Università Ca'Foscari Venezia

Master Degree Programme in Language and Management to China

Final Thesis

The ESG Disclosure Regulations at the Shanghai Stock Exchange: An Empirical Research

Supervisor
Ch. Prof. Michela Cordazzo

Assistant supervisor
Ch. Prof. Franco Gatti

Graduand
Greta Biondi
Matriculation Number 872944

Academic Year
2023/2024

Table of Contents

List of Tables

List of Figures

Glossary

Institutions and Regulations

SSE – Shanghai Stock Exchange | SZSE – Shenzhen Stock Exchange

CSRD – Corporate Sustainability Reporting Directive

ESRS – European Sustainability Reporting Standards

SEC – Securities and Exchange Commission

WB – World Bank

WEF – World Economic Forum

SASB – Sustainability Accounting Standards Board

VRF – Value Reporting Foundation

IFRS – International Financial Reporting Standards

SFDR – Sustainable Finance Disclosure Regulation

ISSB – International Sustainability Standards Board

GAAP – Generally Accepted Accounting Principles

NFRD – Non-financial Reporting Directive

EFRAG – European Financial Reporting Advisory Group

SASAC – Asset Supervision and Administration Commission

CBRC – China Banking Regulatory Commission

AMAC – Asset Management Association of China

MSCI – Morgan Stanley Capital International

CSRC – China Securities Regulatory Commission

MEE – Ministry of Ecology and Environment

CERDS – China Enterprise Reform and Development Society

GEID – Governmental Environmental Information Disclosure

<u>Other Terminology Relevant for This Paper:</u>

ESG – Environmental, Social and Governance | CSR – Corporate Sustainability Report

EID – Environmental Information Disclosure

GRI – Global Reporting Initiative

PRI – Principle for Responsible Investment

SDGs – Sustainable Development Goals

PAI – Principal Adverse Impact

GHG – Greenhouse Emissions

GCG – Green Credit Guidelines

IPCC – Intergovernmental Panel on Climate Change

COP26 – Conference of Parties

CDR – Carbon Dioxide Removal

ECEs – Emerging Chinese Enterprises

SOEs – State-Owned Enterprises

Abstract

This thesis aims at exploring the development of the ESG (Environmental, Social, and Governance) standards in China, with a specific focus on the Shanghai Stock Exchange (SSE). The study is conducted through a detailed analysis on the history of the ESG regulation around the world and in China, searching for reasons that led to the publication of the 2024 “Guidelines No. 14 of Shanghai Stock Exchange for Self-Regulation of Listed Companies – Sustainability Report”.

After a thorough literature review, the empirical research proceeds on examining the requirements of the “Guidelines for Environmental Information Disclosure of Listed Companies on the Shanghai Stock Exchange”, the current sustainability regulation that was published in 2008 and providing a comparison with the latest published guidelines, that will take effect starting from 2026. The results will be based on 25 SSE listed companies’ sustainability reports, and the method used it the content analysis.

Findings of our research will show the high level of disclosure under the 2008 ESG regulations, and a surprisingly good result also under the 2024 issued requirements, demonstrating that companies are positively ready to implement these new guidelines.

Key Words: ESG, Sustainability Report, Shanghai Stock Exchange, China

前言

近年来，环境、社会和治理（ESG）概念在全球范围内获得了显著的发展，逐渐成为上市公司报告实线中的关键要素。 在中国， 近几十年的经济发展对环境带来了巨大的破坏，导致中国政治的“环境意识”不断增加。 因此，中国也指定了 ESG 标准，以衡量企业经济活动对环境的影响，并它对社会的后果。

本论文的目的是追溯中国可持续发展要求的演变，尤其是中国最重要的证券交易发布的 ESG 要求，上海证券交易。它分为三章。本论文第一章的目标是为全世界各地发生的环境、社会和治理的重要规则创建一个历史年表。这为中国随后置顶 ESG 法规提供了背景资料， 为了了解导致 ESG 发展的主要原因。不仅是关于法规的问题，还涉及到普遍的 ESG 事件，例如，推出《全球报告倡议》的标准（GRI Global Reporting Initiative）或者联合国首次提出《可持续发展目标》（SDGs Sustainable Development Goals）。

第一章第二段详细分析了中国的可持续发展历史事，就是说主要的因素造成了 2008 年第一份中国上海证券交易的 ESG 规则，以便准确理解为什么中国要制定了这些法规。比如说，“中国企业改革与发展研究会”（CERDS）和“中华人民共和国生态环境部”（MEE）最近颁布的法规，这些法规为标准环境管理在中国的发展提供了初始动力。在阅读这些已发布的规则的时候，我们了解了许多对我们的实证研究十分有用的信息，这些信息作为第三章的基础。然后，第二段还解释基本原因来到新的 2024 ESG 方针的发布，中国最近的可持续发展法规将于 2026 年开始生效。主要的原因包含与国际 ESG 标准接轨，避免“绿色清洗“（”greenwashing“）并吸引外国投资者。

最新推出的法规的最终目标之一是扩大中国 ESG 的范围，包含更多的方面：在这些新上海股票交易所 2024 颁布的准则之前， 中国的重点尤其放在“环境保护

“上，而不是社会和治理的方面。 第二个目标是把零散的环境、社会和治理要求标准化，并创建一个”具有中国特色“的统一法规。上海证券交易所正在发布新 ESG 规则的原因是与世界其它地区保持同步，但是中国是一个独特的国家，因此采用国际标准是不够的：必须根据全球惯例制定自己的 ESG 规则。

第二章是文献综述，分为三个部分。 第一部分收集了关于 ESG 发展的研究成果。特别是研究经济活动对环境的社会的影响，以及应用环境管理规则对企业经济绩效的打击。 第二个部分探讨了在中国背景下的 ESG 研究， 第三部分更具体地探讨了上海证券交易所得 ESG 文献。第二部分与中国有关的数据足以让我们对这个主题提出看法，而与上海证券交易所的信息却不少。我们希望通过这篇论文为这一研究领域做出贡献。 本章文献综述是我们开展实证研究的基础。

第三章表示我们地实证研究。我们采用“内容分析“的办法进行分析， 用 25 家上市公司为样本。 我们把它们发布的可持续报告分析，然后发现了我们研究地结果。实证研究的重点是 上海证券交易发布的 “2008 ESG 规则“和”2024 新的 ESG 规则“， 所以我们创建了两个”分析框架“，一个针对每项法规。 每一个部分对应环境（A 部分）、社会（B 部分）和治理（C 部分）的三个方面。 每一个部分都包括对 2008 年和 2024 年文件的要求。

分析过程按一下方式进行：我们阅读了公司的可持续发展报告，如果内容符合要求，我们就写 1，如果不符合要求，我们就写 0。本论文声张了每项要求，每一个部分和美分文件的平均结果以及标准差。这些我们的研究调查结果。

在这里我们来介绍 2008 年的 ESG 条例与 2024 年的主要区别。第一个是公布 ESG 报告公司范围的扩大：根据 2008 年的规定，只有大型和污染严重的公司才必须披露环境信息，而到 2024 年，所有上市公司都必须揭发环境，社会和治理的信息。其次是披露要求的深度：第一份条例的结构比较简单，侧重与环境的方面，包含基本社会要素，而第二份文件有一个对环境，社会和治理的所有三分方面进行了详细划分，并提供了具体的报告格式和衡量标准。 第三个不同点是“不

遵守就解释”原则的引入。2008 年，公司没有义务遵守这一概念，即解释为何不遵守要求，因此存在遗漏的空间。而在 2024 年，为了提供透明度和问责制，将执行更严格的 “遵守或解释” 原则。第四个主要区别是与国际标准的一致性（正如我们之前已经解释过的）。现行法规与全球可持续发展实践不一致， 如《全球报告倡议》，而最近发布的法规与国际 ESG 倡议一致。 最后，两个条例的最后一个主要区别是鼓励把环境、社会和治理报告与财务报告相结合。在过去，这两种现实情况总是分开的，而 2024 年的规定鼓励将非财务信息纳入财务报告，以显示每一种信息对另一种信息的影响。 公司通常会有两份不同的报告，但是重要的是要突出经营活动与这些活动对环境影响之间的相关性，反之亦然，即环境、社会和治理活动如何影响公司的财务业绩。

回到我们的实证分析，我们的三个目标是：了解所选公司是否尊周了实际规定，是否为 2025 年可持续发展报告开始实施的新规则做好了准备（公司必须在 2026 年 4 月 30 日之前发布 2025 年 ESG 报告），以及是否已经实施了最新引入的部分规则。从表面上看，在 2008 年和 2024 年的要求，我们可以清楚的看到，ESG 的每一部分都发生了重大变化，既增加了新的要求，也改变了方向。 下面我们将逐节简要介绍内容分析的结果。

关于环境部分，2008 年《上海证券交易所上市公司环境信息披露指引》的披露水平为 48%，而 2024 年《上海证券交易所上市公司自律监管指引第 14 号 – 可持续发展报告》 的揭露水平为 40%。鉴于环境方面在讨论 ESG 问题的重要性，这一发现具有高度相关性，但并不令人惊讶：环境保护已成为 ESG 世界的支柱，并通过 “绿色“、温室气体减排、可再生能源和许多其他方面，成为实现”绿色业务“的根本解决方案。

社会部分的披露比例变化的最大。根据 2008 年的规定，披露水平仅为 11%，而根据 2024 年的指导原则，披露水平达到了 27%。结果翻了一番还多，因为 2024 年的要求是四倍的，其中一些要求几乎得到了 100% 地遵守，这意味着样本

中的所有公司都遵守了这些要求。社会部分的主题也发生了变化，因为不仅要求增加了， 而且引入了更多的概念，如 “产品和质量管理 “、” 技术创新“、”乡村振兴“等。主题的变化反映了全球环境、社会和治理领域新主题的引入，该领域已经扩大并与国际惯例接轨。

与其他两个部分相比，治理部分是框架变化影响较大的部分。框架的方向从“基于监管“ 转为 ”基于公司“， 引入并取代了以前的要求。由于要求数量的减少，披露比例从 2008 年条例的 21%下降到 2024 年条例的 11%。

最后，对每份文件的总披露水平进行比较后发现，现行条例的披露比例为80%，而即将出台的准则的披露比例为 76%。虽然差别不大，但还是重要的。第一个披露水平不是 100%的原因是不同的。 首先，这不是一项强制性规定，公司没有义务遵守这些要求。第二个原因是“不遵守就解释”的原则没有得到执行，也就是说，不遵守的公司没有义务解释。第三个原因是，其中一些要求已经陈旧过时，或者已经成为 ESG 的某些基本方面，甚至不需要披露。

为了准确回答我们的实证研究提出的问题，根据最近发布的指导原则进行披露的水平会略低于目前的水平， 考虑到这只是一个模拟的情况下。尽管如此，在阅读了样本公司的可持续发展报告后，我们可以说，中国上市公司对适用上海证券交易所最新要求的准备程度非常高，这意味着中国上市公司已经为新的环境、社会和治理法规做好了准备，并将进入以国际标准为导向的阶段。

Introduction

The ESG concept developed over time into different dimensions and experienced a great number of interpretations, becoming during the last few years, a pillar concept of listed companies' reporting practices. Financial reports are no longer the only yearly objective of firms, Non-Financial Information documents became important as well.

Studies on Environmental Information Disclosure have been conducted by numerous scholars in different contexts and countries, but no specific study has reported the evolution of the ESG requirements published by the most relevant Chinese stock exchange. This study aims to reconstruct the development of the sustainability guidelines issued by the Shanghai Stock Exchange, providing a comparison, supported by evidence, of the current regulation and the latest guidelines that are yet to take effect.

This research is conducted in the light of the newly acknowledged events that shaped the ESG environment all around the world. China is considered one of the most relevant global players in this area, considering the remarkable growth that this country has experienced during the last four decades. Experts might argue that China has achieved in forty years what took Western countries four centuries to accomplish. This astonishing rise created also problems as consequences, in particular in the topics of pollution and resource usage. This is one of the main reasons why China is considered slightly behind on some sustainability aspects.

Europe is undoubtedly the pioneer of the ESG from a global point of view, having issued the Corporate Sustainability Reporting Directive (CSRD) which came into effect in January 2023, and the European Sustainability Reporting Standards (ESRS). Together these two directives aim to expand the range of companies that are required to mandatorily disclose non-financial information and to harmonize sustainability reporting practices across the European Union. European countries are the first to apply such advanced and updated regulations, even though the U.S. are trying to keep up the EU speed. The Securities and Exchange Commission (SEC) is promoting a series of climate related disclosure rules that will change the current disclosure process applied by American stock exchanges, yielding significant improvements.

The Chinese government is aware of the radical changes that are happening around the globe in the ESG context, and China is also cognizant of the impact of climate change on the environment. These are two reasons that led China to update their ESG rules, and in particular, to issue new sustainability requirements for their major stock exchanges. Furthermore, the Shanghai Stock Exchange specific need for a change was driven by the necessity of China to align with the international ESG trends and regulations, to avoid greenwashing problems and in general to broaden the ESG scope beyond the more traditional Environmental Information Disclosure.

One of this thesis' main objectives is to provide a comprehensive view of ESG landscape in China, starting from localizing the most relevant Chinese sustainability regulations published in 2008 and in 2024 in an international context. We will be doing that by depicting a timeline of important regulations published around the world, describing their effect on the ESG environment, especially the influence that they had on the Chinese sustainability regulatory framework.

After the consolidation between the global trends and the ensuing development in China, this paper endeavours in reconstructing the regulatory frameworks and other relevant events that led to the publication of these two pivotal documents in China, dividing the study in before and after 2008, in order to create a clear vision of the progression and the evolution of ESG requirements. To conclude this section, a detailed description of the main reasons that culminated in the issuing of the "Guidelines No. 14 of Shanghai Stock Exchange for Self-Regulation of Listed Companies – Sustainability Report" in 2024 is provided.

In the second chapter a complete overview of the past literature on the topic is outlined, following the large-to-narrow method that we used in the first chapter. The first paragraph will explore prior studies on the ESG disclosure, tracing the impact of sustainability reporting on the economic activities of enterprises. The second paragraph will narrow the study down to the ESG disclosure in the Chinese context, proposing a selection of paper based on clusters of Chinese firms applying some level of sustainability regulations. The third paragraph will portray the findings of papers related only to the Shanghai Stock Exchange, which utilize for their research evidence from SSE listed companies.

The third chapter include the core of our empirical research, which uses the content analysis method. The explanation of how we selected our sample of companies, and the method will be provided in the first part, while in the last section the examination of the results will be displayed, together with a comparison between the findings related to 2008 and 2024. A detailed description of the content analysis of each document is outlined, but also the comparison of the requirements is included: this paragraph will try to highlight the sections presented in the sustainability reports that already meet the 2024 requirements, underscoring the transition from one regulatory framework to the other.

Since the literature on the Shanghai Stock Exchange is not much, and the papers that exists are related to this stock exchange only in terms of empirical research, that means using a sample of SSE listed companies for the evidence and not providing a comprehensive overview of the regulations itself, this thesis aims at covering that gap. Creating a complete vision of how the ESG regulations were introduced and how they developed over time in the Shanghai Stock Exchange is one of the main objectives of this paper, contributing to increase the literature about ESG requirements in Chinese stock exchanges.

The final objective of this thesis that will be pursued through the empirical analysis, is to investigate the level of observation of the ESG requirements provided by the current regulation, "Guidelines for Environmental Information Disclosure of Listed Companies on the Shanghai Stock Exchange" published in 2008, and to control if the selected companies are ready to meet the new requirements issued in the 2024 "Guidelines No. 14 of Shanghai Stock Exchange for Self-Regulation of Listed Companies – Sustainability Report." To give validity to this question, we analysed the sustainability report published by the selected sample of 25 SSE listed companies. The final findings will provide a clear overview of the level of disclosure of the current ESG requirements, and a simulation of the 2024 new guidelines' level of disclosure.

1 Chapter One: An Overview of ESG Regulation

1.1 Introduction

This chapter will cover the history of the ESG environment, explaining first the timeline of relevant global events and initiatives that shaped the road for China. The remaining part of the chapter will be dedicated at explaining the evolution of the ESG practice in China.

The second paragraph will depict the background of the 2008 "Guidelines for Environmental Information Disclosure of Listed Companies on the Shanghai Stock Exchange," highlighting the main principles of Environmental Information Disclosure (EID) at that time and how they developed.

The third paragraph will portray the development of ESG initiatives in China after 2008, reaching the current situation in which "Guidelines No. 14 of Shanghai Stock Exchange for Self-Regulation of Listed Companies – Sustainability Report" were created, explaining also the main reasons behind the publication.

1.2 ESG and the International Debate

This paragraph will explore the main events related to the ESG reporting practices around the world, with the attempt to discover the dominant reasons leading the major Chinese Stock Exchanges to publish the new sustainability regulations. We will touch upon only the most relevant ESG improvements that impacted the major players in the sustainability reporting scene, not excluding that there are also many smaller events that took place in this environment.

The experts of this area would define the ESG reporting practices a part of the corporate accountability (A.F Macesar, 2024), a phenomenon that started to arise around the 1950s. The public concern and attention towards pollution and environmental degradation started to grow in the 1970s, when the first "Earth Day" was celebrated in the U.S., but it is starting from the 1980s that major international organizations got involved in this world, including the World Bank and the United Nations, which in 1983 created an autonomous consortium to pay attention and to solve disputes about the impact of the human activities on the environment (A.F Macesar, 2024).

The years between the 2000 and 2010 were characterized by a lot of international meetings with the objective of analysing how to manage the climate change and the environmental disasters that the population is starting to witness. A memorable event is the launch of the "Principles for Responsible Investment (PRI)", a United Nations' initiative to support institutional investors engagement with companies and corporations on ESG issues (Gond, Piani, 2013)

In the time following 2010, we have a phase that is called "the formalization of the ESG" (A. F. Macesar, 2024). The first event of the decade was the foundation by Jean Rogers of the Sustainability Accounting Standards Board (SABS) in 2011, an organization that defines specific standards for the divulgation of sustainability risks and opportunities information; the SASB standards are considered similar to Financial Accounting Standards Board's (FASB) but with a difference in topic: these regulations help the companies create value using sustainable and environmentally friendly activities (Busco et al., 2020). In 2015, another important milestone was reached: the United Nations first introduced the 17 Sustainable Development Goals (SDGs), which represent the core of the Paris Agreement, a legally binding international treaty on climate change.[1] In 2016 there was also the re-introduction of the GRI Standards, one of the most used set of standards that enables companies to increase their transparency in reporting their impact in the economy, the environment and the society and to highlight their contribution to sustainable development.[2]

[1] "The Paris Agreement", unfccc.int https://unfccc.int/process-and-meetings/the-paris-agreement
[2] "The Global Standards for Sustainability Impacts", globalreporting.org https://www.globalreporting.org/standards/

Figure 1 - Report on the 2017 WEF Annual Meeting source: weforum.com

In 2017 at the World Economic Forum summit, for the first time over 140 CEOs signed the "Compact for Responsive and Responsible Leadership", a sign of their commitment to align their company's goal with the UN SDGs. A quote directly from the President of the People's Republic of China, Xi Jinping, published in the World Economic Forum Annual Meeting 2017 Report reminds the world of how China is stepping up to its role of global leader, calling for a greater international collaboration:[3]

> "We should all adapt to and guide economic globalization, cushion its negative impact, and deliver its benefit to all countries and all nations." (Xi Jinping, WEF Annual Meeting 2017, Davos)

Skipping to 2020, with all the problems and consequences related to Covid-19, the WEF and the Big Four decided to release a whitepaper that establish standardized

[3] "World Economic Forum Annual Meeting 2017 Report, weforum.org https://www3.weforum.org/docs/WEF_AM17_Report.pdf

metrics to use when reporting on their environmental, social and governance progress.[4] This was a firm and determined move that represented the wish and the need of companies to adapt their current rules to a world that is constantly changing, transformed by the climate change, social development and the recent Covid-19. This document was very important at that time, because it represented hope and determination to overcome that difficult time: the core of this document was to help companies to increase their resilience, leading them to commit to a long-term and sustainable value creation.

In 2021, the European Union's Sustainable Finance Disclosure Regulation (SFDR) dictated conditions to increase transparency in the disclosure of sustainability-related information in the financial market. The main goal of the SFDR is to avoid greenwashing and encourage companies to disclose their policies on integrating the sustainability risks into their investment plans (Cremasco, Boni, 2022). The most characteristic element of this framework is the introduction of the "Principal Adverse Impact" (PAI) which represents the negative impacts of the companies' investments on sustainability goals. The principal factors included are greenhouse emissions, biodiversity restoration, water consumption, pollution control and circular economy transition (Comoli, 2023). This document is fundamental for this research because these core elements will become the foundation of the latest Chinese ESG regulation as we will see in the next chapters. The ultimate objective of this project is to improve the comparability of sustainability data shared across the global financial market (Cremasco, Boni, 2022).

Moving on 2022, the International Financial Reporting Standards (IFRS) foundation, responsible for forging the accounting standards for most countries, merged with the Value Reporting Foundation (VRF), an organization that created the Sustainable Accounting Standards Board (SASB), in order to create the International Sustainability Standards Board (ISSB) and to consolidate a unique and global baseline for the sustainability information disclosure (Harris, 2022). This consolidation does not include

[4] "Toward Common Metrics and Consistent Reporting of Sustainable Value Creation", Consultation Draft WEF and The Big Four
https://assets.kpmg.com/content/dam/kpmg/vn/pdf/publication/2020/WEF_IBC_ESG_Metrics_Discussion_Paper.pdf

the U.S.A., in which the U.S. Generally Accepted Accounting Principles (GAAP) are managed by the FASB. However, because of the merging of the two foundations that we have just mentioned and the creation of this new core guidelines available for almost every country, the Securities and Exchange Commission (SEC) proposed new requirements for quoted companies in the U.S. that encourages to provide some climate-related data in their reports and other documents (Bremner, 2023).

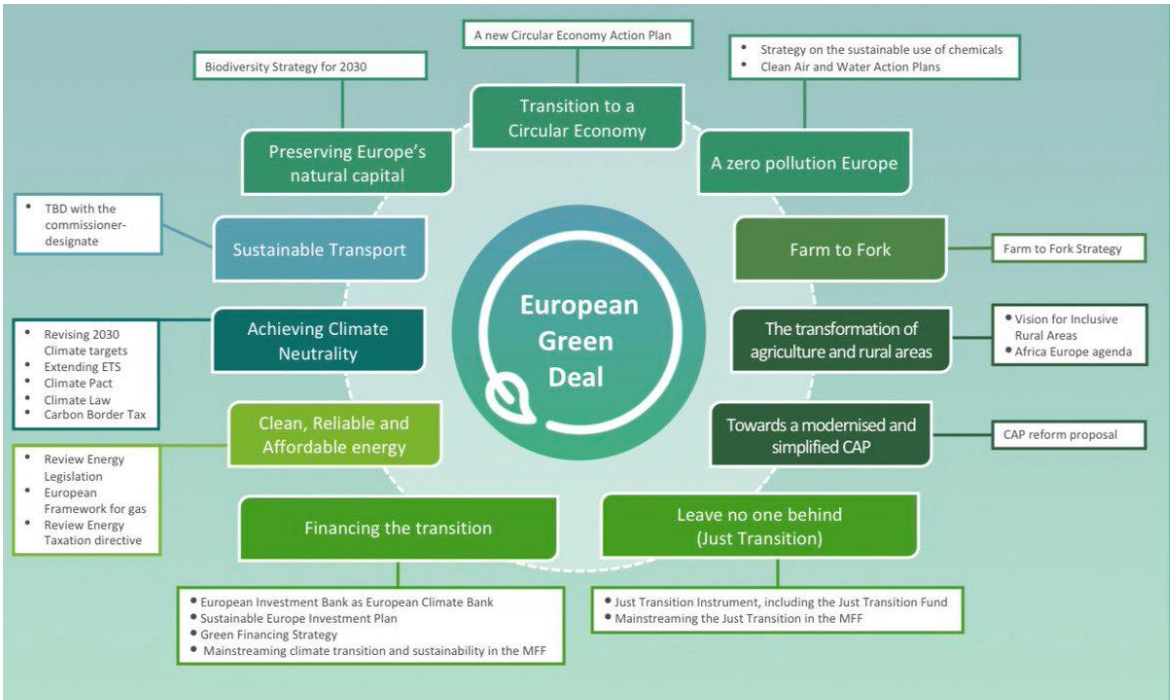


Figure 2 - European Green Deal source: University of Naples, Law Department

Shifting focus to the opposite side of the ocean, 2023 was a big year for the European Union in terms of ESG development. In 2022 the new EU Taxonomy was launched, a guideline to implement sustainable finance and to monitor progress in reaching the 2050 carbon-neutrality goal (de Oliveira Naves, 2022). Even though there is still a debate going on about the effectiveness of the EU Taxonomy and the fact that goes against the principle of market economy, it remains a key driver during these years of change (Kooths, 2022). This leads to the 2023 EU Green Deal directive (Figure 2), the so-called

"Corporate Sustainability Reporting Directive" (CSRD),[5] that establishes a "common framework of measures to promote energy efficiency within the European Union",[6] set to be effective starting from 2025 (reporting on 2024 data).

It is considered a big development in sustainability information disclosure, especially because is presents some divergences with the 2014 Non-financial Reporting Directive (NFRD), the previous framework regarding the disclosure of non-financial information in Europe. The main differences are the scope of the applicability, the requirements that must be respected, the content and the form of the report, the level of assurance and the alignment with other projects.

In details, the NFRD only addressed large public-interest companies with more than 500 employees, in total they were 11,000 companies; the CSRD increased the number up to 50,000 companies because the scope included all large companies, even the one not listed and the final objective is to gradually include also the companies that are not European but that have their main activities in Europe and the small and medium-sized enterprises (SMEs), in the next few years.[7] A CSRD defined "large company" must possess two of three of the following criteria: more than 250 employees, a net turnover of more than 40€ million, or a balance sheet of more than 20€ million.[8]

Secondly, the NFRD encouraged companies to report the information using a digital format, but there was no specific regulation, while the CSRD requires companies to disclose in a XHTML format.[9] Moreover, with the previous directive there were no detailed information on which guidelines to follow in order to disclose non-financial information, any company could choose any kind of international or national framework, while with the 2023 directive companies will start to report according to the European

---

[5] "Corporate sustainability reporting – European Commission", 2023, finance.ec.europa https://finance.ec.europa.eu/capital-markets-union-and-financial-markets/company-reporting-and-auditing/company-reporting/corporate-sustainability-reporting_en

[6] "Directive (EU) 2023/1791 on energy efficiency and amending Regulation (EU) 2023/955", 2023, fao.org https://www.fao.org/faolex/results/details/en/c/LEX-FAOC223539/

[7] CSRD vs NFRD, Nexio Projects, 2023, quantic.com https://www.quentic.com/articles/infographic-csrd-vs-nfrd/

[8] Ibidem

[9] Ibidem

Sustainability Reporting Standards (ESRS), the mandatory EU sustainability standards that are developed by the European Financial Reporting Advisory Group (EFRAG) and scheduled to the finalized this year (Bamrud, Sandal, 2024). The new introductions are particularly influential for this paper because they will cover numerous aspects such as biodiversity, circular economy, water resources, pollution prevention (Bamrud, Sandal, 2022) and mitigation management, all areas that we will find again in the newest Chinese ESG framework.

Furthermore, the auditing extent is completely different in the current directive, since in the NFRD there were no obligations to audit the information reported, while in the CSRD it is mandatory that an external auditor or a competent certifier provide assurance of the disclosed sustainability issues. Aligning with this idea, in the previous regulation there were not any kind of assurance standards, while the CSRD introduces the use of "EU-specific assurance standards". The addition of the mandatory auditing and of the assurance standards will increase the consistency and the transparency of the information disclosed, and the trust and comparability between stakeholders.

Finally, the NFRD was an independent directive in partial alignment with a non-defined ESG framework in Europe at that time. The CSRD on the contrary, emerges as one of the most important projects of sustainability in EU, completely integrated and aligned with the launch of the EU Taxonomy as we have already mentioned, with the implementation of the "Sustainable Finance Disclosure Regulation" (SFDR) (Becker, 2022), the European regulation with the final objective of strengthening and promoting green investment practices, and with the broader European Green Deal initiative. In the following Table 1, we can explore more of the differences between the two directives.

Table 1 - Main Differences between NFRD and CSRD

(elaboration by the author)

NFRD	**CSRD**
Issuing Time	**Issuing Time**
Introduced in 2014, applied in 2017.	Introduced in 2021, adopted in 2023, take force in 2025.
Final Goal	**Final Goal**
First attempt to enhance transparency.	Enhanced attempt to provide a more consistent and comparable non-financial data.
Scope of Application	**Scope of Application**
Large public companies (more than 500 employees) and listed companies.	Large companies than meets two over three of these criteria: - more than 40€ million net turnover; - more than 20€ million on the balance sheet - more than 250 employees
Only European companies (in total 11,700 companies)	Not only European companies, but also subsidiaries of non-EU companies than have primary activities in the European Union territory, and SMEs will have to comply, respectively in 2029 and 2027 (estimated in total more than 50,000 organizations)
Format and Guidelines	**Format and Guidelines**
No specific requirement, only the encouragement for digital reporting and free entitlement to choose any	Companies are required to prepare their report using the XHTML format and to follow the mandatory EU Sustainability

international, national, European guidelines to disclose information.	Reporting Standards (ESRS), that are being developed at the moment.
Audit Requirements	**Audit Requirements**
No mandatory auditing.	Audit necessary, first a limited assurance, but planned to be expanded to relevant auditing.
Assurance Standard	**Assurance Standard**
No specific assurance standards required.	EU-specific assurance standards required to provide reliable and accessible information.
Double-Materiality Concept	**Double-Materiality Concept**
Introduced the concept but no explicit requirement for its application.	Strongly emphasize the concept, requires companies to report both on sustainability issues impacts the company's performance and how the company influences the environment.
Enforcement	**Enforcement**
Penalties vary country by country, enforcement left to member states	Plan to institute a more harmonized and defined enforcement mechanism, even though it is stated that if companies do not respect the audit requirements, the non-compliance will be penalized using national laws (at the moment).

Continuing with the next relevant event, one of the most recent initiatives in reaching carbon neutrality and developing a more sustainable world is the publication of the new climate disclosure rules by the U.S. Securities and Exchange Commission (SEC), published the 6th of March 2024.[10] Following the latest progress in Europe in terms of sustainable information disclosure, also the United States proceed now on formalizing the newest requirements in order to address investors and stakeholders' demand for more comparable and reliable information on how the climate change phenomenon affects companies' financial performance (Soroosh, 2022).

There are a few points that are noticeable enough to be mentioned and are considered influential for this paper's purpose. First, once the rules will be finalized companies will be obliged to disclose what is required by the document, so it will become a mandatory regulation. Secondly, the GHG reporting requirements will not include just the direct emissions (Scope 1), but also the indirect emissions (Scope 2) and the value chain emissions (Scope 3) only if they determine that these emissions are material to their overall climate-related risks (Wilson, 2023). A third important characteristic is the introduction of the climate-risk evaluation governance and how the board manages it, a feature that presents itself also in many Chinese companies ESG reports. As we have already seen in the European CSDR, also in the new American regulation a third-party assurance is mandatory, and the rules will be implemented little by little with different timing based on the size and the type of company.[11]

To conclude this detailed explanation of the ESG development timeline, we can attest that throughout the years, the initiatives that contributed to the development of the sustainability reporting practice have gradually improved, taking into account the global changes that led to the creation of these documents and regulations, and considering the international need to create regulations in order to control the human economic and social activities that are influencing our planet. It is this attentive and proactive world, constantly adapting to new requirements and new global trends, that inspired also the country target of our research, China, and its major stock exchanges, to update themselves and enhance their transparency and comparability with other leading countries in the world. The next paragraphs will conduct a detailed research on the

---

[10] SEC Adopts Rules to Enhance and Standardize Climate-Related Disclosure for Investors, 2024, Press Release SEC Official Website, https://www.sec.gov/newsroom/press-releases/2024-31
[11] Ibidem

background environment that led to the adoption of the 2008 ESG guidelines published by the Shanghai Stock Exchange and an extensive analysis of the recent global circumstances in which the 2024 new SSE Sustainability regulations were introduced.

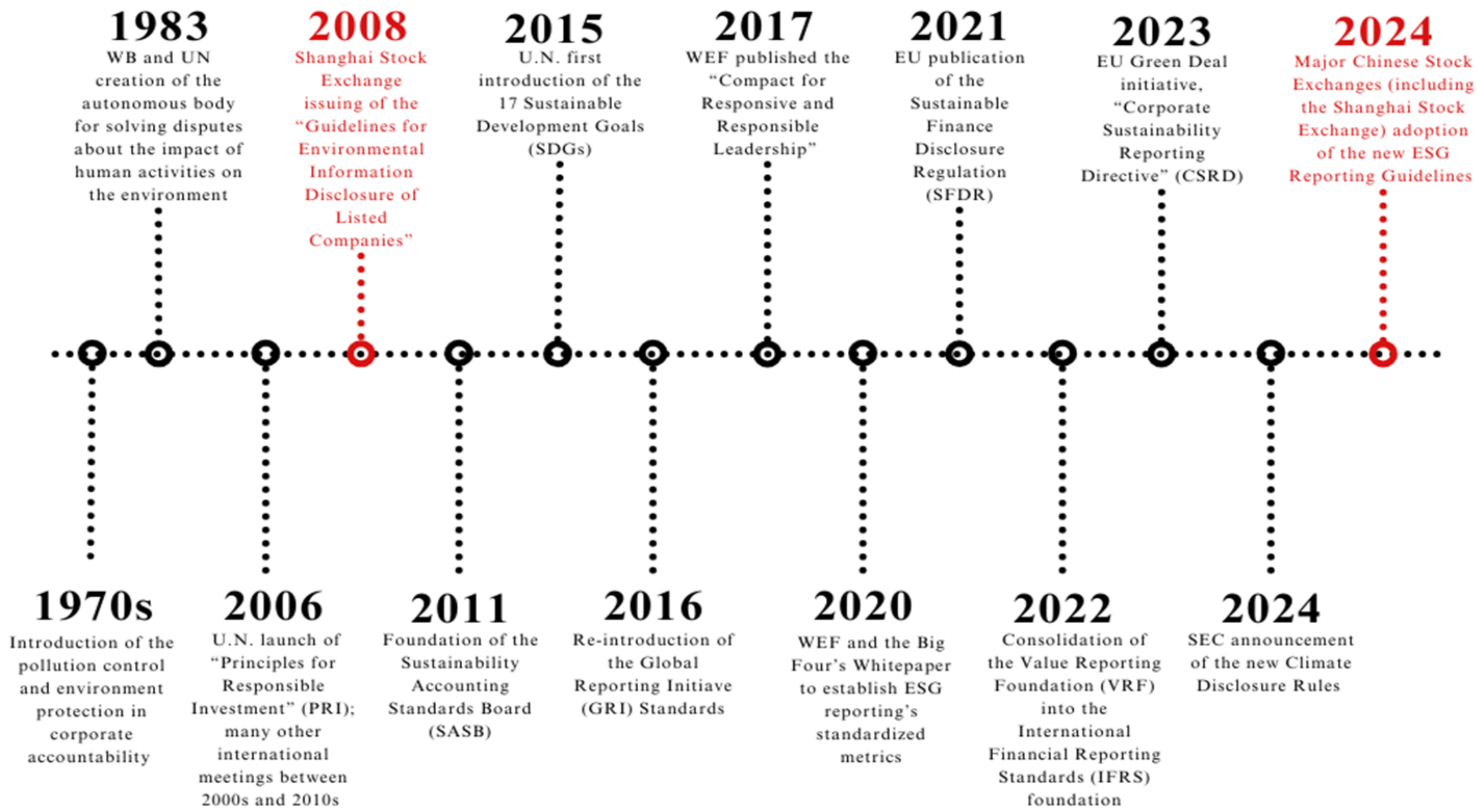


Figure 3 - ESG Evolution Timeline (Elaboration by the author)

1.3 Development of ESG in China

This second paragraph aims to depict the development of the ESG standards in the Chinese context. We have established in the first part of this paper the importance of the international debate in the creation of Chinese regulations related to sustainable development, highlighting the level of influence that environmental practices of Western countries had and still have in the Asian context. Figure 3 shows the issuing of relevant global regulations that impacted the world of ESG, and in between these important events, the main characters of this research stand out, representing the two turning points in the history of ESG in China, and more specifically in the Shanghai Stock Exchange.

The regulation published in 2008 signalled the introduction of sustainability reporting practices in China, while the 2024 guidelines marks China's significant alignment with the international framework, which emphasizes the fight against climate change and the importance of comprehensive environmental reporting. The consequent sub-paragraphs will be divided following this timeline, explaining first China's initial steps towards the application of ESG reporting rules before 2008, focusing on raising awareness and knowledge related to corporate sustainability practices; the paper will proceed on portraying the series of key events that shaped China's ESG environment after 2008, characterised by both domestic obstacles and international pressure; the description will conclude with the explanation of the primary drivers that led the Shanghai Stock Exchange to publish the new guidelines this year.

One purpose of this research is to provide a comprehensive understanding of what precisely led China to issue the two ESG documents exactly in those years, describing the main international and domestic events and regulations that became relevant in this matter, and served as incentives to the creation of these two documents highlighted in Figure 3. This study underlines the role that China embraced in the collective effort to combat the climate change, reflecting its commitment to align with the international context, and being proactive in implementing global environmental standards and crafting their own too.

1.3.1 Regulations before 2008

The practice of issuing sustainability reports is considered a relatively new initiative and a growing management issue in China (Moon, Shen, 2010), as it is stated that other regions around the world have a much longer and consistent history with the concept of environmental reporting due to more stringent regulations and more intense stakeholders' pressure (Kolk, 1999).

We can trace back the starting of ESG in China in 2001, when Chinese companies that wanted to apply for listing in a Chinese stock exchange had to disclose their environmental risks in a document for their initial public offering (Weber, 2013). Since 2004, only highly polluting enterprises were mandated to publish an environmental report, even though other sectors were encouraged as well (Xiao, 2006). Before 2005, Chinese companies were expected to share a corporate environmental report for only local environmental administrations, but beginning from 2005 these companies' environmental performance started to be rated and published by a nationally controlled program (Liu, Anbumozhi, 2008).

The practice of issuing sustainability reports in China started to really take shape in 2006, when the Chinese company law introduced the requirement of including "social responsibilities" in their businesses. Before that year, only 22 corporate sustainability reports (CSR) had been published in the country, and mainly by international companies (Avory et al, 2012). Figure number 4 shows the percentage of companies that shared their CSR report in the years between 2005 and 2009.

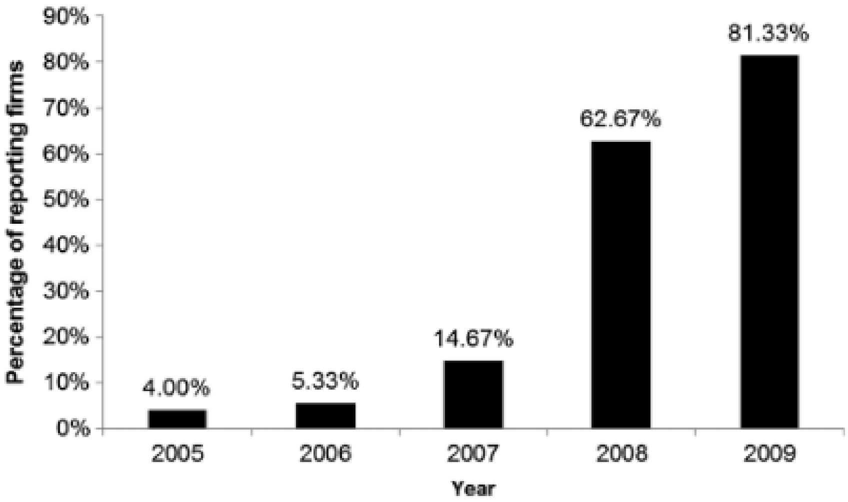


Figure 4 - Percentage of firms that published an ESG Report in China between 2005 and 2009 source: "Environmental, Social and Governance Reporting in China", O. Weber

A significant turning point was the release of the “Guidelines to the State-owned Enterprises Directly under the Central Government on Fulfilling Corporate Social Responsibilities” by the state-owned Assets Supervision and Administration Commission (SASAC) in 2008 (Coni-Zimmer, 2021). At the time, the SASAC controlled more than 100 large state-owned enterprises and one of the main points of this new regulation was the requirement, for all the state-owned companies, to publish CSR reports by 2012 (Coni-Zimmer, 2021).

In 2008, China also launched the “Green Securities Policy”, whose main objective was to increase the sustainability reporting practice among listed companies (Wang, Bernell, 2023). One of the most important points of this document was the requirement for Chinese companies that operate in 14 polluting industries to report mandatory environmental information (Wang, Bernell, 2023).

Motivated by this new environment, the first organism that published guidelines on ESG disclosure was the Shenzhen Stock Exchange in 2006, and in 2008 the Shanghai Stock Exchange followed this trend and issued the “Guidelines for Environmental Information Disclosure of Listed Companies on the Shanghai Stock Exchange” document. These new regulations opened the road to the application of the sustainability reporting standards in China, inspiring the Chinese enterprises to engage in issues such as labour standards and environmental protection (Coni-Zimmer, 2021). According to the SASAC, enterprises should:

> "[…] regard the implementation of CSR as an important content of setting up modern enterprise and enhancing their competitiveness. By transforming the pattern of growth and achieving sound and rapid development, they should implement CSR according to the practical situation of the country and the circumstances of themselves […]" (SASAC, 2008).

The concept behind these regulations was rooted in the Chinese aspiration of achieving a "harmonious society" and gaining an international reputation (Coni-Zimmer, 2021). Reflecting China's dedication to these goals, the success of the guidelines was evident in the record of 703 reports released in 2010 (Avory et al, 2012). Not only did the number of reports increased, but their quality also improved, and they were published by a more diversified range of companies (Avory et al, 2012).

The "Guidelines for Environmental Information Disclosure of Listed Companies on the Shanghai Stock Exchange" is a brief document whose main part is just 9 articles. The publication of this document is accompanied by another guideline called "Notice on Strengthening the Social Responsibility Undertaking of Listed Companies and Issuing the Shanghai Stock Exchange Guidelines for Environmental Information Disclosure of Listed Companies" that reinforces the main points of the first regulation. These guidelines' main objective is to incentivize companies to disclose information, but they are still on a voluntary basis.

The 2008 SSE emitted regulation mainly describes the list of requirements that companies need to share, for example the enterprises' total annual resource consumption or the company's emitted pollutants, without entering into details, and which kind of documentation must be submitted. There is also the chapter about the heavily polluting enterprises that shall disclose with a more specific method some information like the denomination and the mode of emissions of the pollutants or the measures to reduce that pollutants' emissions. Other than that, this first guideline can be considered as the start of the ESG sensibilization, in a country in which this topic was until that moment, almost unknown. In the case of China, it could have been a mix of low foreign investment, less developed securities' trade and the state's powerful political influence that have limited the stakeholders' power and pressure, and consequently also limited the spread of ESG awareness, compared to other Asian countries or even with Hong Kong (Kimber, Lipton, 2005).

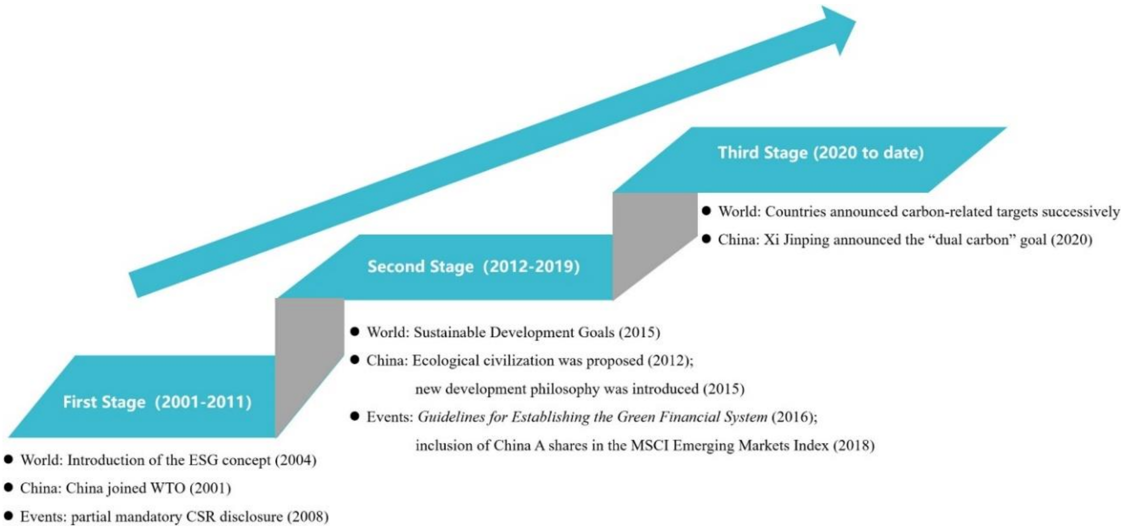


Figure 5 - The Three Stages of ESG practice in China
source: "ESG in China: A review of practice and research, and future research avenues", H. Shen et al.

As Shen et al. reported in their analysis of the development of the ESG reporting in China, the 2008 SSE document is part of the *first stage* of ESG practice in China, when the first step towards a more internationally open China, ready to collaborate with other countries and speak up about the environmental issues that are starting to be noticed during the decade 2001-2011 were taken (Figure 5).

A further national improvement was made in 2010, when the Ministry of Environmental Protection published the "Guidelines for Environmental Information Disclosure by Listed Companies" which presented stringent requirements specifically for heavily polluting industries (Guo et al, 2023). They were mandated to issue annual reports that included environmental information like pollutant emissions and environmental management practices (Guo et al, 2023). It can be considered a relevant step forward because it consolidates various standards and requirements into a unified national document.

1.3.2 Regulations after 2008

Continuing to use the timeline (Figure 5) given by Shen et al. in 2023, we discover that the *second stage* (2012-2019) can be reconnected to the concept that we have already mentioned in this paragraph of the "harmonious society" that is deeply rooted in the Chinese culture. As a matter of fact, in 2012 the "Ecological Civilization" was proposed in China, a philosophy that highlighted the importance of living in a harmonious relationship with the natural world. The term "Ecological Civilization" was firstly coined by the Soviet Union, and only after many years, in 2007, it was embraced by the Chinese government which started to focus on improving technology in order to reduce environmental damage (Garre, 2012). This term gained importance, and it was also mentioned in China's 13th Five-Year Plan (Geall et al, 2018) as to symbolize the Chinese government and population's challenge of ecological responsibility but also the idea of restoring "China's long tradition of agriculture". This aspect is very important for this paper because we will see in the third chapter that a similar voice is always present in the today's companies' sustainability reports (*rural revitalization*).

An additional initiative that has contributed to limiting environmental risks' damage is the issuing of the "Green Credit Guidelines" (GCG) by the China Banking Regulatory Commission (CBRC) in 2012, with the goal of teaching financial institutions the danger of the environmental risks and limiting loans to large industries with high pollution and high energy consumption (Tan et al, 2022). In 2015, the "Environmental Protection Law" was amended, introducing new elements that remarkably changed the legal framework for environmental protection and corporate accountability (Yu, 2022). As Zhang and Cao said in 2015, it was considered "the most progressive and stringent law in the history of environmental protection in China" (Zhang, 2015).

During this *second stage* (Figure 5) also the "Guidelines for Establishing the Green Financial System" were published in China (2016), in order to control investments in polluting activities and to incentivize greener industries.[12] Regarding the Green Finance area, in 2016 also took place the G20 Hangzhou Summit, in which the topic of "Green Finance" was prioritized. Including this topic on the G20 Agenda highlights the importance of addressing the significant challenges of pollution and environmental degradation in China[13] while promoting sustainable investments alternatives.

One more event that is impossible to overlook is the introduction of the Environmental Protection Tax Law in 2017, implemented starting from 2018, which promoted the green technology innovation and optimized the Chinese companies' energy structure, contributing to incentivize pollution reduction trough completely change the current pollution discharge fee system with a more appropriate taxation (Gao, 2022).

Even though we have no official documents issued in 2018, some papers report that, after the Asset Management Association of China (AMAC) organized workshops on the topic of ESG, both the Shanghai Stock Exchange and the Shenzhen Stock Exchange published notices and instructions with the objective of encouraging a deeper ESG disclosure, taking part in the "Sustainable Stock Exchanges initiative" and joining ESG conferences and other events.[14]

Moreover in 2018, the "Three-year Action Plan to Win the Blue Sky Defence War" (also abbreviated as "Blue Sky Defense War) was devised, with the clear goal of reducing air pollution, especially in Chinese metropolis (Figure 6). There are three main actions to be taken in order to improve air quality in China: issue consistent

[12] "Guidelines for Establishing the Green Financial System", 2016, The People's Bank of China, pbc.gov.cn
[13] "Implications of the G20 Summit in Hangzhou, China for Climate Change, Green Finance and Sustainable Development Goals, T. Ishii, 2016, IGES Briefing Note, https://www.researchgate.net/profile/Mark-Elder/publication/308320380_Implications_of_the_G20_Summit_in_Hangzhou_China_for_Climate_Change_Green_Finance_and_Sustainable_Development_Goals/links/57e0a2ef08ae52b3078a83d8/Implications-of-the-G20-Summit-in-Hangzhou-China-for-Climate-Change-Green-Finance-and-Sustainable-Development-Goals.pdf
[14] https://www.cfainstitute.org/-/media/documents/survey/esg-integration-china.ashx

environmental governance policies, provide a transparent and consistent EID in the matter, and finally undergo some structural adjustment (Jiang et al, 2021).

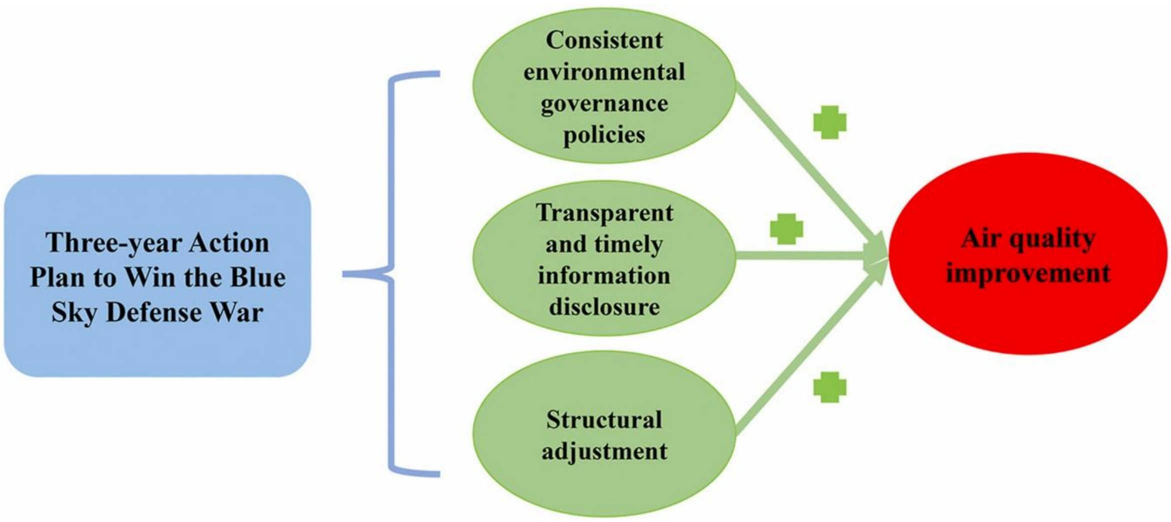


Figure 6 - Main Actions to be taken to implement the "Three-year Action Plan to Win the Blue Sky Defence War source: “Government environmental governance, structural adjustment and air quality: A quasi-natural experiment based on the *Three-year Action Plan to Win the Blue Sky Defense War,* X.Jiang et al.

The results of the study of X. Jiang and G. Li actually showed that the Blue Sky Defense War plan reduced the “monthly average concentration of PM2.5 and PM10 in cities by 14.49 and 23.43 respectively” (Jiang et al, 2021).

Shen et al. also report that, later in 2018 the Morgan Stanley Capital International (MSCI) included partially China A-shares in the MSCI Emerging Markets Index, a natural consequence of the trend of the previous stage of going more international.

Another relevant event for China that took place in the *second stage* is the “Code of Corporate Governance Guidelines for Listed Companies” published by China Securities Regulatory Commission (CSRC) in 2018, establishing the first formal national framework for ESG. The CSRC revised these guidelines in 2021, instructing listed companies to disclose ESG information to their investors in their semi-annual and annual reports (Shen, 2023); there was a further revision in 2023 with the main objective to align the Chinese requirements with international best practices, in order to increase the quality and the comparability of the standards.

The *third stage* (Figure 5) starts in 2020, a very important year as we have already reported in the first paragraph, marked by the announcement of global carbon-related targets and goals. China tried to follow this worldwide direction and Xi Jinping introduced a new national initiative that highlighted the priority of transitioning to a low-carbon system, the so-called "dual carbon" goal (2020) (Jia et al, 2022).

The 2018 Intergovernmental Panel on Climate Change (IPCC) report has shown that the global warming has caused the temperature to increase up to 1.5 °C compared to pre-industrial times, raising concern among the leading countries about this problem.[15] The IPCC report also tries to propose solutions on how to reduce emissions, stating that the global annual emissions must be limited to 25.30 Gt carbon dioxide equivalent by 2030 and to reach net-zero by 2050.[16] Over 132 countries agreed on leveraging their potential to achieve this common goal, but at the 26th Conference of Parties (COP26) in Glasgow, emerged the issue of different levels of difficulty that countries like China and India will face in reaching the objective, compared to smaller and greener nations (Valavanidis, 2021). Even though China is the largest energy consumer and greenhouse gas producer, the Middle Kingdom decided to be part of the global change and taking responsibility for their important role as a country leader, and announced their "dual carbon" strategy, which means "reaching peak emissions by 2030 and the aspired carbon neutrality by 2060" (Figure 7).[17] The main actions included in the plan are developing renewable energy(He, 2022), creating a carbon emissions trading scheme (Chen, 2021) and deploying carbon dioxide removal (CDR) technologies (Bistline at al., 2021).

[15] "Global Warming of 1.5 °C", IPCC Full Report, 2018, ipcc.ch, https://www.ipcc.ch/site/assets/uploads/sites/2/2022/06/SR15_Full_Report_HR.pdf
[16] Ibidem
[17] Remarks by Chinese president Xi Jinping at Climate Ambition Summit, 2020, 新华网, http://www.xinhuanet.com/english/2020-12/12/c_139584803.htm

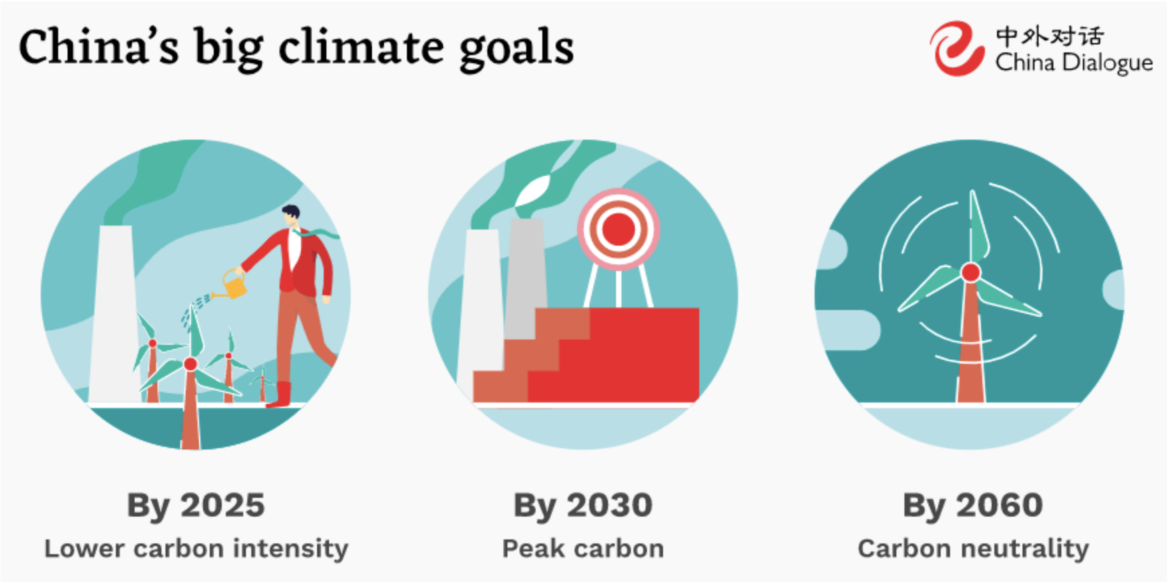


Figure 7 - China's climate goal withstand heat
source: China Dialogue Association 中外对话

The year 2022 is full of events that are relevant to the ESG development in China.

First, the Chinese National Carbon Market was launched, a great method to achieve both carbon peaking and carbon neutrality at the lowest cost (Zhang, 2022), playing a big role in reducing carbon emissions.

Secondly, the "Measures for the Administration of Legal Disclosure of Enterprise Environmental Information" by Ministry of Ecology and Environment (MEE) come into effect in 2022. These measures include standards such as environmental management, discharge of pollutants, carbon emissions and environmental violations, and they are mainly addressed to companies with "a highly environmental impact and receive a high level of public attention" (Huld, 2022). It could be considered the evolution of the aforementioned "Guidelines for Environmental Information Disclosure by Listed Companies" published by the Ministry of Environmental Protection in 2010, being an environmental regulation, with some initial social and governance information requirement at a national level, even though the scope of companies addressed remains limited.

Later that year, in June 2022 the "Voluntary Disclosure Guidelines" were published by the China Enterprise Reform and Development Society (CERDS), a collective body supervised and organized by the state-owned Assets Supervision & Administration Commission in order to lay the foundations for uniform disclosure practices, specifically adjusted for China's ESG priorities (Chan, 2022). The official name of the document is "Guidance for Enterprise ESG Disclosure",[18] and it is considered by many experts like C. Wang and N. Lassi, "the first formal policy for ESG disclosures" requiring all large Chinese companies to voluntarily disclose not only relevant environmental information but also social and governance data (Wang, Lassi, 2023). Therefore, we notice two significant developments: the range of companies that should apply the guidelines is considerably expanded, and it encompasses all the three major aspects of a comprehensive and voluntary ESG regulatory framework.

This document includes more than 100 standards across various ESG aspects, like unto GHG emissions, recycling processes, waste management, energy efficiency, stakeholder engagement and employee management (Wang, Lassi,2023). This guideline is characterized by the principle of "comply or explain", since environmental protection has become a relevant topic for keeping China's leader reputation.

Nishimura and Xu reported the hesitancy of Chinese enterprises when faced with nonfinancial information sharing, since historically they are not used in voluntarily disclosing this kind of information (Nishimura, XU, 2020). Despite the initial reluctancy of Chinese organizations, the number of ESG disclosures of listed companies on the SZSE and SSE increased from 371 (2009) and 1021 (2020), representing also an echo of Chinese government's tendency towards a greener economy and stronger legal control mechanisms, that reported also an increase of millions of dollars coming from environmental penalties of domestic companies (Wang, Lassi, 2023).

[18] https://www.3060edu.com/static/upload/file/20220420/1650418903815960.pdf

1.3.3 Guidelines of Shanghai Stock Exchange in 2024

After having analysed the developing of ESG disclosure practices in China, this paragraph will shortly describe the reasons behind the publication of the 2024 ESG regulations.

As every good economist would say nowadays, in order to make a country sustainable and attractive for investors, the economic growth and stability are not the only aspect to take into consideration. In the most recent years, the global phenomenon of the *green* became one index that investors, especially institutional investors, must consider (Lee, 2024). This is one of the main reasons behind the issuing of the new guidelines published in February 2024 about the sustainability reporting standards: China's commitment to align itself with the present western standard represent the country's attempt to focus more on green development and sustainability (Lee, 2024), with the final objective of shifting the attention of foreign investment towards Chinese companies.

It has been already two decades since the introduction of non-financial reporting around the globe, but it is only in the most recent years that the future became even more challenging with the important presence of carbon and resource constraints' obstacles that lead also to continuous social challenges.

China's growth is exemplary: as we can see from Figure 8, the country reached the level of development that took Europe 400 years in just four decades. Such significant transformations come with profound consequences, affecting not only the country as a whole but also people's lives. China emerged as a global force which pursued rapid economic and social growth, often at the expenses of overexploiting natural resources. As a matter of fact, the Chinese government when accused of being the world's top polluter (Lee, 2024), pointed out the European historical pollution that started centuries ago, as of implying that what China is doing at the moment, has already been done and in a much more intense way by Western countries.

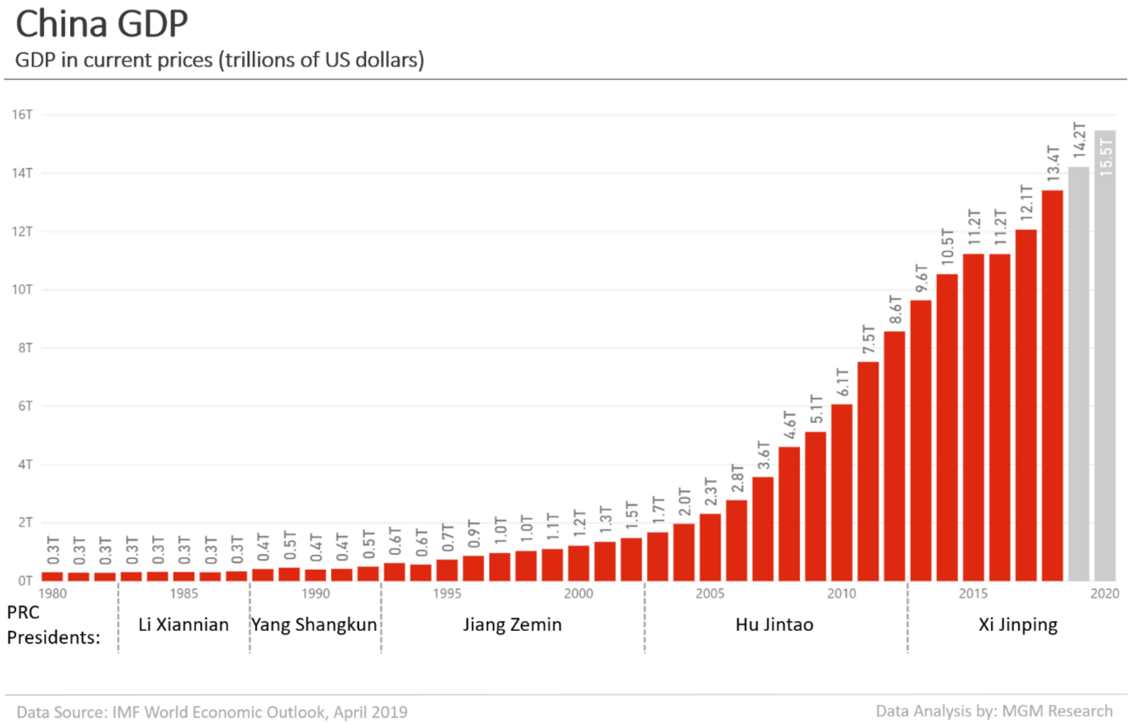


Figure 8 - "China's GDP growth in the last 40 years"
Source: IMF World Economic Outlook

However, when almost ten years ago the "comply or explain" principle was introduced in the Asian continent, China has witnessed a rapid development of the ESG reporting regulations, that led to the newest requirements issued this year.

The transformation of the ESG reporting standards into an international business practice is to be considered a big step in the right direction in order to make this world sustainable, and also a big push for countries that until now have followed Western reporting regulations such as the European NFRD, now substituted by CSRD, to develop their own.[19]

[19] https://www.linkedin.com/pulse/new-mandatory-esg-reporting-requirements-china-handle-recyclings-mm3xf/

The newly released rules will help the issuer, that in this case it is one of the major Chinese stock exchanges, to standardize the fragmented sustainability reporting standards in the whole country and to reduce the more and more frequent cases of greenwashing (Chan, 2022). The Shanghai Stock Exchange (SSE) is the issuer of these "Guidelines No. 14 of Shanghai Stock Exchange for Self-Regulation of Listed Companies – Sustainability Report (Trial)," but once the rules will be defined and completed also the other major stock exchanges will follow its example. In particular, the Shenzhen Stock Exchange (SZSE) and the Beijing Stock Exchange (BSE), noted that these new guidelines will not only help to standardize the sustainability reporting standards in the country, but also to enhance the sustainability disclosure for listed companies (Brancaccio, 2024). Through the implementation of these new, standardized, and detailed regulations, major listed companies in the three largest Chinese stock exchanges aim to align themselves with the biggest Western companies, highlighting their attractiveness and appeal to investors (Brancaccio, 2024).

The last objective of the releasing of the new sustainability reporting practices guideline in 2024 is to "broaden the scope of the ESG investments over the traditional themes"[20]. In 2023 China made clear that the focus will be on the "new three" energy sources, solar power, electric vehicles (EV) and batteries, and the issuing of these recent drafts will help companies in choosing more green and sustainable processes, highlighting them in their annual sustainability reports in order to satisfy the global requirements about taxonomy and attracting new investors (Myllyvirta, 2024). The Chinese commitment in investing in clean energies rose 40% in 2023, making it the largest driver of Chinese economy this year (Myllyvirta, 2024).

An analysis was conducted by L. Myllyvirta in the online journal "Carbon Brief" on May 2024, that takes into account the contributions of every "clean-energy sector" to Chinese investments and GDP in 2023, including the "new three", rail, energy efficiency, wind, nuclear and other sectors (Myllyvirta, 2024). Looking at Figure 9 we can notice how the solar energy, EVs and different kind of batteries are prominent in this analysis.

[20] Quotation of Boya Wang, "China proposes new ESG rules to keep up with Europe", 2024, The Business Times

Sector	Activity	Value in 2023, CNY bln	Value in 2023, USD bln	Year-on-year growth
Solar power	Investment: power generation capacity	755	107	61%
Solar power	Investment: manufacturing capacity	922	131	180%
Solar power	Electricity generation	277	39	45%
Solar power	Exports of components	533	75	42%
EVs	Investment: manufacturing capacity	1,250	177	35%
EVs	Investment: charging infrastructure	102	14	33%
EVs	Production of vehicles	2,200	311	30%
Energy efficiency	Investment: Industry	585	83	14%
Rail transportation	Investment	761	108	7%
Rail transportation	Transport of passengers and goods	964	136	39%
Energy storage	Investment: Pumped hydro	334	47	38%
Energy storage	Investment: Electrolyzers	88	12	85%
Energy storage	Investment: Battery manufacturing	317	45	116%
Energy storage	Investment: Grid-connected batteries	75	11	364%
Power grid	Investment: transmission capacity	540	76	8%
Wind power	Investment: power generation capacity, onshore	330	47	85%
Wind power	Investment: power generation capacity, offshore	72	10	17%
Wind power	Electricity generation	363	51	12%
Nuclear power	Investment: power generation capacity	87	12	45%
Nuclear power	Electricity generation	195	28	4%
Hydropower	Investment: power generation capacity	80	11	-1%
Hydropower	Electricity generation	512	72	-6%
Total	***Investments***	***6,297***	***891***	***39%***
Total	***Production of goods and services***	***5,082***	***719***	***26%***
Total	***Total GDP contribution***	***11,379***	***1,610***	***33%***

Figure 9 -"Analysis: Clean energy was top driver of China's economic growth in 2023"
Source: CREA Analysis for Carbon Brief

Following this analysis, we can clearly see how much China is engaged in green energies development. The reason can be reconducted to the shrank in Chinese real-estate sector and the property slump: investing big amounts of money in these green attractive sectors will help the country continue to grow (Myllyvirta, 2024).

Finally, we can attest how much China has prepared for this change, following both the international historical development of ESG and the evolution timeline in China that this paper laid out in the previous chapters. The environmental standards developed all around the world, absorbing more characteristics with time but also by learning from other countries, through global meeting and other initiatives, enhancing their features and resulting in comprehensive revision of guidelines, with more contemporary attributes. The same process happened to China, and in particular to the subject of this thesis, the Shanghai Stock Exchange.

As the leading of the big three Chinese stock exchanges, the SSE felt the urge to adapt their ESG requirements, especially following the two major national publishing by the Ministry of Ecology and Environment and the China Enterprise Reform and Development Society in 2022. Naturally, it also becomes a consequence of the consolidation of the CSRD in Europe and the newly issued disclosure rules issued by SEC in the United States. All these "forces" acted as drivers for the promotion of new Chinese EID regulations, and pushed by all these international and national factors, the Shanghai Stock Exchange satisfied its specific need to create adapted and contemporary ESG requirements while still having their "Chinese characteristics", not conforming to western countries or international regulations, but integrating their own features with internationally accepted principles. It is deemed a relevant practice at the moment since stakeholders and investors consider a company's ESG performance when valuing the investment (Steurer, 2024), and as the Institute for Sustainable Investing of Morgan Stanley report, the individual investor rate in sustainability matters around the globe is on the rise.[21] In their report "Sustainable Signals" it is stated that "more than 77% of global investors are interested in sustainable investing",[22] meaning companies or activities that seek to deliver significant financial returns while also prioritizing beneficial social and environmental impacts. Figure 10 shows how Morgan Stanley global clients responded to the survey, with a majority of respondents that are very interested in investing in sustainable operations.

[21] https://www.morganstanley.com/ideas/sustainable-investing-on-the-rise

[22] https://www.morganstanley.com/content/dam/msdotcom/en/assets/pdfs/MSInstituteforSustainableInvesting-SustainableSignals-Individuals-2024.pdf

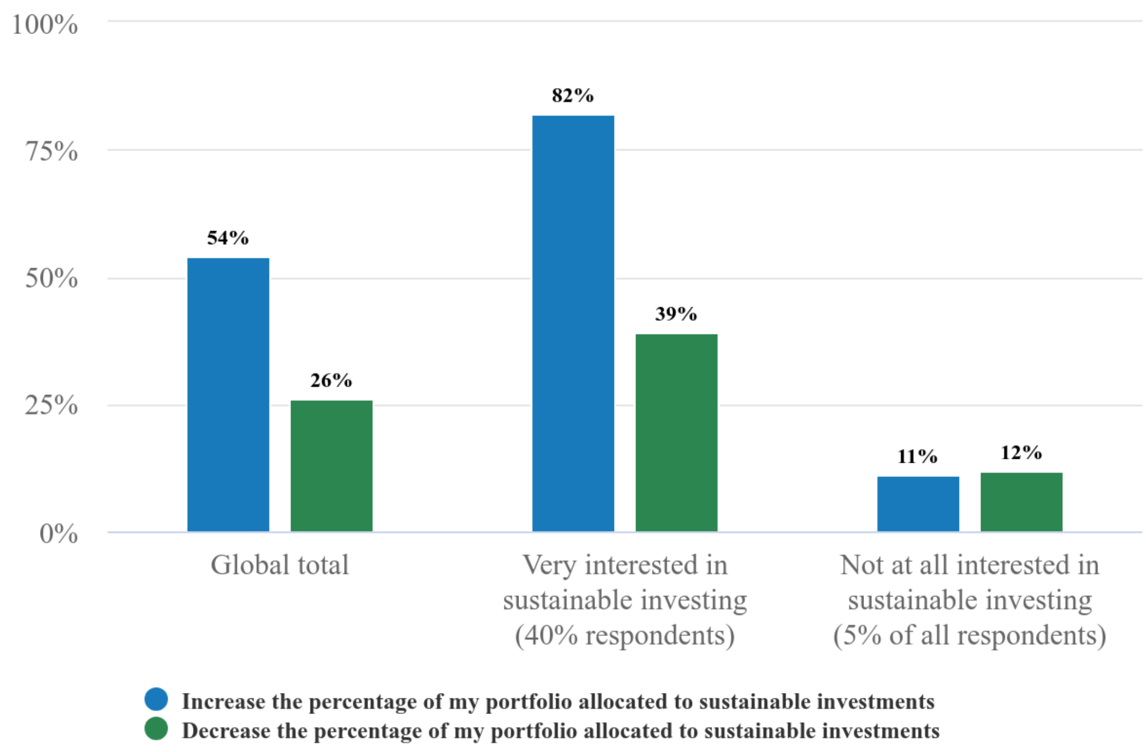


Figure 10 - Increasing Number of Investors Say they Plan to Increase Sustainable Investments
Source: Morgan Stanley Institute for Sustainable Investing

On the top of all these reasons, there is also the global awareness that balancing both economic earnings and sustainability is becoming possible.[23] J. Alsford, Chief Sustainability Officer at Morgan Stanley even stated that:

> "Nearly 80% of individual investors believe that it is possible to balance market rate financial returns with a focus on sustainability. These investors express a desire for their investments to advance positive environmental and social impact, creating opportunities for finance professionals to meet these needs" (J. Alsford, 2024)

[23] https://www.morganstanley.com/ideas/sustainable-investing-on-the-rise

This can be considered the last driver of the issuing of the 2024 “Guidelines No. 14 of Shanghai Stock Exchange for Self-Regulation of Listed Companies – Sustainability Report”, and the following Figure 11 you can find a conceptual map that summarizes all the drivers of change that lead to this recent regulation.

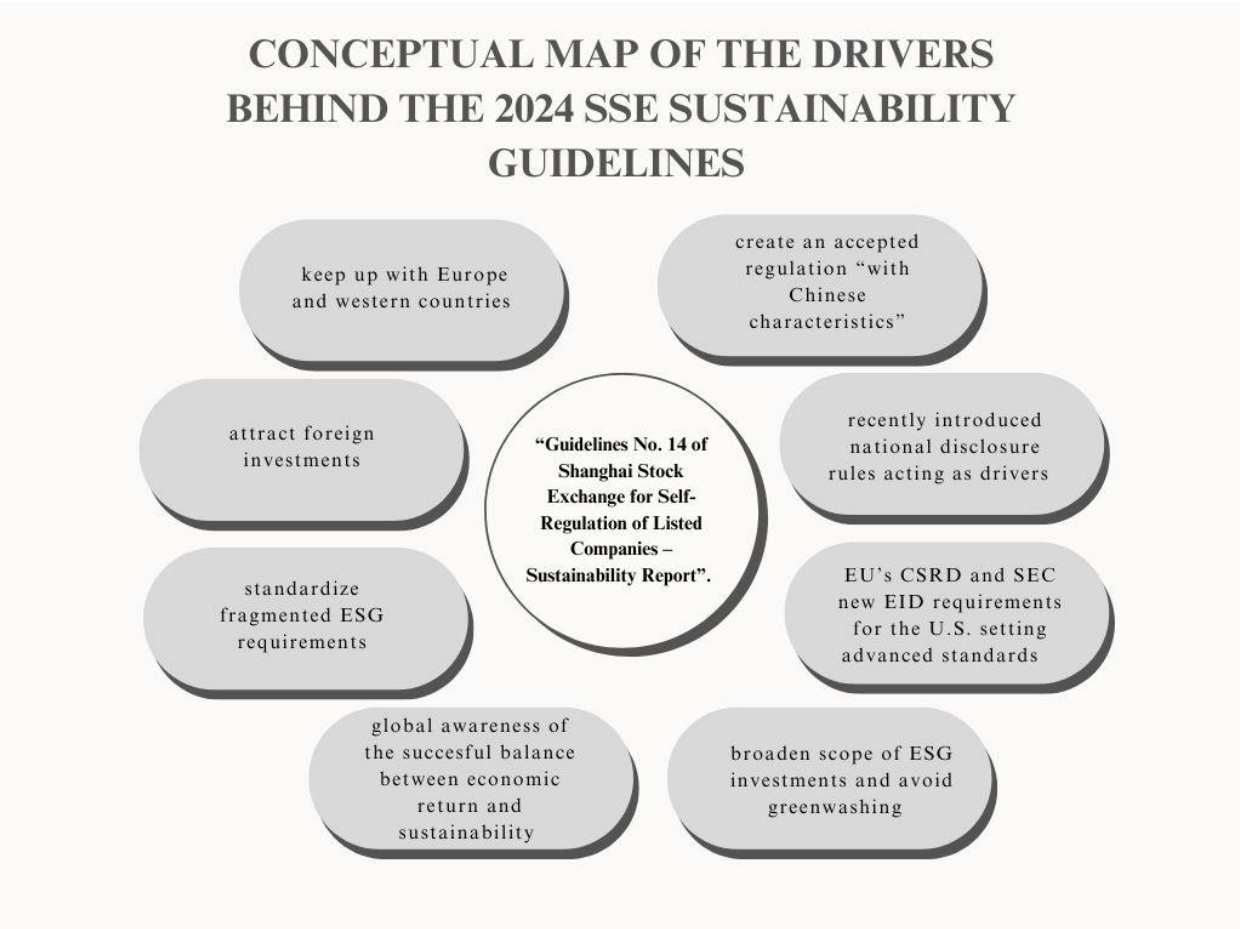


Figure 11 - Conceptual Map of Drivers Behind the SSE 2024 ESG Guidelines (Elaborated by the author)

The second chapter will now guide lectors of this paper through the previous studies that have been conducted in precedent years, in order to create the foundation, together with the first chapter, of our research.

2 Chapter Two: Literature Review

2.1 Introduction

The studies on ESG disclosure and corporate sustainability have gained attention over the recent years due to the increasing awareness that our economic activities are impacting the environment, and that intensification of climate change is becoming more pronounced. There are a lot of studies that research this topic in an international environment, or without a specific context, and we tried to single out the most relevant ones related to our objective, in the first subparagraph of this chapter. The following section aims at portraying the prior studies conducted by Chinese scholar on specific Chinese clusters of companies, and papers related to Chinese characteristics affecting corporate sustainability practices, in order to provide the readers with a general background on the country. Finally, studies specifically on the Shanghai Stock Exchange have been selected, in order to create a comprehensive framework on this aspect of sustainability in China, before proceeding with the detailed analysis.

The study of corporate sustainability is important within its field of study because it connects two very important aspects of human life: business practices and the ESG sphere. This is why this literature review aims at collecting not only studies on the impact of economic actions on the natural environment, but also the opposite, i.e. on the influence of ESG disclosure on the economic and financial performance of listed companies. Corporate ESG studies are fundamental in our time because they highlight the importance of doing business and make a profit while operating responsibly not harming the environment.

Choosing China as our country subject has its reasons: China is both the largest developing country and one of the major contributors to the global pollution and other environmental challenges. During the last few years, this country became aware of being a threat to the environment, and as we have seen in the first chapter, China is now committed to combat the climate change and to engage in sustainable and green activities. In order to keep up with the developed countries, China is making a great effort to adapt to acknowledged ESG standards and to forge their own sustainability regulation, that take into account this country's peculiarity. This is why this literature review will also consider China unique environmental, social and governance circumstances and see how these characteristics impact the economic world, and vice versa how climate challenges pose related to the Chinese ESG sphere.

2.2 Studies on ESG Disclosure

The increasing requirements of ESG reports has stimulated the publication of academic articles and research about this topic. The number of articles published on the Web of Science in this area increased rapidly from 94 in 2015 to 1.410 in 2022. However, the main subjects of these numerous research are North America and Europe (Chen et al., 2023). The reason behind this prioritization of the already developed countries in these studies is probably due to the more pervasive ESG reporting in the aforementioned areas, especially Europe (Matos, 2020). The following Figure 12 shows the statistics for CSR/ESG studies in the history of accounting.

Panel B Research type

Research Type	Number of Studies	Share
archival research	83	63%
experimental research	12	9%
survey	12	9%
case study	12	9%
literature review	4	3%
analytical research	1	1%
other	8	6%
Total	**132**	**100%**

Panel C Geographical distribution

Countries/regions	Number of Studies	Share
US	66	56%
Europe	22	19%
Asia	10	8%
Cross-country	11	9%
Australia	5	4%
Africa	2	2%
Canada	2	2%
Total	**118**	**100%**

Figure 12 - Descriptive Statistics for CSR Research, analysing the type of research and the geographical areas
Source: The British Accounting Review, 2023, A. Tsang

For the purpose of this paper, Panel B and Panel C are relevant. Panel B show the readers through which types of method the research on ESG development is conducted, discovering a majority of archival and experimental research (Tsang et al, 2023). Panel C represents the areas of interest of research in this topic, confirming the assumptions reported at the beginning of this paragraph, with US and Europe leading at the top, with the developing and underdeveloped countries following in line (Tsang at al, 2023).

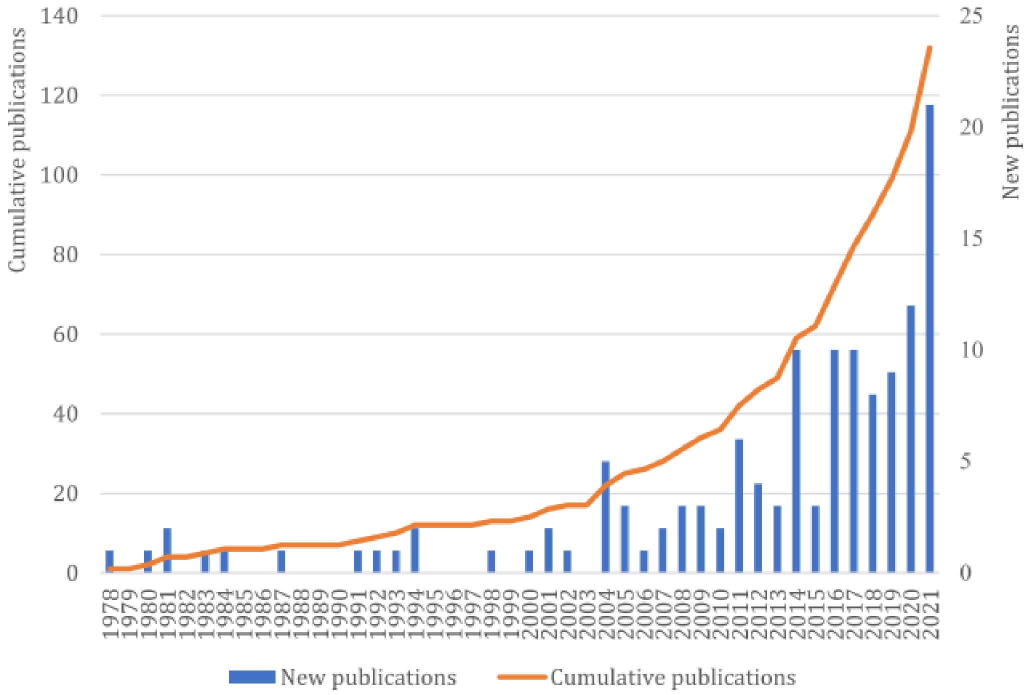


Figure 13 - Table showing the number of new publications of ESG development topic and the number of cumulative publications on the issue
Source: The British Accounting Review, 2023, A. Tsang

Figure 13 represents the evolution of the topic of ESG. Before the year 2004 the number of publications about the ESG development in major accounting journals was very limited, but as we already reported in the first chapter, after the mentioned major events that took place in those years that affected the spread of the sustainability topic in information disclosure, the studies on ESG reporting practices increased. As a consequence, also the number of cumulative publications grew, having more material to examine, to analyse, and to compare. Tsang et al. (2022) also explored what they consider the "four primary areas of interest" in the study of ESG disclosure, that are in order its determinants, its characteristics, the consequences and the moderators.

Huang et al. (2022) studied the relationship between the ESG reporting and the financial performance, with a special focus on the controlling shareholder pledging negatively affecting the ESG performance.

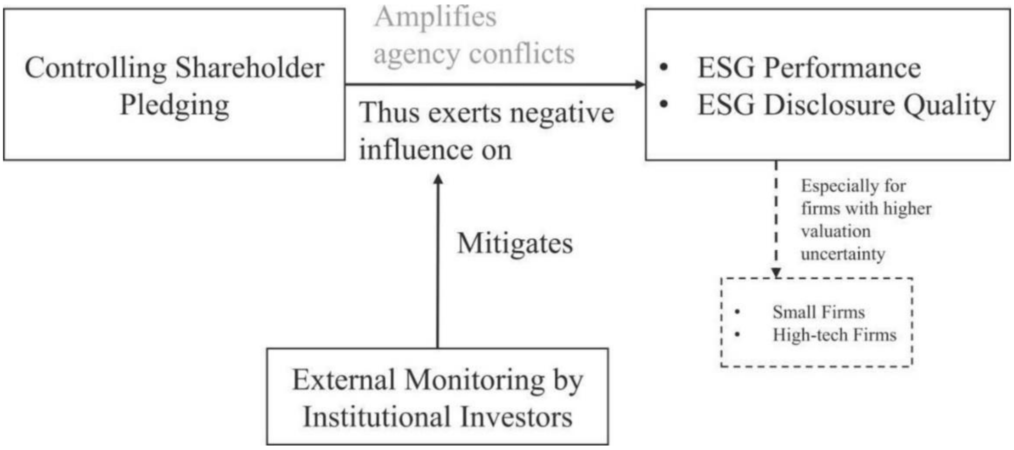


Figure 14 - Huang et al Controlling Shareholder Pledging impact on ESG theory (2022)

Findings of this paper show the readers that a supervision by institutional investors can help can diminish the negative effective coming from the shareholders as shown in Figure 14.

Grewal and Serafeim (2020) reviewed the past literature on the corporate sustainability focusing on three phases: Measurement, Management and Communication of the ESG performance. Measurement is the least researched among the parameters. Management is focused on discerning the importance of sustainability issues that shape the enterprises' corporate sustainability, in order not to treat them all equally and distinguish the ones that are more "financially relevant". This path will highlight how doing well on these selected parameters will result in a good financial performance as well, supporting the positive connection between sustainability and economic success. The final phase is Communication, and the research is about the impact of intermediaries, external media and international standards on the communication of the ESG performance of a company.

Since China is considered an emerging power, this research focuses on past literature of ESG development in rising countries similar to China. Zaini et al. (2018) published a paper aiming to investigate the researchers' methods to analyse the impact of external factors on voluntary disclosure in emerging countries. As a result, they discovered that at that time the level of EID in developing countries remains low, but that regulatory enforcement and stakeholders' requirement are the main incentive for the majority of companies to issue a non-mandatory information disclosure document. Atasel et al. (2020) discovered that the role of Information Disclosure in general, and in particular ESG disclosure, have a negative impact on the cost of equity (COE), that represent the return that the company expects for a given investment, and a positive one on the firm's financial performance, based on a sample of Turkish companies between 2010 and 2019. Elshabasy (2018) carried out another research about the impact of ESG on firms' performance but using the 45 most active enterprises in Egypt. The findings showed that there is a negative relationship between a firm's age and ESG disclosure, but a firm's profitability displays a positive correlation with ESG. The first negative association is probably due the experience that the company has already acquired, meaning that the company has already establishes practices to reduce costs, to improve their quality and to make their stakeholders satisfied, and they are less favourable to apply new disclosure rules fearing negative promotion or regulatory scrutiny. On the other hand, there is a positive correlation between ESG disclosure and the company's high profit: profitable enterprises have more resources to exploit in implementing sustainable activities and they can probably utilize ESG information to enhance their brand image and value. Naturally, stakeholders of modern and younger companies have higher expectations in terms of achieving the SDGs and as a consequence their requirements on the topic could be stricter.

Several documents have been published recently also regarding Asian countries, in the attempt of filling the gap about the topic of sustainability information disclosure in emerging countries. Artie W et al. (2023) published a study that aims at analysing the potential disparities in emerging Chinese enterprises (ECEs)'s sustainability reports, in particular discerning state-owned enterprises (SOEs) from companies with a heterogeneous ownership. Findings of this study report that enterprises with a broad and international institutional ownership with overseas establishment are more aligned with UN's SDGs and more easily disclose environmental information. Artie W et al also reveal that when enterprises are led by a "independent nonexecutive director (INED)" they usually report on climate change and on the pathway to reach the Sustainable

Development Goals. Another curious result coming from this research is that when the director is female, the focus of disclosure is often on energy-saving projects.

Kartikasary et al. (2023) proved with their 5-year research on 608 Southeast Asian companies that ESG disclosure positively impact these firm's value and increase the market capitalization. The study utilized three dimensions of "ESG Score", that is measured with the Thomson Reuters Eikon Refinitiv Matrix presented in the Figure below. Figure 15 is particularly relevant for this paper because it served as a base for our analytical framework that we used in the content analysis that will be explained in chapter three, as the readers will notice the components of this matrix's dimensions will return in the following analysis.

Figure 15 - Thomson Reuters Eikon Refitiniv Matrix used to calculate ESG Score
Source: Kartikasary, 2023

Following the development of the research, findings show the readers how stakeholders and investors are becoming visibly interested in non-financial aspects of companies. This is why, based on the conclusion of Kartikasary's paper, South-East Asian companies should invest on high-quality ESG reporting in order to gain a legitimate reputation and to increase shareholder value and the level of international investment.

R. Phang and Y. Chia (2024) bring this research flow to a further step analysing three Asian financial centres (Singapore, Hong Kong and Shanghai) different approaches to ESG information disclosure, uncovering the drivers, the dynamics and the contents' similarities and divergences between these big stock exchanges. These two researchers highlight the driving forces of ESG disclosure in Asia being the international consensus and competitiveness, they dwell on the content of the disclosure distinguishing and EID and a more comprehensive ESG/CSR Report while also focusing on single versus double materiality. This study is helpful for our literature review because it touches upon both China and Chinese companies, the subjects of our next paragraph, but it mentions the Shanghai Stock Exchange too, protagonist of the last paragraph of this chapter.

2.3 Studies on ESG Disclosure in China

Numerous Chinese scholars investigated the methodology of ESG disclosure in China. This part of the literature review is fundamental to understand the changes that brought to the publication of the new standards as it can be read following the passing of time and the emerging of the new trends and new requirements.

Starting from two of the first scholars that published on the topic of sustainability in China Geng and Jiao (2002): their finding highlighted how listed companies at that time disclosed environmental information with the goal to meet the needs of shareholders. This statement is aligned with the idea that we explained before about emerging countries: in order to gain international attention, attract foreign investments and achieve UN SDGs, Chinese companies started to share Environmental Information to satisfy the national and international investors' request, influenced by the global trends born after the ESG development. Chen, another forerunner on the topic, in his paper of 2010 believed that Chinese companies could first disclose environmental information using the form of a supplementary report, and then when China's environmental accounting research area would be mature enough, they could start to adopt independent ESG report. Zeng (2010) tried to explore the status of corporate ESG disclosure in China at that time, examining a sample of 871 listed manufacturing companies in China. In his paper he reported ten components to measure aforementioned status based on the EID core-concepts shown in Figure 16.

Components	Definition	Central aspect reflecting EID
I_1	Firm's environmental investment expenditure for technologies development	Investment
I_2	Government appropriate funds, finance allowance and taxes abatement related to the environment	Investment
I_3	Disposal and treatment of generated waste, recycling and integrated utilization of waste products	Technology
I_4	Information related to ISO environmental system authentication	Consciousness and responsibility
I_5	Construction and operation of environmental improvement	Technology
I_6	Influence of government environmental protection policy	Consciousness and responsibility
I_7	Loans related to environmental protection	Investment
I_8	Lawsuit, atonement, penalty, and bounty related to environmental protection	Consciousness and responsibility
I_9	Firm's environmental protection policies, strategies and goals	Consciousness and responsibility
I_{10}	Other environmental related information	Others

Figure 16 – Components for measuring EID
Source: Zeng, 2010

Liu (2018) suggested that Chinese companies can model their ESG reports using developed countries' standards. According to him, listed companies should also include the reporting of significant environmental events that occurred during the reporting period alongside the financial documents. A. L. Wang (2018) investigated the rise of Environmental Information Disclosure Law, highlighting how the convergence of interest of the state, the society and the international actors played a primary role in the creation of these laws. Related to this argument, the paper published in 2021 by Zhu et al. uncovers how the Government Environmental Information Disclosure (GEID) of local authorities seemed to be improving and developing quickly. The aim of this article is to verify if the environmental information disclosed by the local governments reflect actual ecological situation. Y. Li et al. (2021) studied ESG standards within a new light, considering it as a "new tool for environmental governance" in an era of big data and information. This thesis showed sustainability information disclosure's "superposition effect" given by previous accumulation of information brought to the "peer effect" that is mutual imitation and learning between the companies. Another important finding of this study is that Chinese cities with a faster economic development and a better firm performance disclosed more environmental information that the poorer and less developed cities. Higher cluster of sustainability reporting practices are more present in coastal cities, areas that are notoriously more open to international dialogue and trade, in which reside metropolis like Shanghai, Shenzhen or Guangzhou. In the conclusion, this study foresaw the need that China felt in 2024 and that tried to satisfy with the issuing of the new SSE ESG regulations, that is to say the need for a uniform and national mechanisms that will be providing a unique framework to follow starting from the year of application of the aforementioned guidelines.

In 2020, Wang et al also published a study that can be considered the Chinese counterpart for Elshabasy's Egypt case study (2018) mentioned in the previous paragraph. Based on a panel sample of 289 Chinese listed firms, Wang discovered that ESG disclosure directly and positively impacts companies' financial results, while visibility and liquidity are two aspects that "mediate" the relationship between sustainability and economic success.

As for more recent studies, S. He et al. (2023) wrote a paper regarding the effect that ESG activities has on the Chinese enterprises' carbon emissions, showing that engaging in ESG practices and reporting can in fact lower the carbon footprint by optimizing their energy systems. The main concept of He's paper is that by focusing on green enterprises, low pollution and low energy usage activities, and input of more sustainable innovations and products, companies can pursue better and greener results; environmental information sharing acts as a regulatory driver, influencing the company's decision in the *investment structure, energy structure* and *innovation mechanism*, with the objective of achieving lower carbon emissions.

H. Chen et al. (2023) highlighted the importance of exploring the factors influencing corporate environmental information disclosure and investigated the role that online media and investors play in the quality of the information that is disclosed. The result is measured using a sample of 309 Chinese listed firms in heavily polluting sectors between 2015 and 2017. Findings report that long-term online media and shareholder's attention are negatively connected to the quality of ESG disclosure: the more they are linked, the worse is the quality of the Environmental Information sharing. This result is probably due to three reasons:

- a lower credibility of online media compared to the traditional ones
- a weaker influence on government agencies (failing to capture public interest)
- a less effective agenda-setting (gap between media and public's interests)

Another aspect that can't be neglected is the role that culture in the sustainability reporting practices. M. Zhao et al. (2024) and S. Chao et al (2023) both studies the positive effect of Confucian culture in the environmental information disclosure.

The central focus of Zhao's paper is that Confucian culture can strengthen the positive connection between *business strategy* and *ESG Disclosure*; on a second level, they discovered that as *environmental uncertainty* rises, the Confucian culture's influence weakens, while a strong *legal supervision* enhances the positive impact of Confucianism. This is probably due to the fact that Confucian values, namely social harmony and hierarchical respect, usually are more suited to predictable conditions, while a situation with strong legal frameworks can reinforce the Confucian ethical morals.

2.4 Studies on ESG Disclosure in the Shanghai Stock Exchange

The research on this topic is only at the start, and as a matter of fact there are not a lot of paper available online regarding this matter. X. H. Meng et al (2013) started the research on the topic of ESG requirements by conducting a study on the transition from voluntarism to regulation and whether economic performance could affect the level of disclosure. The change of regulation implies starting from the first stage of voluntarism, passing through the transitional phase and finishing in the mandatory stage. During their analysis of these steps, they discovered that under mandatory regulation, the financial performance could negatively impact the environmental information sharing, but the ownership factor can mitigate the relationship between the two. This is because companies under a strict compliance environment may prioritize the economic aspect in the short-time horizon over a transparent ESG disclosure; the type of ownership though, can influence this decision, depending on the type of investors and stakeholders' preferences. The study lists also five *controls* components that may influence the impact that the financial aspect has on corporate sustainability, that are *firm size, age as listed company, type of industry, firm location* and *leverage.*

More specifically referred to the Shanghai Stock Exchange, X. Meng et al. (2018) examined the various motives to apply ESG disclosure under increasing regulatory pressure to disclose on environmental events, using a sample of 742 listed manufacturing firms in the SSE. This study also states that companies in industries with moderate competition are more inclined to share environmental information as a way to differentiate themselves, compared to firms in highly or minimally competitive sectors.

X. Chen et al. (2020) analysed 363 listed manufacturing companies from the SSE to discover the main factors and mechanisms that influence EID in the stock exchange's environment. The list of factors individuated by Chen that influences the ESG disclosure can be divided into two sections: "corporate characteristics" and "external pressure", both directly affecting the environmental management. In the "corporate characteristics" are included *financial performance, risk, size* and *ownership structure*, reflecting in a way what Meng already stated in his study in 2013 mentioned above. However, Chen introduces the "external pressure" elements, such as *city environmental quality, regional economic development, customer pressure and industry*. These newly introduced elements join the already anticipated ones in influencing the company's environmental management and consequently the ESG information that firm is going to analyse and then share in their sustainability report. This research is extremely relevant for our topic because it helps understanding the reason why ESG requirements in the Shanghai Stock Exchange needed to be updated. The new addition completes the factors that were already singled out by previous scholar in analysing elements that affect the ESG disclosure in China, and in particular in the SSE. Moreover, these new components changed over the years, and this evolution is reflected also in the change of requirements of a stock exchange. For example, the *city environmental quality* has clearly changed compared to the years before 2020, same for the *regional economic development* and the *customer pressure*.

Y. Li et al. (2021) published a paper aimed at examining the impact of top executives' political career ambitions on corporate environmental practices, and the data collected were from heavily polluting industries in the SSE. Findings reported that companies managed by highly political people are more likely to have a low level of Environmental Information Disclosure due to political interests that hinders ESG Information sharing. X. Luo et al. (2024) examined the impact of corporate performance and corporate size on ESG disclosure of A-share listed enterprises in the SSE, showing how both these two characteristics improve the quality of environmental information sharing. Wei (2024) instead focused on the influence of the ownership structure of firms on the level of sustainability-related information in SSE Chinese listed companies, finding that managerial ownership has a relatively positive impact, while institutional and state ownership are negatively associated with the ESG sphere in SSE listed enterprises, confirming previous theories that we have already explained like study of A. Ng (2023) mentioned above.

Table 2 - Literature Review (Elaborated by the Author)

Panel A: Studies on ESG Disclosure (Around the World, Emerging Countries and Asia)				
Author(s) and Year	**Research Question**	**Country**	**Sample**	**Findings**
S. M. Zaini G. Samkin et al. (2018)	To study the various approaches used in exploring the influences of external factors in voluntary disclosure in emerging countries.	Emerging Countries	35 articles published between 1998 and 2023	The majority of studies used "content analysis" to review the extent of voluntary disclosure and discovered that research in this field in emerging countries is low.
Y. Elshabasy (2018)	To prove that companies' success does not only depend on economic results but also on environmental protection contribution, whether CSR affect the firm in a financial way.	Egypt	45 most active listed Egyptian firms	The results of the test showed different outcomes: - Firm Size and Firm Financial Leverage have a insignificant relationship with EID - Firm's Age has a negative relationship with EID - Firm's Profitability has a positive relationship with EID.
O. Atasel Y. Guneysu et al. (2020)	To explore the effect of ESG on the cost of equity (COE) and evaluate the impact of ID on financial performance, in particular on firm value and profitability.	Turkey	BIST100 data of non-financial firms between 2010-2019	The results show that information disclosure has a negative impact on COE but it has a positive effect on firm value and profitability.
J. Grewal G. Serafeim (2020)	To review the literature on corporate sustainability, studying three specific phases: measuring, managing and communicating sustainability performance.	World	Key papers of the past on the topic	The study found out that improving a company's sustainability issues is related to the enhancing of financial performance too. The results seek to outline how the various type of media serve the disclosure outcomes communication

W. Huang Y. Luo et al (2022)	To prove that ESG performance and disclosure quality deteriorate after controlling shareholder' pledging for their share for personal loans.	China	Large sample of Chinese listed firms	Findings support the initial thesis, proving that both ESG performance and quality of the disclosure worsen aftecontrolling shareholder uses their shares as collateral for personal loans. The results also add that institutional external supervision can help mitigate this impact.
A. Tsang T. Foster (2023)	To organize a comprehensive review of past literature with the topic of ESG in accounting research.	World	ESG disclosure papers in accounting research	Findings show that CSR creates value for firms in different ways, not only in the financial aspect, but also in finance, lower cost of capital, increase employee satisfaction and others.
A. Ng T. Leung et al. (2023)	To examine potential differences in ESG reporting among emerging Chinese enterprises (ECEs).	China and Asia	Random sample 500 ECEs listed in SEHK	Findings show that ECEs with international ownership are more aligned with SDGs, rather than state-owned enterprises (SOEs); the presence of female directors influenced disclosure on energy-saving initiatives.
M. Kartikasary et al. (2023)	To explore the impact between ESG score and firm value described by market capitalization.	South-East Asia	608 South-East Asian companies	The results shows that ESG disclosure positively affects firm value and that ESG Score affects the increase in market capitalization (the social score in the most affected).
R. Phang Y. Chia (2024)	To present the different approaches to ESG disclosure in the three major Asian Financial centres: Singapore, Hong Kong and Shanghai.	Singapore, Hong Kong and Shanghai	Three Asian Financial centres' ESG guidelines	The results "joined the dots" between the three different approaches, presenting a comparative analysis in terms of ESG disclosure.

Panel B: Studies on ESG Disclosure in China				
Author(s) and Year	**Research Question**	**Country**	**Sample**	**Findings**
J. Geng R. Jiao (2002)	To verify the reasons why companies should publish a sustainability report	China	Chinese companies	Findings show that the majority of Chinese companies shared an ESG/CSR Report in order to meet their shareholders 'interests.
J. Chen (2010)	To investigate on the creation of the Enterprise Environmental Accounting Reporting System	China	Empirical Research on past publications	Chinese companies can start their journey into ESG using a supplementary document, and when the accounting research would be mature enough, they can apply the ESG report.
S. X. Zeng et al (2010)	To examine the status of EID	China	871 listed manufacturing companies	The actual situation of the level of EID in China, for example, they found out that large companies are more inclined to share their EID.
D. Liu (2018)	To discuss methods to improve the Enterprise Environmental Accounting Information Disclosure	China	Chinese companies	Chinese companies can use developed countries as model to create their own ESG Standards.
A. L. Wang (2018)	To review the creation of the laws about the EID in China.	China	Historical Reconstruction using past publishing	Findings mainly highlight how the convergence of interest of the state, the society and the international actors played a primary role in the creation of environmental laws in China.
S. Wang et al. (2020)	To explore the effect of EID on financial performance and the mediating effect of liquidity and visibility.	China	289 Chinese listed firms, using STATA Software	Results revealed that EID positively affects financial performance, and that both visibility and liquidity mitigate the relationship, while ownership has no impact.

Y. Li et al. (2021)	To analyse the spatial-temporal characteristics and factors influencing EID.	China	Pollution Information Disclosure Index (PITI) of 120 cities, 2003-2019	There were many results, including the "peer effect" of EID and better economic development and firm performance more likely disclose environmental information assessment.
X. Zhu (2021)	To study the connection between the Government Environmental Information Disclosure (GEID) and the environmental performance and to verify if the EID disclosed by local government reflect the real environmental performance.	China	Data from Chinese cities	The local government shared EID can actually reflect the whole environmental situation and the higher the level of GEID the better the local government environmental performance.
H. Chen et al. (2023)	To investigate the influence of online media and investors' attention on corporate EID.	China	309 Chinese listed firms in heavily polluting industries, 2015-2017	Both long-term online media attention and investor attention have a negative association with the quality of corporate EID.
S. He et al. (2023)	To evaluate the impacts of environmental information disclosure on enterprises' carbon emissions.	China	Data from Chinese industrial firm pollution database and Chinese industrial firm database (2003-2012)	EID has significant impact on companies' carbon emissions and that the punishment system and regulations has an impact on reducing carbon emissions.
S. Chao (2023)	To assess if Confucian culture contributes to corporate EID in China.	China	Data from 3180 Chinese listed firms	Confucian culture has a positive effect on EID.
M. Zhao et al. (2024)	To investigate the role of business strategy on EID from an informal institutional perspective, including the	China	Panel of A-share firms in SSE and SZE 2010-2010	Findings reveal that Confucian culture mitigates the connection between business strategy and EID, and when environmental uncertainties arise, the role of Confucian culture weakens.

	impact of Confucian culture on the relationship between the two.			

Panel C: Studies on ESG Disclosure at the Shanghai Stock Exchange				
Author(s) and Year	**Research Question**	**Country**	**Sample**	**Findings**
X. H. Meng et al (2013)	To examine whether economic activities affect EID.	China	Chinese listed enterprises	The relationship between economic performance and EID is complex and the impact of ownership varies a lot depending on voluntary or mandatory disclosure.
X. Meng et al. (2018)	To determine the role of advertising on corporate EID and the influence of being in a competitive environment	China	742 SSE listed manufacturing firms	Finding show that the more advertising is intense the higher the level of EID, and that companies in relatively competitive environment are more inclined to adopt EID-based strategies.
X. Chen (2020)	To discover the specific influencing factors and mechanisms of corporate EID	China	363 SSE listed manufacturing companies (2012-2018)	Findings identified two distinct group of factors that influence EID, that are “corporate characteristics” and “external factors” both mediated by environmental management.
Y. Li et al. (2021)	To examine how much the political career aspiration of a firm’s top executives affect the environmental practices.	China	Heavily polluting firms listed in the SSE (2014-2016)	Firms managed by highly politically involved managers show a low level of EID, meaning that political aspiration hinders corporate environmental practices in China.

X. Luo (2024)	To explore the impact of "corporate performance" and "corporate size" on EID.	China	SSE's A-share listed Chinese enterprises (2008-2017)	Findings show that both aspects have a positive influence on the improvement of EID quality.
M. Wei (2024)	To discuss to which level the type of ownership structure influence EID.	China	Panel data SSE SZE 300 Index (2009-2019)	Ownership structure influences EID, moreover, managerial ownership deeply promotes EID, while state and institutional ownership are negatively connected to EID.

3 Chapter Three: Research Method and Results

3.1 Introduction

The purpose of the third chapter is to provide a clear analysis of the differences between the previously reviewed SSE issued 2008 ESG regulations with the newly introduced guidelines in 2024. This final section will analyse some of the largest companies listed in the Shanghai Stock Exchange by market capitalization in 2024, examining how their latest Sustainability Report (or CSR Report or ESG Report) adhere to the newest SSE “Guidelines No. 14 of Shanghai Stock Exchange for Self-Regulation of Listed Companies Sustainability Report”. The final objective is to assess if the 2022 or 2023 published reports are ready for the key changes introduced within this year ESG regulation.

3.2 Sample of Companies

This paragraph will show how we selected the companies that became the main subject of this research, and the criteria used for the analysis.

We decided on choosing companies with the following characteristics. The companies that became the primary topic of this paper must:

- be Chinese enterprises
- be listed in the Shanghai Stock Exchange
- be on the top 100 SSE listed entities by market capitalization
- be included in one of the following sectors: Construction, Transportation, Energy or Agrifood
- have disclosed a Sustainability Report in 2023 (or at least in 2022), using the English Language.

At first, we decided to select the top 30 companies operating in the sectors listed above or in very close or similar areas, listed in the Shanghai Stock Exchange and that published a recent Sustainability Report (or CSR Report, or ESG Report).

We chose to analyse only companies listed in the Shanghai Stock Exchange, and no other important Chinese stock exchanges such as Shenzhen Stock Exchange or Beijing Stock Exchange, because SSE is Mainland China's largest stock exchange, and fifth in the World Ranking of Global Stock Exchanges; it presents good levels of liquidity, diversification and a lot of innovative and modern financial products, not to mention the growth potential given by China's economic growth.

We decided to follow the "market capitalization" ranking because it is a typical way to classify and compare companies. Usually, enterprises with large capitalization are commonly more stable and secure, and they often have more impact on market indexes; the market capitalization level generally represents the size of the company and normally, it is an indicator of a high trading volume.

We determined the four sectors from which we extrapolated the companies based on the most affected sectors by the ESG regulation and the level of impact of these industries from the environmental, social and governance point of view. The driver of the new guidelines published in 2024 particularly focused on these sectors and here we list the reasons:

- Energy Sector: due to China's significant energy consumption, the carbon emissions evidence, the renewable energy adoption and the pollution control plans.
- Agrifood Sector: due to China's relevant pollution in this sector and the implementation of sustainable practice; important aspects of the agrifood sector that are also engaged in sustainability projects are food and water safety and management and labour conditions of people working in this area.

- Construction Sector: mainly due to China's important urbanization and environmental impact of the construction activities, such as urban planning, sustainable building practices, energy efficiency in buildings, workers' safety.
- Transportation Sector: due to China's major contribution to greenhouse gas emissions, vehicle emissions and electric vehicles implementation in certain regions, fossil fuels consumption evidence and carbon neutrality goals.

For the research in this paper, we decided not to include banks and financial institutions in order to provide consistency and comparability because these types of enterprise have different regulatory frameworks and risk profiles, other that presenting a unique business model.

We selected companies that published their Sustainability Report in the English Language in order to increase the level of comparability and understanding. The usage of the English Language ensures a significant alignment with international practices and standards, and as a consequence, it is more likely that the structures used for the reports are similar one to another. In this way, the comparison will appear more natural and substantial.

Mainly because of this last requirement, in the end we were obliged to single out the top 25 companies listed in SSE operating in the sectors mentioned above. For the reasons that are exhaustively clarified in the first part of this paper, some major Chinese enterprises have not yet made available an English version of its Sustainability Report to the public.

During the selection, other than excluding the areas that we have already explained, we were forced also to factor out some companies that operate in those sectors but are in a very small part involved in overseas economic engagement, and due to this reason, they don't share any version of ESG/CSR document in international websites.

To summarize, we started with 100 listed companies, we selected the ones that operate in the above-mentioned sectors, leaving 47 companies out of our sample. After this operation, we had to exclude also the company with no ESG Report available online (21 companies) and then the companies that don't have an English version of their report (10 companies). The following table represents the sample of companies chosen.

Table 3 - Sample of Companies

(Elaborated by the author)

Panel A: Sample of Companies	**No.**
Listed companies in the Shanghai Stock Exchange in 2024	100
Non-operating in the chosen sectors	47
No ESG Report available online	21
No English Version of ESG	10
Final sample of companies	**25**
Panel B: Industry Sector	**Percentage**
Energy	44%
Transportation	40%
Agrifood	8%
Construction	8%

3.3 Collection and Measurement of ESG Disclosure

This paragraph will display the foundations of our empirical research. After having depicted the history of how the ESG standards have evolved over the years both in the international context and in the Chinese area and having reinforced this data with an exhaustive literature review, in order to reach the objective fixed, we need to evaluate the level of alignment of the companies' ESG disclosure with the current regulation and the future one.

The method of empirical research selected is the “content analysis”, a research tool used for analysing documents in order to quantify textual data. In this specific case, we collected the latest ESG report published by our sample of 25 SSE listed companies and proceeded with the detailed content analysis. The period of collection can be considered the first nine months of 2024. The sustainability reports were retrieved on the companies’ official website, using tools such as Google, Microsoft Edge and Baidu 百度，a Chinese internet-based search engine.

Fundamental instruments to reach the objective are the two analytical frameworks that we crafted for this purpose: the two frameworks report the ESG requirements issued by the Shanghai Stock Exchange through the 2008 document and the newly issued 2024 guidelines. The tool used to create these essential instruments is Excel.

The first sub-paragraph will show the main requirements depicted in the 2008 “Guidelines for Environmental Information Disclosure of Listed Companies on the Shanghai Stock Exchange” while the second sub-paragraph will describe the requirements included in the “Guidelines No. 14 of Shanghai Stock Exchange for Self-Regulation of Listed Companies – Sustainability Report”. Both 2008 and 2024 regulation-based frameworks are divided into three main sections, following the E-S-G order: we will call “A” the environmental section, “B” the social section, and “C” the governance section.

The content analysis criteria consist of assigning “1” if the requirement is met and “0” if it is not observed; the table in the following sub-paragraph will only report the average for every requirement. The sub-total for each section will be calculated, but only the average expressed in percentage will be displayed since it is not possible to show every single result. The standard deviation of these numbers will be exposed too in order to understand the variation of the single results from the average and see if the values deviate significantly. This process will be repeated for each document. In the end the final total of 2008 and the one of 2024 will be calculated, showing the level of disclosure.

The last sub-paragraph will provide a comparison between the 2008 and 2024 results, in order to provide a comprehensive overview of the change of the Chinese ESG regulations have undergone. Not only we tested if the actual regulation is observed by the sample of companies, and quantified the extent of this compliance, but we also conducted a simulation to assess the disclosure level in accordance with the 2024 requirements.

3.3.1 Analytical Framework under ESG Regulation in 2008

This paragraph will analyse the 2008 Guidelines content and divide the topics into macro-areas. We will signal the macro-topic of the requirement in the left part of the table, because in the official document there is no such division: we will use A for Environmental, B for Social and C for Governance. After the letter a number will appear indicating the number of the requirements and it will be useful in the comparison analysis part; there are some requirements that we combined under the same letter and number because they can be considered a "comprehensive requirement". Apart from the first article that summarizes the reason why this document is being issued, that is to encourage companies to take responsibility for environmental protection, and the article number six which reminds companies to fulfil their obligations in accordance to the "Enterprise Accounting Standards" (《企业会计准则》) the main requirements proposed in the 2008 document are as follows:

Table 4 - 2008 ESG Regulation Analytical Framework (Elaborated by the author)

A	**ENVIRONMENTAL**
A1	Company's annual environmental protection policy and goals and effectiveness
A2	Company's total annual resource consumption
A3	Company's environmental investment in technology development situation
A4	Type, quantities, concentration and destination of the POLLUTANTS
A5	Construction and operation of the company's environmental protection facilities
A6	Company's treatment and disposal of waste
A7	Denomination, mode of emissions, concentration and total amounts of pollutants + if exceed also the amount exceeding, measure to reduce pollutant emissions
A8	(heavily polluting ind) Emergency plan for pollution incidents
B	**SOCIAL**
B1	Company's voluntary agreement to improve environmental behavior
B2	If they received a reward from the environmental department
C	**GOVERNANCE**
C1	New, renovated or expanded projects impacting environment
C2	If the company is investigated or not - involved in litigation
C3	If the company is included in the list of severel polluting enterprises
C4	If there is a new regulation that may have significant impact on the environment
C5	Publish an announcement document
C6	Boards' resolutions on major investment activities
C7	Proof of document being seized

There is one more requirement that is worthy of mention: after all these points, the document requires that this information must be disclosed on the website of the Shanghai Stock Exchange (especially the information shared in the A part), in a timely, accurate and complete manner. If these requests are not carried forward, the Exchange will take necessary disciplinary measures.

Before entering into details in the analysis of the 2008 Regulation's requirements, we must declare that the document followed another order, without any division in topic, describing at first part of the governance section, hinting at the social demand and then opening up for the environmental requests. We chose to follow the order of E-S-G in order to grant comparability with the analysis of the 2024 report.

From this checklist, we notice a few points that are worth to be mentioned.

Section A represents the very core of the environmental disclosure; these requirements have become the pillar of Environmental Protection practices and can be found in every company's ESG Report nowadays. For instance, also the information that in 2008 were requested to be shared by severely polluting firms, today you can find them in almost every large enterprise's sustainability report.

As forecasted, the Social part is short and symbolic, limiting itself on "improving the company's behaviour" transforming it into a sustainable way of thinking. In this section we also included the awards and recognition sharing, a chance of self-promoting that helps build a firm's image.

The Governance sector references information that nowadays can be considered outdated or unnecessary, such as the introduction of a new ESG guidelines, a news that today would be on every financial or accounting website; or perhaps information that today would be self-evident, like the projects that impacts the environment, whether positively or negatively: real case studies are always present in companies' sustainability reports. The documents required to be published remain valid, aside from the "proof on major assets being detained or seized" that is almost never shared since today it would be viewed as a very bad publicity for the company.

The fourth additional point is completely undertaken by the development of companies owned and private websites, that are where today the firm's ESG Report is published for everybody to read.

3.3.2 Analytical Framework under ESG Regulation in 2024

This second part of the chapter will examine the 2024 guidelines' content and divided it into different categories, following the E-S-G ideological order, again the letters A, B and C will be assigned to each category, and this will grant the comparison in the paragraph 3.4. In the official document, this order is respected within the chapters, presenting titles like "Environmental Disclosure", "Social Disclosure" and "Corporate Governance Information Related to Sustainable Development Disclosure". At the end of the document there is a table that highlights the macro-elements for every section of every chapter. In this paper, we will try to combine the chapters and the sections' titles with the macro-elements given by the final table. This meticulous attention on defining every single detail within each macro-section is scrupulously preserved, and in our analysis, it is maintained in the further subdivision within all the sections, as it is showed in the following table:

Table 5 - 2024 ESG Regulation Analytical Framework (Elaborated by the author)

A	**ENVIRONMENTAL**
ENV1	CLIMATE RESPONSE
A1	Assessment how climate change impacts the business and the pursuing of green and low-carbon growth
A2	GHG DATA
A3	New technologies that contribute to carbon neutrality
ENV2	POLLUTION CONTROL
A4	Pollutant Discharge
A5	Waste Disposal
A6	Impact on the Ecosystem and Biodiversity
A7	Risk assessment for environmental incidents
ENV3	REDUCE UTILIZATION
A8	Overview of Energy Usage
A9	Clean Energy Usage
A10	Energy-Saving Goals
A11	Water Resources Usage
A12	Achievement of Circular Economy
B	**SOCIAL**
SOC1	RURAL REVITALIZATION/SOCIAL CONTRIBUTIONS
B1	Actions to contribute to the Rural Revitalisation
B2	Contributions to the Society
SOC2	INNOVATION DEVELOPMENT/ETHICS OF SCIENCE
B3	Strategies and objectives for technological innovations
B4	Overview of compliance
SOC3	SUPPLIERS AND CLIENTS
B5	Overview of Supply Chain Risk Management
B6	Equal Treatment to SME - Account Payable Due
B7	Product and service Quality Management
B8	Data security and Customer Privacy Protection
SOC4	EMPLOYEES
B9	Employement/Compensation Policies
C	**GOVERNANCE**
GOV1	SUSTAINABILITY GOVERNANCE MECHANISMS
C1	Due diligenge in the reporting period
C2	Engagement with investors/stakeholders
GOV2	COMMERCIAL BEHAVIORS
C3	Anti-commercial bribery and anti-corruption
C4	Anti-unfair competition

Upon initial observation, the length and the complexity of the requirements stand out, in contrast with the ones described in the previous paragraph. All three sections present additional information that must be shared, but in particular the social disclosure is the most detailed and intricated one. At the end of this paper a table is provided in Appendix II that was crafted to make our research the most comprehensive and detailed as possible, and to avoid missing out information mentioned in our sample of companies' sustainability reports.

The detailed analysis of each requirement is provided in the following section, but there are some observations that stand out from this analytical framework. The topic of the 2024 requirements have undergone some changes, in particular some enrichment. It is not an EID Regulation, but it includes a large portion of the social and governance spheres.

Section A incorporates all essential elements of the corporate environmental protection, encompassing both innovative projects and proposal related to the topic (refer to A3) and also components of environmental reporting (refer to A8). Section B with its four categories include a variety of topic: from Chinese characteristic elements (see B1) to classic social aspects (see B9). Finally, section C innovates the governance requirements, presenting some innovative components such as the *due diligence* (C1) and the *anti-corruption* compliance (C3). All these information will be explained in detail during the examination of the content analysis' results.

Before moving on the comparison between the 2008 and 2024 requirements, we must report that the official document is much longer, including more chapters than just these three mentioned. We provide here a summary of the rest of the document, in order to offer the reader a complete understanding of the guidelines.

The first chapter of the document presents the "general provisions", reporting the fundamentals of this regulation and the reasons why companies should share and integrate sustainability thinking in their business strategies. Article three is worth of mention since it reports the scope of companies that are required to publish a sustainability report, that is “any company that is a constituent of the SSE 180 Index or the STAR 50 Index or is listed simultaneously in Chinese Mainland and overseas markets” (Guidelines No. 14 of Shanghai Stock Exchange for Self-Regulation of Listed Companies—Sustainability Report, 2024, SSE). Article four is also important since it states the timing of publishing, being “within four months following the end of each fiscal year” and “no earlier than its annual report” (Guidelines No. 14 of Shanghai Stock Exchange for Self-Regulation of Listed Companies—Sustainability Report, 2024, SSE).

The remaining articles of the first chapter remind companies to share both “financial materiality” and “impact materiality”, reflecting the firm’ performance in the sustainability environment and anticipating estimated information such as reduction targets or other forecasts. Article nine highlights the importance of taking into account stakeholders’ requests and of facilitating communication with investors.

The second chapter main topic is “Disclosure Framework for Sustainability Information”, a deeper explanation on how to disclose the information requested in the first chapter. For instance, it mentions how to analyse in accordance with the “four key aspects” that are governance, strategy, impacts, risks and opportunities management, and indicators and targets (article 11, chapter 2, Guidelines No. 14 of Shanghai Stock Exchange for Self-Regulation of Listed Companies—Sustainability Report, 2024, SSE).

After the detailed requirements of these ESG chapters, there is one additional chapter called “Supplementary Provisions and Interpretations” which provides companies an encouragement to follow a topic indicator index in order to give a structure to their sustainability report. This chapter also indicates to provide information on a third-party audit in there is one and then a list of terminology’s definitions that help companies to understand what the exact meaning of some words is. Timing is also mentioned, signalling how these guidelines will take effect starting from 1st of May 2024 and encouraging the “early adoption”, that means encouraging firms to follow this regulation for the 2024 Sustainability Report already. It also reminds that the requirements will be mandatory for the publication of the 2025 Sustainability Report and that the issuing of the document must be before April the 30th 2026. The final articles of this chapter, inform companies that they reserve the right to interpret the guidelines and to punish firms for any violations.

3.4 Results

This chapter will provide the readers with the findings of our research. As we have already mentioned before, the research has been conducted through a content analysis method, requirement by requirement. Reporting these results multiplied for 25 companies is not possible in this paper. Given the impossibility due to the dimensions of the page, we will report only the average of the values collected, and the standard deviation, expressed in percentages.

The results will be reported following the E-S-G order, as we did for the previous paragraphs.

3.4.1 Results according to ESG Regulation in 2008

We will now analyse the results coming from the content analysis of the 2008 ESG regulation. We have calculated both the average disclosure per requirement horizontally (horizontal line) and the average disclosure of the whole section, either environmental (A section), social (B section) and governance (C section) in the vertical axe. As we have predicted, it was not possible to show the results for each of the 25 companies: this is why only the results for requirements (horizontal line) are show for each one of them, while the results based on the company (vertical axe) are summarized in the sub-total average for categories, total average per year and the deviation standards.

Table 6 - ESG Results from content analysis 2008
(Elaborated by the author)

A	ENVIRONMENTAL	Average per requirement/N max items	Standard Deviation
A1	Company's annual environmental protection policy and goals and effectiveness	6%	
A2	Company's total annual resource consumption	6%	
A3	Company's environmental investment in technology development situation	6%	
A4	Type, quantities, concentration and destination of the POLLUTANTS	6%	
A5	Construction and operation of the company's environmental protection facilities	6%	
A6	Company's treatment and disposal of waste	6%	
A7	Denomination, mode of emissions, concentration and total amounts of pollutants + if exceed also the amount exceeding, measure to reduce pollutant emissions	6%	
A8	(heavily polluting ind) Emergency plan for pollution incidents	6%	
	Average Sub-total A	48%	4%
B	**SOCIAL**		
B1	Company's voluntary agreement to improve environmental behavior	6%	
B2	If they received a reward from the environmental department	5%	
	Average Sub-total B	11%	2%
C	**GOVERNANCE**		
C1	New, renovated or expanded projects impacting environment	6%	
C2	If the company is investigated or not - involved in litigation	2%	
C3	If the company is included in the list of severel polluting enterprises	0%	
C4	If there is a new regulation that may have significant impact on the environment	1%	
C5	Publish an announcement document	6%	
C6	Boards' resolutions on major investment activities	6%	
C7	Proof of document being seized	0%	
	Average Sub-total C	21%	3%
	Average Total 2008	80%	6%

With a sub-total average of 48% and a deviation standard of 3%, we can assess how the environmental requirements are mostly respected in the 2022 or 2023 Sustainability Reports selected. The information required to disclose in 2008 probably had been unusual and required a great deal of work to collect the data, while nowadays large listed companies share this information almost with pride, showing off how the amount of waste or the pollutants' discharge is gradually reducing every year, manifesting the level of interest and care the firm has for environmental protection. The results based on the requirements also maintain this uniformity, having for all the requirements a repeated 6%.

As we predicted in the previous section, the social requirements are almost non-existent in the 2008 SSE regulation, exclusively limiting their action to improve the company's and the employees' "environmental behaviour". We have also included in this section the awards and recognition received, thanks to the impact of their economic activities in the social and environmental spheres. The average of these values' sub-total is impressively high, and the standard deviation is low, meaning that every company discloses some information on the topic, including a show off of all the awards and prizes collected, that serves as a showcase of corporate self-promotion in order to enhance the company's public image.

The governance requirements' average is the one that varies the most, with values per requirements between 0% and 6% and with a final deviation standard of 4%. This is due to a multiplicity of reasons. There are some requirements that are nowadays eradicated into the ESG culture, becoming a pillar of the EID and for this reason they are shared by every single company without even acknowledging it. This is the case of the first requirement, "introducing new projects that have an impact on the environment", being itself an opportune occasion of *green* self-promotion, no company dare to omit this section from their report. Other requirements instead, are not so subtly respected like the proof of document being seized or detained. This part would be a negative self-advertisement, and this is why negative actions done by companies are not always displayed, or if they are mentioned, they are always accompanied by all the remedies and methods that the company used to repair the mistakes or bad outcomes, signalling at the same time the great efforts that the firm utilizes in order to make up for bad mistakes and to reach the green development's objectives.

The final results showed in Table 6, reports the average percentage of disclosure based on the 2008's requirements. The table reports a full 80% of disclosure, indicating the level of adherence of the information shared and the regulation's demand; a 6% of standard deviation reveals a slight variation in fulfilling all the requirements.

3.4.2 Results according to ESG Regulation in 2024

This sub-paragraph will cover the analysis of the results of the content analysis of the 2024 SSE ESG document. The process applied in the 2008 regulation is repeated with the latest guidelines' requirements, with the same division of calculus: the horizontal line to show the result per each requirement, while the average for every section is exposed vertically. In the case of the 2024 document, in each segment are present more sub-sections that we decided to keep in our content analysis in order to preserve the original division provided in the regulation. The decision of dividing the three main section into various parts reflect the need to compartmentalize the various topics, while at the same time highlighting the introduction of new subjects, as will be explained thoroughly in the following pages.

Table 7 - ESG Results from content analysis 2024 (Elaborated by the author)

A	ENVIRONMENTAL	Average per requirement/N max items	Standard Deviation
ENV1	CLIMATE RESPONSE		
A1	Assessment how climate change impacts the business and the pursuing of green and low-carbon growth	4%	
A2	GHG DATA	3%	
A3	New technologies that contribute to carbon neutrality	3%	
	Average ENV1	10%	2%
ENV2	POLLUTION CONTROL		
A4	Pollutant Discharge	4%	
A5	Waste Disposal	4%	
A6	Impact on the Ecosystem and Biodiversity	2%	
A7	Risk assessment for environmental incidents	2%	
	Average ENV2	12%	3%
ENV3	REDUCE UTILIZATION		
A8	Overview of Energy Usage	4%	
A9	Clean Energy Usage	3%	
A10	Energy-Saving Goals	4%	
A11	Water Resources Usage	3%	
A12	Achievement of Circular Economy	2%	
	Average ENV3	16%	4%
	Average Sub-total A	39%	8%
B	**SOCIAL**		
SOC1	RURAL REVITALIZATION/SOCIAL CONTRIBUTIONS		
B1	Actions to contribute to the Rural Revitalisation	4%	
B2	Contributions to the Society	4%	
	Average SOC1	8%	1%
SOC2	INNOVATION DEVELOPMENT/ETHICS OF SCIENCE		
B3	Strategies and objectives for technological innovations	4%	
B4	Overview of compliance	2%	
	Average SOC2	6%	2%
SOC3	SUPPLIERS AND CLIENTS		
B5	Overview of Supply Chain Risk Management	3%	
B6	Equal Treatment to SME - Account Payable Due	0%	
B7	Product and service Quality Management	4%	
B8	Data security and Customer Privacy Protection	3%	
	Average SOC3	10%	3%
SOC4	EMPLOYEES		
B9	Employement/Compensation Policies	4%	
	Average SOC4	4%	1%
	Average Sub-total B	27%	5%
C	**GOVERNANCE**		
GOV1	SUSTAINABILITY GOVERNANCE MECHANISMS		
C1	Due diligenge in the reporting period	1%	
C2	Engagement with investors/stakeholders	4%	
	Average GOV1	5%	2%
GOV2	COMMERCIAL BEHAVIORS		
C3	Anti-commercial bribery and anti-corruption	4%	
C4	Anti-unfair competition	2%	
	Average GOV2	6%	2%
	Average Sub-total C	11%	4%
	Average Total 2024	76%	13%

It has been already assessed than the 2024 ESG regulation is much more detailed, containing more sections inside of each macro-area. This regulation requires more disclosure from each category, and thus an additional classification in each section is needed. In our analysis we will respect this further division, trying to emphasize the reason behind this supplementary adjustment. Table 7 above shows the comprehensive findings.

We will now look closely at the results of each section of the document.

The “environmental” section contains three subdivisions, each with a specific topic. The first requirements are related to how companies react to climate change, more precisely to “climate change tackling”. The second section’s main topic is the control of pollution, with a specific focus on pollutant and general waste disposal, the ecosystem and biodiversity protection and the environmental compliance management. The last part focuses on “resource utilization and circular economy”, with an accent on the usage of both energy and water resources and on circular economy. We can make a more detailed analysis with the average and standard deviation from each single subdivision.

The first section is related to “climate response” and it refers to how companies react to ecological disruption and how they try to tackle climate change. The results show how they represent a solid 10%, indicating a uniformity of the single requirements’ percentages and presenting a minimal standard deviation, hinting at how this part is the strongest out of the environmental section. Almost every company acknowledges the impact of the environmental changes, sharing the GHG data progression, accompanied by the introduction of new technologies that help achieve the zero-carbon policy goal. The second section relates to pollution control and ecosystem protection, incentivizing companies to disclose data on pollutants discharge, waste disposal and on risk assessment for environmental incidents. Here, the average disclosure is 12%, with a standard deviation of 3%, slightly higher than the previous section. Also here, the single requirements’ average values stand between 25% and 4%, not creating big gaps. The least fulfilled requirement is the “risk assessment for environmental incidents", materials that a lot of companies don’t consider when writing a sustainability report. The section “information on impact on the ecosystem” also is not always mentioned, and if it is present, the information is not often as complete as requested by the latest regulation.

The third section offers a detailed examination of energy and water resources usage and goals to achieve circular economy. Here the average is 16% with a little higher standards deviation of 4%, showcasing how these requirements are observed in a more sporadic manner, with number between. On a more specific inspection, the requirement to share information on circular economy activities is not entirely observed, since companies publish descriptions on green activities that contribute to build the company’s sustainable development but maybe they are not included in the circular economy’s area.

At the end of the A section, we can notice the average disclosure of all these three sub-sections, and the amount is 39% with a deviation standard of 8%. Companies with the lowest disclosure percentages predominantly belong to the transportation and energy sectors, albeit with exceptions. In general, we can state that the most important and fundamental requirements in the environmental area are generally met, since it is also the part that catches the future investors’ attention, and it is considered the report’s chapter that, if it is properly structured, could act as a powerful means of self-presentation.

The social chapter is divided in four additional subdivisions. The section opens with a promotion of the “Rural Revitalization”, a process aimed at boosting the economy while developing and improving rural areas and addressing environmental and social challenges. In China these actions are particularly entrenched in the government’s principles, and thus especially experienced also by the Chinese population. In this analysis, this requirement is overall the most observed. Together with reviving rural areas, this first sub-section also promotes the fostering of community service: volunteering actions and charitable events are often highlighted in firm’s sustainability reports, representing a proper occasion for self-promotion too. In this sub-division the standard deviation is only 1%, showing the uniformity of the companies selected.

The sub-second section’s title is “innovation-driven development and ethics of science and technology”, underlining the importance of all the strategies and the objectives of a company when trying to achieve technological innovations and at the same time the respect of rules in the world of science and technology. The first requirement is often shared by companies, showing a strong 4% average disclosure, since showcasing their newest technological discoveries can attract future investors; the second part related to the “compliance of ethics of science” instead is not observed with the same degree of attention, representing just the 2% of the total disclosure of this section that rounds up to 6%.

The “suppliers and clients” section represents the largest one out of the social category, including the “supply chain risk management”, the “quality management” and the “data security and customer privacy”. The standard deviation here is slightly higher compared to the previous sections (3% compared to 1% and 2%) due to a requirement that ensures equal treatment to small and medium-sized enterprises; this demand is the least observed of the document. This requirement normally encourages companies to disclose the exceeding amount left to pay if there is an account payable over 30.000.000.000 RMB, an information that during this analysis has not been found in any report, even if this could be because there is no account payable to pay. Regarding the last requirement related to data security and customer privacy, this research can assess the fact that customer privacy is usually more mentioned than data security.

The last description is about “employees” and everything that revolves around the employability. This can be considered another pillar of the corporate sustainability concept, and this is why it is extensively delineated in almost every sustainability report of the range of companies chosen.

To summarize, the social aspect contains numerous areas, some of which are more considered than others. A 27% percent average disclosure with a 3% standard deviation indicate the success of some requirements that are almost automatically integrated in the ESG documents, and the “extinction” of others.

The governance section is shorter than the other two, but it contains significant elements. The first parameter of the "due diligence in the reporting period" is mentioned very briefly and not very often in the sample of companies selected, while the engagement with investors is one of the fundamental aspects of sustainability inside a firm. This requirement is particularly important in the context of sustainability reporting practices because investors, both actual and future investors, and stakeholders are two of the main addressers and readers of these reports; it is important that they feel acknowledged, and that the sustainability report not only meets the regulations' requirements but also aligns with their needs and expectations. The last part of the governance section is related to "commercial behaviours", highlighting how companies should disclose practices and legislation about *anti-commercial bribery*, *anti-corruption* and *anti-unfair competition*. We can clearly state that there is a deeper attention to detail for the *anti-commercial bribery* and the *anti-corruption* legislation, while the *anti-unfair competition* is not so common. The two sub-sections mentioned above have a similar percentage, respectively 6% and 5%, with the same standard deviation, indicating that all companies disclose a comparable volume of information on the matter. The sub-total shows the final results, with a 11% of average percentage and a 4% standard deviation, confirming the reasons explained above.

The final results showed in Table 7, displays the average percentage of disclosure of companies in their latest report, showing how the disclosure achieves around 76%, representing a good result and indicating the high level of adherence with these new standards.

3.4.3 Comparison between 2008 and 2024

In order to completely understand the final results of the content analysis, we first did basic research on the major differences between the two regulations, more specifically in terms of significant transformations driven by the evolving context of ESG regulations, both domestically and internationally.

The areas that interested this change are mainly scope, disclosure requirements, the level of alignment with international standards, the addition of the “comply or explain” principle and the incorporation in the financial report. From 2008 to 2024 the range of companies that were addressed to disclose environmental, social and governance information changed drastically from “larger listed companies and heavily polluting industries” in 2008 to “all listed companies” in the Shanghai Stock Exchange, coordinating with developed countries’ methods. The depth of the disclosure requirements also increased a lot: the first document that we explored possessed a very simple structure, focused on the environmental aspect and with basic elements from the social sphere, while the 2024 guidelines present a detailed division touching all three aspects of ESG with specific reporting formats and metrics. In the 2008 regulation the governance section was limited to ensure that companies were in compliance with the current regulations and law, while in the latest document there is a strong emphasis on new governance features like the engagement with stakeholders, risk management and anti-corruption practices. Regarding the social part, the disclosure requirements imposed in 2008 were just limited to charitable activities and some simple information about employment while the newest document demand to publish detailed information about workforce management including talent acquisition, welfare, diversity and inclusion, but also volunteering activities and engagement in rural revitalization.

Furthermore, the innovation of the latest published guidelines is the introduction of the “comply or explain” principle. In 2008, companies were not obliged to follow this concept of explaining why the requirement is not observed, and so as a consequence, there was room for omission, and this we will see in the following content analysis’ results. In 2024 instead a stricter “comply or explain” principle is enforced, in order to provide transparency and accountability. The introduction of this element is driven by the alignment with international standards that is clearly perceived in the newest regulation, that still has to take effect; the current one lacks adherence with global sustainability practices, such as the Global Reporting Initiative (GRI) or the UN Sustainable Development Goals (SDGs). These two frameworks are very closely integrated in the 2023 published ESG reports of our sample of companies: usually a mention of both of these practices is always present in the reports, especially the correlation between the firm's activities with UN 2030 Agenda's sustainable goals.

Finally, the last major difference that has been individuated between the two regulations is the incentive to integrate the ESG report with the financial report. In the past these two realities have always been separated, while the 2024's regulation encourages the incorporation of the non-financial information in the financial report, in order to show the impact that each one has on the other. It is not mandatory to have one single document encompassing both disclosure, companies usually have two separated reports, but it is important to highlight the correlation between the operating activities and the impact that these have on the environment, and vice versa, i.e. how ESG activities impact companies' financial performance.

To summarize concisely, in general the 2008 document present a focus on environmental issues, addressing only heavily polluting industries, and with very little requirements on social and governance aspects. It can be considered a starting point of the ESG disclosure in China, with no obligation to provide explanations and proof, with no adherence to acknowledged global practices and often considered just a supplementary and superfluous document. The 2024 guidelines try to improve all those aspects, increasing the scope of companies interested, enlarging the requirements' topic, opening the Chinese standards to international ones, while keeping their own characteristics, encouraging the publishing of justification and evidence and trying to wholly integrate sustainability in the economic activity and profitability of the company.

Now that the context is clear, the paper continues with the examination of the research's findings, in order to understand if our selected companies:

- adhere to the actual rules;
- are ready for the new rules that will be enforced starting from the 2025 Sustainability Report (the companies will be required to publish 2025 ESG Report before April 30th 2026);
- already implement part of the newest introduction.

These are our three main objectives for our empirical research. The paper will now delve into the final results of the regulations' requirements analysis. For this detailed comparison analysis, we always refer to Table 6 for the 2008 ESG regulation and Table 7 for the 2024 ESG regulation.

Upon initial observation, the length of the 2024 requirements stands out prominently. We can clearly see how both the environmental and social requirements evolved, demanding more specific information and in general adding some areas than in 2008 weren't considered part of ESG. A considerable amount of the environmental requirements remains almost the same, for example the introduction of new projects or technologies that influence environment, or the disclosure needed for pollutants. In 2008 the focus was on reporting how the company impacted the environment and what they are trying to do to improve their economic activities' influence. In the 2024 regulation, the usage of *renewable energies, energy-efficiency* and *conservation of energy* are instead emphasizes, indicating how the accent moved from "explanation of the remedies that we use to manage climate change and its consequences" to "how we can fight and prevent climate change's disasters", starting with a more passive, "damage control" approach and shifting to a more positive, active and "damage prevention" role. Figure 17 underlines this evolution of requirements that we have just explained and shows how companies observe the current requirements, but also how they are anticipating some elements that will be mandatory starting from 2026.

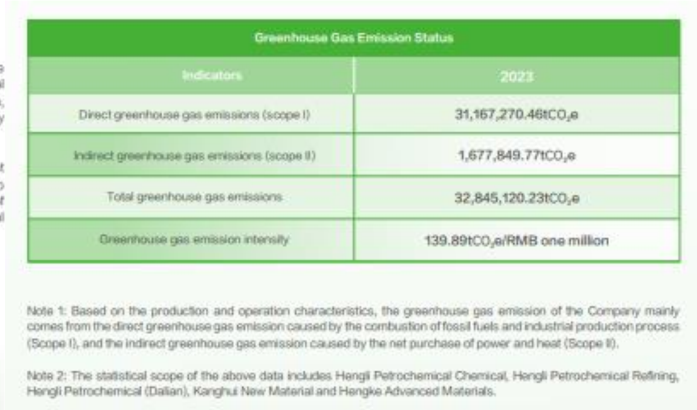
Pollutant Control

Pollution Control

The Company establishes a comprehensive and efficient pollution prevention and control management system to ensure that the waste gas, waste water, waste and other pollutants generated during production and operation meet the national and local laws and regulations through regular monitoring and supervision and inspection mechanism. At the same time, the Company pays attention to the innovation of pollution control technology, and builds the first PTA residue recovery system in the world PTA industry–R2R device, realizing the ecological development of petrochemical industry.

In order to ensure the professional knowledge and emergency response ability of the employees to prepare for pollutant discharge, the Company regularly organizes and carries out pollutant discharge training and emergency drills to strengthen the employees' ability of understanding and executing environmental laws and regulations and ability of quick response and disposal in case of emergency environmental events, so as to ensure the safety, environmental protection and high efficiency of production activities.

Pollutant Emission Training Activity



Greenhouse Gas Emission Status	
Indicators	2023
Direct greenhouse gas emissions (scope I)	31,167,270.46tCO_2e
Indirect greenhouse gas emissions (scope II)	1,677,849.77tCO_2e
Total greenhouse gas emissions	32,845,120.23tCO_2e
Greenhouse gas emission intensity	139.89tCO_2e/RMB one million

Note 1: Based on the production and operation characteristics, the greenhouse gas emission of the Company mainly comes from the direct greenhouse gas emission caused by the combustion of fossil fuels and industrial production process (Scope I), and the indirect greenhouse gas emission caused by the net purchase of power and heat (Scope II).

Note 2: The statistical scope of the above data includes Hengli Petrochemical Chemical, Hengli Petrochemical Refining, Hengli Petrochemical (Dalian), Kanghui New Material and Hengke Advanced Materials.

Figure 17 - HengLi Petrochemical ESG Report environmental section
source: HengLi Petrochemical website

On the Figure 17's right side, there is an introduction of the "pollution control" section, observing the 2008 requirements (refer to A4 in Table 6), while on the left side the detailed "GHG emissions" management of the company is displayed, meeting the 2024 regulation's new demand (refer to A2 in Table 7). This example serves as confirmation that most companies from our sample respond to most of the current environmental requirement, but they are also starting to integrate in their sustainability reports also the newest sections provided in 2024. Naturally, from a quantitative perspective, the average percentage of disclosure slightly changed: for instance, the "pollutants information" occupied a 6% per the environmental section under the 2008 regulation, while only a 4% under the 2024's.

As it is stated above, the environmental section of the latest document focuses on a proactive *green* approach, with a focus on energy-saving and low-carbon activities, which constitutes the 16% of this segment. These elements are not included in the 2008 regulation, but as they are becoming more and more fundamental pillars of ESG, some companies are starting to include this data in their sustainability reports, as shown in Figure 18 below.

Corporate Green Responsibility

Air China advocates for its employees to practice environmental protection and low-carbon, green office concepts, enhancing their awareness of energy conservation and emission reduction, and guiding them to save energy in their work, reducing the operational impact on the environment. Every year, we allocate special funds for environmental protection training and publicity, enhancing employees' awareness of low-carbon development and carbon reduction. This also helps them better understand the green and low-carbon concepts, making the concepts a part of their mindset and actions.

Air China has established an energy-saving and ecological environment protection statistical information system, and developed and launched an environmental protection dictionary, providing employees with knowledge retrieval services for energy-saving and environmental protection policies and regulations.

We have invited experts from the National Bureau of Statistics, the Capital Power Exchange Center, Tsinghua University, and other institutions to conduct online and offline green-themed training sessions for key internal staff. The main content of these sessions includes policies related to the "dual carbon" strategy, energy conservation and environmental protection regulations, energy statistics, and green electricity trading. A total of 133 staff members have been trained, with a total duration of 798 hours.

The National Energy Conservation and Ecological Environment Protection Statistical Information System has collected

104

national-level energy conservation and environmental protection laws and regulations.

local-level energy-saving and environmental protection standards

90

corporate energy saving and environmental protection policies

7

Air China releases a green and low-carbon action initiative

Air China has issued a green and low-carbon action initiative to its employees, advocating for the establishment of green development concepts among its staff, and the adherence to green and low-carbon office habits, low-carbon travel methods, low-carbon lifestyles, etc. We are also conducting knowledge quizzes on the "dual carbon" strategy, resource-saving society, major protection of the Yangtze River, SAF, and plastic pollution control.

Nearly 40,000

employees made the green and low-carbon commitment

Over 30,000

employees participated in green and low-carbon activities

Green and low-carbon action initiative (excerpt)

Figure 18 - Air China 2023 ESG Report environmental section
source: Air China website

Figure 18 displays Air China's energy-saving and environmental protection policies, with a focus on green and low-carbon action initiatives, information that would satisfy the 2024 requirements, but not included in the 2008 regulation.

The results of the environmental sub-totals show a solid 48% out of 80% of disclosure in 2008 and 39% out of 76% in 2024, indicating how both documents' requirements are generally observed, albeit with some exceptions. The standard deviation of the environmental sub-totals is lower in 2008 (3%) compared to 2024 (8%), showing a stronger uniformity in the first set of results, probably also due to a lower amount of demand to meet and to an increased simplicity of the information requested. To satisfy all the requirements proposed in 2024, more complex work and personnel is required, since the information requested to disclose are a relevant amount, and of consistent complexity and length. This is why it is more likely that some companies have yet to fully incorporate all relevant data into their sustainability reports, especially now that these regulations have not taken effect yet. The 2008 regulation demand easier and more accessible information, reflecting the minimal fluctuation of the results (low standard deviation), showing how the requirements are almost always observed.

In the 2024 results, the "Environmental 1" section reflects the 2008 framework, without introducing new concepts, it is mostly similar to the previous regulation. The second section can be considered an instrument of integration, as it incorporates elements from the previous regulation (i.e. "waste disposal", "pollutants discharge") while introducing new aspects (i.e. "ecosystem and biodiversity protection"). There is one element of this segment that is particularly observed by listed companies: the "risk assessment for environmental incidents" (refer to A7 in Table 7), part of the environmental compliance management, a branch that compels companies to conform with the standards while not harming the environment. This section is often present in sustainability reports, and it is made clearly visible by the categorization of major environmental emergencies and risks and how to prevent them or how the company is managing it in order to inflict no harm to the environment. Frequently the risks are divided in two categories: physical risks and transformation risks. The firsts directly come from the "physical impact" of climate change, and they can be either "acute", i.e. consequences due to extreme weather problems like floods or wildfires, or "chronic", i.e. long-term harming consequences due to environmental crisis like rising sea-levels or global warming; the second kind of risks is driven by the process of transitioning to a low-carbon economic system.

Finally, the third section "resource utilization and circular economy" has the highest percentage (16%) out of the environmental requirements, confirming the emphasis on renewable sources and energy conservation, but presenting at the same time the highest standard deviation (4%), due to the "circular economy achievement" requirement, that is not often mentioned in our sample of companies' sustainability requirements.

Regarding the social section, a lot of improvements have been made. Only by looking at the social sub-total percentage of disclosure we can see how the data is more than doubled (11% in 2008, 27% in 2024). The requirements increased in number but also in the topic's scope: in 2008 the only references to the social sphere were a voluntary agreement on improving the "environmental behaviour" (refer to B1 in Table 6) and the sharing of awards obtained (refer to B2 in Table 7) while in 2024 the range of topic expanded considerably. In 2008 the standard deviation was only 2%, a sign of the conformity of the companies to these two regulation's demands, even though some companies did not propose any agreement on enhancing the company's ecological practices, and some did not obtain any recognition to share.

The 2024 social requirements instead have a more complex structure: they are divided into four different sections, as we have already anticipated above, each one with a specific focus. The first two requirements are specifically Chinese, deeply eradicated in the Chinese political ideology of people contributing to the country's growth: this is why is counts as one third of all the social disclosure alone with only two requirements (8% of 27%), and reports just a 1% of standard deviation, an indication of the firms' compliance in this matter. This result is particularly astounding, since companies, as of now, are not obliged to follow these new requirements. As we have constated, some firms have already begun to incorporate minor aspects, yet this specific element is observed by almost all the companies from the sample, with a comprehensive view of the detailed organization of this "rural revitalization". This development is highly relevant, as it indicates the step forward for companies in embracing the 2024 regulation, demonstrating also a perfect level of readiness in implementing these guidelines.

Figure 19 shows two pages from COSCO's Sustainability Report, belonging to the social section, where the first two requirements are met: the commitment to rural revitalization and the charitable activities. Again, these pages represent the combination of observation of both 2008 and 2024 requirements.

Figure 19 - COSCO ESG report social section
source: COSCO website

The second segment of the social section contains two requirements: the first is very frequently observed, with companies reporting every single advancement in the technological field (refer to B3 in Table 7); while the second, related to the ethics of science (refer to B4 in Table 7), is not so often met: the regulation requires to specifically share an *overview of its compliance with the ethics of science and technology in the reporting period* (Guidelines No. 14 of Shanghai Stock Exchange for Self-Regulation of Listed Companies—Sustainability Report, p 15, Shanghai Stock Exchange), but this comprehensive outline is not easily found. We discovered instead that companies readily share information about the intellectual property, i.e. patents, licence and copyrights, that are not exactly the same as the data requested by the regulation, but in many cases, they nearly attain to it. Due to this inaccuracy, the standard deviation of this segment is 2%, while the disclosure percentage just a 6%, represented by a 4% given by the technology-related innovation and just a 2% for the level of compliance.

During our research, we tried to classify the topics shared by more than two companies, as well as the characteristics that were specific of some companies or some sectors alone. There is one topic that is so often mentioned that we thought it would be worth to speak briefly about it here: the “digitalization”. Since it was most often a single chapter not included in any category, we decided to collocate it in the innovation-driven development, as digitalization is a process that is experienced by most enterprises nowadays, especially in China, where a lot of ordinary activities are carried out through digital methods.

The next section represents the 10% of the social disclosure percentage, the largest segment out of all the social part, with four different requirements: it is the “suppliers and customers” section, a topic than in 2008 it is not even mentioned. This is the widest topic in all the 2024 documents because it included a lot of different areas inside, from the supply chain security (refer to B5 in Table 7) to the safety and quality of products/services (B7) and to the customer privacy (B8). All these requirements are fundamental to attract investors but also to satisfy current stakeholders, and this is the reason why these demands are almost uniformly met. As we have already anticipated in the previous paragraph, there is only one requirement in this segment that increase the standards deviation (3%), that is the obligation to share the overdue account payable if it exceeds 30.000.000 RMB, for all companies including SMEs. This information was not found in our research.

During our analysis of the sustainability reports, we discovered one chapter that is present in almost every company operating in transportation sector. More specifically, this chapter is included in every airline company’s ESG report, and we decided to mention it in this paragraph because it belongs to the “safety and quality of the products and services”. In this case, we are referring to the safety of a service, i.e. “flights’ safety”. Not only an ordinary product needs to be safety tested, naturally also services like transportation needs to be provided with a safety and quality control management.

The fourth and last section of the social segment, the one related to the employees, is the simplest of the section and with a standard deviation that is almost zero. The chapter about employees’ safety, development and interests is almost always present, in every sector; in 2008, the topic of employment is not even mentioned in the regulation. Nowadays instead, companies are proud to share what they can do for their own employees, respecting the ideology for which the "employees make the company great".

The employment chapter are usually a long and detailed description of not only employability, but also compensation and remuneration policies, employees' career and training and many other aspects of the workforce management. A special emphasis is given at the "occupational health" and employees' safety, in order to let the company support their employees in their physical, mental and social well-being. This is considered another Chinese characteristic: the population contributes to the society and the society repays back offering assistance to the people.

The governance section instead reduced the number of topics, starting with a 21% disclosure in 2008 and finishing with only a 11% in 2024. A shift in terms of topic is also detected, from a regulation point of view to a more "corporate" point of view: the 2008 requirements were mainly about checking if the companies aligned with rules or if the companies published documents about events that are not entirely positive, for example the proof of documents being seized or if the companies have been involved into litigation or similar events; the 2024 document requires more information about the companies' governance structure and commercial practices.

There is a premise that must be conveyed before explaining the actual analysis. We have found out that many companies have this habit in common of not following the E-S-G order: more than 50% of the companies prefer to start their sustainability report with an organized description of the governance structure. Usually, there is the personnel division panel, with the board of directors and often also the departments' structure; secondly there is "corporate governance" chapter, including both the risk management and the investors' communication.

Now that the order of the document is cleared, we can start the revision of the content analysis' results. The findings of this research show how the 2008 requirements are rather antiquated and obsolete, and even though the standard deviation is 4%, we found that these requests are the less observed of the 2008's. There is one requirement that we were astounded to find in the companies' sustainability reports, representing a mild 2% of the governance average, and that is the litigation involvement (refer to C2 in Table 6), since it can be perceived as a bad influence for attracting investment or customer's attention. Nonetheless, most companies in their governance section mention the number of litigation cases in which they have been involved: for instance, Sinopec disclosed in their 2023 ESG report that in 2022 the company has been involved in three cases of corruption litigation that were adjusted by the court, while in 2023 the cases rounded up to 0. Another example that we can give account of is the China Shenhua Energy report, which precisely mention *"In 2023, the Company did not involve in any case related to intellectual property litigation"* (China Shenhua Energy 2023 ESG report, p 76). In this case, it was not a "corruption" litigation but related to the intellectual property. In observing this requirement, both companies are meeting the current regulation's requests and at the same time they are showcasing the methods and measures they have taken to improve, thereby demonstrating themselves as enterprises that when committing a mistake, they promptly amend their errors.

The "board's resolution on major investments" (refer to C6 in Table 6) is a kind of information that is usually given at the start of the ESG report, and what this analysis has found, is that beside the "resolutions", or the "intent", or the "governance" of the board, also the hierarchical structure of directors is showed, together with strategies, mechanisms and key activities. This requirement comes from the 2008 table, but it intersects with the 2024 "due diligence during the reporting period" information (refer to C1 in Table 7). This data that is required to be shared, but we found that only little information is present in sustainability reports, and if there are some usually, they are written in the same paragraph together with the board committee.

Figure 20 - China Communication Constrution 2023 ESG Report governance section source China Communication Construction website

Figure 20 displays the structure of the board of directors of China Communication Construction. This company's sustainability report does not merely report how the directors of the firm are divided but it explains their role relative to the ESG goals. For instance, this ESG report quotes *the company establishes the Strategy & Investment and ESG Committee of the Board of Directors to identify the ESG work responsibilities* (China Communication Construction 2023 ESG Report, p 15*)*, meaning to identify the company's member that will carry out the due diligence. This reference to the China Communication Construction ESG report is significant because it highlights the transition from the 2008 to the 2024 regulation: the first requires only to share the board's structure and intents, while the second put in correlation the directors' organizational structure and resolutions with the ESG objectives. This kind of data observes both requirements from 2008 and 2024.

Generally, right after the boards of directors comes the stakeholders' engagement. As we already know, stakeholders and investors are very important figures since they are the primary addresser of the sustainability reports, and at the same time the company obey to stakeholders wish, trying to satisfy their needs and preferences. This is why the communication with investors is rather relevant in the firm's governance system, and this was acknowledged both in 2008 with the requirement of publishing an "announcement document" (refer to C5 in Table 6), representing a 6% of the governance section, and in 2024 under the voice "engagement with stakeholders" (refer to C2 in Table 7), representing a 4%. Usually, the communication with stakeholders is divided into the naming of the main stakeholders of the company, the outlining of their expectations and the methods through which the firm will try to meet them.

During our analysis, we observed that in sustainability reports not only the "climate risk management" is examined, but also the general risk management is investigated under the governance section. There is no requirement yet that dictate the structure of this supervision, but we have found that many companies are used to share information about this topic, and they usually express the correlation between "risk management" and "internal control", which is a mechanism aimed at identifying risks and ensuring that they are under control, supporting the firm's long-term sustainability. These two functions are usually categorized under the compliance section of the governance segment, making sure that the company is complying with the current rules and laws.

The new introductions of the 2024 regulation are the requirements related to the *anti-commercial bribery, anti-corruption* and *anti-unfair competition*; in many cases, anti-corruption is a synonym for "business ethics": as a matter of fact, the inclusion of information regarding these topics represents the commitment of companies to ethical business practices and governance. In order of occurrence, the most featured is the *anti-corruption*, a measure to ensure that there is no misuse of power in conducting business; the second in line is the *anti-commercial bribery*, in order to let the business run without interference; and finally, the *anti-unfair competition* rule, to ensure that a fair behaviour is adopted by the company. The first two together represent a requirement that consist of

4% average disclosure, while the anti-unfair competition requirement takes up 2%, presenting a final 6% average disclosure of this sub-segment of the governance section.

The sharing of the major findings coming from the examination of the results of the 2008-2024 guidelines content analysis is completed. This paper will now provide the research's conclusion.

Conclusions

This thesis reached its objective of providing a comprehensive overview of the development of ESG regulations in China, and more specifically in the Shanghai Stock Exchange. The paper started with a detailed timeline of the ESG regulations and initiative publications, to provide the readers with the background landscape of ESG standards' development in China and around the globe. With a thorough literature review, we reported prior studies on the ESG requirements evolution in the world, in China and then more specifically at the Shanghai Stock Exchange, collecting information on the influence of ESG on clusters of mainly Chinese enterprise, in order to fully understand how to proceed with our empirical research. Finally, through our detailed content analysis we emphasized the differences first between the two regulations and secondly between the results of the content analysis.

The primary differences between the two regulations can be summarized in five aspects that we have explained in the previous paragraph: the enlargement of the scope of companies addressed, the alignment with international standards, the introduction of the "comply or explain" principle, the broadening of disclosure requirements and the incorporation of non-financial information within the financial statement. As we have already explained in detail these differences, we now focus just on the intensification of disclosure requisites.

From a superficial point of view, it can be clearly noticed that each section of ESG has undergone significant changes, both in terms of addition of new requirement and in shift of direction. In particular, the environmental section enhanced its requirements by including more innovative and modern elements, while the governance section took a different orientation. The social segment mixed the increase of requirements with the new approach. We will now analyse closely the results of the content analysis, section by section.

Regarding the environmental section, the level of disclosure under the 2008 "Guidelines for Environmental Information Disclosure of Listed Companies on the

Shanghai Stock Exchange" is 48% while in the 2024 "Guidelines No. 14 of Shanghai Stock Exchange for Self-Regulation of Listed Companies – Sustainability Report" is 40%. The difference is not much, and in proportion with the average sub-total per year, it represents approximately half of the disclosure. This finding is highly relevant but not surprising given the importance of the environmental aspect when discussing ESG matters: environmental protection has become a pillar of the ESG world, and through the aspects of *green*, GHG emissions reduction, renewable energy and many others, it has become a fundamental solution to achieve a "*green* business", a way to make profit while being sustainable. This is why this section is particularly valued by company, and it usually takes up a considerate amount of space in their sustainability reports; not to mention, clear and transparent environmental data can attract green finance investors, a financial branch that has developed quickly over the last few years, and that has become one of the most interesting areas for investment in stock exchanges.

The social section's percentage of disclosure is the one that changes the most. Under the 2008 regulation, with only two requirements, the level of disclosure is just 11%, while under the 2024 guidelines the result round up to 27%. The result is more than doubled because the 2024 requirements are quadruplicated, and some of them are almost 100% respected, meaning that all the companies from the sample observed them. In this section, there is also a small difference in the standard deviation. In the first set of requirements, it is only 2%, indicating that there is a significant coherence of the firms in meeting these requests. In the second list of 2024 requirements the standard deviation is 5%, a little bit higher due to some demand of the regulation that are not included in the companies' sustainability reports. We cannot know for sure if this type of information is not shared to the public anywhere, but our research is focused on the companies' sustainability report, so if the data is not disclosed in their ESG report, for us it does not exists anywhere. The social section has also undergone changes in terms of topics, because not only the requirements increased, but more concepts were introduced, like the "product and quality management", the "technical innovations", the "rural revitalization," just to mention some. This change in the subject of the topics is the reflection of the introduction of new themes within the global ESG sphere, which has expanded and aligned with international practices.

The governance section is the segment that suffered more the change of framework compared to the other two. As it is already explained in the previous paragraph, the orientation of the framework shifted from “regulatory-based” to “corporate-based”, introducing and substituting the previous requirements. Aside from the change of direction, there has been also a reduction in the number of requisites, from seven to four. This part justifies the reduction of the percentage of disclosure, that shifted from 21% under the 2008 regulation, to 11% under the 2024 regulation. The 11% disclosure is also due to the standard deviation of 4%, signalling that the governance requirements are not uniformly observed under the 2024 regulation.

To conclude the comparison between the two regulations, the ultimate comparison between the final level of disclosure of the totals for each document show that the percentage of disclosure under the current regulation is 80%, while under the forthcoming guidelines is 76%. It is not a big difference, but it is perceived.

Theoretically the percentage of disclosure under the 2008 regulation should have been closer to 100%, assuming all companies would be in compliance with the regulation. This uniformity is not achieved due to various reasons. The first one is that this is not a mandatory regulation, companies are not obliged to follow these requirements. Most of the companies nowadays still try to be in compliance with these requests in order to be aligned with international trends and to attract investment, but these requisites are not mandatory. The second reason is that the “comply or explain” principle is not enforced, meaning that companies that don’t comply are not obliged to explain. For this reason, during the past sixteen years companies that didn’t want to share sustainability related information, not only could not publish it, but they could also not provide any explanation. The third reason is that some of these requirements are old and obsolete, or they have become some essential aspect of ESG that is not even required to be shared anymore. We have explored this reason already in Chapter 3.

Regarding the 2024’s results, they are highly astounding considering it only a simulation of what the sustainability reports will include in the next few years. The percentage of disclosure is almost the same as the current non-mandatory regulation. The difference will be that the 2024 set of rules will become mandatory starting from 2026.

The reasons for the 76% outcome are the possibility that certain requirements may not appear because the company does not engage in such activities or due to the fact that the regulation are yet to take effect.

To give a precise answer to the question that we posed for our empirical research, the level of disclosure under the recently published guidelines would be slightly lower than the current one, still taking into account that this is a simulation. Nonetheless, after having read the sustainability reports from our sample of companies, we can state that the level of readiness to apply the latest Shanghai Stock Exchange requirements is very high, meaning that Chinese listed companies are ready for the new ESG regulation, and to enter a phase driven by international-based standards.

References

Macesar, A. F. (2024). A Brief History of ESG, The Sustainable Agency Online Journal https://thesustainableagency.com/blog/the-history-of-esg/

Gond, J.-P., & Piani, V. (2013). Enabling Institutional Investors' Collective Action: The Role of the Principles for Responsible Investment Initiative. Business & Society, 52(1), 64-104. https://doi.org/10.1177/0007650312460012

Busco, C., Consolandi, C., Eccles, R.G. and Sofra, E. (2020), A Preliminary Analysis of SASB Reporting: Disclosure Topics, Financial Relevance, and the Financial Intensity of ESG Materiality. Journal of Applied Corporate Finance, 32: 117-125. https://doi.org/10.1111/jacf.12411

Cremasco, C., & Boni, L. (2022). Is the European Union (EU) Sustainable Finance Disclosure Regulation (SFDR) effective in shaping sustainability objectives? An analysis of investment funds' behaviour. *Journal of Sustainable Finance & Investment*, 1–19. https://doi.org/10.1080/20430795.2022.2124838

Comoli, M. (2023). I Principal Adverse Impact – "PAI" – nelle politiche di sostenibilità. *Sostenibilità, Impresa e Stakeholder. Profili manageriali, finanziari e operativi del bilancio sostenibile*, 343-369. https://hdl.handle.net/11579/154421

Harris, P. et al. (2022). Seeking Truly Global Financial Reporting Standards: Should U.S. Standards Setters Re-Engage with IFRS (and the IASB and ISSB)?, The CPA Journal. https://www.cpajournal.com/2022/03/28/seeking-truly-global-financial-reporting-standards/

Bremner, C. (2023). THE VALUE OF REGULATING CLIMATE DISCLOSURES. *Environmental Law*, *53*(1), 107–145. https://www.jstor.org/stable/48724688

De Oliveira Neves, R. (2022). The EU Taxonomy Regulation and Its Implications for Companies. In: Câmara, P., Morais, F. (eds) The Palgrave Handbook of ESG and Corporate Governance. Palgrave Macmillan, Cham. https://doi.org/10.1007/978-3-030-99468-6_13

Kooths, Stefan. (2022). EU Taxonomy: Mission Impossible. VL – 19. DO - 10.1515/ev-2022-0028. The Economists' Voice Journal. https://www.researchgate.net/publication/365813484_EU_Taxonomy_Mission_Impossible

Bamrud, H.R., Sandal, H. (2024). Why CSRD is a game changer for sustainability reporting. EY Online Journal. https://www.ey.com/en_no/consulting/why-csrd-is-a-game-changer-for-sustainability-reporting

詹芳芳.(2024).中国 ESG 信息披露的国际借鉴、现状与监管思路探讨. *财务管理研究*(04),100-109. doi:CNKI:SUN:CWGL.0.2024-04-017.

Becker, Martin G. & Martin, Fabio & Walter, Andreas, 2022. "The power of ESG transparency: The effect of the new SFDR sustainability labels on mutual funds and individual investors," Finance Research Letters, Elsevier, vol. 47(PB). https://ideas.repec.org/a/eee/finlet/v47y2022ipbs1544612322000332.html

Soroosh, J. (2022). An Overview of the SEC's Proposed Climate-Related Disclosures: The Potential Enhancement and Standardization of Reporting for Investors, The CPA Journal. https://www.cpajournal.com/2022/10/24/an-overview-of-the-secs-proposed-climate-related-disclosures/

Wilson, Devon, The SEC Climate Rule and Carbon Emission Disclosure Regulations - A Comparative Analysis (September 5, 2023). Rock Center for Corporate Governance at Stanford University Working Paper No. 252, Available at SSRN: https://ssrn.com/abstract=4564151 or http://dx.doi.org/10.2139/ssrn.4564151

Moon, J., Shen, X. CSR in China Research: Salience, Focus and Nature. *J Bus Ethics* **94**, 613–629 (2010). https://doi.org/10.1007/s10551-009-0341-4

Kolk, A. (1999). Evaluating corporate environmental reporting. *Business Strategy and the Environment, 8*(4), 225-237. Retrieved from https://www.proquest.com/scholarly-journals/evaluating-corporate-environmental-reporting/docview/213773163/se-2

Weber Olaf (2014), Environmental, Social and Governance Reporting in China, *Bus. Strat. Env.*, 23: 303–317. DOI: 10.1002/bse.1785

Xiao, H. (2006). Corporate Environmental Accounting and Reporting in China. Current Status and the Future. In: Schaltegger, S., Bennett, M., Burritt, R. (eds) Sustainability Accounting and Reporting., vol 21. Springer, Dordrecht. https://doi.org/10.1007/978-1-4020-4974-3_20

Xianbing Liu, V. Anbumozhi, Determinant factors of corporate environmental information disclosure: an empirical study of Chinese listed companies, Journal of Cleaner Production, Volume 17, Issue 6, 2009, Pages 593-600, ISSN 0959-6526, https://doi.org/10.1016/j.jclepro.2008.10.001

Avory, B., Zhang, M., Allison-Hope, D. 2012, "Transparency in China: A New Generation of Sustainability Reports", article on BRS. https://www.bsr.org/en/blog/transparency-in-china-a-new-generation-of-sustainability-reports

Coni-Zimmer, M. (2021). The Localization of Transnational CSR Norms: Chinese Corporations and their Contribution to "Harmonious Society". (PRIF Working Papers, 56). Frankfurt am Main: Hessische Stiftung Friedens- und Konfliktforschung. https://nbn-resolving.org/urn:nbn:de:0168-ssoar-77348-6

Wang, H., & Bernell, D. (2013). Environmental Disclosure in China: An Exmination of the Green Securities Policy. The Journal of Environment & Development, 22(4), 339-369. https://doi.org/10.1177/1070496513506905

Kimber, D., & Lipton, P. (2005). Corporate Governance and Business Ethics in the Asia-Pacific Region. Business & Society, 44(2), 178-210. https://doi.org/10.1177/0007650305275300

Chong Guo, Yalin Jiang, Fang Yu, Yingyu Wu. Does environmental information disclosure promote or prohibit financialization of non-financial firms? Evidence from China, The Quarterly Review of Economics and Finance, Volume 92, 2023, Pages 200-214, ISSN 1062-9769, https://doi.org/10.1016/j.qref.2023.10.005

Gare, A. (2012). China and the Struggle for Ecological Civilization. *Capitalism Nature Socialism*, *23*(4), 10–26. https://doi.org/10.1080/10455752.2012.722306

Geall S, Ely A. Narratives and Pathways towards an Ecological Civilization in Contemporary China. *The China Quarterly*. 2018;236:1175-1196. doi:10.1017/S0305741018001315

Xiujie Tan, Yaxue Yan, Yuyang Dong, Peer effect in green credit induced green innovation: An empirical study from China's Green Credit Guidelines, Resources Policy, Volume 76, 2022, 102619, ISSN 0301-4207, https://doi.org/10.1016/j.resourpol.2022.102619

Chunling Yu, Toru Morotomi, The effect of the revision and implementation for environmental protection law on ambient air quality in China, Journal of Environmental Management, Volume 306, 2022, 114437, ISSN 0301-4797, https://doi.org/10.1016/j.jenvman.2022.114437

Zhang, B., Cao, C. Policy: Four gaps in China's new environmental law. *Nature* **517**, 433–434 (2015). https://doi.org/10.1038/517433a

Xinwei Gao, Na Liu, Yujie Hua, Environmental Protection Tax Law on the synergy of pollution reduction and carbon reduction in China: Evidence from a panel data of 107 cities, Sustainable Production and Consumption, Volume 33, 2022, Pages 425-437, ISSN 2352-5509, https://doi.org/10.1016/j.spc.2022.07.006

Xin Jiang, Guanglong Li, Wei Fu, Government environmental governance, structural adjustment and air quality: A quasi-natural experiment based on the Three-year Action Plan to Win the Blue Sky Defense War, Journal of Environmental Management, Volume 277, 2021, 111470, ISSN 0301-4797, https://doi.org/10.1016/j.jenvman.2020.111470

Hongtao Shen, Honghui Lin, Wenqi Han, Huiying Wu, ESG in China: A review of practice and research, and future research avenues, China Journal of Accounting Research, Volume 16, Issue 4, 2023, 100325, ISSN 1755-3091, https://doi.org/10.1016/j.cjar.2023.100325

Xiaoping Jia, Yanmei Zhang, Raymond R. Tan, Zhiwei Li, Siqi Wang, Fang Wang, Kai Fang, Multi-objective energy planning for China's dual carbon goals, Sustainable Production and Consumption, Volume 34, 2022, Pages 552-564, ISSN 2352-5509, https://doi.org/10.1016/j.spc.2022.10.009

Valavanidis, Athanasios. 2021/12/09. SP 1. EP 37. The COP26 UN Conference Promoted Climate to the Top of the Global Agenda Opportunity for pivotal changes in global climate policy to protect the long-term survival of humanity. Volume 1. https://www.researchgate.net/publication/356896691_The_COP26_UN_Conference_Promoted_Climate_to_the_Top_of_the_Global_Agenda_Opportunity_for_pivotal_changes_in_global_climate_policy_to_protect_the_long-term_survival_of_humanity

Jianjian He, Yi Yang, Zhongju Liao, Anqi Xu, Kai Fang, Linking SDG 7 to assess the renewable energy footprint of nations by 2030, Applied Energy, Volume 317, 2022, 119167, ISSN 0306-2619, https://doi.org/10.1016/j.apenergy.2022.119167

马喜立.(2019).中国 ESG 投资的发展趋势研究. *广义虚拟经济研究*(02),33-38. doi:CNKI:SUN:GYXN.0.2019-02-005.

Xing Chen, Boqiang Lin, Towards carbon neutrality by implementing carbon emissions trading scheme: Policy evaluation in China, Energy Policy, Volume 157, 2021, 112510, ISSN 0301-4215, https://doi.org/10.1016/j.enpol.2021.112510

Bistline, J.E.T., Blanford, G.J. Impact of carbon dioxide removal technologies on deep decarbonization of the electric power sector. *Nat Commun* **12**, 3732 (2021). https://doi.org/10.1038/s41467-021-23554-6

ZhongXiang Zhang, 2022. "China's Carbon Market: Development, Evaluation, Coordination of Local and National Carbon Markets and Common Prosperity," Working Papers 2022.30, Fondazione Eni Enrico Mattei. https://ideas.repec.org/p/fem/femwpa/2022.30.html

Huld, A. 2022. "China ESG Reporting – New Measures on Disclosure of Enterprise Environmental Information". Article on China Briefing Online Journal https://www.china-briefing.com/news/china-esg-reporting-disclosing-enterprise-environmental-information/

Chan. H, 2022. “China moves to standardize fragmented ESG reporting landscape”. Article on Thomson Reuters https://www.thomsonreuters.com/en-us/posts/news-and-media/china-esg-reporting/

Chao Wang, Nicholas Lassi,Protecting biodiversity and human health along the belt and road, Global Transitions, Volume 5, 2023, Pages 79-88, ISSN 2589-7918, https://doi.org/10.1016/j.glt.2023.06.001

Nishimura, N., Xu, S., 2020. “Would Integrating ESG in Chinese Equities Have Worked?” Article on MSCI https://www.msci.com/www/blog-posts/would-integrating-esg-in/01970806830

Lee, S. T. T., 2024. “China Proposes New ESG Rules to Keep Up With Europe”, article on Bloomberg. https://www.bloomberg.com/news/articles/2024-02-21/china-proposes-new-esg-rules-to-keep-up-with-european-guidelines?embedded-checkout=true

Brancaccio, L. 2024. “China’s Stock Exchanges Announce ESG Reporting Guidelines for Listed Companies”. Article on China Briefing. https://www.china-briefing.com/news/chinas-stock-exchanges-announce-esg-reporting-guidelines-for-listed-companies/#:~:text=The%20new%20Guidelines%20require%20companies,national%20development%20strategy%2C%20among%20others

孙强语,唐中印 & 蒋飞.(2024).数字普惠金融发展对中国地方政府 ESG 的影响. *绿色财会*(06),1-8. doi:10.14153/j.cnki.lsck.2024.06.001.

Myllyvirta, L. 2024 “Analysis: Clean energy was top driver of China’s economic growth in 2023”. Article on Carbon Brief section China Policy. https://www.carbonbrief.org/analysis-clean-energy-was-top-driver-of-chinas-economic-growth-in-2023/

Steurer, E. , Fahling, E. and Zhao, M. (2024) Empirical Research on the Impact of ESG Performance on the Valuation of Listed Manufacturing Companies in China. *Journal of Financial Risk Management*, **13**, 396-425. doi: 10.4236/jfrm.2024.132019.

原诗萌.(2023).中国企业 ESG：可持续的经济增长、社会发展和环境保护. *国资报告*(10),29-32. doi:CNKI:SUN:GZBG.0.2023-10-009.

Zaini, S., Samkin, G., Sharma, U. and Davey, H. (2018), "Voluntary disclosure in emerging countries: a literature review", *Journal of Accounting in Emerging Economies*, Vol. 8 No. 1, pp. 29-65. https://doi.org/10.1108/JAEE-08-2016-0069

Elshabasy, Yousra. (2018). The impact of corporate characteristics on environmental information disclosure: An empirical study on the listed firms in Egypt. Journal of Business and Retail Management Research. 12. 232-241. https://jbrmr.com/cdn/article_file/content_62388_18-01-19-11-01-24.pdf

Güneysu, Yusuf & Ünal, Hüseyin & Atasel, Oguz. (2020). Impact of Environmental Information Disclosure on Cost of Equity and Financial Performance in an Emerging Market: Evidence from Turkey. Ekonomika. 99. 76-91. https://www.redalyc.org/pdf/6922/692276093005.pdf

Jody Grewal and George Serafeim (2020), "Research on Corporate Sustainability: Review and Directions for Future Research", Foundations and Trends® in Accounting: Vol. 14: No. 2, pp 73-127. http://dx.doi.org/10.1561/1400000061

Wei Huang, Yan Luo, Xiaohuan Wang, Lifu Xiao, Controlling shareholder pledging and corporate ESG behavior, Research in International Business and Finance, Volume 61, 2022, 101655, ISSN 0275-5319, https://doi.org/10.1016/j.ribaf.2022.101655

Albert Tsang, Tracie Frost, Huijuan Cao, Environmental, Social, and Governance (ESG) disclosure: A literature review, The British Accounting Review, Volume 55, Issue 1, 2023, 101149, ISSN 0890-8389, https://doi.org/10.1016/j.bar.2022.101149

Ng, A.W., Leung, T.C.H., Yu, T.-W., Cho, C.H. and Wut, T.M. (2023), "Disparities in ESG reporting by emerging Chinese enterprises: evidence from a global financial center", *Sustainability Accounting, Management and Policy Journal*, Vol. 14 No. 2, pp. 343-368. https://doi.org/10.1108/SAMPJ-08-2021-0323

Kartikasary M., Paramastri Hayuning Adi, Martogi Marojahan Sitinjak, Hardiyansyah, Desti Yolanda Sari. 2023 Environmental, Social and Governance (ESG) Report Quality and Firm Value in Southeast Asia. Volume 426, Article Number 02087, Number of Paged 6, Section Innovative Management and Sustainable Society. DOI https://doi.org/10.1051/e3sconf/202342602087

Phang R, Chia Y. Sustainability and the sunlight of disclosure: ESG disclosure in three Asian financial centres. *RECIEL*. 2024; 33(2): 209-223. doi:10.1111/reel.12554

Geng, J. Jiao, R. “A Preliminary Study on Environmental Accounting Information Disclosure of Listed Companies.” [J]. Accounting research, 2002, 000(001):43-47

Chen, J. “Constructing Enterprise Environmental Accounting Reporting System.” [J]. CO-Operative Economy & Science, 2010(6):3.

S.X. Zeng, X.D. Xu, Z.Y. Dong, Vivian W.Y. Tam, Towards corporate environmental information disclosure: an empirical study in China, Journal of Cleaner Production, Volume 18, Issue 12, 2010, Pages 1142-1148, ISSN 0959-6526, https://doi.org/10.1016/j.jclepro.2010.04.005

Wang, A. L. (2018). Explaining Environmental Information Disclosure in China. *Ecology Law Quarterly*, *44*(4), 865–924. https://www.jstor.org/stable/26568782

Shanyong Wang, Hualong Wang, Jing Wang, Feng Yang, Does environmental information disclosure contribute to improve firm financial performance? An examination of the underlying mechanism, Science of The Total Environment, Volume 714, 2020, 136855, ISSN 0048-9697, https://doi.org/10.1016/j.scitotenv.2020.136855

Yongsheng Li, Xiangjian Zhang, Tingting Yao, Abudureheman Sake, Xiao Liu, Na Peng, The developing trends and driving factors of environmental information disclosure in

China, Journal of Environmental Management, Volume 288, 2021, 112386, ISSN 0301-4797, https://doi.org/10.1016/j.jenvman.2021.112386

Li, Y., Wong, C.W.Y. and Miao, X. (2022), "Political connection, political promotion and corporate environmental information disclosure in China", *Chinese Management Studies*, Vol. 16 No. 1, pp. 78-101. https://doi.org/10.1108/CMS-06-2020-0233

Zhu X, Zhu Y, Meng X. Government Environmental Information Disclosure and Environmental Performance: Evidence from China. *Sustainability*. 2021; 13(12):6854. https://doi.org/10.3390/su13126854

Hongtao Chen, Xiumei Fang, Erwei Xiang, Xiaojia Ji, Maolin An. Do online media and investor attention affect corporate environmental information disclosure? Evidence from Chinese listed companies, International Review of Economics & Finance, Volume 86, 2023, Pages 1022-1040, ISSN 1059-0560, https://doi.org/10.1016/j.iref.2023.01.022

Chao, S., Wang, S., Li, H., & Yang, S. (2023). The power of culture: Does Confucian culture contribute to corporate environmental information disclosure? *Corporate Social Responsibility and Environmental Management*, 30(5), 2435–2456. https://doi.org/10.1002/csr.2495

He, S., Xu, L. & Shi, D. How does environmental information disclosure affect carbon emissions? Evidence from China. *Environ Sci Pollut Res* **30**, 93998–94014 (2023). https://doi.org/10.1007/s11356-023-28883-1

Zhao, M., Wang, X., Zhang, S., & Cheng, L. (2024). Business strategy and environmental information disclosure from a Confucian cultural perspective: Evidence from China. *Business Strategy and the Environment*, 33(3), 1557–1577. https://doi.org/10.1002/bse.3558

Meng, X.H., Zeng, S.X. & Tam, C.M. From Voluntarism to Regulation: A Study on Ownership, Economic Performance and Corporate Environmental Information Disclosure in China. *J Bus Ethics* **116**, 217–232 (2013). https://doi.org/10.1007/s10551-012-1462-8

Mengdi Wei, Yan Wang, Stéphanie Giamporcaro. The impact of ownership structure on environmental information disclosure: Evidence from China, Journal of Environmental Management, Volume 352, 2024, 120100, ISSN 0301-4797, https://doi.org/10.1016/j.jenvman.2024.120100

Chen, X., Li, X. & Huang, X. The impact of corporate characteristics and external pressure on environmental information disclosure: a model using environmental management as a mediator. *Environ Sci Pollut Res* **29**, 12797–12809 (2022). https://doi.org/10.1007/s11356-020-11410-x

吴晨钰 & 陈诗一.(2022).中国特色 ESG 体系下的绿色转型与高质量发展. *新金融*(04),8-16. doi:CNKI:SUN:XJRO.0.2022-04-003.

Meng X, Zeng S, Xie X, Zou H. Beyond symbolic and substantive: Strategic disclosure of corporate environmental information in China. *Bus Strat Env*. 2019; 28: 403–417. https://doi.org/10.1002/bse.2257

Luo, X., Jaidi, J. and Nipo, D.T. (2024), "Firm Size, Firm Performance, and Environmental Information Disclosure Quality: Evidence from Listed A-shares Companies in China's Shanghai and Shenzhen Stock Exchanges", Hamdan, A., Alareeni, B. and Khamis, R. (Ed.) *Digital Technology and Changing Roles in Managerial and Financial Accounting: Theoretical Knowledge and Practical Application* (*Studies in Managerial and Financial Accounting, Vol. 36*), Emerald Publishing Limited, Leeds, pp. 193-201. https://doi.org/10.1108/S1479-351220240000036018

Judith C.Stroehle,周尚颐,Robert Eccles,王德全,霍蓉蓉 & 黄小薏.(2021).中国 ESG 实践的机遇、挑战与变革. *董事会*(11),22-29. doi:CNKI:SUN:DSHY.0.2021-11-013

唐晓萌 & 柳学信.(2020).ESG 在中国的发展及建议. 当代经理人(03),3-7. doi:CNKI:SUN:JJLW.0.2020-03-002.

Matos, Pedro, ESG and Responsible Institutional Investing Around the World: A Critical Review (August 7, 2020). CFA Institute Research Foundation Literature

Reviews, May 2020, ISBN 978-1-944960-97-1, Available at SSRN:
http://dx.doi.org/10.2139/ssrn.3668998

Appendix I

Table 8 - Sample of Companies selected

Elaboration by the author

Name of the Company	**Industry Sector**
China Shenhua Energy Co. Ltd.	Energy
China Yangtze Power Co. Ltd.	Energy
Petrochina Company Limited	Energy
Sinopec Corporation	Energy
China Coal Energy Company Limited	Energy
SDIC Power Holdings Limited	Energy
LONGi Green Energy Co. Ltd.	Energy
HengLi Petrochemical Co. Ltd.	Energy
Zheneng Jinjiang Group	Energy
China Datang Corporation Ltd.	Energy
Wingtech Co. Ltd.	Energy
CRRC Corporation Limited	Transportation
Great Wall	Transportation
SAIC Corporation	Transportation
China Railway Group Limited	Transportation
Air China Limited	Transportation
CSSC Shipping	Transportation
China Southern Airlines Company Limited	Transportation
China Eastern Airlines Corporation Ltd.	Transportation
GAC Group	Transportation
COSCO Shipping Co. Ltd.	Transportation
Foshan Haitian Co. Ltd.	Agrifood
Inner Mongolia Yili Co. Ltd.	Agrifood
China Communication Construction Company Limited	Construction
Power Construction Corporation of China	Construction

Appendix II

Table 9 - 2024 Regulation Topic Framework based on the official document's chapters

Elaborated by the author

Chapter Three: Environmental Disclosure	
CLIMATE RESPONSE	
Climate Change Tackling	- climate change impact (green and low-carbon growth paths), and capacity to adjust and respond to climate risks, and transition plan to address climate risks
	- total GHG emissions
	- new technologies contributing to carbon neutrality
POLLUTION CONTROL AND ECOSYSTEM PROTECTION	
Pollutant Discharge	- total discharge, technologies to treat pollutants, target set for reduction impact of pollutant, discharge penalties
Waste Disposal	- total amount and density, treatment methods of disposal, target set for amount to discharge
Ecosystem and Biodiversity Protection	- impact on the operation activities, discontinuation in ecological red zones
	- efforts and achievement in restauration of areas and wild plants and animals
	- efforts in reducing its product ecological footprint

Environmental Compliance Management	- risk assessment for environmental incidents, overview of contingency plan
	- classification of major environmental emergencies and penalties received
REDUCE UTILIZATION AND CIRCULAR ECONOMY	
Energy Usage	- overview of energy usage
	- use of clean energy, wind, solar, hydropower etc.
	- energy-saving goals
Usage of Water Resources	- overview of water resources usage
	- water conservation goals
Circular Economy	- goals to achieve circular economy
	- specific actions and specific goals

Chapter Four: Social Disclosure	
RURAL REVITALIZATION AND SOCIAL CONTRIBUTIONS	
Rural revitalization	- contributions to rural revitalisation actions to support, progress and specific achievements
Contributions to Society	- charitable and volunteer activities, amount of funds, number of personnel and time allocated, impact on the brand
INNOVATION-DRIVEN DEVELOPMENT AND ETHICS OF SCIENCE AND TECHNOLOGY	
Innovation-Driven	- strategies and objectives for tech-innovation, details on its innovation activities, R&D progress and

	achievement, reward in the application
Ethics of Science and Technology	- overview of the compliance with the ethics of science and technology: field of the company scientifical/technological activities, any violations of the ethics, training on the matter
SUPPLIERS AND CLIENTS	
Supply Chain Security	- overview of supply chain risk management
	- mergers and acquisitions, reorganization, innovations relative to supply chain security
Equal Treatment to Small and Medium-sized Enterprises	- if account payable exceed 30.000.000.000,00 RMB disclose the overdue account payable (including small and medium sized)
Safety and Quality of Products and Services	- establishment of the product and service quality management
	- quality-management certifications
	- significant quality incidents after-sale services and product recall
Data Security and Customer Privacy Protection	- functioning of the data security
	- functioning of the customers' privacy protection system
	- any incident/breach on the matter
EMPLOYEES	- employment/compensation policies
	- occupational health and safety
	- employee career development, training etc.

Chapter Five: Corporate Governance Information Related to Sustainable Development Disclosure	
SUSTAINABILITY-RELATED GOVERNANCE MECHANISMS	
Due diligence	- due diligence in the reporting period (personnel carrying it out, identifying negative sustainability-related impacts and risks and how to respond to them)
Communication with Stakeholders	- engagement with investors
	- stakeholders' engagement rules
	- channels for stakeholders' comments and suggestions
COMMERCIAL BEHAVIORS	
Anti-commercial Bribery and Anti-corruption	- establishment and operations of these systems
	- people who received training and the relative incidents, if any.
Anti-unfair Competition	- establishment and operations to prevent unfair competition
	- penalties or litigation

Acknowledgements

In the end, I would like to express my sincere gratitude to my Professor, Dott. Michela Cordazzo, for the guidance she provided me during these last few months and for being an exceptional teacher that made me fall in love with the subject that I decided to focus on the last part of my university career. I will always be grateful for the memorable classes and for the inspiration for my final thesis.

Secondly, I would like to thank my family, for the support that they provided during all my years of study, and my life in general. You inspire to give the best of me on every occasion and I will be forever grateful for everything you did for me.

Lastly, I would like to extend my gratitude to my university colleagues, especially my friends with whom I shared my journey in Taiwan. Even though we had our moments, I will forever remember the memories we build up there and think about it with a smile.