

# **Assessing the Role of Securities Exchanges on Environmental, Social and Governance (ESG) Practice**

by

Tobi Oyewole

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## **Author's Declaration**

I hereby declare that I am the sole author of this thesis. This is a true copy of the thesis, including any required final revisions, as accepted by my examiners.

I understand that my thesis may be made electronically available to the public.

## **Abstract**

Environmental, Social and Governance (ESG) risks are increasingly becoming issues of concern for investors and regulators. Government, businesses, researchers, non-profit organizations are paying more attention to how their activities are contributing to sustainable development. ESG risks have even more significant impact on financial systems, and as such, banks and financial regulators are playing crucial roles in adopting and promoting ESG practices and related disclosures. Securities exchanges occupy a unique position of influence in that they stand as intermediaries between issuers and investors. The Sustainable Stock Exchange Initiative (SSEI), an organization created by the United Nations to galvanize efforts by securities exchanges towards the SDG, has continued to lead securities exchanges on several ESG initiatives. Some of the initiatives include guiding securities exchanges on how to support companies within their market on responsible business practices and reporting. A good number of securities exchanges globally have now published ESG guidance for their market, created ESG listing rules, developed ESG indexes and facilitated ESG related trainings. Amidst growing attention from securities exchanges on ESG regulations, this research assesses the role played by this financial regulator on ESG reporting practice among publicly listed companies, particularly climate reporting using the Taskforce on Climate and Financial Disclosures (TCFD) recommendations. This research adopts a qualitative approach through content analysis to study all ESG guidance, rules and indexes created by securities exchanges, to substantiate the impact of ESG regulations within capital markets across the world. The study provides answers important questions on the structure of the ESG regulatory landscape across geo-political region, the prevalence of guiding ESG frameworks, progress on climate related disclosures, and how ESG regulations by securities

exchanges are supporting national actions towards the SDGs in their host countries. The overall objective of this study is to identify the roles played by securities exchanges in supporting ESG efforts within their markets and recommend new ways to meet the ever-evolving market demands on ESG.

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## **1 Introduction**

The world is changing fast. Businesses are evolving into more complex phases and operations leaving adverse socio-economic impact on people and the planet. To address these concerns, companies are taking actions in considering their operational impacts by reviewing their strategic management approach to integrate Environmental, Social and Governance (ESG) factors (Tsai, 2019). As a result, ESG management and reporting have become mainstream practices among businesses globally (Cyriac, 2013). ESG management has been described in several quarters as the transition from corporate philanthropy to a more defined way of ensuring businesses consider Environmental, Social and Governance (ESG) imperatives in their operation and transparently disclose their impact across measurable ESG indicators (Roberts, 1991).

During the period between 2017 and 2019, the percentage of investors that considered ESG requirements in making decision on at least a quarter of their investment portfolio increased from 48% to 75% (Elliot, 2020). In numbers, The International Monetary Fund (IMF) reported that total ESG investments in 2019 rose to \$20.6 billion, beating the previously held record in 2018 by almost four times (IMF, 2019). According to Morningstar, (a research institute that provide financial data and insight services for investors, asset managers and the capital market across North America, Europe, Australia, and Asia), ESG investments rose by more than \$10 billion in the second quarter of 2020 (Morningstar, 2020).

The 2020 outbreak of the global pandemic, which affected all aspect of human endeavors including progress towards the SDGs, further emphasized the need for responsible investing and corporate sustainability. In recent years, ESG considerations have become important for both

organizations and investor. This can be attributed to the rise of Socially Responsible Investments (SRI) and the increasing drive by investors in contributing to sustainable development. This global shift in responsible investment and corporate sustainability provides the much-needed momentum required to accelerate the achievement of the Sustainable Development Goals (SDGs) and the Paris Agreement on Climate Change.

As institutional investors become more comfortable in integrating ESG factors into making investment decisions, there has been a global demand for ESG related data and disclosures. To meet this growing demand, companies, especially the publicly listed companies, are increasingly adopting ESG reporting to provide the required information to their investors and other stakeholders, attract ESG investments and meet regulatory demands.

The concept of sustainability reporting, now often interchangeably referred to as ESG reporting, evolved in the 1990s as a way for businesses to document their non-financial risks and opportunities, as well as discuss innovative ways to address these risks (Azzone et. Al, 1996). Reporting on ESG is useful in understanding a company's impact on the operating environment and how it affects financial and operational performance (Friede et. al, 2015). Businesses use the tool of sustainability reporting, to communicate their responsibility to help attain the Sustainable Development Goals (Camilleri, 2017).

Since the evolution of reporting, we have witnessed significant developments in both the reporting structure and frameworks. The undeniable need for businesses, especially publicly listed companies, to respond to the demand for ESG disclosures has resulted in the establishment of an array of sustainability frameworks that are designed to guide organizations in their quest

to make timely and relevant information available to the investment community. Some of these frameworks include Sustainable Development Goals (SDGs), Global Reporting Initiative (GRI), United Nations Global Compact (UNGC) Principles, Sustainability Accounting Standards Board (SASB), Carbon Disclosure Project (CDP), The International Integrated Reporting Council (IIRC) and Accountability AA 1000 Series of Standards.

Governments, institutions, and regulators have become strong advocates for ESG disclosures. Securities exchanges particularly, are increasingly playing a crucial role in promoting ESG and related disclosures within the market by guiding companies on the requirements for transparent and fair business conduct (SSEI, 2015). Finding a way to connect traditional financial services with ESG tenets holds great promises in advancing efforts towards solving the world's pertinent challenges such as climate change, energy and water scarcity, unemployment, hunger and poverty and inequalities. These ambitious objectives demand that regulators such as securities exchanges, take leading roles by creating the required regulatory environment for businesses to contribute more to sustainable development.

Exchanges promote ESG disclosure and build capacity within the market on reporting frameworks to ensure that more companies can fulfil their reporting obligations. They achieve this by:

- 1) Publishing Sustainability report for their businesses
- 2) Issuing ESG guidance/guidelines for their listed companies
- 3) Developing and enforcing listing rules for listed companies
- 4) Conducting ESG related training

## 5) Creating or adopting ESG/Sustainability Index ratings (SSEI, 2020)

These ESG initiatives by securities exchanges are supported by the United Nations Sustainable Stock Exchange Initiative (SSEI). The SSEI collaborates with securities exchanges globally to deepen the adoption of sustainability and reporting amongst markets. SSEI member exchanges commit to fostering the growth of long-term sustainable finance and the adoption of ESG investments in their respective markets. In 2015, SSEI issued a Model Guidance on ESG Reporting in September 2015 at a time when only 14 stock exchanges around the world were providing guidance on reporting ESG information for their markets. As of 2020, 60 SSEI member Exchanges had published ESG guides to their markets (SSEI, 2020), several others have developed ESG indexes, created listing rules and sustainability related training for their markets. These initiatives collaborate efforts from other regulatory organizations, governments, and opinion leaders, in advocating for corporate sustainability practice and advancing actions towards the SDGs. Gradually, regulators and institutions are becoming important drivers for ESG.

### **1.1 Problem Statement**

Securities exchanges are committing efforts to ESG regulations, which is a significant step forward in promoting ESG reporting among publicly listed companies. However, there are concerns as to how and to what degree ESG initiatives by securities exchanges have impacted corporate sustainability practices within financial markets. Also, there are limited studies on the role of securities exchanges, which makes it difficult to validate their contribution to the corporate sustainability discuss. We see lots of activities especially on ESG programs led by the SSEI but no clear evidence on how capital markets globally have received the growth of ESG subjects. This

study examines the nature and prevalence of ESG initiatives by securities exchanges, and how the exchanges are helping their listed companies navigate the often-complex ESG terrain.

### Research Questions and Objectives

The research will seek to answer questions such as:

- 1) What ESG regulatory initiatives have been created or adopted by securities exchanges?
- 2) How are securities exchanges across the geo-political regions promoting ESG within their markets
- 3) What frameworks are useful to securities exchanges in performing their ESG regulatory functions?
- 4) How are securities exchanges supporting their listed companies on climate disclosures using the TCFD?
- 5) How are the efforts by securities exchanges are impacting SDG performance index and CO2 per capita of their host countries and regions?

This study builds on my experience working at a securities exchange in Africa where I facilitated the launch of Sustainability Disclosure Guidelines to provide step-by-step guidance to over 150 listed companies on integrating sustainable business practice and reporting. Specifically, the objectives of this study include:

- 1) Review the ESG regulatory landscape of 110 member exchanges of the SSEI within their host countries and regions.
- 2) Assess how securities exchanges are supporting climate disclosures

- 3) Compare ESG regulatory performance of securities exchanges with the SDG index and CO2 per capita of their host countries.
- 4) Identify market concerns and identify opportunities for securities exchanges to improve on ESG regulations.

## **1.2 Significance and Contribution to the Study**

This research is of interest as it brings the role of regulators in promoting corporate sustainability and reporting to the spotlight. Considering the dearth of research in this knowledge area, this study will become close literature gap by providing foundational insights into the roles of regulators in supporting ESG ambitions specifically within the capital markets. It will also inspire more specialized studies, which may focus on specific ESG regulatory programs within the capital markets and the impacts both in the financial markets and the wider scope of sustainable development. The study would add to the academic body of work on ESG reporting frameworks and the various call for standardization. The study is important as it uncovers the need for researchers to pay more attention to understanding the ESG regulatory landscape and the role played by each stakeholder in strengthening ESG integration and accountability (Alsayegh et.al, 2020).



## 2 Literature Review

One of the most prominent development experienced within the business landscape globally since the 1980s is the rise of Environmental, Social and Governance (ESG) considerations in business strategies, risks, and opportunities (Maria Yevdokymova et al, 2019). Incorporating the triple bottom-line concept into businesses has become a popular mantra used to describe the idea that businesses can maximize profits while effectively considering people and the planet (Kolk, 2006). While more companies especially in the developed world have continued to adopt ESG into their business operations, businesses in the emerging economies have not experienced similar growth (Balachandran & Krishnan, 2004).

Ackerman & Bauer (1976) studied the evolution of Corporate Sustainability into what is now regarded as the 21st century approach to business. The study reveals that doing business in the 21<sup>st</sup> century raises the spotlight on issues such *“sustainable development, corporate citizenship, corporate sustainability, corporate reputation, socially responsible investment and corporate social reporting”*.

Wayne Visser, (2008) identified the Millennium Development Goals as the widely acceptable agenda for collective development. The agenda is hinged on the United Nations’ target to achieve *“a world with less poverty, hunger and disease, greater survival prospects for mothers and their infants, better educated children, equal opportunities for women, and a healthier environment”* (UN, 2006). Wayne revealed that the global agenda for development has not been met in emerging economies. He highlighted the roles of businesses in driving development through

responsible business practices and transparent disclosures. This introduces to the first hypothesis of this study.

## **2.1 ESG Reporting**

Non-financial reporting focused on environmental activities became a subject of attention in the early 70s. This attention was first noticed among businesses in Europe and the United States that employed the practice of social reporting and accounting also known as *“the identification, measurement, monitoring, and reporting of the social and economic effects of an institution on society”* (Kolk, 2006). As attention gradually moved towards core economic issues, social reporting became less popular among businesses both in the US and Europe (Maura A. Barr, 2007).

As businesses expand and become more complicated, corporate social responsibility reporting developed beyond reporting social issues to focus more environmental activities. (Kolk, 2006). Drivers such as government policy forced an increase in environmental accountability by introducing mandatory licensing and fines for industries with high polluting operations (KPMG and UNEP 2005). The emergence of various environmental standards was also key to the growth of environmental reporting.

According to Wheeler and Elkington (2001), corporate disclosures to stakeholders is an important part of the 21st century business. Therefore, we have continued to experience an unprecedented growth in corporate sustainability reporting in the last decade with more countries in the developed world publishing stand-alone sustainability reports (Maura A. Barr, 2007). The KPMG

Survey of Sustainability Reporting 2020 reveals that global sustainability reporting rate increased by 5 percentage from 75 to 80 percent from the result of similar survey conducted in 2017.

## **2.2 ESG Practice and Reporting Trends globally**

Great progresses were made in the late 90s when the United Nations Environment Program (UNEP) and the Coalition for Environmentally Responsible Economies jointly developed reporting guidelines on economic, environmental, and social performance through the formation of the Global Reporting Initiative (GRI) (Barr, 2007). The aim of this coalition is to mainstream sustainability reporting to receive the same level of attention and acceptance as corporate annual financial reporting (Barr, 2007). Since this coalition, sustainability reporting practice has progressed steadily, and several studies have been conducted on the growth and the drivers.

North American and European companies have continued to lead the charge for the remarkable growth in sustainability reporting. There are several evidence of increase in reporting among the G250 companies, which has also increased public interest in the environmental and social impact of businesses on the community (Palenberg et al, 2006).

Horváth *et al.* (2017) reported in their research on the "*Status Quo and Future Development of Sustainability Reporting in Central and Eastern Europe*" the advancement of research on the reporting pattern of American and Western European countries and noted fewer studies in Central and Eastern Europe.

A report by Hedberg and Fredrik (2003), on "*The Global Reporting Initiative and Corporate Sustainability Reporting in Swedish Companies*", where they studied the reason why Swedish adopted the use of GRI guidelines in reporting. They concluded that the GRI provides a designable

template for reporting. With a strong argument that the reporting is more useful internally for the development of the company. Part of their submission is that SR helps the companies to checkmate their growth with the set goals keeping abreast what have been done over time in the company. Like the previous writers, they also postulated needs for developing the guidelines used in reporting.

Mion and Aduai (2020) suggested in their findings " The Effect of Mandatory Publication of Nonfinancial Disclosure in Europe on Sustainability Reporting Quality: First Insights about Italian and German Companies", that mandating of reporting from companies improves the quality of the report and enhancing the adoption of globally accepted guidelines for reporting. This gives voice to most used patterns and allows for basic for comparing among the reporting companies and region.

Amoako *et al.* (2017) in their research on "*Sustainability reporting: Insights from the websites of five plants operated by Newmont Mining Corporation*", reported the comprehensiveness of Australia, South America, and Africa. The quality of the report from North America and Asia were questionable in their comprehensiveness. Influence from management discretion, legislation and societal pressures were responsible for the variation in the quality of reporting. More reasons for a general accepted template that would be void of location specific interference.

### **2.3 ESG Regulation**

There is a dearth of literature about ESG regulation and the role of securities exchanges. Limited research has focused on the ESG regulation as it relates to ESG practice and reporting. For example, Cort & Esty (2020) opined that rise of ESG especially in the corporate space has made

many stakeholders ask questions on who and how to regulate ESG. Perhaps the need for regulation in the private sector has been the most talked about. In response, we have witnessed increasing attention to ESG regulation from Government, Capital markets, and central banks.

Gunningham (2020) examined the hierarchical flow of ESG regulation and observed that while the effort of the government in regulating ESG can provide an overarching approach to the standardization of ESG practice and reporting, the capital markets also play an important role in moderating ESG regulations within the private sector. Capital markets relate more closely with businesses globally and already perform both financial and government regulatory functions. Extending their regulatory duties to include ESG requirements is both important for market resilience and for the growth of the idea of sustainable development among businesses (Fornasari, 2020).

Plastun et.al (2020) studied *“the influence of the ESG disclosure regulation (government corporate ESG disclosure and non-government corporate ESG disclosure) on the ranking in 50 largest economies”*. Their result shows disparity in the ESG regulatory landscape in developed countries and emerging economies. They concluded that countries with better economic ranking are more compliant to ESG regulations. As such, ESG was regarded as an important pointer to development, the result acknowledges the role of ESG regulation in driving positive national economic growth.

Monciardini (2012) conducted a study on the struggles for regulating ESG disclosure by examining the roles played by different actors within the ESG regulatory space. The research concluded that the increase in ESG reporting regulations is another leverage for institutional investors to achieve more dominance over asset managers and their portfolio in companies.

Ermakova (2021) researched *“the regulation of ESG-banking in Russia and the European Union”*. The study identified the lack of unified standards and frameworks as limitation to the growth of ESG regulations.

#### **2.4 The United Nations Sustainable Stock Exchange Initiative (SSEI)**

Seeing the potential of the contribution of financial regulators in achieving the SDGs, the United Nations created the Sustainable Stock Exchange Initiative (SSEI) to govern how securities exchanges regulate and promote ESG and reporting within their market. The SSEI kicked into action by engaging the capital markets stakeholders to find out what type of ESG regulation and initiatives they would want securities exchanges to take on (SSEI, 2020). The respondents to the survey suggested some ESG initiatives ranging from ESG related training to publishing of written guidelines on reporting ESG for issuers.

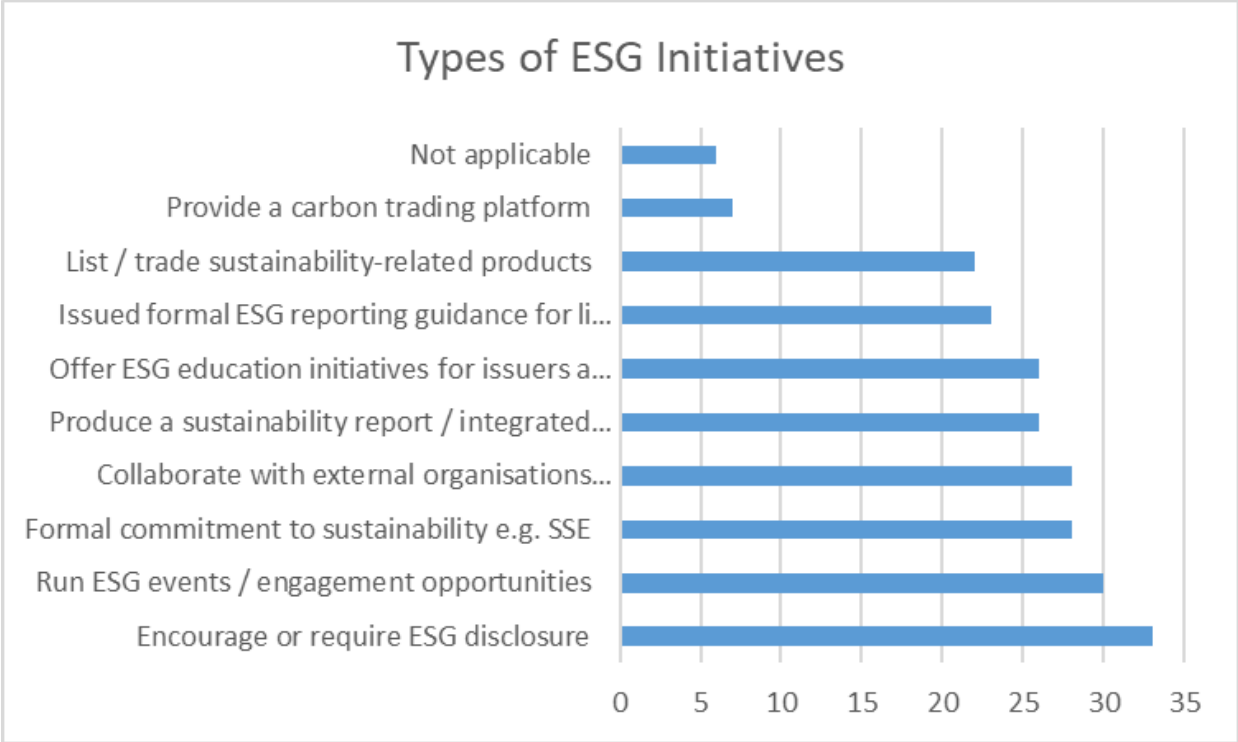


Figure 1: Result of survey conducted by SSEI on investor demand for ESG initiatives

Source: <https://sseinitiative.org/exchanges>

SSEI in its brief on the role of securities exchanges in promoting ESG, observed that, “*exchanges are uniquely positioned to promote best practice sharing and collaboration that creates long-term value for issuers and investors. ESG issues are increasingly critical to this long-term value proposition.*” The SSEI has so far coordinated activities of the securities exchanges by instituting ESG regulatory initiatives which securities exchanges can adopt. SSEI noted that exchanges can adopt initiatives such as publishing written ESG guidance for their market, publish their own ESG reports and adopt ESG indexes.

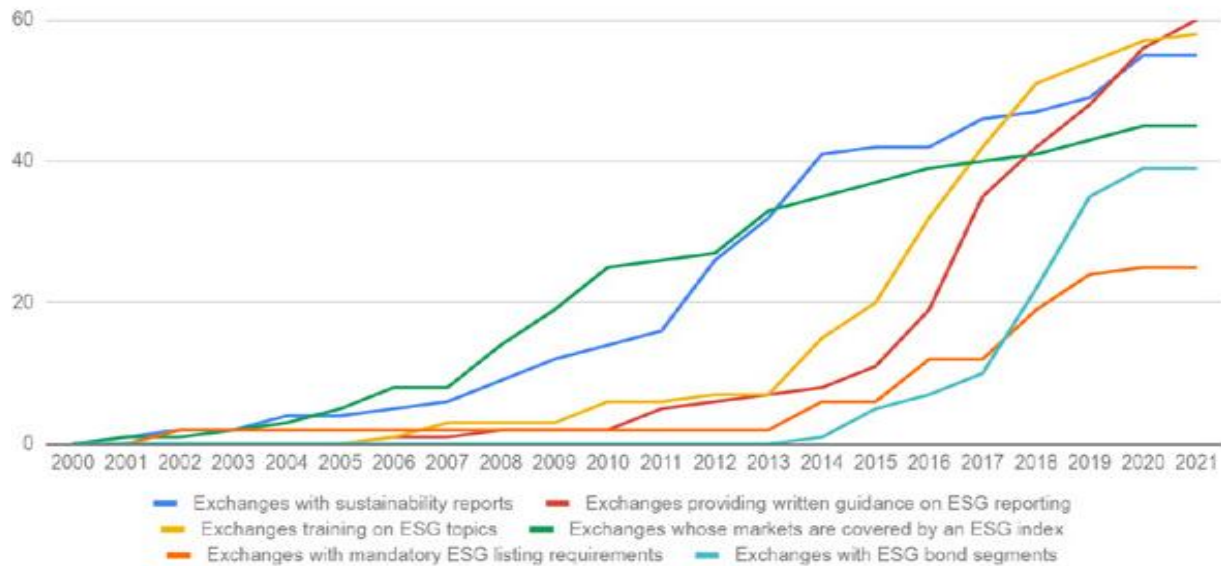


Figure 2: Progress on ESG Regulation by Securities Exchanges

Source: <https://sseinitiative.org/exchanges>

Most of the research that have been done relating to the ESG regulatory responsibility of securities exchanges have been focused on assessing the financial performance of publicly listed company against their ESG performance. This is understandably so due to the increasing demand for market evidence that support the business case for ESG. There is no known research that has been conducted to assess how securities exchanges are adopting the ESG initiatives created by the SSEI to promote ESG practice and reporting within their market.

## 2.5 Impact of ESG Regulation on Countries' SDG Index and Emission Per Capita

Determining how different variables impact the SDG performance index and CO2 per capita of countries can be difficult, this may account for the few studies in this area of knowledge.



Kalayci (2019) also examined a financial variable and how it impacts CO2 emissions. The study examined the effect of globalization and trade openness on CO2 emissions with using North American Free Trade Agreement (NAFTA) countries as case study. The research concluded that there exists a positive relationship between economic globalization and trade openness, and CO2 emissions.

Yu & Lee (2017) studied *“the relationship between corporate greenhouse gas (GHG) emissions and corporate social responsibility (CSR)”*. The result show that companies with high CSR performance index have more GHG emission.

## **2.6 Institutional and Legitimacy Theory**

Several theories such as the Legitimacy theory and stakeholder theory and institutional theory (Cooper & Owen, 2007) support the imperative for ESG practice and disclosures. However, institutional and legitimacy theory are more suited for this study and specifically the development of our hypothesis.

Institution theory is described by Scott & Meyer (1983) as *“the elaboration of rules and requirements to which organizations must conform if they are to receive support and legitimacy”*.

(Scott, 1995) further argues that *“behaviour of companies is mainly influenced by its surrounding institutions: the cultural-cognitive, normative, and regulative structures that provided stability and collective meaning to social behaviour. In other words, institutional theory is based on the view that institutional pressures and social interactions influence the formulation of organizational actions or practices”*.

The theory attributes the demand of institutions such as government and regulators as one of the driving forces of business objectives beyond the quest for profits (Meyer & Rowan, 1977). These demands shape the way businesses go about achieving their corporate goals. This explains the perception that securities exchanges must play critical roles in promoting socio-economic development of their host countries and regions. Institutional theory can therefore help to formulate hypothesis on how the ESG regulatory activities of securities exchanges impact broader sustainable development results within their host countries and regions.

Di Maggio and Powell (1983) postulate on institutional isomorphism also support this study. The ESG regulation duties of the securities exchanges are ways to meet up with regulatory requirements from the SSEI, ESG industry advancement and initiatives by peer exchanges. This relates to Caemmerer and Marck (2009) explanation on the forms of isomorphism, specifically coercive, and normative isomorphism. Coercive isomorphism in the context of this study refers to how exchanges are reacting to SSEI regulations. Normative isomorphism is securities exchanges' response to the ESG regulatory activities by their peer exchanges.

Legitimacy theory is useful in understanding the relationship that exists between institutions and their environment. According to Parsons (1960), legitimacy *"the appraisal of action in terms of shared or common values in the context of the involvement of the action in the social society"*. The most relevant explanation of legitimacy to this study is the explanation by Maurer (1971), where he describes legitimation *"as the process whereby an institution justifies to a peer or superordinate system its right to exist; that is to continue, import, transform, and export energy material or information"*. As an example, to buttress this definition, Chiu (2011) postulated

through an extensive study in the field of marketing that institutions social value is perceived through their social and environment compliance.

This theory is relevant to this study in understanding the ESG regulatory landscape across countries and regions in relation to market size and complexities. Even though the SSEI moderates ESG regulations in all exchanges through the same lenses, larger exchanges may seek to legitimize their activities by joining the SSEI campaign to promote sustainable capital markets.

## **2.7 Literature Gap**

Research on sustainability concepts, corporate adoption of responsible business practices and the role of government and regulators have been on the rise in the last decade. The role of regulators, especially within financial markets, has evolved over the years. This is driven by increasing evidence of the relationship between finance and sustainable development. While some researches have been conducted on how central banks are regulating sustainable banking, there has been no research done on how securities exchanges are regulating ESG/corporate sustainability within the capital markets. Even though SSEI publishes annual update on its work in coordinating activities of exchanges in providing market ESG regulations, it does not represent an external assessment of these regulations put in place by the exchanges in relations to market complexities.

In understanding the broader role securities exchanges play in supporting national agendas of their host countries or regions, UN Environment Programme (UNEP) Executive Director Achim Steiner said, *“stock exchanges can help build momentum in such areas as carbon pricing and moving away from fossil fuels subsidies towards renewable technologies, as they are able to*

*mobilize partners with the necessary expertise, technology and financial resources.”* Based on this submission highlighting the role of securities exchanges in a broader, there has been no study relating the efforts of exchanges to key national SDG metrics.

The UNEP Inquiry (2015:6) validates this study by asserting that there is a *“growing number of sustainability innovations in financial policy, regulation and standards. But their potential for scale and efficiency remains poorly understood. In their current form, many are ad hoc measures that are not integrated into the overall financial and capital markets. Many have only recently been enacted, so that their impacts remain untested and their prospects uncertain. The transferability of innovations is also unclear.”* To this end, the gap in literature is what type of ESG regulations have been put in place by securities exchanges and how do they relate to market size as well as contribute to broad sustainable development agenda.

## **2.8 Hypothesis Development**

My hypothesis development was based on earlier discussed institutional and legitimacy theories and the gap in literature assessing the efforts of securities exchanges in regulating ESG in their market.

**Hypothesis 1:** The biggest exchanges in terms of market capitalization have better ESG Regulation for their market.

**Hypothesis 2:** Exchanges with more listed companies have better ESG Regulation for their market

Hypotheses 1 and 2 are based on the legitimacy theory, which explains how large institutions legitimizes their activities to justify their status among their peers. My research expects to validate the hypotheses that market sizes positively influence the ESG regulatory activities of securities exchanges.

**Hypothesis 3:** Exchanges in countries with lower emissions have better ESG regulatory performance.

**Hypothesis 4:** Exchanges in host countries with better SDG performance have better ESG regulatory performance.

Hypotheses 3 and 4 are based on institutional theory. The study expects to find that securities exchanges in countries with lower emission and higher SDG performance have better ESG regulatory performance.

### **3 Methodology**

This study uses a mixed method approach to assess the role of securities exchanges in promoting ESG practice and reporting within their respective markets as well as their contribution to sustainable development in their host countries. The research will be done through a desk review of existing literature and data of securities exchanges that are members of the Sustainable Stock Exchange Initiatives (SSEI).

#### **3.1 Data Collection**

The primary objective of this study is to explore the ESG regulatory landscape created by securities exchanges, how it relates to their market size and support national sustainable development performance of their host countries. As ESG practice is on the rise among businesses, this research is important to understand the role securities exchanges are currently playing to advance the ESG agenda and make useful recommendation on how capital markets globally can lead the charge for more responsible business practice.

This study was conducted through desktop search of literature and data collected from the Sustainable Stock Exchange Initiative (SSEI) securities exchanges database. I also leveraged my networks within various exchanges, especially in Europe and Sub-Saharan to validate data collected from the SSEI website, having worked as an ESG Analyst for over 2 years at a securities exchange in Africa. These were all informal interactions through emails, no formal interviews were conducted during this study.

### 3.2 Method Used

In observing the role of securities exchanges in promoting ESG within markets, a list of all securities exchanges that are members of the SSEI was created with their basic market features such as host country, geo-political region, market capitalization and numbers of listed companies. Further data collection was conducted to determine all the ESG related initiatives that have been adopted by individual exchanges for their markets. The initiatives that were considered are approved by the SSEI as part of the ESG regulatory responsibilities of their member securities exchanges. These initiatives include:

1. ESG/Sustainability reporting by securities exchanges
2. Publishing ESG guidance for listed companies
3. Conducting ESG related training for listed companies
4. Adopting ESG/Sustainability index
5. Creating ESG related listing rule (SSEI, 2020)

Data on securities exchanges with the above ESG initiatives were collated and exchanges were categorized based on whether they have the initiatives listed above for their individual markets or not.

To determine overall ESG activities by each securities exchange, a binary system was created to access the performance of securities exchanges on the above listed ESG initiatives approved by the SSEI. For each of the ESG initiative undertaken by securities exchanges, a binary score of 0 – 1 was awarded, 0 being indication that a securities exchange has not implemented the initiative and 1 being a score that a securities exchange has implemented the ESG initiative. After the

binary system was created, a total binary score for all securities exchanges was collated. At the end, all securities exchanges have a final ESG regulatory performance score, minimum score being 0 and maximum being 5 as we only looked at 5 major ESG initiatives.

Additional data were collected on the CO2 per capita and SDG Performance Index of all the host countries of the securities exchanges from Our “World in Data”. Our World in Data is a science-based open-source data platform that focuses on data and analysis of issues bothering on sustainable development. These CO2 per capita and SDG Performance Index of countries were matched against the ESG initiative information of the securities exchanges in each country.

### **3.3 Descriptive Analysis**

Two major analyses were conducted to answer the research questions and achieve the study objectives. First a descriptive analysis was conducted using data collected from SSEI on the ESG regulatory initiatives by the securities exchanges. The objective of the descriptive analysis is to explore how securities exchanges are promoting and regulating corporate sustainability practice within their market. The analysis shows how securities exchanges have adopted initiatives such as ESG self-reporting, and regulatory initiatives such as ESG listing rules, ESG related training, ESG/Sustainability Indexes, and ESG guidance within their market.

### **3.4 Hypothesis Testing**

In testing for the research hypothesis, linear regression analysis was conducted using Statistical Package for the Social Sciences (SPSS) to determine the relationship between the size of the exchanges both in market capitalization and number of listed companies and their contribution to ESG regulations within their market. Regression analysis was also run to determine whether



there is a relationship between the ESG regulatory performance of securities exchanges and the CO2 per capita and SDG Performance Index of their host countries. This is to observe if the securities exchanges are playing any role in supporting national efforts towards achieving the SDGs.

### **3.5 Limitation and Challenges to Data Collation**

The main challenge of this study is the lack of similar research in this area of study. This gave limited opportunity to gain insights from previous studies and achieve intellectual comparison in both the kind of data and possible analytical methodology. Another limitation is the inability to do a deeper dive into the structure and content of some of the ESG initiatives such as adopted by the securities exchanges. Some of the features were not available on the official websites of the exchanges and some have been drafted in languages other than English. Translating those documents will take a lot of time and may push this study beyond the scope of a master's degree program in terms of timeline.

## **4 Result**

This chapter will explore the securities exchanges ESG regulatory landscape using descriptive analysis and regression analysis model. It will assess how securities exchanges are promoting various ESG related initiatives in line with the guidance by the UN Sustainable Stock Exchanges Initiative (SSEI). The analysis will consider initiatives undertaken by securities exchanges such as published annual ESG report, ESG guidance issued, ESG training, ESG listing rules and ESG index. This will help to understand ESG regulatory landscape within capital markets. The study will also help to understand how securities exchanges are positioning within their host countries and regions to support their SDG index and CO2 per capita performance.

### **4.1 Descriptive Analysis**

#### **4.1.1 Overview of Securities Exchanges**

This research has been focused mainly on securities exchanges which are members of the UN Sustainable Stock Exchanges Initiative (SSEI). The decision to limit this study to the member exchanges is to ensure easy and credible data gathering and focus on exchanges that have identified as one concerned with promoting ESG practice within their markets. In conducting the study, basic information on the securities exchanges were gathered from the SSEI database. The table below shows information about 110 securities exchanges such as host country and region, market capitalization (m\$) and number of listed companies.

**4.1.2 Progress on ESG Regulation among Securities Exchanges**

There are 110 securities exchanges currently registered with the SSEI at the time of conducting this study. The 110 exchanges are from 108 host countries in 8 geo-political regions. The table below summarizes their ESG landscape and their efforts to promote ESG within their markets.

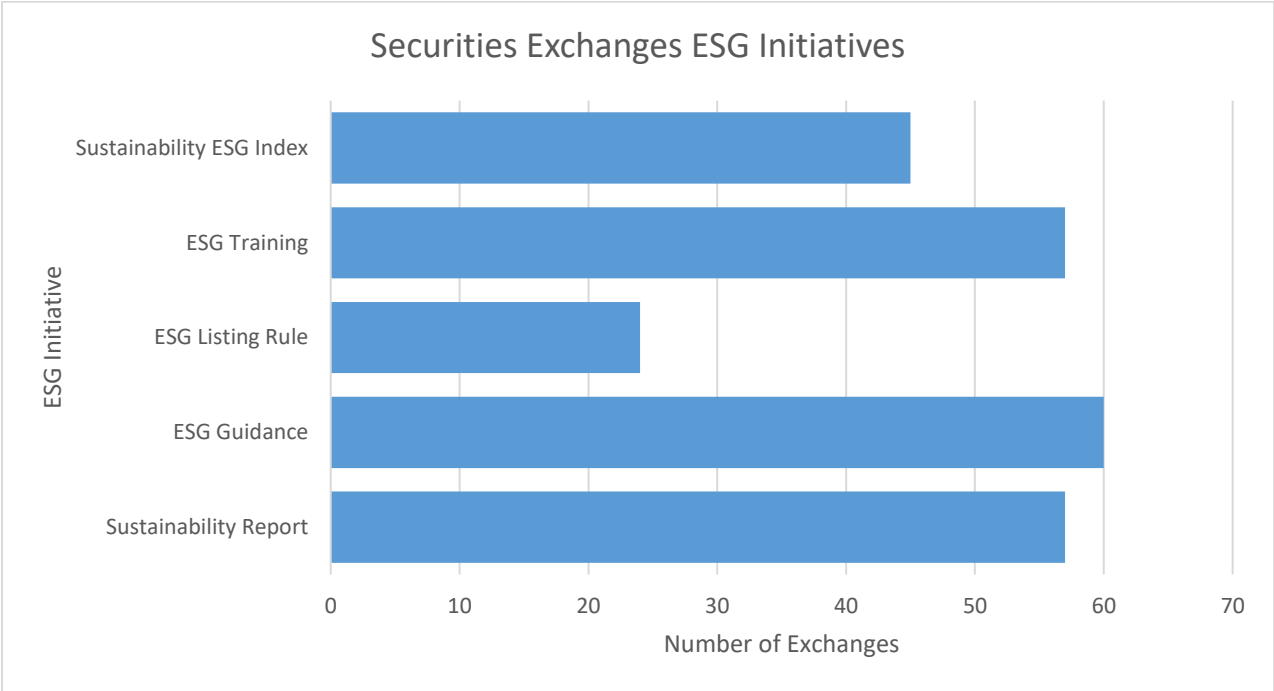


Figure 3: ESG Regulatory Initiatives by Securities Exchanges

Of all the exchanges, 57 have published at least one annual ESG/Sustainability report for their business. Determining this is significant in assessing securities exchanges holding themselves to high level of business transparency and public disclosures. To put exchanges in a position where they can carry out their regulatory functions, sustainability/ESG reporting is important to show leadership.

60 securities exchanges of all the 110 member exchanges of SSEI have published ESG guidance or guidelines for the companies listed within their markets. ESG guidance/guidelines are compilation of sustainable business practice and reporting required by securities exchanges from companies listed in their market (SSEI, 2015). The guidance/guidelines mostly outline the value organizations can derive from integrating sustainable development and step-by-step approach on creating corporate sustainability objectives. Some of the guidance/guidelines also provide indicators and metrics that should be consider by businesses in reporting their contribution to the attainment of the Sustainable Development Goals.

24 member exchanges of the SSEI have created ESG related listing rules for their markets. These rules provide ESG reporting practice requirements that must be met by the listed companies. Exchanges have adopted different rules to address the needs of their market and the growth of ESG imperatives amongst their listed companies. Some ESG listing rules apply to all listed companies, some apply to some categories of listed companies. The classification is always a function of the size of the listed companies in terms of their market capitalization.

57 exchanges have dedicated ESG training created to build capacity on ESG strategy and reporting for capital market players. These training may be conducted in partnership with global reporting organizations such as the GRI, TCFD, SASB and CDP.

45 securities exchanges have sustainability/ESG index for their markets. The indexes provide ESG ranking for listed companies in line with requirements that have been set by the exchanges.

### 4.1.3 Regional Analysis of SSEI Member Exchanges

In assessing the roles of securities exchanges in their host country and region, it is important to understand how the members exchanges of the SSEI are spread across regions. For many years, Europe has been on the frontline of ESG evolution (Johnson, 2000). This may well be the reason we have witnessed an increasing number of exchanges in Europe join the SSEI to advance ESG issues in the European market. Asia has also recorded a good representation of securities exchanges on the SSEI membership. This may be due to the rapid growth of ESG regulation at the various national governmental level, which has brought more focus on the role of financial regulators (Cheung & Zhang, 2010). Australia & Oceania has the least number of exchanges on the SSEI, and this may well be attributed to the fewer number of countries in the region.

Table 1: Classification of SSEI Member Securities Exchanges by Region

| <b>Region</b>                                 | <b>Number of Exchanges</b> |
|---|----------------------------|
| Asia  | 21                         |
| Australia & Oceania                           | 3                          |
| Central America and the Caribbean             | 6                          |
| Europe  | 39                         |
| Middle East, North Africa, and Greater Arabia | 16                         |
| North America                                 | 7                          |
| South America                                 | 6                          |
| Sub-Saharan Africa                            | 12                         |
| Total   | 110                        |

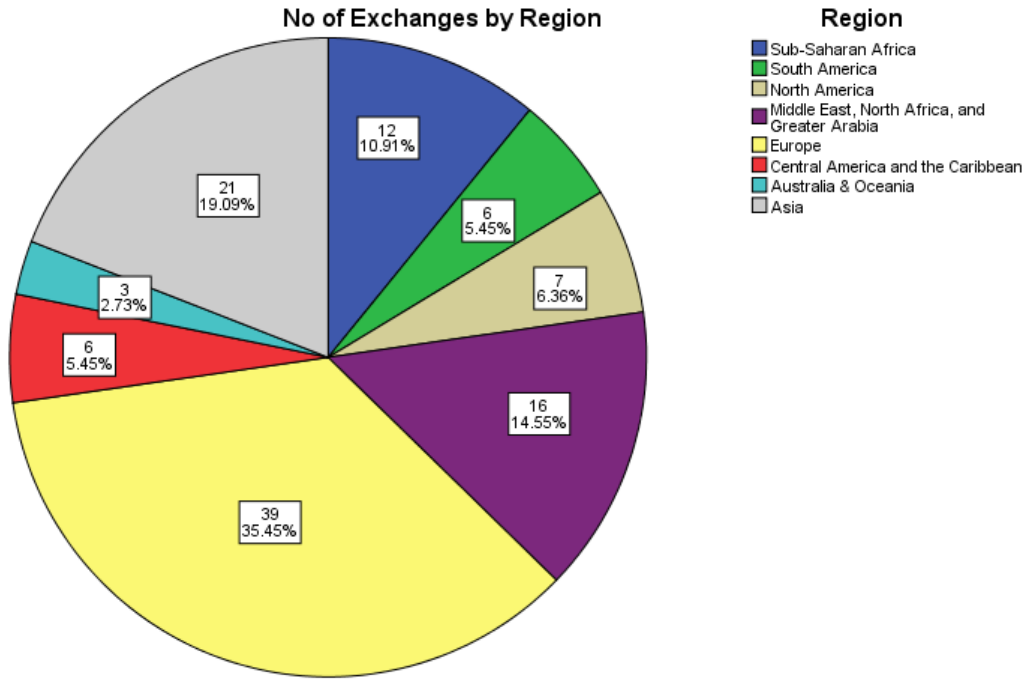


Figure 4: Classification of SSEI Member Securities Exchanges by Region

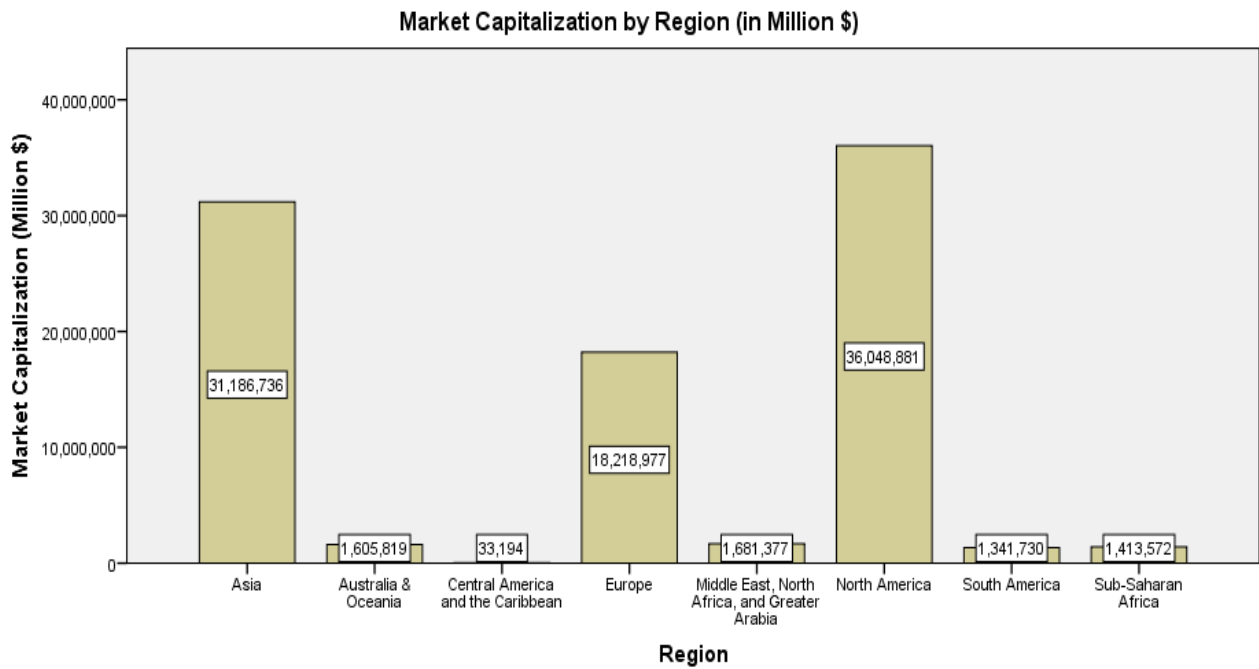


Figure 5: Market Capitalization of Securities Exchanges by Region

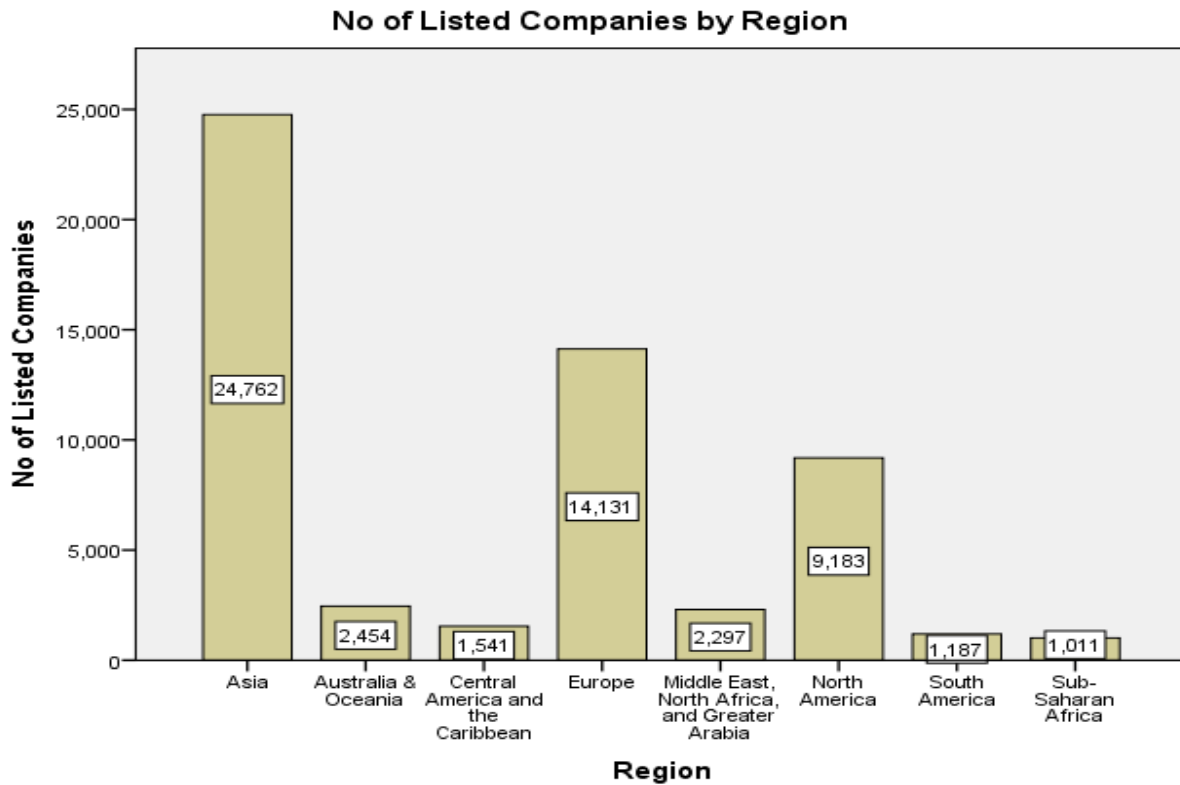


Figure 6: Number of Listed Companies in Securities Exchanges by Region

#### 4.1.4 ESG Initiatives by securities exchanges by region

Below is a summary on the ESG initiatives that have been adopted by different exchanges at the time of undergoing this study. The summary was prepared under five main heading: securities exchanges that have published sustainability reports by for their own business, exchanges that have published ESG guidance for their listed companies, exchanges with ESG listing rules, ESG trainings and Sustainability Index. In Europe, out of a total 39 exchanges, 25 have annual published sustainability report, 22 have issued ESG guidance, 9 have ESG listing rules, 19 have

ESG related trainings for their listed companies and 17 have adopted a form of ESG index to rate the sustainability performance of their listed companies.

Table 2: Breakdown of ESG Initiatives by Securities Exchanges by Region

| Region  | Number of Exchanges | Number of Exchanges with at least one ESG Initiative | Sustainability Report | ESG Guidance | ESG Listing Rule | ESG Training |
|---|---------------------|--|-----------------------|--------------|------------------|--------------|
| Asia  | 21                  | 17   | 11                    | 14           | 10               | 17           |
| Australia & Oceania                           | 3                   | 2  | 1                     | 2            | 0                | 0            |
| Central America and the Caribbean             | 6                   | 2  | 1                     | 2            | 0                | 1            |
| Europe  | 39                  | 30   | 25                    | 22           | 9                | 19           |
| Middle East, North Africa, and Greater Arabia | 16                  | 12   | 6                     | 10           | 1                | 7            |
| North America                                 | 7                   | 7  | 5                     | 5            | 0                | 5            |
| South America                                 | 6                   | 5  | 4                     | 3            | 2                | 4            |
| Sub-Saharan Africa                            | 12                  | 6  | 4                     | 2            | 2                | 4            |
| <b>Grand Total</b>                            | <b>110</b>          | <b>81</b>  | <b>57</b>             | <b>60</b>    | <b>24</b>        | <b>57</b>    |

#### 4.1.5 Regional Analysis on Securities Exchanges with Published Sustainability Report

A closer study of each of the ESG initiatives undertaken by securities exchanges shows the prevalence of each initiative per region. As early hinted, in Asia, Australia & Oceania, Central America and the Caribbean, Middle East, North Africa, and Greater Arabia, and Sub-Saharan Africa, more than half of the securities exchanges have never published an annual sustainability/ESG report. This trend may have impacted their efforts on other SSEI approved



sustainability initiatives for securities exchanges. It is important for securities exchanges to take leadership in sustainable business practice and transparent disclosures before rolling out sets of rules and regulations for their markets.

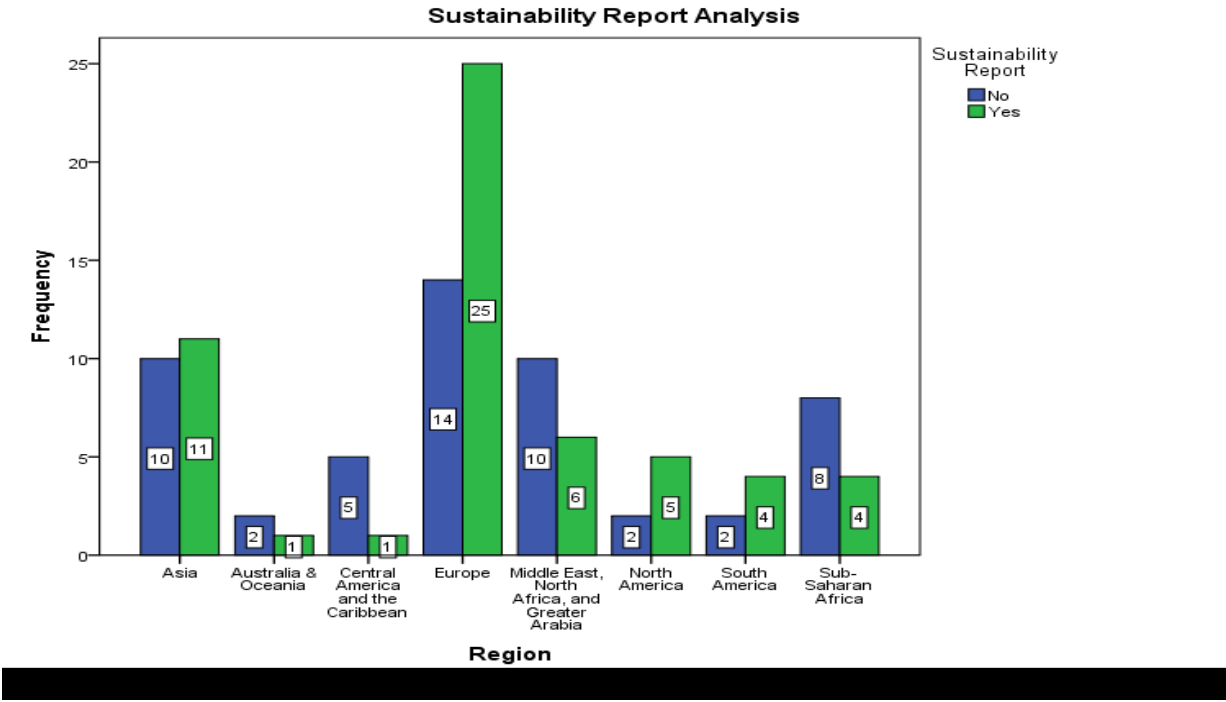


Figure 7: Breakdown of Securities Exchanges with Published Sustainability Report by Region

**4.1.1.6 Regional Analysis on Securities Exchanges with Published ESG Guidance**

More than half of securities exchanges have published some form of guidelines on ESG reporting for their market. We consider this impressive seeing that SSEI only commenced the ESG guidance campaign in 2015. It is however interesting to note that some exchanges that failed to self-publish annual ESG/Sustainability reports have issued ESG guidance for their markets. One may question their objectives, especially now that there is a growing believe that ESG related activities are used as a competitive advantage. Another reason for this could be the way that the SSEI appeared to have placed a great preference on issuing guidance for securities exchanges. The

SSEI has over the years shown great support for exchanges in issuing ESG guidance than any other ESG related initiative within the capital markets. In 2015, SSEI published a model guidance for exchanges and has become reference for several exchanges.

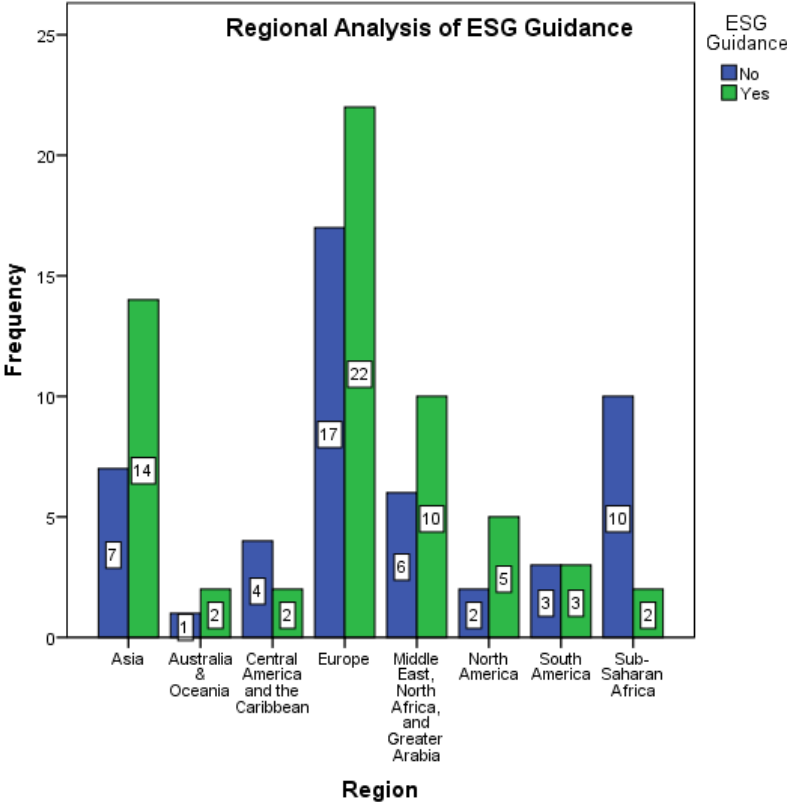


Figure 8: Breakdown of Securities Exchanges with Written ESG Guidance by Region

**4.1.7 Regional Analysis on Securities Exchanges with ESG Listing Rules**

Across all the regions, there appears to be a conservative approach to creating listing rules for their market. Only 22% of the total securities exchanges have some form of listing rules. This may suggest that exchanges are still approaching ESG regulation cautiously. Listing rules are important in determining the ease of access to markets. Creating ESG listing rules would signal stricter

market entry procedures for companies that may not have already created structure around their ESG functions. A recent report by SSEI has suggested that ESG listing regulation provide a unique opportunity for exchanges to become more relevant in their advocacy for sustainable business practice (SSEI, 2020). In Asia, 10 out of the 21 exchanges have listing rules on ESG, which could be a pointer to the growth of ESG practice among businesses (PwC, 2020). The recent growth of ESG in Asia was attributed to regulatory developments such as stewardship codes, listing rules and sustainability related guidelines as some of the drivers of ESG in this region. No exchange in North America has created an ESG listing rule. Considering the market size and possibilities, exchanges in this region have not maximized their unique positions to positively influence business towards more transparent disclosures. Although ESG reporting may have become a popular practice in North America, setting listing rules alongside guidelines could lead the course for more standardization in ESG practice.

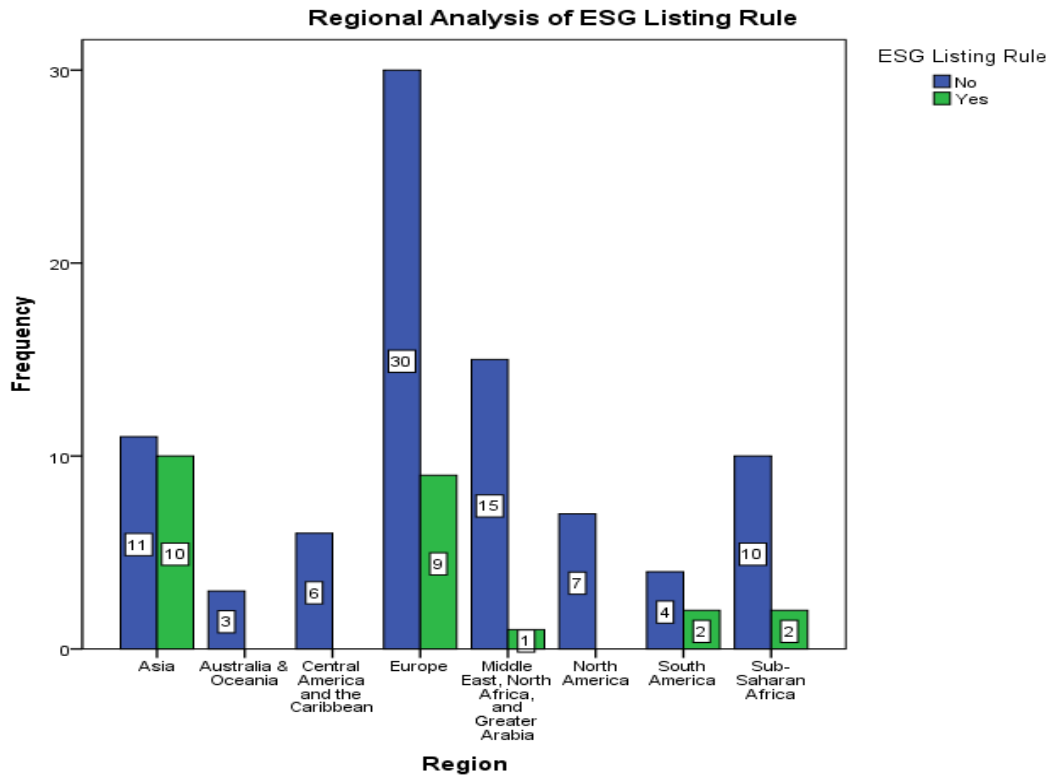


Figure 9: Breakdown of Securities Exchanges with ESG Listing Rule by Region

#### 4.1.8 Regional Analysis on Securities Exchanges with ESG Trainings

Securities exchanges have shown a good response to market demand for capacity building on ESG subjects. In the past, the slow adoption of ESG imperative has been attributed to lack of knowledge on keys subjects especially reporting (Dumay et.al, 2017). Providing the listed companies with the required knowledge to advance their ESG practice is an important part of ESG regulation. Several reporting organizations such as the Global Reporting Initiative (GRI) have collaborated with securities exchanges, especially in emerging markets to build ESG capacity within the capital market ecosystem.

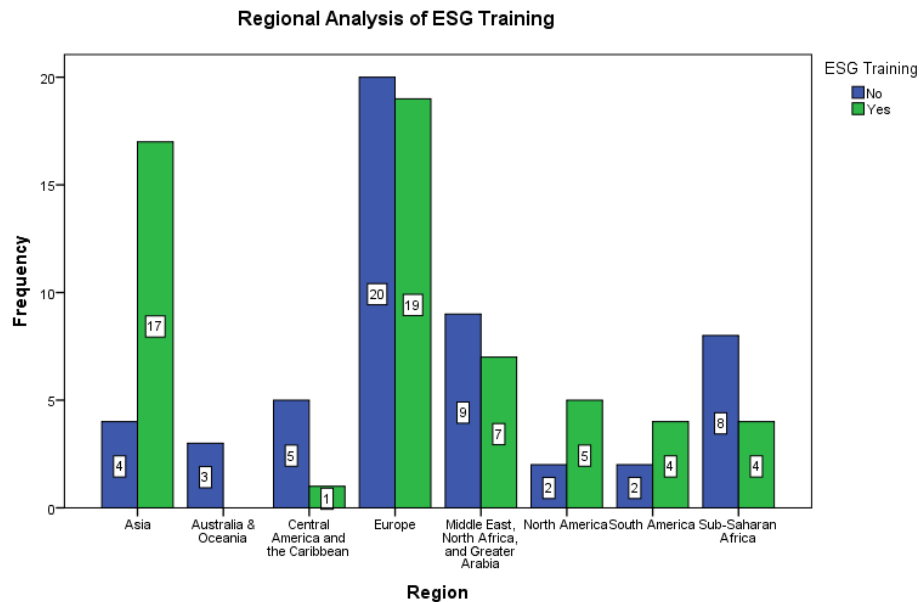


Figure 10: Breakdown of Securities Exchanges with ESG Related Training by Region

#### 4.1.9 Regional Analysis on Securities Exchanges with Sustainability/ESG Indexes

As with ESG listing rules, securities exchanges are taking a slow approach to adopting ESG related indexes for their markets. Only about 40% of exchanges have adopted a form of index to rate listed companies. Asia, North America, and Europe lead the ranks as the region with exchanges with ESG indexes. Some indexes are independently developed by the exchanges. Some exchanges adopt indexes developed by host regional government, regulators, a third-party organization or combine several indexes. 49% of exchanges with ESG indexes created unique indexes for their markets.

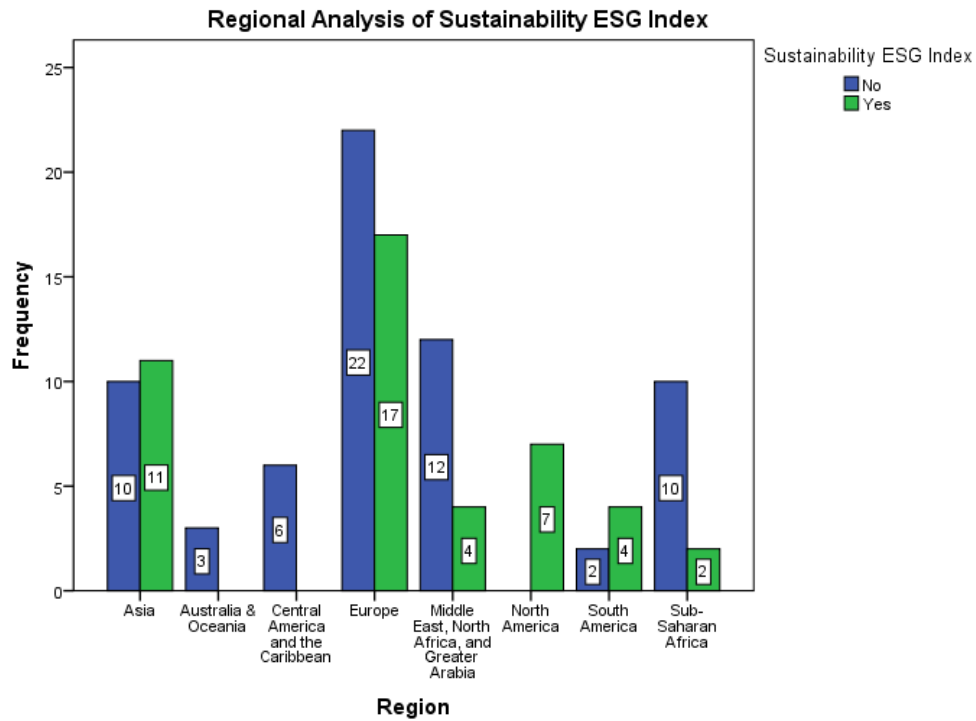


Figure 11: Breakdown of Securities Exchanges with ESG/Sustainability Index Report by Region

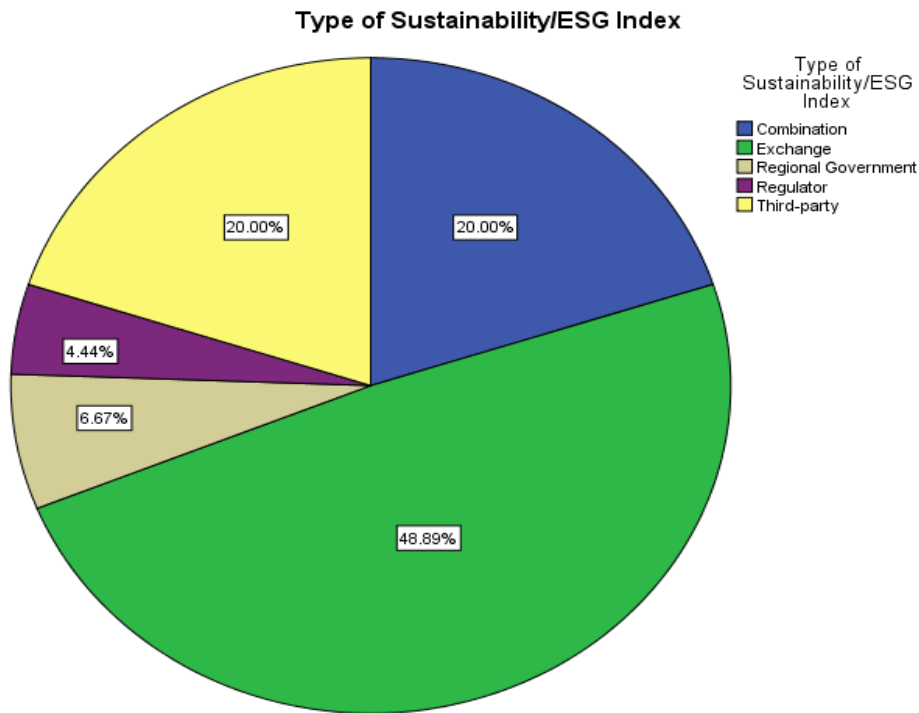


Figure 12: Types of ESG/Sustainability Index Adopted by Securities Exchanges

#### 4.2 Summary of Securities Exchanges ESG Landscape by Region

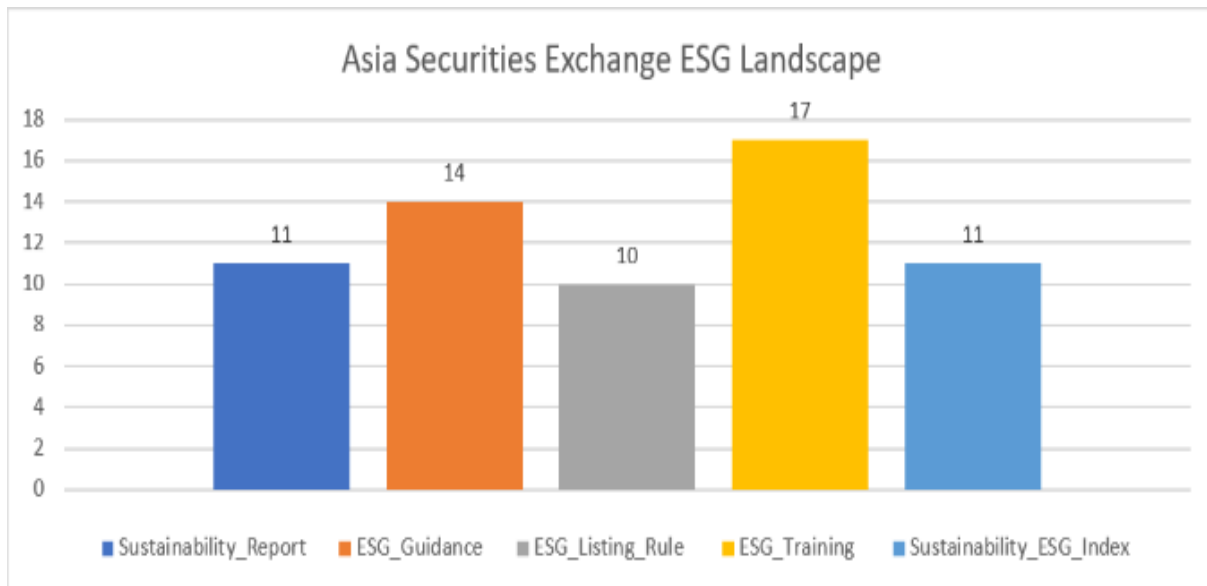


Figure 13: Securities Exchange ESG Landscape in Asia

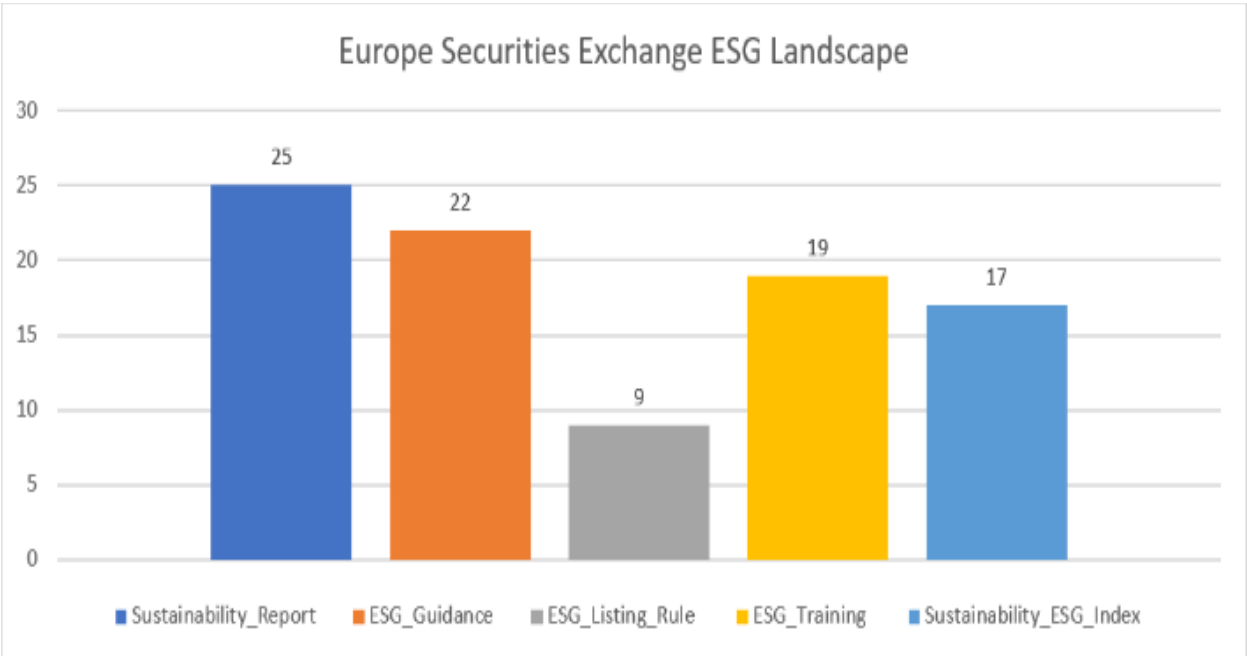


Figure 14: Securities Exchange ESG Landscape in Europe

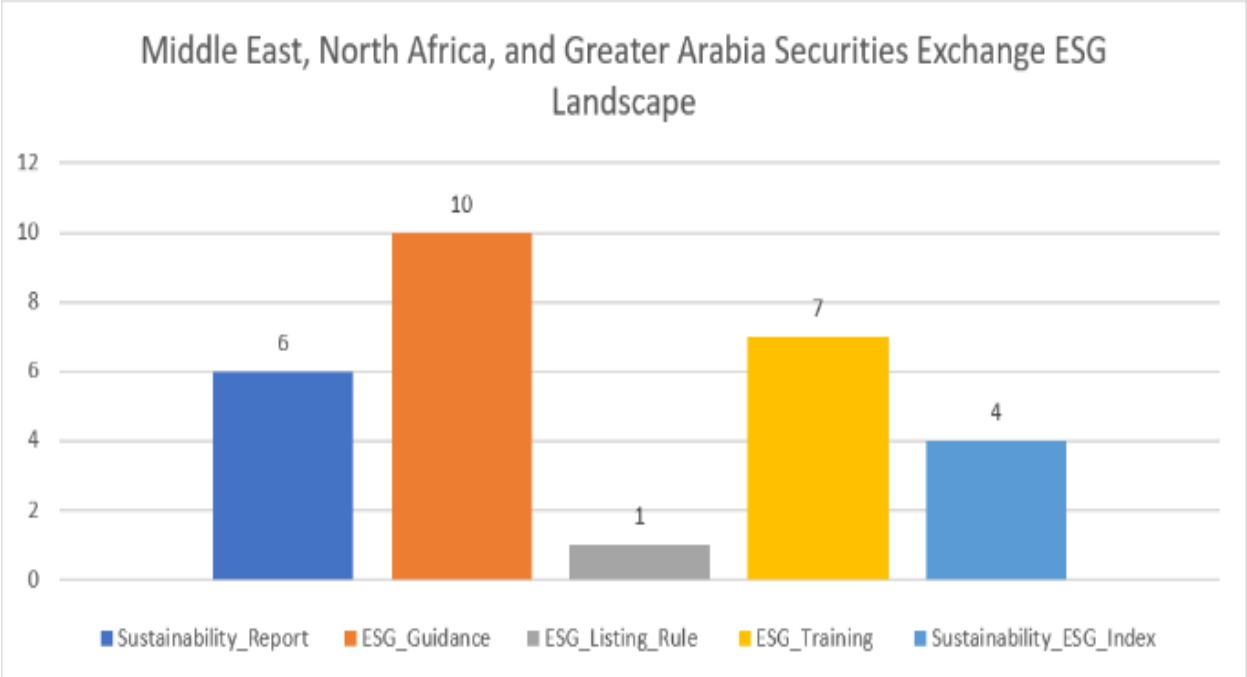


Figure 15: Securities Exchange ESG Landscape in Middle East, North Africa, and Greater Arabia



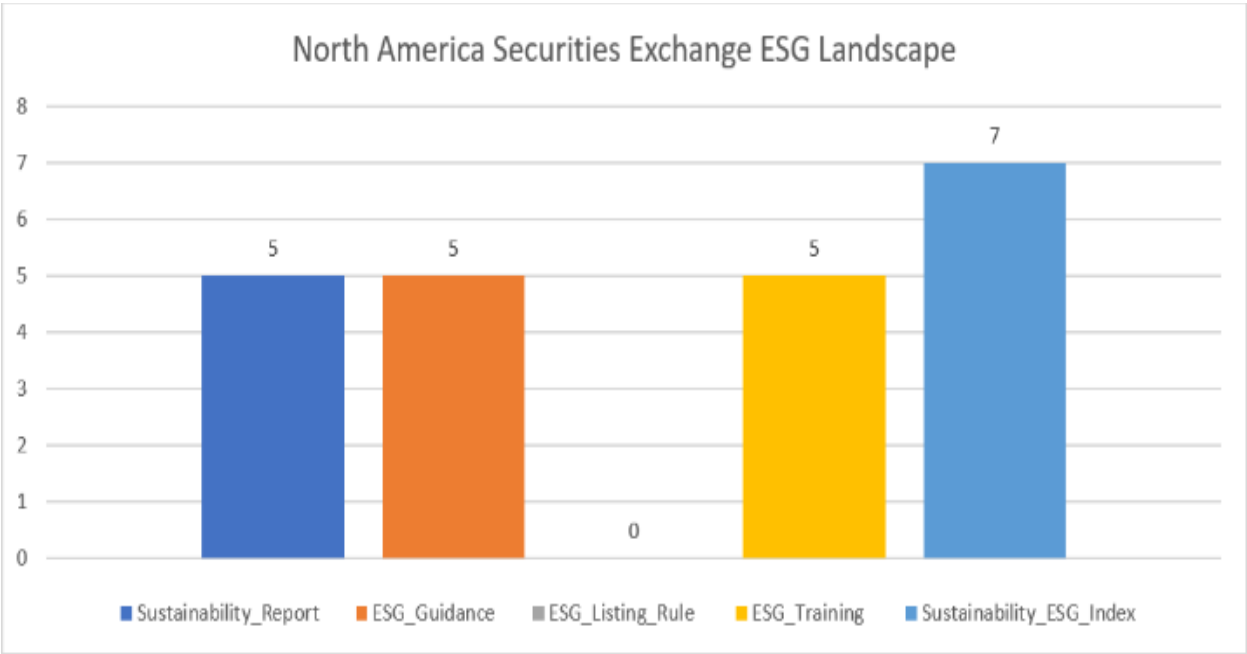


Figure 16: Securities Exchange ESG Landscape in North America

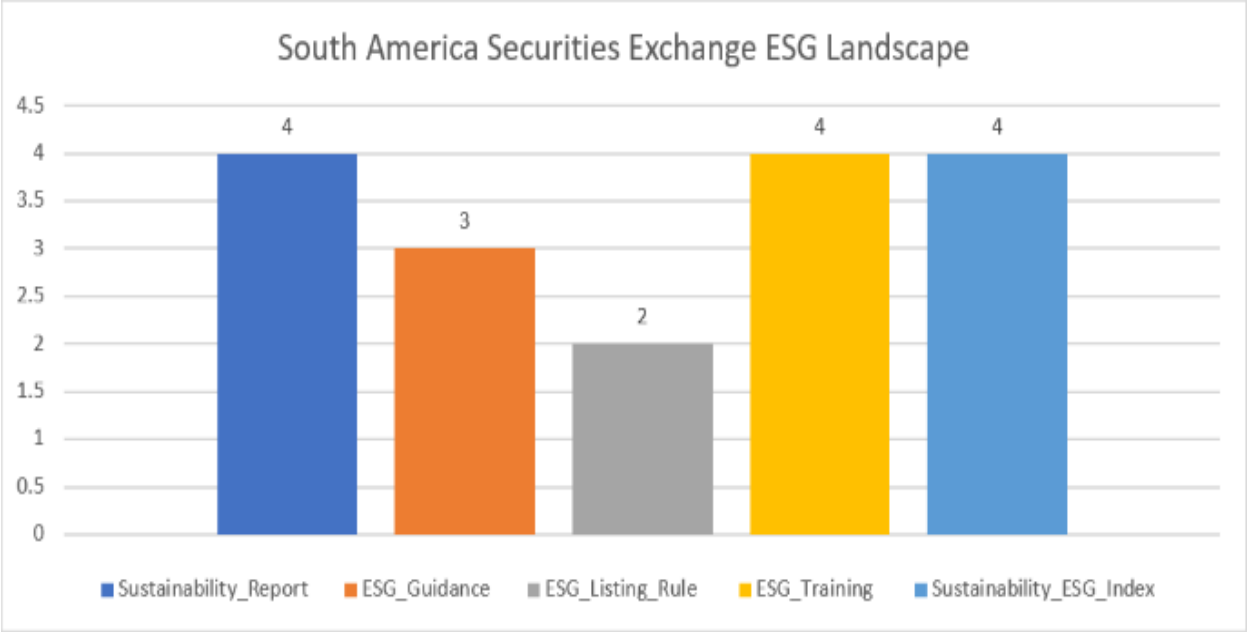


Figure 17: Securities Exchange ESG Landscape in South America

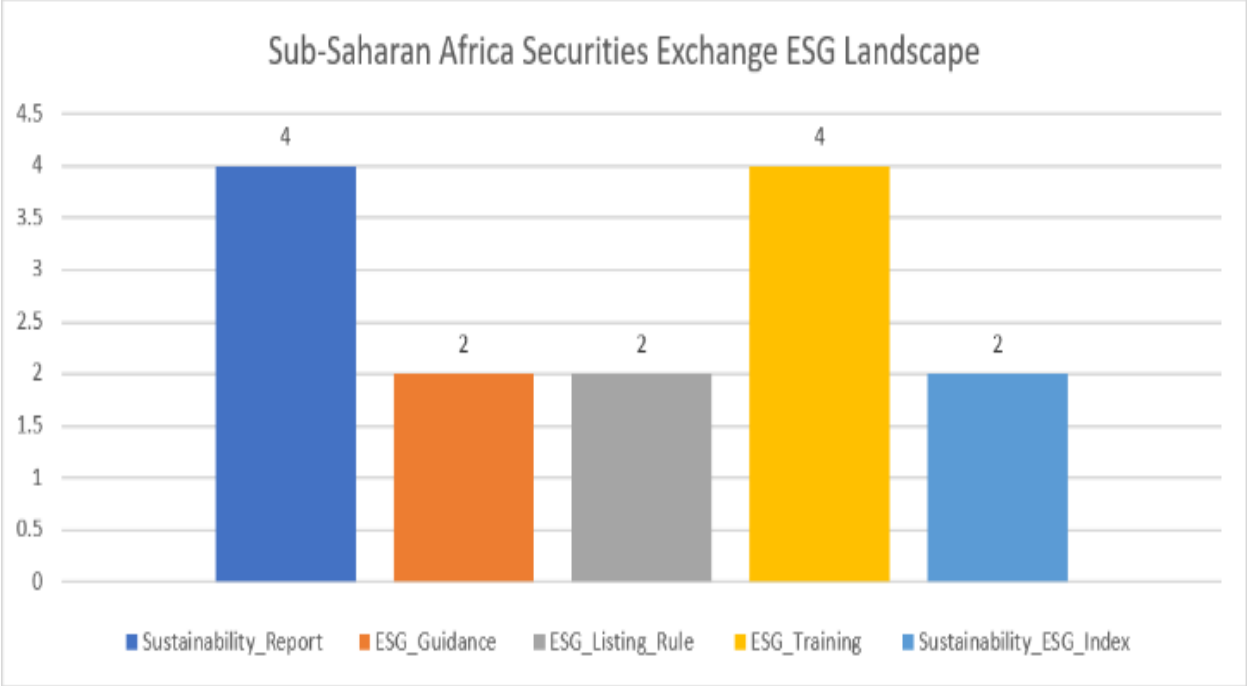


Figure 18: Securities Exchange ESG Landscape in Sub-Saharan Africa

**4.3 ESG Guidance**

One of the most important efforts by securities exchanges to promote ESG disclosures within the capital market ecosystem is through the issuance of ESG guidance. ESG guidance provides listed companies with some leeway in the integration of ESG and how their sustainability initiatives can be reported in line with global best practice. The guidance also helps listed companies publish ESG information to meet the needs of their stakeholders in relevance and transparency.



Figure 19: The Progress on ESG Guidance Campaign by SSEI

Source: <https://sseinitiative.org/esg-guidance-database/>

The SSEI in 2015 began the ESG guidance campaign by publishing a model guidance for its members. From 2009 to early 2015, only 14 exchanges had published ESG guidance. The issuance of the model guidance in 2015 by SSEI precedes a rapid growth of the ESG guidance campaign.

Since 2015, 46 exchanges have now published ESG guidance in just 6 years. Out of the 110 member exchanges of the SSEI, 60 securities exchanges have now published some form of guidelines of ESG for their markets. These exchanges have collaborated and referenced some of the globally recognized ESG reporting frameworks such as:

1. Global Reporting Initiative (GRI)
2. Sustainability Accounting Standards Board (SASB)

3. Taskforce on Climate Related Financial Disclosures (TCFD)
4. Carbon Disclosure Project (CDP)
5. International Integrated Reporting Council (IIRC)
6. Climate Disclosure Standards Board (CDSB)

Figure 20 below shows how the 60 securities exchanges have referenced the above frameworks in helping publicly listed companies provide their stakeholders with quality ESG information.

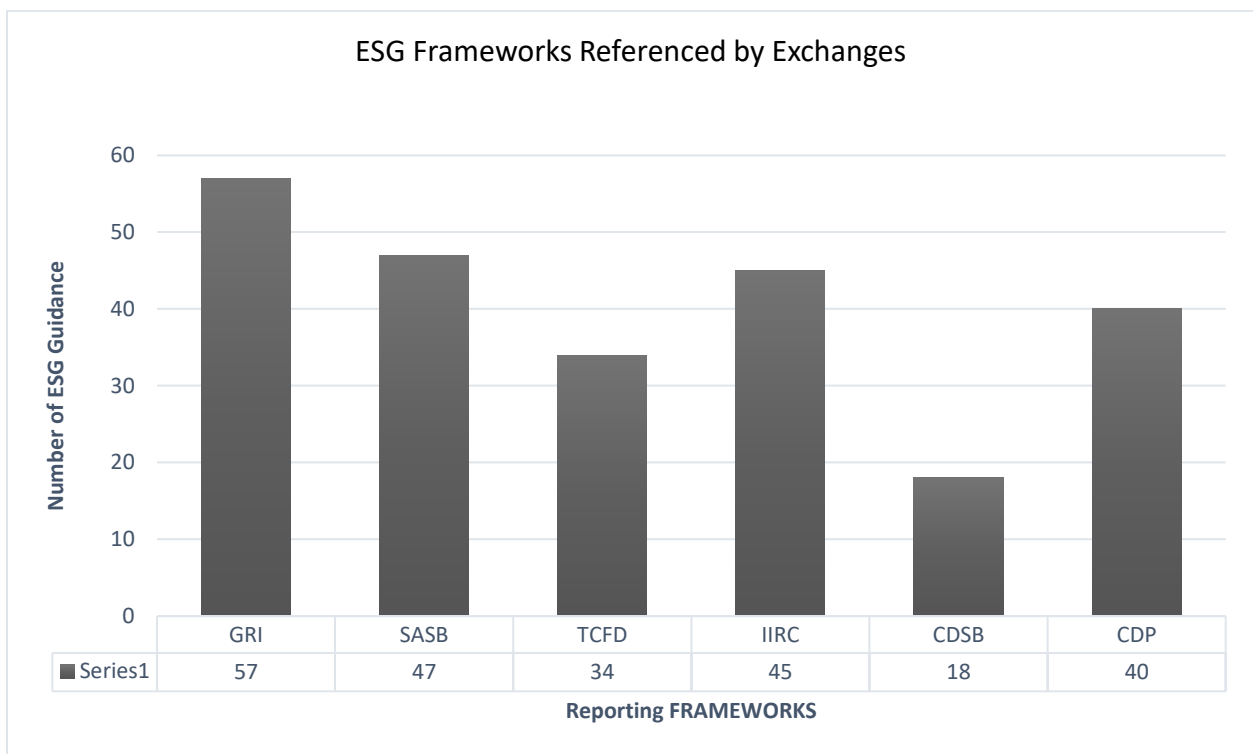


Figure 20: Breakdown of ESG Frameworks Referenced in ESG Guidance by Securities Exchanges

GRI remains the most referenced framework with the securities exchanges as it is with many businesses. SASB and IIRC frameworks have also been widely referenced. There is a growing

attention on the TCFD framework as government, regulators and businesses seek to scale their response to climate change. As at the time of conducting this study, 34 exchanges have referenced the TCFD in drafting their ESG guidance. All the 4 guidance that have been released in 2021 have referenced the TCFD. This is reflective of the increased recent attention to climate related disclosures, especially among businesses. More ESG guidance published since 2018 has referenced the TCFD.

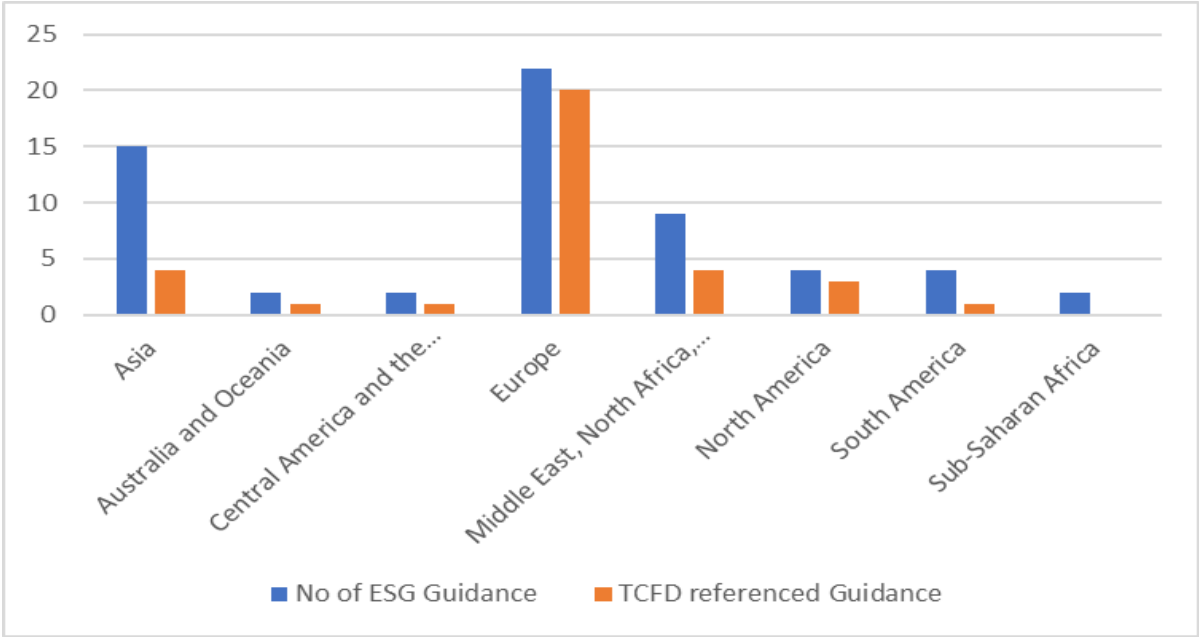


Figure 21: Breakdown ESG Guidance by Securities Exchanges with TCFD Framework by Region

The SSEI is providing renewed leadership on climate disclosure for securities exchanges. In August 2021, the SSEI published a Model Guidance on Climate Disclosure: A Template for Stock Exchanges to Guide Issuers on TCFD Implementation. Over 100 member exchanges partnered with the SSEI to publish the model guidance amidst high demand for climate disclosures by investors.

Some exchanges have also combined at least two of the above listed 6 frameworks in drafting their ESG guidance. Combining frameworks allow the listed companies to understand material issues and determine how different framework indicators address the uniqueness of their business operations.

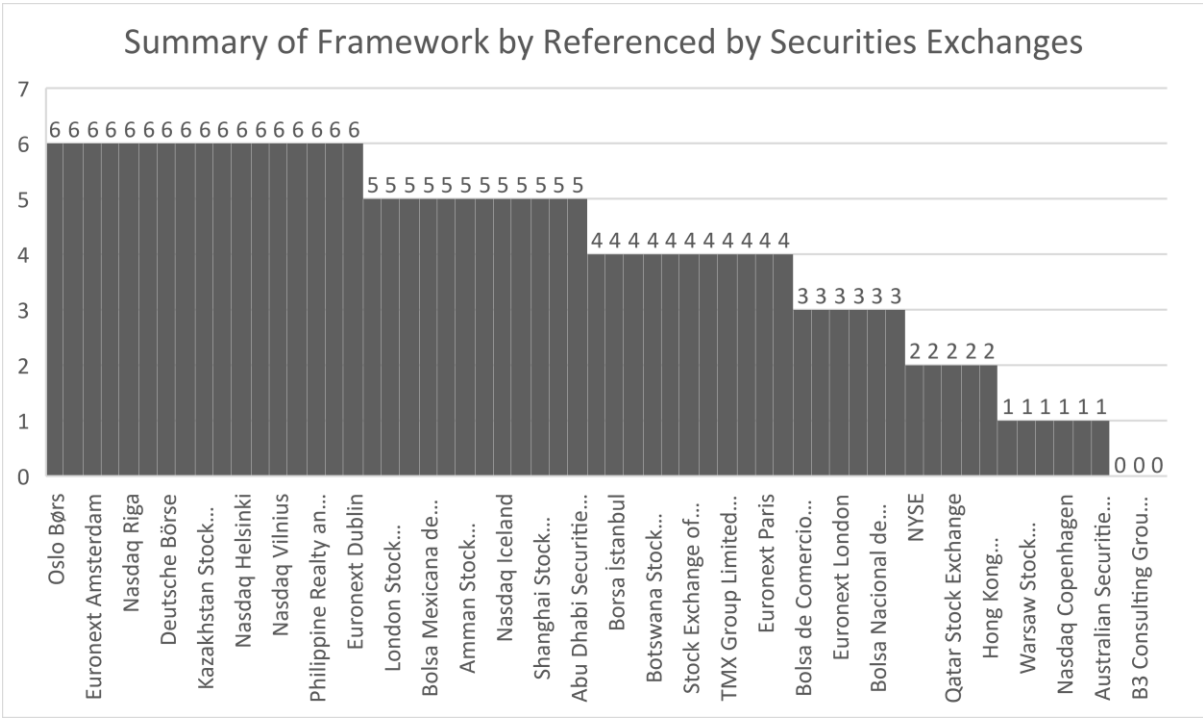


Figure 22: Summary of Frameworks Referenced in ESG Guidance by Securities Exchanges

The figure 22 above shows securities exchanges and the numbers of frameworks they referenced in drafting their ESG guidance. 16 exchanges have referenced all the 6 frameworks, only 3 exchanges have published their guidance without referring to any globally recognized reporting framework.

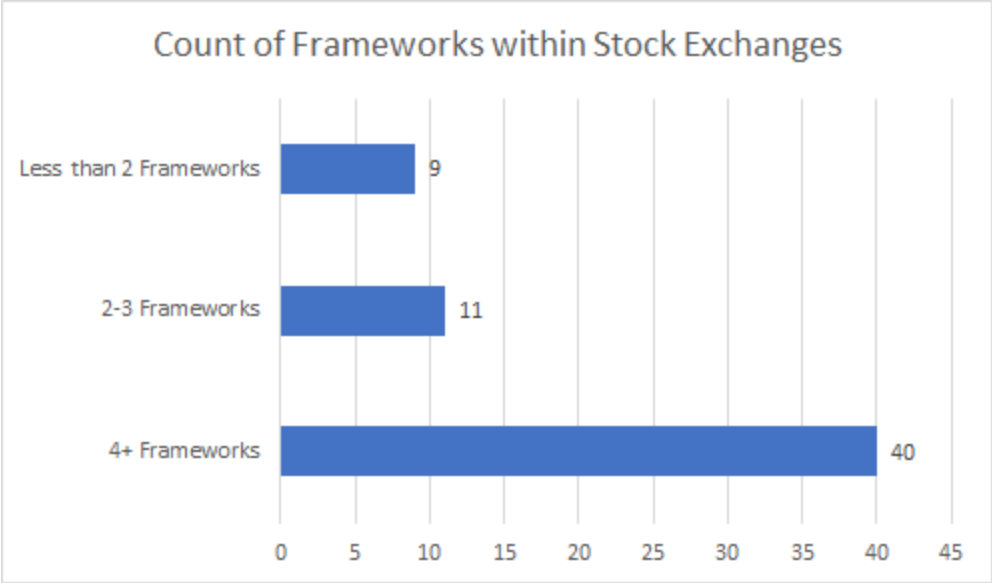


Figure 23: Classification of Securities Exchanges by Framework Combinations

Exchanges in Europe, Central America and the Caribbean, Australia, and Oceania, have referenced an average of 5 reporting frameworks in their ESG guidance. This validates the advancement in ESG initiatives by exchanges in Europe, which has been observed throughout this study. While the number of frameworks referenced by exchanges may not signal that they are providing superior guidance to their listed companies, it may provide diverse insights about reporting.

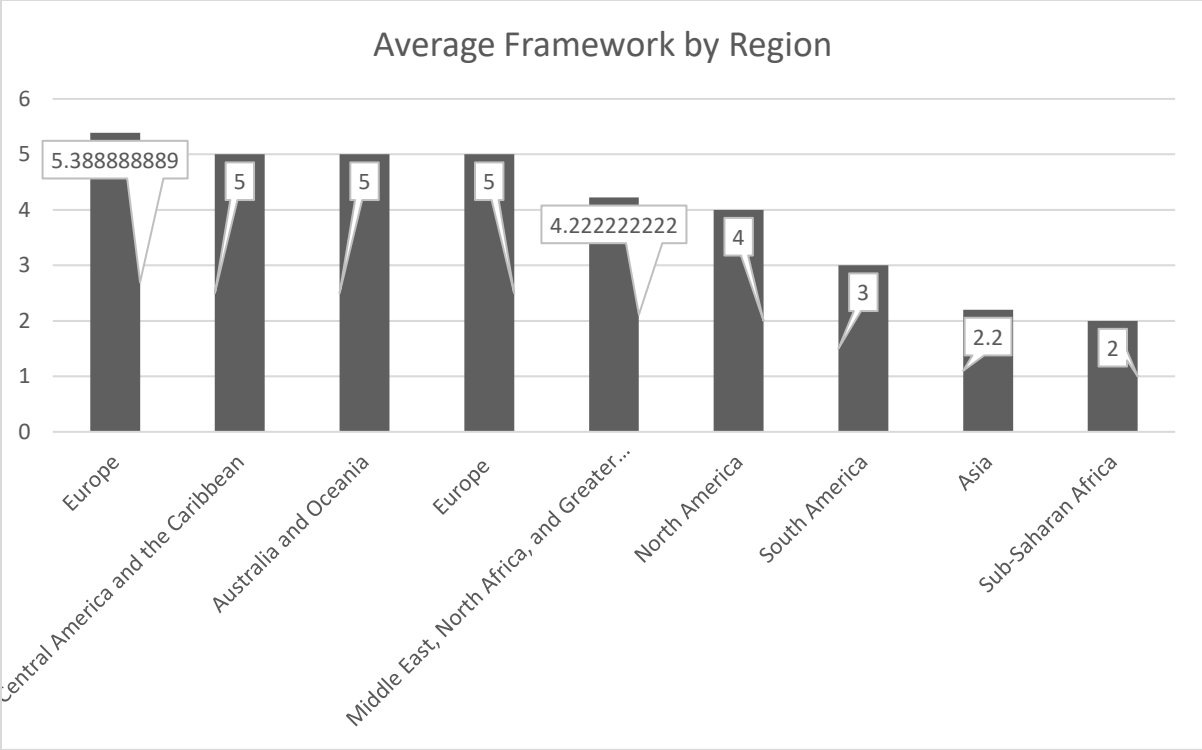


Figure 24: Classification of Securities Exchanges by Framework Combinations in Regions

**4.4 Linear Regression Analysis**

**4.4.1 Hypothesis 1**

**The biggest exchanges in terms of market capitalization have better ESG Regulation for their market.**

Table 3: Model Summary – H1

| Dependent variable   | Independent variable  | Coefficient | Constant | R squared | Significance |
|----------------------|-----------------------|-------------|----------|-----------|--------------|
| ESG Regulation score | Market Capitalization | 2.076E-7    | 2.055    | 0.092     | 0.001        |

The r square value indicates how much of the total variation in the dependent variable, ESG regulation score, can be explained by the independent variable, market capitalization. In this



case, 9.2% can be explained. The Durbin-Watson  $d = 2.072$ , which is between the two critical values of  $1.5 < d < 2.5$  and therefore we can assume that there is no first order linear autocorrelation in the data.

The "Sig." column indicates that the statistical significance of the regression model that was run was significant. Here,  $p < 0.005$ , which is less than 0.05, and indicates that, overall, the regression model statistically significantly predicts the outcome variable.

#### 4.4.2 Hypothesis 2

##### **Exchanges with more listed companies have better ESG Regulation for their market**

Table 4: Model Summary – H2

| Dependent variable   | Independent variable       | Coefficient | Constant | R squared | Significance |
|----------------------|----------------------------|-------------|----------|-----------|--------------|
| ESG Regulation score | Number of Listed Companies | 0.001       | 1.847    | 0.138     | 0.000        |

From the above regression summary Table 4, the R Square value is 0.130, which implies that 13% of the dependent variable, ESG regulation score, can be explained by the independent variable, number of listed companies. The p value which is 0.000 and less than 0.05 indicates that the regression model's predication of the outcome is significant.

#### 4.4.3 Hypothesis 3

##### **Exchanges in countries with lower emissions have better ESG regulatory performance.**

Table 5: Model Summary – H3

| Dependent variable   | Independent variable   | Coefficient | Constant | R squared | Significance |
|----------------------|------------------------|-------------|----------|-----------|--------------|
| ESG Regulation score | Country CO2 Per Capita | 0.035       | 1.989    | 0.016     | 0.205        |

From the above summary table 5 for hypothesis 3, the dependent variable – ESG regulation score was regressed on the predicting variable – Country’s CO2 Per Capita. Country’s CO2 Per Capita’s prediction of the ESG regulation score is not significant as the p value of 0.205 is greater than 0.05. The R Square value of 0.016 also indicates that only 1.6% of the ESG regulation score can be explained by the independent variable, Country’s CO2 Per Capita.

**4.4.4 Hypothesis 4**

**Exchanges in host countries with better SDG performance have better ESG regulatory performance.**

Table 6: Model Summary – H4

| Dependent variable   | Independent variable          | Coefficient | Constant | R squared | Significance |
|----------------------|-------------------------------|-------------|----------|-----------|--------------|
| ESG Regulation score | Country SDG Performance Index | 0.05        | -1.357   | 0.089     | 0.002        |

Table 6 provides the details of the dependent variable – ESG regulation score of securities exchanges regressed on that predicting variable – SDG performance index for all host countries for the securities exchanges under study. We observe that only 8.9% sample of the ESG regulation score can be explained by the SDG performance index as seen through the R Square of 0.089 and p value of 0.002 is however significant.

#### 4.5 Overall Result Finding

The tables above show the regression model summaries for the research hypothesis. In the result for hypothesis 1 presented, we observe that only 9.2% of the ESG regulation score is explained by the market capitalization of securities exchange, even though the relationship is significant. The low R square is interesting as one would expect that the ESG regulatory landscape of securities exchanges growth will be commensurate with their size both in market capitalization and the numbers of listed companies. A slightly higher R square value of 0.130 was observed for the 2<sup>nd</sup> hypothesis with significant p value. This indicates that 13% of the ESG regulation score is explained by the number of companies listed on the securities exchanges.

While both hypothesis testing can be regarded to have come back negative due to the low R square, this may well explain the lack of standardization that can be generally observed within the ESG space and especially in the leadership of the SSEI in coordinating ESG regulations within the capital markets. Though SSEI has a list of initiatives that can be adopted by these securities exchanges, there are no real demands and accountability on the markets regarding ESG regulations.

For the third hypothesis, R square value of 0.016 indicates that only 1.6% of the ESG regulation score of securities exchanges is explained by the CO2 per capita of the host countries of the exchanges. The p value also indicates an insignificant relationship, which nullifies our third hypothesis as there may be other variables that contribute to the CO2 per capita of countries beyond the ESG regulatory activities of the securities exchanges or may as well seem that exchanges in high emitting countries have better ESG regulations to address the problem.

Hypothesis 4 however shows a slightly more positive relationship of ESG regulatory score of exchanges and their host countries SDG performance index than in the 3<sup>rd</sup> hypothesis. 8.9% of the SDG performance index is explained by the ESG regulation score. Considering the low value of R square, it nullifies our 4<sup>th</sup> hypothesis even though the p value is significant. As with our 3<sup>rd</sup> hypothesis, the scope of the research focuses on the contribution of the ESG regulatory landscape which may be just one out of several other contributing variables to the SDG performance of countries. However, the contribution of the private sector ESG programs which are mostly regulated by securities exchanges cannot be overemphasized.

## 5 Discussion

The scarcity of literature about ESG regulation, particularly in relation to the activities of global capital markets, emphasizes the importance of this study and its potential contribution to the body of knowledge in ESG space. The UNEP Inquiry (2015:6) observation on the ESG regulatory gave a real insight into the need for this kind of research.

*“There is a growing number of sustainability innovations in financial policy, regulation and standards. But their potential for scale and efficiency remains poorly understood. In their current form, many are ad hoc measures that are not integrated into the overall financial and capital markets. Their impacts remain untested and their prospects uncertain. The transferability of innovations is also unclear”*

One may argue that ESG as a concept is evolving and as such, the ESG regulatory landscape is new. This study has shown that there is significant development in the ESG regulatory landscape and that the SSEI’s leadership holds a lot of promises for ESG regulation among global capital markets. Exchanges in Europe, North America and Asia are more dominant in regulating ESG practice compared to other regions. This is supported by similar research by Cyriac (2013) on the regional comparison of growth of corporate sustainability reporting practices. Two conclusions can be deduced if we examine our results in the light of Cyriac’s work. First it could mean that regions with more advance corporate sustainability practice are forcing improved capital market ESG regulation or that the regulations put in place by the exchanges are helping to mainstream the adoption of ESG practice among businesses. Cyriac’s work was focused on companies and compared Asian and European countries. This research has addressed one of the most important

drivers of corporate sustainability practice and reporting, which is the financial market regulator Lozano (2015). It has added to the body of works on the progress of corporate sustainability by examining how regulators specifically the capital market is playing a role in advancing ESG practice.

Through our literature, we also observed that there is no known study of the contribution of securities exchanges' ESG regulatory performance to broader sustainability indexes such as emissions per capita and SDG performance indexes of their host countries. Similar research such as one conducted by Abbasi & Riaz (2016), which examines how financial variables impact emissions in emerging economies have similar conclusion to this study. Abbasi & Riaz (2016) concluded that only a small degree of emissions is explained by financial variables. This study also concluded that the ESG regulatory performances of securities exchanges do not significantly explain both emissions and the SDG performance indexes of their host countries.

Theoretical, we observe that these relationships are difficult to explain because there may as well be other factors parallel to the ESG regulations of the securities exchanges that impact various sustainability indexes of the host countries. A similar study by Eleftheriadis & Anagnostopoulou (2015), who examined the impact of climate disclosures on companies' profitability, also displays insignificant relationship in the two variables. In explaining the result, Eleftheriadis & Anagnostopoulou (2015), admitted that a lot of other factors could potentially contribute to corporate profitability beyond climate disclosures. Though the study by Eleftheriadis & Anagnostopoulou focuses on corporate profitability and climate disclosures, we can take some clues from the result to validate to our conclusion. In all, this study has provided some knowledge gap closure and foundational understanding of the contribution of securities exchanges to the

sustainability indexes of their host countries. More research can be done using a wide range of market variables to assess national sustainability indexes.

### **5.1 Regulation Holds Immense Potential for the Growth of ESG**

Having examined the ESG regulatory landscape from the securities exchanges point of view, it is important to emphasize the role of ESG regulations in mainstreaming the concept of responsible business practice and leading change for sustainable development. Securities exchanges play a key role in this because they are strategically positioned as intermediaries between issuers and the investing community. Exchanges can leverage this unique position to create regulations that advance ESG practice and disclosures.

ESG requires strong regulations to provide confidence to the investing ecosystem on its promise to deliver value to stakeholders. Regulating ESG is difficult especially because there are several frameworks, rules, and standards that businesses have adopted for a variety of reasons. Provide leadership and guidance for ESG practice and reporting remains one of the important ways to get all stakeholders on board to address the challenges of sustainable development.

At the regional level, there are impressive efforts to create a more unified landscape for ESG regulation. For example, the EU taxonomy has been created to achieve coherence of frameworks designed for achieving green deal objectives. We expect that other regions such as North America will adopt similar idea to scale ESG practice and regulation. Also worthy of mention is the recent announcement by International Financial Reporting Standards (IFRS) Foundation to create the new International Sustainability Standards Board, to provide guidance to companies on ESG disclosures.

## **5.2 Lack Of ESG-Performance Evidence may be a Setback in ESG Regulation**

Though ESG landscape has evolved significantly in the past decades, we have not seen a lot of evident-based research on the link between ESG and financial performance. The most widely researched aspect of ESG is the G element which is a measure of how businesses uphold the tenets of corporate governance (Rahdari & Rostamy, 2015). There are only few studies on establishing how the “E” (environmental) and “S” (social) elements impact financial performance (Klettner, et al., 2014). This may be a major setback in ESG regulations. Rules and regulations must be enforced using a knowledge-based approach. If we apply this principle to the subject of ESG regulation, it means regulators must provide their stakeholders with relevant evidence to suggest that ESG accountability delivers value to businesses both in their quest for impact and profit. Regulators must themselves take on and publish evidence ESG-performance research, which can support businesses in articulating their enterprise imperative for sustainability.

## **5.3 Redefining the Role of SSEI**

This research has benefited immensely from the impressive work of the United Nations Sustainable Stock Exchange Initiative. The SSEI has become more prominent in galvanizing efforts of securities exchanges in enforcing ESG practice within their market.

Since 2000, securities exchanges have embraced several SSEI ESG initiatives. For example, 46 exchanges have published written guidance on ESG reporting for their market since the commencement of ESG guidance campaign in 2015 (Fornasari, 2020).

However, there are more areas of opportunities for the SSEI. It will be interesting to see the SSEI mandate all the members exchanges to self-report on their ESG imperatives. I believe this will



significantly raise the bar for ESG regulation as it will become a material issue for all exchanges to include in their disclosures. With climate risks becoming an area of interest to business stakeholders, it will be interesting to see how the SSEI moderates the ESG reporting landscape for securities exchanges on climate disclosures requirements within global capital markets. An impressive first step forward was the release of two model guidelines on climate disclosures using the TCFD recommendations and the policy brief on the net-zero movement by SSEI in August 2020.

#### **5.4 Lack of Standardization affects ESG Regulation**

This research work also brings to focus the lack of standardization within the ESG framework space and its impact on ESG regulation. For example, the 60 securities exchanges that have published written guidance on ESG reporting for their markets have referenced 6 different frameworks. Over the past months, we have witnessed the declaration by four major ESG standards organizations to merge their frameworks. First it was SASB and IIRC merging to form Value Reporting and more recently the announcement by GRI, CDP, CDSB and Value Reporting to consolidate into one unique framework (Eccles & Krzus, 2014). This is a great leap forward in the advocacy for standardization. If securities exchanges gain more clarity on reporting frameworks and standards, it will in no small measure help the exchanges make more universally acceptable regulations and lead their market with more clarity.

## **5.5 Collaborations between Securities Exchanges and Government**

This study also shed some light on the need to unify sustainability agenda both in government policy making and in business. In most of the host countries of the securities exchanges that were studied, there were a few exchanges, especially in Europe and Asia that are working collaboratively with the government to implement set ESG regulations. In Sub-Saharan Africa, we did not notice such a partnership between the government and the capital market on the ESG related matter. While this can also be attributed to lack of intent or planning for sustainable development by the government, it may also be due to lack of collective agreement between both parties in ESG planning and regulations.

Having also established through this study that there is no significant relationship between the ESG regulatory efforts of the securities exchanges and the national sustainability agendas, the exchanges and government must work in close contact to drive sustainability within their purview. The government must recognize the potential of the private sector to influence actions for change and leverage the same through partnership with regulators such as the securities exchanges to implement ESG efforts.

## **5.6 Limitation of Study**

While the uniqueness of this research is hinged on the fact that it is a pioneer study in this knowledge area, it still would have benefitted from closely related works. The dearth of previous research on the ESG regulatory landscape within the capital market did not allow for comparability in methodology and results.

Another limitation is the lack of consistency in the SSEI's database, which was the major source of data collection for this research. SSEI database in some cases was not reflective of the immediate ESG regulatory advancement of some of the securities exchanges. This is however a broader challenge within the ESG industry where there is a lack of ESG data or in some cases lack of accessibility and credibility.

## 6 Conclusion

This study is very timely especially considering the increasing attention to corporate ESG practice globally. Government leaders and business leaders are looking to collaborate to achieve sustainable development. The securities exchanges can become a strong intermediary that connects national and regional sustainability objectives with business practices through strong ESG regulations.

This study has provided some insight into the current ESG landscape within global capital markets and identified areas of progress and opportunities. One of the key findings is how the ESG regulatory efforts of the securities exchanges seem not to impact national sustainability agendas. Considering the influence of the capital markets within the private sector, aligning government and capital market regulations will provide more unified ESG objectives and could lead to more sustainable development. ESG growth within market can be accelerated by collaboration between government and regulators to enforce best practice within the private sector. For example, Europe displayed the most collaborative efforts between the regional government and the exchanges, this may well explain why the exchanges in this region appeared to be ahead in ESG regulations.

This study has also assessed the leadership of the SSEI in moderating capital market ESG regulations. Our conclusion is that the securities exchanges are not maximizing their regulatory responsibility within their individual market to drive wide acceptance of ESG practice. This submission is captured in a recently published report by KPMG (2021) on climate disclosures, *“the biggest obstacle continues to be policies and frameworks that support a transition to a low-*

*carbon future... unless new regulation on mandatory disclosures on climate matters is uniform, numbers-bound, measurable and specific, it will only create more greenwashing and hassle”.*

## **6.1 Avenues for Research**

There are several potentials for future study work in this research area. As ESG regulations come into focus especially with increasing attention to climate related risks and disclosures for businesses, there are several areas of regulations that can be of interest to sustainability management researchers. This is a global study of ESG regulation by securities exchanges, an area of interest could be to focus on specific geo-political regions and compare what securities exchanges are doing in terms of ESG regulations in a particular region. This allows for more direct comparison and could also highlight in more detail how the regulations corroborate with region legislations on ESG practices.

A study targeting the contents of the ESG guidance by the securities exchanges might be of interest to the body of knowledge on ESG reporting frameworks and standardizations. With recent developments on climate disclosures, a study on climate disclosure regulations by securities exchanges might also be of interest.

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## Appendix

| Name of Exchange   | Country    | Region                                       | Market Capitalization (m\$) | NO of Listed Company | Sustainability Report | ESG Guidance | ESG Listing Rule | ESG training | Sustainability/ESG Index | Total ESG Regulatory Score |
|--|------------|--|-----------------------------|----------------------|-----------------------|--------------|------------------|--------------|--------------------------|----------------------------|
| Bolsas y Mercados Argentinos (BYMA) and Bolsa de Comercio de Buenos Aires (BCBA) | Argentina  | South America                                | 47,727                      | 97                   | 1                     | 0            | 1                | 1            | 1                        | 4                          |
| Armenia Securities Exchange  | Armenia    | Europe                                       | 2,169                       | 10                   | 0                     | 0            | 0                | 0            | 0                        | 0                          |
| Sydney Stock Exchange  | Australia  | Australia & Oceania                          | 84                          | 3                    | 0                     | 0            | 0                | 0            | 0                        | 0                          |
| Australian Securities Exchange (ASX)   | Australia  | Australia & Oceania                          | 1,507,050                   | 2275                 | 1                     | 1            | 0                | 0            | 0                        | 2                          |
| Wiener Börse   | Austria    | Europe                                       | 124,104                     | 74                   | 0                     | 0            | 1                | 1            | 1                        | 3                          |
| Baku Stock Exchange  | Azerbaijan | Middle East, Orth Africa, and Greater Arabia | 1,438                       | 18                   | 0                     | 0            | 0                | 0            | 0                        | 0                          |
| Bahrain Bourse (BHB)   | Bahrain    | Middle East, Orth Africa, and Greater Arabia | 25,600                      | 44                   | 1                     | 1            | 0                | 1            | 0                        | 3                          |
| Chittagong Stock Exchange (CSE)  | Bangladesh | Asia   | 41,028                      | 288                  | 0                     | 0            | 0                | 1            | 0                        | 1                          |
| Dhaka Stock Exchange   | Bangladesh | Asia   | 41,126                      | 308                  | 0                     | 1            | 0                | 1            | 0                        | 2                          |

|  |                        |                                   |           |      |   |   |   |   |   |   |
|--|------------------------|-----------------------------------|-----------|------|---|---|---|---|---|---|
| Belarusian Currency and Stock Exchange   | Belarus                | Europe                            | 80,084    | 55   | 0 | 0 | 0 | 0 | 0 | 0 |
| Euronext Brussels                        | Belgium                | Europe                            | 351,600   | 130  | 1 | 1 | 1 | 1 | 1 | 5 |
| The Bermuda Stock Exchange (BSX)         | Bermuda                | Central America and the Caribbean | 2,870     | 1154 | 0 | 0 | 0 | 0 | 0 | 0 |
| Royal Securities Exchange of Bhutan      | Bhutan                 | Asia                              | 678       | 19   | 0 | 0 | 0 | 0 | 0 | 0 |
| Banja Luka Stock Exchange (BLSE)         | Bosnia and Herzegovina | Europe                            | 2,070     | 646  | 0 | 0 | 0 | 0 | 0 | 0 |
| Botswana Stock Exchange                  | Botswana               | Sub-Saharan Africa                | 4,461     | 24   | 1 | 1 | 0 | 1 | 0 | 3 |
| B3                                       | Brazil                 | South America                     | 1,187,362 | 328  | 1 | 1 | 0 | 1 | 1 | 4 |
| Bulgarian Stock Exchange                 | Bulgaria               | Europe                            | 5,020     | 259  | 0 | 0 | 0 | 0 | 0 | 0 |
| TMX Group Inc.                           | Canada                 | Orth America                      | 2,429,243 | 3486 | 1 | 1 | 0 | 1 | 1 | 4 |
| NEO Exchange                             | Canada                 | Orth America                      | 2,991     | 7    | 0 | 0 | 0 | 0 | 1 | 1 |
| Bolsa de Comercio de Santiago            | Chile                  | Orth America                      | 294,676   | 293  | 1 | 1 | 0 | 1 | 1 | 4 |
| Shenzhen Stock Exchange                  | China                  | Asia                              | 3,030,000 | 2170 | 0 | 1 | 0 | 1 | 1 | 3 |
| Shanghai Stock Exchange                  | China                  | Asia                              | 5,568,909 | 1403 | 1 | 1 | 0 | 1 | 1 | 4 |
| Hong Kong Exchanges and Clearing Limited | China                  | Asia                              | 6,759,774 | 2549 | 1 | 1 | 1 | 1 | 1 | 5 |
| Bolsa de Valores de Colombia             | Colombia               | South America                     | 81        | 66   | 1 | 1 | 0 | 1 | 1 | 4 |
| Bolsa Nacional de Valores                | Costa Rica             | Central America and               | 2,381     | 62   | 1 | 1 | 0 | 1 | 0 | 3 |



|  |                    |  |           |      |   |   |   |   |   |   |
|--|--------------------|--|-----------|------|---|---|---|---|---|---|
|  |                    | the Caribbean                                |           |      |   |   |   |   |   |   |
| Central America and the Caribbean                      | Côte D'Ivoire      | Sub-Saharan Africa                           | 12,486    | 45   | 0 | 0 | 0 | 0 | 0 | 0 |
| Zagreb Stock Exchange                                  | Croatia            | Europe                                       | 22,637    | 97   | 1 | 0 | 1 | 1 | 0 | 3 |
| Cyprus Stock Exchange (CSE)                            | Cyprus             | Europe                                       | 2,825     | 74   | 0 | 0 | 0 | 0 | 0 | 0 |
| Prague Stock Exchange                                  | Czech Republic     | Europe                                       | 26,313    | 17   | 0 | 0 | 0 | 0 | 0 | 0 |
| Nasdaq Copenhagen                                      | Denmark            | Europe                                       | 445,888   | 149  | 1 | 1 | 0 | 1 | 1 | 4 |
| Bolsa y Mercados de Valores de la República Dominicana | Dominican Republic | Central America and the Caribbean            | -         | 36   | 0 | 0 | 0 | 0 | 0 | 0 |
| Quito Stock Exchange                                   | Ecuador            | South America                                | 10,023    | 332  | 0 | 0 | 0 | 0 | 0 | 0 |
| Egyptian Exchange                                      | Egypt              | Middle East, Orth Africa, and Greater Arabia | 46,546    | 255  | 1 | 1 | 1 | 1 | 1 | 5 |
| Nasdaq Tallinn   | Estonia            | Europe                                       | 3,103     | 17   | 1 | 1 | 0 | 1 | 0 | 3 |
| Nasdaq Helsinki  | Finland            | Europe                                       | 275,000   | 151  | 1 | 1 | 0 | 1 | 1 | 4 |
| Euronext Paris   | France             | Europe                                       | 3,482,969 | 846  | 1 | 1 | 1 | 0 | 1 | 4 |
| Deutsche Börse   | Germany            | Europe                                       | 2,262,223 | 446  | 1 | 1 | 0 | 1 | 1 | 4 |
| Athens Exchange Group                                  | Greece             | Europe                                       | 55,588    | 203  | 1 | 1 | 0 | 1 | 0 | 3 |
| The International Stock Exchange (TISE)                | Guernsey           | Europe                                       | 623,520   | 1942 | 1 | 0 | 0 | 0 | 0 | 1 |

|                                       |            |  |           |      |   |   |   |   |   |   |
|---------------------------------------|------------|--|-----------|------|---|---|---|---|---|---|
| Bolsa Centroamericana de Valores S.A. | Honduras   | Europe                                       | 2,082     | 15   | 0 | 0 | 0 | 0 | 0 | 0 |
| Budapest Stock Exchange               | Hungary    | Europe                                       | 29        | 42   | 0 | 1 | 0 | 0 | 0 | 1 |
| Nasdaq Iceland                        | Iceland    | Europe                                       | 7,864     | 20   | 1 | 1 | 0 | 1 | 0 | 3 |
| National Stock Exchange of India      | India      | Asia   | 2,379,901 | 1878 | 1 | 0 | 1 | 1 | 1 | 4 |
| Bombay Stock Exchange                 | India      | Asia   | 2,373,884 | 5616 | 1 | 1 | 1 | 1 | 1 | 5 |
| Indonesia Stock Exchange              | Indonesia  | Asia   | 516       | 626  | 1 | 1 | 1 | 1 | 1 | 5 |
| Tehran Stock Exchange                 | Iran       | Asia   | 270,000   | 331  | 0 | 0 | 0 | 0 | 0 | 0 |
| Euronext Dublin                       | Ireland    | Europe                                       | 171,428   | 51   | 1 | 1 | 1 | 0 | 1 | 4 |
| Tel-Aviv Stock Exchange               | Israel     | Middle East, Orth Africa, and Greater Arabia | 262,000   | 455  | 0 | 0 | 0 | 0 | 1 | 1 |
| Borsa Italiana                        | Italy      | Europe                                       | 734,408   | 426  | 1 | 1 | 0 | 1 | 0 | 3 |
| Jamaica Stock Exchange                | Jamaica    | Central America and the Caribbean            | 9,405     | 71   | 0 | 0 | 0 | 0 | 0 | 0 |
| Japan Exchange Group                  | Japan      | Asia   | 6,222,825 | 3604 | 1 | 1 | 0 | 1 | 1 | 4 |
| Amman Stock Exchange                  | Jordan     | Middle East, Orth Africa, and Greater Arabia | 23,407    | 195  | 0 | 1 | 0 | 0 | 0 | 1 |
| Kazakhstan Stock Exchange             | Kazakhstan | Middle East, Orth Africa, and Greater Arabia | 45,504    | 103  | 0 | 1 | 0 | 0 | 0 | 1 |

|  |             |  |         |     |   |   |   |   |   |   |
|--|-------------|--|---------|-----|---|---|---|---|---|---|
| Nairobi Securities Exchange                        | Kenya       | Sub-Saharan Africa                           | 26,489  | 62  | 1 | 0 | 0 | 0 | 0 | 1 |
| Boursa Kuwait                                      | Kuwait      | Middle East, Orth Africa, and Greater Arabia | 94,992  | 176 | 0 | 1 | 0 | 1 | 0 | 2 |
| Nasdaq Riga  | Latvia      | Europe                                       | 1,489   | 24  | 1 | 1 | 0 | 1 | 0 | 3 |
| Nasdaq Vilnius                                     | Lithuania   | Europe                                       | 4,515   | 27  | 1 | 1 | 0 | 1 | 0 | 3 |
| Bourse de Luxembourg                               | Luxembourg  | Europe                                       | 68,639  | 168 | 1 | 1 | 1 | 1 | 1 | 5 |
| Bursa Malaysia                                     | Malaysia    | Asia   | 455,773 | 904 | 1 | 1 | 1 | 1 | 1 | 5 |
| Malta Stock Exchange                               | Malta       | Europe                                       | 5,359   | 24  | 0 | 0 | 0 | 0 | 0 | 0 |
| Stock Exchange of Mauritius                        | Mauritius   | Sub-Saharan Africa                           | 12,112  | 168 | 0 | 0 | 0 | 0 | 1 | 1 |
| Bolsa Mexicana de Valores (Mexican Stock Exchange) | Mexico      | Orth America                                 | 417,021 | 148 | 1 | 1 | 0 | 1 | 1 | 4 |
| Bolsa Institucional de Valores (BIVA)              | Mexico      | Orth America                                 | 233     | 1   | 0 | 0 | 0 | 0 | 1 | 1 |
| Mongolian Stock Exchange                           | Mongolia    | Asia   | 1,106   | 218 | 0 | 0 | 0 | 0 | 0 | 0 |
| Mongol Securities Exchange                         | Mongolia    | Asia   | 1,258   | 1   | 0 | 0 | 0 | 0 | 0 | 0 |
| Bourse de Casablanca                               | Morocco     | Middle East, Orth Africa, and Greater Arabia | 67,049  | 74  | 0 | 1 | 0 | 0 | 0 | 1 |
| Namibian Stock Exchange                            | Namibia     | Sub-Saharan Africa                           | 2,540   | 43  | 0 | 0 | 0 | 0 | 0 | 0 |
| Euronext Amsterdam                                 | Netherlands | Europe                                       | 942,595 | 125 | 1 | 1 | 1 | 0 | 1 | 4 |

|  |                |  |         |     |   |   |   |   |   |   |
|--|----------------|--|---------|-----|---|---|---|---|---|---|
| New Zealand Stock Exchange                             | New Zealand    | Australia & Oceania                          | 98,685  | 176 | 0 | 1 | 0 | 0 | 0 | 1 |
| Bolsa de Valores de Nicaragua (BVN)                    | Nicaragua      | Central America and the Caribbean            | 1,264   | 4   | 0 | 0 | 0 | 0 | 0 | 0 |
| Nigerian Exchange Group                                | Nigerian       | Sub-Saharan Africa                           | 50,631  | 167 | 1 | 1 | 0 | 1 | 0 | 3 |
| Macedonian Stock Exchange                              | Orth Macedonia | Europe                                       | 3,070   | 105 | 0 | 0 | 0 | 0 | 0 | 0 |
| Oslo Børs  | Orway          | Europe                                       | 308,197 | 227 | 1 | 1 | 0 | 1 | 0 | 3 |
| Muscat Securities Market                               | Oman           | Middle East, Orth Africa, and Greater Arabia | 21,019  | 112 | 0 | 0 | 0 | 0 | 0 | 0 |
| Latin American Stock Exchange (Latinex)                | Panama         | Central America and the Caribbean            | 17,274  | 214 | 0 | 1 | 0 | 0 | 0 | 1 |
| Bolsa de Valores & Productos de Asunción S.A. (BVPASA) | Paraguay       | South America                                | 1,523   | 103 | 0 | 1 | 0 | 0 | 0 | 1 |
| Grupo BVL  | Peru           | South America                                | 95,014  | 261 | 1 | 0 | 1 | 1 | 1 | 4 |
| Philippine Stock Exchange                              | Philippines    | Asia   | 290,339 | 266 | 1 | 1 | 1 | 1 | 0 | 4 |
| Warsaw Stock Exchange                                  | Poland         | Europe                                       | 161,428 | 883 | 0 | 1 | 0 | 1 | 1 | 3 |
| Euronext Lisbon  | Portugal       | Europe                                       | 66,400  | 57  | 1 | 1 | 1 | 0 | 1 | 4 |
| Qatar Stock Exchange                                   | Qatar          | Middle East, Orth Africa,                    | 138,606 | 45  | 0 | 1 | 0 | 1 | 0 | 2 |

|                                   |                   |  |           |      |   |   |   |   |   |   |
|-----------------------------------|-------------------|--|-----------|------|---|---|---|---|---|---|
|                                   |                   | and Greater Arabia                           |           |      |   |   |   |   |   |   |
| Korea Exchange                    | Republic of Korea | Asia   | 1,869,629 | 2138 | 0 | 0 | 0 | 1 | 1 | 2 |
| Bucharest Stock Exchange          | Romania           | Europe                                       | 23,621    | 87   | 1 | 0 | 0 | 0 | 0 | 1 |
| Moscow Exchange                   | Russia            | Europe                                       | 695,689   | 233  | 1 | 0 | 0 | 0 | 1 | 2 |
| Rwanda Stock Exchange             | Rwanda            | Sub-Saharan Africa                           | 1         | 8    | 0 | 0 | 0 | 0 | 0 | 0 |
| Saudi Stock Exchange (Tadawul)    | Saudi Arabia      | Middle East, Orth Africa, and Greater Arabia | 502,000   | 188  | 1 | 0 | 0 | 0 | 0 | 1 |
| Belgrade Stock Exchange           | Serbia            | Europe                                       | 5,058     | 597  | 0 | 0 | 0 | 1 | 0 | 1 |
| MERJ Exchange                     | Seychelles        | Sub-Saharan Africa                           | 19        | 24   | 0 | 0 | 0 | 0 | 0 | 0 |
| Singapore Exchange                | Singapore         | Asia   | 1,100,000 | 749  | 1 | 1 | 1 | 1 | 1 | 5 |
| Ljubljana Stock Exchange          | Slovenia          | Europe                                       | 6,681     | 35   | 0 | 0 | 0 | 0 | 0 | 0 |
| Somali Stock Exchange             | Somalia           | Middle East, Orth Africa, and Greater Arabia | 11,000    | 3    | 0 | 0 | 0 | 0 | 0 | 0 |
| Johannesburg Stock Exchange       | South Africa      | Sub-Saharan Africa                           | 1,278,577 | 365  | 1 | 0 | 1 | 1 | 1 | 4 |
| Bolsas y Mercados Españoles (BME) | Spain             | Europe                                       | 1,137,417 | 3136 | 1 | 1 | 0 | 1 | 1 | 4 |
| Colombo Stock Exchange            | Sri Lanka         | Asia   | 18,960    | 296  | 0 | 1 | 0 | 1 | 0 | 2 |
| Nasdaq Stockholm                  | Sweden            | Europe                                       | 850,000   | 319  | 1 | 1 | 0 | 1 | 1 | 4 |

|  |                          |  |            |      |   |   |   |   |   |   |
|--|--------------------------|--|------------|------|---|---|---|---|---|---|
| SIX Swiss Exchange                     | Switzerland              | Europe                                       | 1,739,092  | 264  | 1 | 0 | 0 | 0 | 1 | 2 |
| Stock Exchange of Thailand             | Thailand                 | Asia   | 595,373    | 688  | 1 | 1 | 1 | 1 | 0 | 4 |
| Bourse des Valeurs Mobilières de Tunis | Tunisia                  | Middle East, Orth Africa, and Greater Arabia | 9,501      | 81   | 0 | 0 | 0 | 0 | 0 | 0 |
| Borsa İstanbul                         | Turkey                   | Middle East, Orth Africa, and Greater Arabia | 240,268    | 415  | 1 | 1 | 0 | 1 | 1 | 4 |
| Uganda Securities Exchange             | Uganda                   | Sub-Saharan Africa                           | 7,804      | 16   | 0 | 0 | 0 | 0 | 0 | 0 |
| Dubai Financial Market                 | United Arab Emirates     | Middle East, Orth Africa, and Greater Arabia | 80,319     | 66   | 1 | 1 | 0 | 1 | 1 | 4 |
| Abu Dhabi Securities Exchange          | United Arab Emirates     | Middle East, Orth Africa, and Greater Arabia | 112,128    | 67   | 1 | 1 | 0 | 1 | 0 | 3 |
| London Stock Exchange                  | United Kingdom           | Europe                                       | 3,483,490  | 2148 | 1 | 1 | 0 | 1 | 1 | 4 |
| Euronext London                        | United Kingdom           | Europe                                       | 35,313     | 2    | 1 | 1 | 1 | 0 | 1 | 4 |
| Dar es Salaam Stock Exchange           | Tanzania                 | Sub-Saharan Africa                           | 10,164     | 26   | 0 | 0 | 0 | 1 | 0 | 1 |
| New York Stock Exchange                | United States of America | Orth America                                 | 22,081,367 | 2291 | 1 | 1 | 0 | 1 | 1 | 4 |

|                            |                          |                    |            |      |   |   |   |   |   |   |
|----------------------------|--------------------------|--------------------|------------|------|---|---|---|---|---|---|
| Nasdaq                     | United States of America | Orth America       | 10,823,350 | 2957 | 1 | 1 | 0 | 1 | 1 | 4 |
| Ho Chi Minh Stock Exchange | Viet Nam                 | Asia               | 116,657    | 344  | 1 | 1 | 1 | 1 | 1 | 5 |
| HaOi Stock Exchange        | Viet Nam                 | Asia               | 49,000     | 366  | 0 | 1 | 1 | 1 | 0 | 3 |
| Zimbabwe Stock Exchange    | Zimbabwe                 | Sub-Saharan Africa | 8,288      | 63   | 0 | 0 | 1 | 0 | 0 | 1 |