

HOW STOCK EXCHANGES CAN GROW **GREEN FINANCE**

A VOLUNTARY ACTION PLAN





142.13	142.13	142.12	393.13
(-39.95)	(-39.95)	(-39.95)	(-39.95)
10.54	10.54	33.13	102.97
(+23.57)	(+18.08)	(-76.72)	(+687.23)
93.52	75.41	132.89	-9.66
(-57.53)	(-19.36)	(+76.22)	(+87.58)
143,653.64	150,028.94	156,015.25	22,217.71
(+0.68)	(+4.44)	(+3.99)	(+0.13)
50.44	726.98	741.27	-2.87
(+3.70)	(+1341.28)	(+1.07)	(-0.007)
14,502.33	14,556.61	16,579.05	959.02
		(-12.89)	(-2.55)

NOTE

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The preparation of this document relied on the hundreds of valuable inputs made by the experts comprising the informal SSE Advisory Group on Green Finance (See Annex III for a full list of members). Special appreciation is extended to Maurice Bauer and Julie Becker of the Luxembourg Stock Exchange for acting as Co-Chairpersons of this advisory group and for their valuable contribution to the contents of this paper. This paper is presented as an informal contribution to the discussions taking place at the COP23 United Nations summit on climate change on 16 November 2017 in Bonn, Germany. The views expressed in this paper are those of UNCTAD, UN Global Compact, UN Environment and PRI unless otherwise stated; the paper does not necessarily reflect the official views of individual members of the advisory group or their respective organisations.

ABOUT THE SSE

The SSE initiative is organized by UNCTAD, UN Global Compact, UN Environment Finance Initiative and the UN-supported Principles for Responsible Investment. The initiative was launched in 2009 by the United Nations Secretary-General as a peer-to-peer learning platform for exploring how exchanges (in collaboration with policymakers, regulators, investors and companies) can promote responsible investment for sustainable development.

MESSAGE FROM THE CHAIR OF THE ADVISORY GROUP

It has been an honour for the Luxembourg Stock Exchange to chair this distinguished Advisory Group and contribute, together with other experts, to the elaboration of the action plan. It offers action points and guidance for stock exchanges and constitutes a roadmap towards our ambitious goal of simultaneously stimulating demand and supply for green investing.

'How stock exchanges can grow green finance': With this ambitious title, the present guidance for stock exchanges allows the United Nations Sustainable Stock Exchanges (UN SSE) initiative to continue promoting sustainable and transparent capital markets through dialogue, capacity building and research. Today, eight years after launch, nearly all major stock exchanges from both developed and developing countries have joined the UN SSE initiative.

However, ten years after the issuance of the first ever green bond in 2007, the current share of labelled green bonds in the overall issuance of debt securities still stands at less than 1% – a drop in the ocean – despite the political talk and the COP21 goals. It is clear that all market participants need to act to unlock more capital and channel it into sustainable projects, while upskilling investors' knowledge in green finance.

As the leading stock exchange for the listing of green bonds, through our Luxembourg Green Exchange, our key focus is on facilitating the launch of more climate-aligned projects. CO2 emissions have never been so high, oceans are warming and acidifying, and global temperatures are rising; therefore, it is important to engage stock exchanges even more: only through combined and global efforts can we help sustainable finance to evolve from being niche to becoming mainstream.

Stock exchanges can play their role by encouraging new issuers to tap into the market, by promoting their efforts to comply with best market practices and by giving investors clarity and trust. To enable this, exchanges should provide solutions for enhanced disclosure: facilitating financial instruments issuance on one side, and ensuring compliance of the issuer's commitment to provide information to investors on the other.

The key objective is to provide issuers and investors with a dedicated infrastructure where they can efficiently post and access transparent information relating to a security's use of proceeds and its impact. This will boost market integrity, and improve investor trust in the market.

Stock exchanges, and especially the UN SSE initiative, can support the integrity and growth of green finance by encouraging the application and development of robust standards as well as leveraging the existing ones. This will lead to the better harmonisation of international definitions, easier comparability of projects and more solid overarching transparency.

Let's wake up the trillions!



Robert Scharfe
Chief Executive Officer
Luxembourg Stock Exchange

MESSAGE FROM THE UNFCCC

In recent years the world has set unprecedented targets for the way we interact with our environment, through landmark agreements such as the Paris Agreement at COP21 and the Sustainable Development Goals. Achieving these targets will require innovative new forms of finance and investment, what we often refer to as 'green finance'. Today we need more collaboration between policy makers and capital markets to help us deliver on our global climate commitments.

We commend the United Nations Sustainable Stock Exchanges (SSE) initiative for their work with exchanges, regulators, investors, companies and policy makers to mobilise the finance needed to achieve the Paris Agreement and bring new notions of risk and sustainable wealth generation into the allocation of capital. Stock exchanges are the intersection between all of these capital market players, and as such they are in constant adaptation to the demands of each. One of these areas is in green finance, entailing both the promotion of green products and services as well as greening mainstream local and international financial markets.

Stock exchanges are playing an important role in creating a financial system that reflects the environment in which businesses operate. In addition to promoting green products and services that mobilise financial resources for climate action, stock exchanges are also adapting to long term objectives.

This guidance document provides stock exchanges in any market with a solid platform to ensure the development of green finance initiatives in their market and to support their Nation's achievement of their Paris Agreement commitments. At the same time, it helps stock exchanges to engage their markets and ensure that all market players are aware of the opportunities associated with green finance and new green financial products. By guiding capital market players in further developing green finance, the SSE is playing a key role in the mobilisation of finance for sustainable development and climate change mitigation and adaptation.

We applaud the SSE and its Advisory Group on green finance for this exceptional work in ensuring all stock exchanges have the tools to succeed in transitioning to green markets, and we encourage continued efforts in this area. Financing the 2030 Agenda and Paris Climate Agreement will require long-term efforts in a collaborative manner, and stock exchanges are in a prime place to promote and encourage collaborative and unified change to our financial system.



Patricia Espinosa

Executive Secretary
United Nations Framework Convention
on Climate Change (UNFCCC)

EXECUTIVE SUMMARY

BACKGROUND

In 2015, world leaders met in Paris and agreed on ambitious goals to avoid the worst effects of climate change. The same year, countries worldwide agreed on the United Nations Sustainable Development Goals (SDGs) which include a clear call to action on climate change. Meeting these global goals will require a transition to green and sustainable financial markets. In order to create the new forms of green and blended finance as set out in the Paris Agreement and the SDGs, there is a need for both the promotion of green products specifically, as well as the greening of mainstream financial markets more broadly. This guidance seeks to help stock exchanges start or further enhance their work on green finance by providing them with an action plan.

VALUE PROPOSITION

Green and sustainable finance offers benefits and opportunities for stock exchanges. Green finance products have already been introduced in several markets and have seen tremendous growth, with green bond and green equity indices outperforming their non-green benchmarks. Green finance is nevertheless still in its early stages: as of 2017 green equities were only about 5% of overall listed value and only around 0.2% of total bond issuance worldwide was made up of labelled green bonds. This presents significant growth opportunities for exchanges and other market actors, with potential concomitant revenue growth opportunities, and in some markets this has allowed exchanges to strengthen their competitive position.

TARGET AUDIENCE

Since 2009, the Sustainable Stock Exchanges (SSE) initiative has been working with stock exchanges to encourage partnerships and the adoption of best practices in the area of responsible investment for sustainable development. This guidance document is produced for stock exchanges, with the input of stock exchanges, to facilitate peer-to-peer learning. A small but pioneering group of stock exchanges are already taking a leading role in the development of green finance in their markets. Stock exchanges not yet actively engaged with green finance can enjoy the second-mover advantage of learning from their peers and duplicating what works from existing practices, while adding improvements and innovations to customise green finance to their market. This applies to stock exchanges in developed, emerging and frontier markets: within a wide range of market conditions, there are opportunities to develop green finance and examples to learn from.

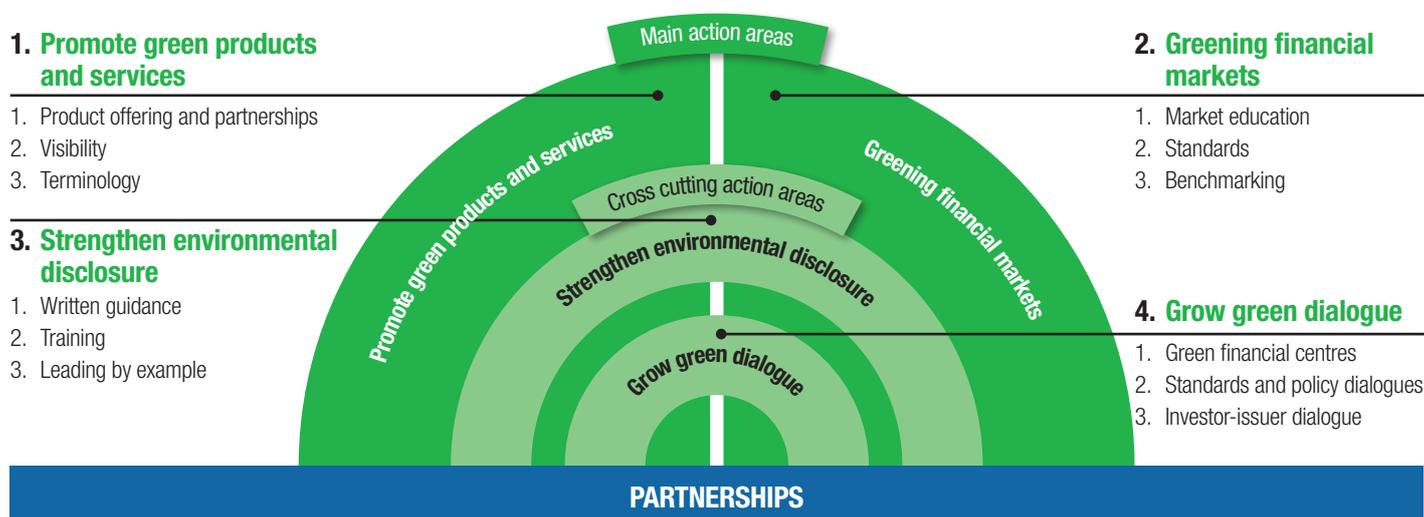
This voluntary guidance was written for stock exchanges, keeping in mind that there is no one-size-fits-all approach; rather, that different markets and exchanges under different circumstances will need to tailor policies, guidelines and other initiatives to best fit their specific conditions.

CHALLENGES

Promoting green products and greening financial markets are not without challenges for stock exchanges. This guidance addresses a number of specific challenges, obstacles and barriers including: insufficient supply to meet investor demands; insufficient liquidity of green products; terminology confusion (what is 'green'?); operational capacity constraints of exchanges; regulatory hurdles; and poor availability of relevant data. Each of these challenges has already been faced by an exchange or other capital market stakeholder and the lessons-learned from their experiences can help other exchanges. Moreover, stock exchanges are not expected to address all these challenges in isolation. Exchanges will need to work with a range of stakeholders including investors, issuers, index providers, standard setters, regulators and policy makers. These other market stakeholders may also find this guidance useful to better understand how their own green finance roadmaps can better align with their stock exchange.

AN ACTION PLAN

The growth of green finance depends on both promoting green finance products as well as greening mainstream financial markets. A green finance action plan is offered to guide stock exchanges in the implementation of green finance strategies. This voluntary action plan provides exchanges with a checklist of 12 action points within 4 action areas. It can be used as a self-assessment tool to identify areas where stock exchanges can initiate or expand their activities on green finance. Real world examples are provided for each action item to assist with implementation.



The SSE green finance action plan identifies two main action areas that stock exchanges should work on in parallel. First, the promotion of green labelled products and services helps direct funding towards green projects and environmentally aligned issuers (action area 1). Secondly, more systematic and holistic changes must take place to support a green transition and ensure market resilience to the economic impacts of climate change (action area 2). In addition to these two main action areas, the guidance also identifies two cross-cutting action areas that will facilitate green finance efforts in the first two action areas: strengthening the quality and availability of climate-related and other environmental disclosure among issuers and investors (action area 3); and contributing to the growth of dialogue and consensus building on green finance with other capital market participants (action area 4). Throughout all four of these action areas, partnerships are key.

In order to assist stock exchanges in self-assessing their current state of play on green finance, and to help develop their own roadmap, a diagnostic checklist has been developed (see table II.1 in the section 'How to use this guidance'). The SSE Green Finance Diagnostic Checklist allows an exchange to benchmark their current support for green capital markets, and helps an exchange better visualise what action areas present further opportunities.

This action plan was developed with the contribution of a multi-stakeholder Advisory Group of over 70 experts from more than 60 institutions across 28 countries (as well as 6 international organisations), including stock exchanges, asset owners, asset managers, issuers, financial service providers, civil society representatives and leading international green finance specialists (annex III). This work aims to synthesise efforts already being undertaken, identify specific items of relevance for stock exchanges and highlight the key areas of impact.

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ACRONYMS

ABS - Asset backed securities	NOX - Nitrogen oxide
BMV - Bolsa Mexicana de Valores	NSE - National Stock Exchange of India
BSE - Bombay Stock Exchange	PRI - Principles for Responsible Investment
CBI - Climate Bonds Initiative	REC - Regional energy certificates
CO ₂ - Carbon dioxide	REIT - Real estate investment trust
COP - Conference of the Parties	RGGI - Regional greenhouse gas initiative
CSRC - China Securities Regulatory Commission	S&P - Standard and Poor's
DJSI - Dow Jones Sustainability Index	SDG - Sustainable Development Goal
EGX - Egyptian Stock Exchange	SEMARNAT - Mexican Ministry of Environment and Natural Resources
EIoD - Egyptian Institute of Directors	SET - Stock Exchange of Thailand
ESG - Environmental, Social and Governance	SIF - Sustainable Investment Forum
ETF - Exchange traded fund	SME - Small-medium sized enterprise
ETS - Emissions Trading Scheme	SO ₂ - Sulphur dioxide
EU - European Union	SSE - Sustainable Stock Exchanges (initiative)
FSB TCFD - Financial Stability Board's Task Force on Climate-Related Disclosures	UN - United Nations
GBP - Green Bond Principles	UNCTAD - United Nations Conference on Trade and Development
GFC - Green Finance Committee	UN Environment FI - United Nations Environment Finance Initiative
GHG - Greenhouse gas	UNFCCC - United Nations Framework Convention on Climate Change
GRI - Global Reporting Initiative	WFE - World Federation of Exchanges
ICE - Intercontinental Exchange	
ICMA - International Capital Market Association	
IEA - International Energy Agency	
IFC - International Finance Corporation	
IFRS - International Financial Reporting Standards	
IOSCO - International Organization of Securities Commissions	
IPCC - Intergovernmental Panel on Climate Change.	
IPO - Initial public offering	
JSE - Johannesburg Stock Exchange	
LGX - Luxembourg Green Exchange	
LSE - London Stock Exchange	
LuxSE - Luxembourg Stock Exchange	
MENA - Middle East and North Africa	
NDC - Nationally Determined Contributions	
NGO - Non-governmental organisation	

I. GREEN FINANCE: AN INTRODUCTION

1. BACKGROUND

Recent years have seen strong international agreement related to environmental action and aligning finance and investment policy with environmental goals (box I.1). In addition to global action, regional and national action related to green finance is also increasing.¹ To keep the global temperature increase well below 2 degrees Celsius, as agreed by governments in 2015,² the world must implement deep emissions reductions.³ The International Energy Agency (IEA) estimates that investment in low-carbon technologies and energy efficiency needs to increase six-fold to US\$2.3 trillion by 2035 to achieve the climate target.⁴ Funding will be required from all sectors, and capital markets are already seeing new opportunities, as well as risks, arise from environmental agreements. Stock exchanges, as the interface between key capital market players, have the opportunity to play an important role as facilitators and proponents for the transition to a greener economy.

“Without a healthy environment we cannot end poverty or build prosperity.”

United Nations Secretary General António Guterres

“Stock exchanges play a pivotal role in bringing together issuers and investors, and can drive the development of sustainable market-based solutions. In this context, stock exchanges can act first as platforms for disseminating ESG information; second, as providers of market infrastructure for sustainable asset classes; and third, as alternatives to bank finance for small and medium-sized enterprises.”

European Commission High-Level Expert Group on Sustainable Finance Interim Report, July 2017

Box I.1 Global agreements related to green finance (Source: SSE)

In recent years, UN Member States have concluded a number of agreements to achieve a series of goals related to green finance. Some of these agreements include:

- **The Paris Agreement/COP21, entered into force 4 November 2016** – The Paris Agreement’s central aim is to strengthen the global response to the threat of climate change by keeping a global temperature rise this century well below 2 degrees Celsius above pre-industrial levels and to pursue efforts to limit the temperature increase even further to 1.5 degrees Celsius. Additionally, the agreement aims to strengthen the ability of countries to deal with the impacts of climate change.⁵ The Paris agreement states explicitly that it aims to make ‘finance flows consistent with a low GHG emissions and climate-resilient pathway’.
- **The 2030 Agenda/SDGs, adopted September 2015** – The 2030 agenda, a set of 17 goals known as the Sustainable Development Goals (SDGs), provides the roadmap for generating ‘shared value’ – shifting capital away from ‘business as usual’ towards increased prosperity and social inclusion and environmental regeneration. The agenda was agreed upon by 193 countries, setting out 17 goals or SDGs, of which 11 have climate related targets.⁶
 - Specifically, Goal 13 Climate change, Target 13.3, is relevant to stock exchanges: Improve education, awareness raising, and human and institutional capacity on climate change mitigation, adaptation, impact reduction and early warning.
- **The Addis Ababa Action Agenda, adopted July 2015** – The Action Agenda establishes a strong foundation to support the implementation of the 2030 Agenda for Sustainable Development. It provides a new global framework for financing sustainable development by aligning all financing flows and policies with economic, social and environmental priorities.⁷ Agreements directly relevant to stock exchanges include paragraph 44 and 70, as well as paragraph 38 which is particularly relevant to work on green finance:
 - Paragraph 38 is particularly relevant to stock exchanges, whereby governments endeavour to ‘design policies, including capital market regulations where appropriate, that promote incentives along the investment chain that are aligned with long-term performance and sustainability indicators, and that reduce excess volatility’.

Since the unprecedented agreement of most of the world's governments to take action on climate change in Paris in 2015, the majority of countries have already submitted their Nationally Determined Contributions (NDCs) outlining their activities and strategies towards meeting the goals of the Paris Agreement.⁸ The strategic implementation of the NDCs will require a global financial system that meets the long-term investment needs of a transition to an environmentally sustainable economy.⁹ The demands of this transition to a lower-carbon economy will require significant changes across economic sectors and industries in the near term, with direct implications for capital markets.

Adding to the challenges of a rapidly warming planet, the world also faces biodiversity loss, water scarcity, ocean acidification, pollution (air and water), deforestation, and other areas of environmental degradation. It is estimated that by 2030, the world will need to invest close to US\$90 trillion in sustainable infrastructure assets in key areas such as buildings, energy, transport, water and waste to tackle three central challenges facing the global community: reigniting growth, delivering on the SDGs and reducing climate risk in line with the Paris Agreement.¹⁰ This presents not only a challenge in

adapting to the changing context, but also an opportunity for capital markets to address this demand for new investment.

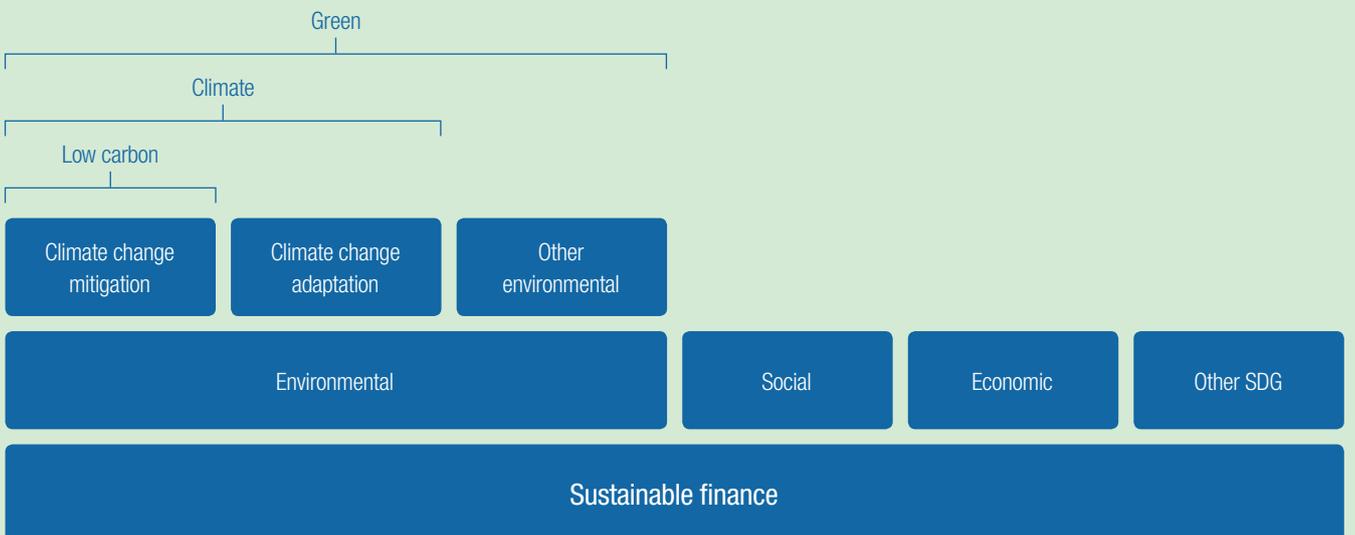
As a mechanism for facilitating the transition to a less polluting and less resource-intensive global economy, green finance offers an important contribution to a number of the environmental challenges the world is facing. It could prevent or reduce the impact of future market failures and promote resilience and financial stability.

According to the G20, green finance can be understood as the 'financing of investments that provide environmental benefits in the broader context of environmentally sustainable development'.¹¹ These benefits include, for example: reduction in air, water and land pollution; reduction in greenhouse gas (GHG) emissions; improved energy efficiency; as well as the mitigation of and adaptation to climate change. While there is no globally-agreed definition for green or sustainable finance, working definitions and sets of criteria have been developed in the context of the global financial system, the intergovernmental system, national financial systems, private institutions and markets (box I.2 and annex I).

Box I.2 Green finance terminology (Source: UN Environment Inquiry)

Climate Finance is defined by the United Nations Framework Convention on Climate Change (UNFCCC) as 'local, national or transnational financing, which may be drawn from public, private and alternative sources of financing... to significantly reduce emissions, notably in sectors that emit large quantities of greenhouse gasses... and to adapt to the adverse effects and reduce the impacts of climate change'.

Sustainable Finance can be understood as stocks and flows of financial resources and assets (across banking, investment and insurance) which is aligned with a broader range of environmental, social and economic objectives - most fundamentally, the delivery of the SDGs.



Green finance includes internalising environmental externalities and adjusting risk perceptions to encourage environmentally sustainable investment while discouraging environmentally harmful investment. It covers a wide range of financial institutions and asset classes, both private and public, and involves the effective management of environmental risk across the financial system.¹²

2. VALUE PROPOSITION

Green finance offers key benefits and opportunities to stock exchanges, including attracting new listings, strengthening an exchange's competitive position, meeting a growing investor and issuer demand, and reinforcing an exchange's social license (box I.3). With climate change cited as one of the most important long-term trends posing a risk to investments by large institutional investors and asset managers,¹³ the financial markets are increasingly recognising the importance of green finance. By promoting green products that direct finance towards environmentally beneficial projects and initiatives and by supporting the greening of financial markets through greater transparency and disclosure, various financial institutions are

already capitalising on these benefits and opportunities. For example, financial centres in Dubai,¹⁴ Hong Kong,¹⁵ London,¹⁶ Luxembourg,¹⁷ Paris,¹⁸ Singapore¹⁹ and Stockholm²⁰ are just some examples of those who are already working to become international or regional 'green finance centres'. Building on this momentum, a group of financial centre representatives agreed in 2017 to take strategic action on green and sustainable finance, launching an international network of financial centres for sustainability²¹. Stock exchanges are also benefiting from the opportunities presented with green finance (for an example, see box I.4) and are playing key roles in developing green centres in their market.²²

As the positive financial opportunities of green investment products grow, new opportunities continue to emerge and new products are being listed. For example, green equity indices (box I.5), among other green products, have been shown to outperform their non-green benchmarks, which is creating increased demand and development of new green products.

Box I.3 Key benefits for stock exchanges to take action on green finance (Source: SSE)

- **Attract listings** of new green themed financial products and IPOs;
- **Strengthen the competitive position of your exchange** by operating at the forefront of an ongoing market transition;
- **Meet investors' demand** for green products and services;
- **Reinforce your position in the economy and society** as an essential facet of the financial system by supporting national and international goals on climate action and sustainable development.

Box I.4 Luxembourg Stock Exchange creating a competitive advantage in green bonds through the launch of their Green Exchange (Source: Luxembourg Green Exchange)

The Luxembourg Stock Exchange (LuxSE) was able to create a competitive advantage by developing its expertise in green bonds and launching the Luxembourg Green Exchange (LGX). In 2007 LuxSE listed the first ever green bond to enter the market, the European Investment Bank's 'Climate Awareness Bond'. At publication, the exchange listed more than 140 green bonds, with issuers ranging from sovereigns, supranationals, agencies and development banks, to financial institutions and major corporates.

Asked about the selection criteria when choosing the listing venue for the world's first sovereign green bond, the Polish Deputy Minister of Finance, Piotr Nowak, explained: 'LuxSE is one of the biggest stock exchanges for international bonds in Europe, and a very innovative one. The recent implementation of LGX is proof of an open-minded approach towards the needs of financial markets'.²³

Box 1.5 Climate indices outperforming their benchmarks (Source: FTSE Russell)

As of the end of October 2017, all of FTSE’s climate themed indexes have risen more than their benchmark indexes for the last five years. This includes: the FTSE All-World ex CW Climate Balanced Factor Indexes, FTSE Divest-Invest Developed 200 Index Series, FTSE Environmental Opportunities Index Series and FTSE ex Fossil Fuels Index Series. (Returns as of 30 October, 2017)

FTSE Climate Balanced Factor - 5 year performance total return



FTSE Divest Invest - 5 year performance total return



FTSE Environmental Opportunities - 5 year performance total return



FTSE Ex Fossil Fuels - 5 year performance total return



Tony Campos, director, ESG product management, FTSE Russell, said:

‘Recent environmental index performance supports the growing recognition by market participants globally that applying ESG considerations to portfolios can align with investment objectives and not simply meet an investment quota or policy objective. Increasingly we are seeing investors look to smart beta indexes to incorporate ESG exposure into their core passive equity portfolios.’

While green finance products have already been introduced in several markets and have already seen tremendous growth, there is ample room for additional growth. For example, as of 2017, green equities were only about 5% of overall listed value²⁴ and around 0.2% of total bond issuance worldwide was made up of labelled green bonds.²⁵ This presents significant growth opportunities for exchanges and other market actors, with potential concomitant revenue growth opportunities, and in some markets has allowed exchanges to strengthen their competitive position.

Alongside the promotion of green finance products to redirect finance towards environmentally and sustainably aligned objectives, stock exchanges also have a central role to play in the broader challenge of greening mainstream financial markets. This will require the mainstreaming of environmental considerations throughout the investment chain for both equities and debt instruments in response to both investor and public sector demands.

As conduits between policymakers, issuers and investors, stock exchanges are uniquely placed to promote standards, enhance transparency, guide both issuers and investors, and facilitate the growth needed in the area of green finance. In some markets, stock exchanges are already showing leadership in supporting this green transition, and signalling to their respective markets the necessity of integrating sustainable practices as well as supporting their sustainable development (box I.6).

Box I.6 Brazilian stock exchange's commitment to sustainability (Source: B3)

Acting as the heart of the capital markets, stock exchanges play crucial roles in fostering better practices by interacting daily with leading national and international companies and investors. Exchanges exist to develop the financial and capital markets, and to be sources of finance and growth for companies and investment alternatives for market players. This is only feasible if the exchanges' leadership understands the importance of a truly sustainable development that considers social, environmental and economic factors. In this context, Brazil's stock exchange B3 has a history of being actively committed to the United Nations. It was the first stock exchange in the world to adhere to the Global Compact in 2004 and also the first exchange in any emerging market country to sign up to the Principles for Responsible Investment in 2010 and one of the five founding signatories to the SSE initiative. These commitments demonstrate how seriously B3 considers the sustainability agenda when defining its strategy.



In addition to the opportunities green finance presents, climate change and environmental degradation pose serious risks to the way markets currently operate, and capital market players are beginning to consider these when developing their future work plans. The Financial Stability Board’s Task Force on Climate-Related Financial Disclosures (FSB TCFD) Recommendations highlight a set of risks and opportunities facing markets today, as well as their potential financial impact (table I.1). In addition to the financial risks listed by the FSB TCFD, some other material risks related to the environment may include: disruption to supply chains, loss of raw materials, loss of biodiversity, loss of arable land, social upheaval, increased healthcare costs, mass migration and extreme weather events. Stock exchanges and other capital market players can mitigate these risks by enhancing their work on green finance.



TABLE I.1: FSB TCFD CLIMATE-RELATED MARKET* RISKS, OPPORTUNITIES AND POTENTIAL IMPACTS (SOURCE: FSB TCFD)

Climate Related Opportunities and their Financial Impact	
<p>Climate Related Opportunities:</p> <ul style="list-style-type: none"> • Access to new markets • Use of public-sector incentives • Access to new assets and locations needing insurance coverage 	<p>Potential Financial Impact:</p> <ul style="list-style-type: none"> • Increased revenue through access to new and emerging markets (e.g. partnerships with governments, development banks) • Increased diversification (e.g. green bonds and infrastructure)
Climate Related Risks and their Financial Impact	
<p>Climate Related Risks:</p> <ul style="list-style-type: none"> • Changing customer behaviour • Uncertainty in market signals • Increased cost of raw materials 	<p>Climate Related Risks:</p> <ul style="list-style-type: none"> • Reduced demand for goods and services due to shift in consumer preferences • Increased production costs due to changing input prices (e.g. energy, water) and output requirements (e.g. waste treatment) • Abrupt and unexpected shifts in energy costs • Changing revenue mix and sources • Re-pricing of assets and speed of re-pricing (e.g. fossil fuel reserves, land valuations, securities valuations)

*Extrapolated from a larger list of risks, opportunities and potential impacts which the FSB TCFD broke down into the following categories: Policy and legal, technology, market, reputation, resource efficiency, energy source, products and services, and resilience. Only those associated with Market are listed in the above table.

II. HOW TO USE THIS GUIDANCE

1. TARGET AUDIENCE AND SCOPE

This voluntary action plan was written for stock exchanges, keeping in mind that there is no one-size-fits-all approach; rather, that different markets and exchanges under different circumstances will need to tailor policies, guidelines and other initiatives to best fit their specific conditions. In this regard, the scope of this guidance aims to cover a broad spectrum of activities that may or may not be applicable to all exchanges depending on their individual market circumstances and mandates. To be most useful to exchanges, the specific action points within each of the four action areas are all based on real-world examples of exchanges already working on the particular aspect of green finance being presented. Exchanges are encouraged to adapt the examples presented in this guidance to best fit their market circumstances.

The scope of this voluntary action plan focuses on environmental issues within the broader work being done on environmental, social and governance (ESG) factors as they apply to capital markets. Many stock exchanges worldwide have already focused significant time and resources on sustainability more broadly, and the guidance presented here seeks to strengthen those efforts, specifically as they relate to environmental issues, rather than replace or diminish them. Extension from green finance to a broader set of ESG issues is also an option for all the suggested action points, particularly where stock exchanges are newly implementing their sustainability engagement. It is advised that exchanges work with investors, issuers, regulators and other key stakeholders to identify which sustainability area or areas should be prioritised within the context of the exchange's mandate and its sphere of influence and impact, for example to address national priorities.

The list of action points where stock exchanges are engaging on green finance presented in this document is not exhaustive, and it is recognised that other opportunities not discussed here may also exist, or may evolve over time. For example, exchanges may also have opportunities, or may already be working on green initiatives linked to the derivatives market, asset-backed securities, and other intermediated products or instruments. Commodity trading also presents environmental opportunities, but is beyond the scope of this guidance. This and other topics may be developed further in future work on this area.

2. GETTING STARTED

Stock exchange action on Green finance involves two complementary sets of activities:

- I. Growing green products (i.e. developing, promoting and investing in explicitly labelled environmentally linked financial products), and
- II. Greening financial markets (i.e. mainstreaming environmental issues within financial markets).

What is referred to in this guidance as financing or promoting green products includes the activities identified as necessary to start the flow of funds towards green activities and environmentally aligned issuers. What is referred to in this document as greening financial markets or mainstreaming green refers to the integration of material environmental issues into the financial system as a whole.

Product innovation and promotion are key in the initial development of green finance to provide more liquidity and accessibility for environmentally-aligned investing. However, even with the strongest growth, these explicitly labelled green finance instruments will not be enough to achieve the degree of change necessary. In parallel, mainstream markets will need to move in the same direction, towards the integration of material environmental issues into the financial system.

To grow green finance in their markets, it is recommended that stock exchanges keep in mind at all times these two complementary sets of activities, and work with partners whenever appropriate. The first two action areas in this guidance aim to address the dual need for promoting green products and greening financial markets, while the remaining two action areas provide support to these activities (figure II.1).

FIGURE II.1 A GREEN FINANCE ACTION PLAN FOR STOCK EXCHANGES (SOURCE: SSE)



In order to assist stock exchanges in self-assessing their current state of play on green finance, and to help develop their own roadmap, a diagnostic checklist has been developed (see table II.1). The SSE Green Finance Diagnostic Checklist allows an exchange to benchmark its current support for green capital markets, and helps it better visualise what action areas present further opportunities.

This SSE Green Finance Diagnostic Checklist can be used as a starting point as an indication of a potential next step for that exchange, and as a benchmarking tool to track progress of the exchanges engagement on green finance. Exchanges are encouraged to use this tool not only as a starting point but as a reference to track their progress.

TABLE II.1 SSE GREEN FINANCE DIAGNOSTIC CHECKLIST (SOURCE: SSE)

Action plan area		Action point
Promote green products and services	1.1	Product offerings and partnerships: Has your exchange developed and offered green products or services for your market or partnered with another financial services institution to do so?
	1.2	Visibility: Does your stock exchange make green products easy to find through dedicated platforms or listing labels?
	1.3	Green Terminology: Does your exchange provide guidance to its market on green terminology?
Greening financial markets	2.1	Market education: Does your exchange educate issuers and investors on the importance of incorporating environmental issues into investment practices?
	2.2	Standards: Has your exchange incorporated environmental disclosure standards into its listing rules?
	2.3	Benchmarking: Does your exchange make benchmarks available for your market in the form of green indices or environmental rating systems?
Strengthen environmental disclosure	3.1	Written guidance: Does your exchange provide written guidance on environmental disclosure?
	3.2	Training: Is your exchange providing training for capital market participants on environmental disclosure and/or integration?
	3.3	Leading by example: Does your exchange produce a report on its own environmental policies, practices and impacts?
Grow green dialogue	4.1	Green financial centres: Does your exchange have an action plan or roadmap to grow green finance in your market?
	4.2	Standards and policy dialogues: Does your exchange stimulate policy dialogue on green standards?
	4.3	Investor-issuer dialogue: Does your exchange facilitate a dialogue between issuers and investors on green finance?

3. ADDRESSING CHALLENGES, OBSTACLES OR BARRIERS

When promoting green products and greening financial markets, stock exchanges may encounter some challenges, obstacles or barriers in their markets (table II.2). It is recommended that stock exchanges first evaluate their market to determine both the challenges and opportunities for green finance development at their exchange.

TABLE II.2: HOW THIS GUIDANCE ADDRESSES CHALLENGES, OBSTACLES OR BARRIERS TO GREEN FINANCE FOR STOCK EXCHANGES (SOURCE: SSE)

Challenge, obstacle or barrier	How to address the challenge, obstacle or barrier	
	Section	Action area
Insufficient supply to meet investor demands In many markets, the demand for green finance products outweighs the supply. For example, many green bonds are oversubscribed, and investors are demanding more. ²⁶ Similarly, various investor initiatives are demanding increased environmental disclosure on financial products (see Action Area 3: Strengthen environmental disclosure).	1.1	Product offerings & partnerships
	1.3	Green terminology
	2.1	Market education
	2.3	Benchmarking
	3.1	Written guidance
	3.2	Training
	3.3	Leading by example
Insufficient liquidity of green products Contrary to the above barrier, in some markets the investor base may be insufficient for the product offerings, or investors may not be sufficiently aware of the availability of green products in their market.	1.2	Visibility
	2.1	Market education
	2.3	Benchmarking
	4.3	Investor-issuer dialogue
Terminology confusion A lack of standardisation and clarity of 'green' and related terms such as fossil-free, low-carbon, etc. may cause confusion in the market and hesitation to invest in green labelled products.	1.3	Green terminology
	2.3	Benchmarking
Operational capacity constraints of exchanges The size and resources of each exchange varies greatly from market to market, and therefore capacity may not always allow an exchange to take action without the support of partners.	1.1	Product offerings & partnerships
	4.2	Standards and policy dialogues
Regulatory hurdle Some new green finance products may require the involvement of capital market regulators to define listing requirements in areas such as defining green, second opinions and reporting requirements. A regulatory hurdle may include either blocks to the growth of green finance initiatives by current regulation, or a lack of enabling regulation.	2.2	Standards
	4.1	Green financial centres
	4.2	Standards and policy dialogues
Lack of transparency or availability of data Sufficient data must be available to identify the environmental impact of listed entities or products, measure performance against targets or green disclosure standards, or identify green revenues produced.	1.3	Green terminology
	2.1	Market education
	2.2	Standards
	2.3	Benchmarking
	3.1	Written guidance
	3.2	Training
	4.2	Standards and policy dialogues

III. ACTION PLAN FOR STOCK EXCHANGES

Once a stock exchange has assessed their current engagement on green finance using the SSE Green Finance Diagnostic Checklist (table II.1) or another diagnostic tool, they can begin to develop an action plan for growing green finance in their market. The following action areas can be integrated into this action plan:

1. PROMOTE GREEN PRODUCTS AND SERVICES

Part of a stock exchange's mandate is to facilitate the trading of stocks, bonds and other financial products in their market, which often includes the promotion of these products to increase issuance and investment. Stock exchanges already promote various green products, from debt instruments like green bonds, to green equities like YieldCos (see a full list of green products being promoted by stock exchanges in annex II). Stock exchanges can play an important role in the growth of financial products in their market either by working on developing these products or promoting products where they already exist.

The Climate Bonds Initiative (CBI) together with the Luxembourg Green Exchange, London Stock Exchange Group, Nigerian Stock Exchange and Johannesburg Stock Exchange, developed a report on the role of exchanges in accelerating the growth of the green bond market in particular.²⁷ This report found six key areas where stock exchanges have a role to play (figure III.1).

Several stock exchanges are already supporting the green bonds market through various tools, and exchanges can apply lessons learned from this field to other green products such as green ETFs, REITs or YieldCos (see annex II for a description of green products offered on stock exchanges).

Stock exchanges should keep in mind that green finance products, as with other investment products, can originate from several types of institutions and are often developed in partnership between two or more firms. Therefore, being aware of key partners and opening communication lines is essential to developing and promoting new products. To promote green finance products and services in their markets, a selection of key action points (1.1-1.3) are outlined below.

1.1 Product offerings and partnerships

Has your exchange developed and offered green products or services for your market or partnered with another financial services institution to do so?

While the mandate of a stock exchange may not always include developing new products, many exchanges worldwide have been involved in the creation of new products through partnerships. To grow green products in their market, many stock exchanges partner with financial services providers, research institutes, banks,

FIGURE III.1: THE ROLE OF STOCK EXCHANGES IN ACCELERATING THE GROWTH OF THE GREEN BOND MARKET (SOURCE: CLIMATE BONDS INITIATIVE)



international organisations, other stock exchanges and/or other specialised agencies.

For example, the London Stock Exchange (LSE) Group signed a memorandum of understanding with YES BANK to collaborate on bond and equity issuance, with a focus on developing green infrastructure. Similarly, the Luxembourg Stock Exchange, a global leader in green bond listings, has launched separate partnerships with both the Shanghai and Shenzhen stock exchanges in China on joint green bond indices to facilitate access to China's green bonds for European Investors. As part of a cross-border cooperation between the Shanghai Stock Exchange and the Luxembourg Stock Exchange, a new index family consisting of the Shanghai Stock Exchange Green Corporate Bond Index and the Shanghai Stock Exchange Green Bond Index are displayed on both exchanges' websites synchronously. Although indices are not a product in themselves, they are important benchmarking activities that can lead to the development of ETFs (see action point 2.3 for more on benchmarking activities).

In Italy, it was through an evaluation of their work with SMEs that Borsa Italiana recognised a potential for SME green bonds (box III.1). In both Mexico and USA, exchanges are aligning with their government's objectives through emissions trading schemes that aim to support the country's commitment to emissions reductions as part of the Paris Agreement (box III.2 & III.3).

Box III.1 The Italian corporate bond market: designed for SMEs (Source: Borsa Italiana)

In 2013 Borsa Italiana launched a new segment on ExtraMOT (Borsa Italiana's exchange-regulated market or MTF) for professional investors only called 'ExtraMOT PRO'. The professional segment was created to encourage private SMEs to issue corporate bonds to fund their medium-long term development plans and more in general to offer Italian corporates a national, flexible and cost effective fixed income market. Based on estimates regarding the use of proceeds* 23 climate-aligned bonds from companies operating in the renewables and energy efficiency sectors have raised over €590mn (US\$708mn) on ExtraMOT PRO. In March 2017, following a consultation, Borsa Italiana introduced a formal procedure for issuers to request the accreditation of their debt instruments listed on MOT (the regulated market) and ExtraMOT as green and/or social bonds, through the provision of a second or a third party opinion certifying the use of proceeds and a commitment to annual reporting. The list of the labelled green and/or social bonds is published on the Borsa Italiana website. As of September 2017, 36 green and sustainable bonds by 8 different entities (supranational issuers as well as corporate, bank and government ones) - for a total amount of almost €35bn (US\$42bn) - are listed on Borsa Italiana's Fixed Income markets.

Box III.2 Mexican collaboration on emissions trading (Source: MÉXICO2)

The Mexican Ministry of Environment and Natural Resources (SEMARNAT), the Mexican Stock Exchange and the Mexican Stock Exchange's green platform (MÉXICO2) are collaborating to develop an Emissions Trading Scheme (ETS) exercise. This system is one of the tools that is expected to help the country fulfil its commitments adopted in the Paris Agreement, including the reduction of 22% of greenhouse gas (GHG) emissions by 2030. ETS are market based tools that set a price to GHG emissions which cause climate change. Exercises such as this one serve the dual purpose of showcasing private sector leadership in sustainability and helping companies become familiar with the way ETS operate and manage their carbon footprint. Sectors to be covered by the exercise have been defined as: electricity, oil & gas, industry (cement, glass, iron & steel), petrochemicals, aviation and pulp and paper.

Box III.3 Sustainable carbon emission markets and renewable energy at ICE (Source: Intercontinental Exchange)

Intercontinental Exchange (ICE) started investing in environmental markets in 2003 through a partnership with the Climate Exchange, which it fully acquired in 2010. Now, with well more than a decade of investment in these products, ICE is recognised as a global leader in emissions and renewable energy markets. As a complement to the broad range of energy products traded on ICE's markets, the exchange offers a slate of environmental contracts that support programmes established to reduce carbon emissions and encourage the use of renewable energy. The exchange's services include critical risk management tools that help businesses meet government-mandated emissions reduction targets and other regulations in a cost-effective manner. The establishment of a transparent, market based pricing system helps companies make decisions on how to allocate resources and invest in new technologies and innovative solutions. ICE's products provide open markets, price discovery and transparency, as well as a means to comply with the requirements of various government programmes. Examples of ICE's products supporting emission reduction programmes include:

- **European Emissions Trading System:** ICE Futures Europe lists futures and options contracts for EU allowances, EU aviation allowances and Certified Emissions Reductions. Since launching in 2005, contracts accounting for more than 60 billion tons of carbon emissions have traded on the ICE platform.
- **California Cap and Trade Programme:** ICE Futures US lists futures and options contracts based on the California Carbon Allowances that form the basis of California's cap and trade programme. Since launching in August of 2011 and through the end of 2016, ICE has traded contracts accounting for 1.4 billion tons of emissions related to California's programme.
- **Regional Greenhouse Gas Initiative:** ICE Futures US lists futures and options contracts based on RGGI allowances and has traded contracts accounting for more than 1.9 billion tons since trading began in 2008.
- **EPA Criteria Pollutant Markets (SO₂ and NO_x):** ICE Futures US lists futures and options contracts based on the various programmes for SO₂ and NO_x reduction.
- **Renewable Energy Certificates:** ICE Futures US lists futures and options contracts based on renewable energy programmes run by the States of Connecticut, Maryland, Massachusetts, New Jersey, Pennsylvania and Texas. Since launching trading of RECs in 2009, ICE has traded contracts accounting for more than 57 million certificates

It should be noted that the operating environments of exchanges vary, and therefore particular products are more appropriate in some markets than in others. For example, in many markets governments may consider the use of a carbon tax or other tax strategies rather than carbon trading, therefore any emissions trading strategies should be discussed with governments and evaluated for efficiency and effectiveness before considering their implementation. Stock exchanges should always evaluate their market and ensure that the

appropriate conditions are in place before initiating a product. For example, despite initiating the development of the S&P/EGX ESG index, which has shown exceptional relative performance, there have been some difficulties identified by the exchange in promoting the development of an ETF tracking this index (box III.4). Details on what conditions are conducive to new product development can be found in annex II.

Box III.4 Egyptian exchange’s lessons learned from the development of an ESG index (Source: EGX)

Despite initiating the development of the S&P/EGX ESG index, which has shown exceptional relative performance, there have been some difficulties identified by EGX in promoting the development of an ETF tracking this index. This situation has relevance for exchanges working to introduce green finance products. In March 2010, EGX was the first stock market in the MENA region and second worldwide to launch the S&P sustainability index S&P/EGX ESG index, in cooperation with Standard and Poor’s (S&P), The Egyptian Institute of Directors (EIoD) and CRISIL, a global analytical company providing ratings and research. The S&P/EGX ESG index intends to encourage listed companies to move from doing charitable activities to focus on building their corporate image and being able to manage ESG related-risks. It also intends to encourage companies to be more transparent and to improve disclosure of their ESG practices.

Obstacles and Challenges:

1. At the time of creation, there was a limited number of sustainability specialists for index creation, an obstacle that was overcome by including a disclosure specialist in the index team in addition to the EIoD team. The first screening phase of the regular re-balance process is carried out in coordination with the Egyptian Corporate Social Responsibility Center, formerly EIoD, and reviewed by the EGX team.
2. Difficulties of quantification and the possibility of subjectivity in the second phase of screening is overcome by ensuring that each process is revised and reviewed among the team. The S&P/EGX ESG Index is the responsibility of an Index Committee that monitors overall policy guidelines and methodologies. The Index Committee is composed of four members from S&P Dow Jones Indices, two members from the Egyptian Exchange specialised in the global equity markets and one member from the Egyptian Corporate Social Responsibility Center.
3. Marketing is still a major obstacle for the S&P/EGX ESG index as S&P and EGX have not launched any products tracking the performance of this index despite its relative outperformance in comparison to the EGX30 benchmark.

Performance of the S&P/EGX ESG Index vs. its benchmark



1.2 Visibility

Does your stock exchange make green products easy to find through dedicated platforms or listing labels?

Stock exchanges are making it easier for investors to find and invest in environmentally-aligned companies and products with innovative platforms and listing labels. Some exchanges have created a separate listing segment or section on their website that allows direct access to green or sustainable products or companies. For example, the Mexican Stock Exchange developed MÉXICO2, its environmental markets platform, and the Luxembourg Stock Exchange utilises the Luxembourg Green Exchange, exclusively for green, social or sustainable securities. Oslo Børs also has a separate list for green bonds, which stands out on their website as a green box in the menu (figures III.2-III.4). Nasdaq Stockholm also keeps a unique market for sustainable bonds where green, social and sustainable bonds are eligible for listing (box III.5). In both Norway (Oslo Børs) and Singapore (Singapore Stock Exchange), the green-labelled listings that meet their requirements can be easily found with the letter G (short for green) in their ticker symbol, to increase the visibility of the loan as a climate-friendly investment. In London, green infrastructure funds (known as YieldCos in the US market) also offer options with clear and detailed climate-related information (box III.6).

FIGURE III.2 LUXEMBOURG PUTS ITS GREEN EXCHANGE FRONT AND CENTRE (SOURCE: LUXEMBOURG STOCK EXCHANGE)

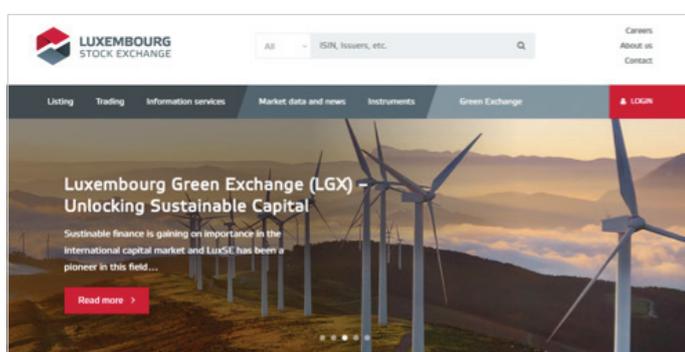


FIGURE III.3 OSLO BØRS ADDS A SPLASH OF GREEN TO THEIR HOME PAGE (SOURCE: OSLO BØRS)

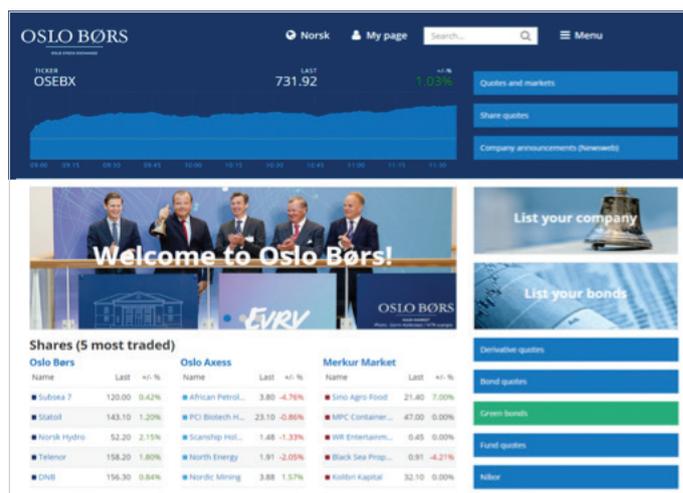
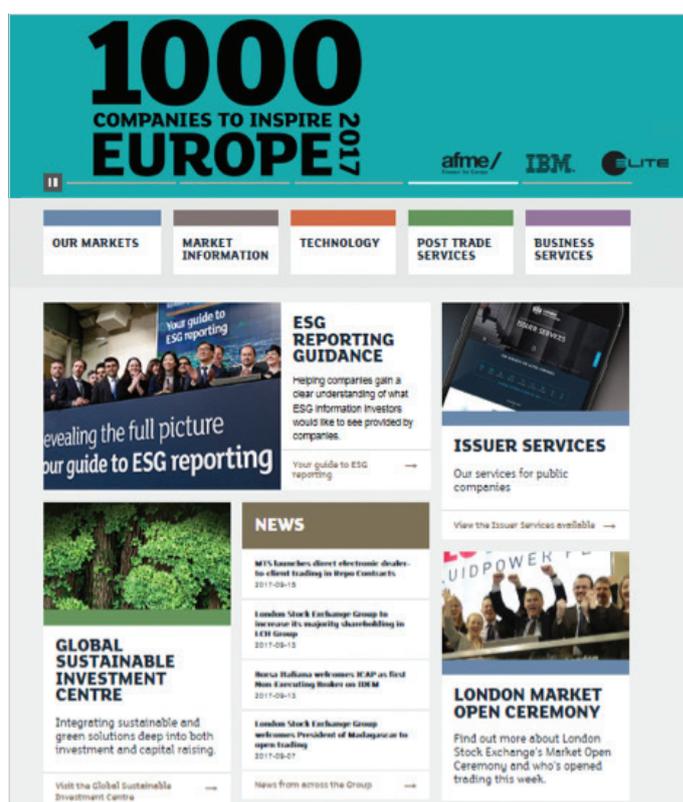


FIGURE III.4 LSE GROUP HOME PAGE HIGHLIGHTS SUSTAINABLE INVESTMENTS (SOURCE: LSE GROUP)



Box III.5 Nasdaq Stockholm sustainable bond listings (Source: Nasdaq Stockholm)

The sustainable bond market has been growing rapidly over the past years, driven by green bonds, with a growing progression towards a wider focus on both an environmental and/or social positive impact. Being one of the frontrunners of this market, Nasdaq Stockholm, together with Sustainalytics, developed the eligibility criteria for its sustainable bond market in 2015. Two years later, Nasdaq Stockholm developed updated criteria together with a sustainable bond market on Nasdaq's MTF platform First North Bond Market. This market will be a complement to issuers not fulfilling the criteria on the regulated market, such as three years' financial history, issuing under a prospectus and not reporting according to IFRS. This will typically be home to municipality owned real estate companies not reporting IFRS.

Box III.6 An emerging asset class: renewable infrastructure funds on the London Stock Exchange²⁸ (Source: London Stock Exchange Group)

An emerging asset class associated with the transition to a low carbon economy is represented by renewable infrastructure funds (the UK equivalent of a US Yieldco), which on the London Stock Exchange (LSE) can raise capital on either its Premium Segment, for open and closed-ended funds seeking access to the widest investor base from institutional to general retail investors, or on its Specialist Fund Segment dedicated to specialist, closed-ended investment funds targeting institutional, professional and highly knowledgeable investors only. Renewable infrastructure funds listed on LSE have a combined market capitalisation of £4.1bn (US\$5.3bn) and have raised £3.7bn (US\$5.4) since 2013.

Examples include:

- Greencoat UK Wind, Britain's first ever green infrastructure fund enabling investors to gain exposure to a portfolio of predominantly operational wind energy generation assets and related energy infrastructure assets in the UK. Following strong demand during the bookbuilding process, the company in 2013 raised gross proceeds of £260mn (US\$342mn), the maximum fund raise. Greencoat has returned to the market six times, raising a further £555mn (US\$815mn). Greencoat Capital, the manager of Greencoat UK Wind, recently launched its second fund which will invest in similar projects with a European focus. Greencoat Renewables raised €270mn (US\$311mn, £238mn) and is dual listed on the Irish Stock Exchange and AIM.
- The Renewable Infrastructure Group (TRIG) has invested in 56 investment projects, 27 of which are operating onshore wind projects, 28 Solar PV and 1 Battery Storage. On admission, TRIG raised £300mn (US\$394mn) and has returned to market eight times since listing, raising a further £616mn (US\$906mn).

For investors to be able to report on the impact of these funds on the exposure of their portfolios to the low carbon economy, clarity and details regarding the type of assets these funds are invested in are extremely useful. These could include the renewable energy generation capacity and the equivalent estimated GHG emissions avoided through the infrastructure projects that are financed, or in which the funds are invested.

1.3 Green terminology

Does your exchange provide guidance to its market on green terminology?

A stock exchange can provide guidance to its market either by sharing existing standards, principles or best practice and benchmarks on 'green', or by working with its regulator or other appropriate standard-setting organizations to set a local standard for green definitions. Having some consensus on what qualifies as green is important for facilitating the development of new products and the evaluation of current products. For example, the Luxembourg Green Exchange has facilitated the listing of more than US\$75 billion in green bonds and social and sustainable bonds (as of Q3 2017) by defining green, social and sustainable for their market and guiding issuers on listing these bonds. By taking this first step, a stock exchange can also break down barriers for other market players to facilitate the growth of green finance instruments.

Developing guidance on what is green is often done in partnership with multiple stakeholders. In South Africa, the Johannesburg Stock Exchange worked with the National Treasury of South Africa and key industry players in developing its green bond framework (box III.7), including considering the role of international frameworks such as the International Capital Market Association's (ICMA) Green Bond Principles in the local context. Similarly, other exchanges have worked with their regulators and other financial market players to set guidelines in their market for green; for example, the Luxembourg Stock Exchange is a Charter Member of the LuxFLAG, the Luxembourg Finance Labelling Agency, and Singapore Exchange worked with their central bank to release green bond guidelines for their market.

Box III.7 Johannesburg Stock Exchange involvement in green bond guidelines (Source: Johannesburg Stock Exchange)

South Africa has significant infrastructure financing needs: the country's National Development Plan identifies significant funds required over the short term for infrastructure investment in energy, water, transportation, waste management, climate change mitigation and adaptation, etc. The Johannesburg Stock Exchange (JSE) aims to support efforts to meet these needs by creating an enabling environment in which evolving global best practices for green securities are translated into mandatory requirements for listing green securities, while retaining relevance for, and context, of a developing nation in transitioning to a low-carbon economy, that in turn creates a sustainable platform for growth in jobs and investment. The vision is for South Africa to be the green economic hub of the continent.

To this end, a green finance strategy is currently being developed for the JSE, which will complement our contributions to the national sustainable finance strategy being developed in collaboration with the National Treasury (Ministry of Finance) and a range of key industry players in the financial sector.

A key step in this process is the launch of the JSE's Green Bond Segment in September 2017. Our entry requirements are in line with emerging global standards for green securities, while retaining sufficient flexibility to cater for the local context. In developing the framework and requirements, the JSE conducted international research to determine the most appropriate model for the Green Bond framework in the context of the South African market and in the context of instrument classification. Informal consultations were conducted with key market players throughout the development process, as well as dialogue events to discuss the investment case for green bonds as well as the proposed framework. The rules then underwent formal consultation with relevant JSE advisory committees, the regulator and a public comment process.

The regulatory principles that have been adopted by the JSE are in line with key factors in ensuring green status of instruments, namely use of proceeds, external review and ongoing disclosure. The Green Bond Principles, governed by the ICMA, were used as a benchmark standard that issuers would need to comply with, verified through a report issued by a third party with the appropriate expertise to do so.

JSE is confident that its green bond offering will be an effective tool to leverage the power of financial markets to facilitate the provision of green loans in the domestic and regional market.

Other green related definitions should also be addressed by stock exchanges to assist their market. There can be confusion among investors about the nature of green labelled products such as 'fossil free'. The evolution of consistent standards can play a role in reducing the occurrence of 'greenwashing'. In its research report published in June 2016, the World Wide Fund for Nature called for a set of industry standards for green bonds to address the growing risk of 'greenwashing', a term that describes situations where bonds or products are labelled and perceived as environmentally friendly

while not fulfilling their green promise. It is believed that greater transparency brought about by the development of robust and widely accepted industry standards is vital to the success of the green bond market. Some organisations are working to produce working definitions to help guide the market. For example, US-based NGO As You Sow has developed a set of basic voluntary definitions, which stock exchanges may wish to use or adapt for their market (box III.8).



Box III.8 An example of defining 'fossil free' (Source: As You Sow)

Civil society organisation As You Sow and international partners worked together to develop a set of basic voluntary definitions relating to fossil free investments and funds intended for use by the investment industry.

Carbon Underground 200 Free (or 'CU200 Free')

Goal: This is the current definition of the divestment pledge and will remain unchanged. It excludes the largest owners of proved fossil fuel reserves on their balance sheets (e.g. the S&P 500 Fossil Fuel Free Index falls under this definition).

- Intent must be defined in the prospectus to eliminate the 100 largest coal and 100 largest oil/gas reserve holders, as defined and updated quarterly by Fossil Free Indexes.
- Exclude 100 largest oil/gas and 100 largest coal companies by the size of proved reserves.

Carbon Reserve Free

Goal: This continues the logic of focusing on reserves but expands to exclude all companies with proved fossil fuel reserves, not just the 200 largest.

- Intent must be defined in the prospectus to eliminate all fossil fuel reserve holders.
- Exclude all companies with oil, gas, or coal reserves regardless of size.

Fossil Free

Goal: Extends the logic to exclude all companies involved in the ownership, extraction, production, refining, processing, distribution and/or direct sales of fossil fuels.

- Intent must be defined in the prospectus as the elimination of companies with fossil fuel reserves; or whose business is the exploration, extraction, refining, processing, or distribution of fossil fuels.
- Exclude Carbon Reserve Free.
- Exclude oil field and coal mining services.
- Exclude natural gas extraction services (includes fracking).
- Exclude fossil fuel refining.
- Exclude fossil fuel pipelines.

100% Fossil Free (or 'Fossil Free + 100% Utilities')

Goal: Extends the logic to exclude all companies involved in the ownership, extraction, production, refining, processing, distribution and/or direct sales of fossil fuels and/or direct combustion of fossil fuels.

- Intent must be defined in the prospectus as the elimination of companies with fossil fuel reserves; or whose business is the exploration, extraction, refining, processing, or distribution of fossil fuels; and any company whose business involves the combustion of fossil fuels.
- Exclude Fossil Free as described above.
- Exclude all fossil-fired utilities (meaning zero fossil fuels combusted).

X% Fossil Free²⁹

Goal: Extends the logic to exclude all companies involved in the ownership, extraction, production, refining, processing, distribution and/or direct sales of fossil fuels and/or direct combustion of fossil fuels greater than a 30% fossil fuel mix.

- Intent must be defined in the prospectus as the elimination of companies with fossil fuel reserves; or whose business is the exploration, extraction, refining, processing, or distribution of fossil fuels; and any company whose business involves the combustion of a fuel mix that is greater than 30% fossil fuels.
- Exclude Fossil Free as described above.
- Exclude fossil-fired utilities whose fuel mix is greater than 30% fossil fuels.

2. GREENING FINANCIAL MARKETS

Historically, exchanges have been mandated to help companies comply with regulations that enable stable, transparent and fair markets. While many stock exchanges are not standard-setting organisations, most exchanges do actively promote the implementation of national or international standards, guidelines or best practices in their markets. Similarly, stock exchanges can play an important role in the promotion or accreditation of certain standards that help to further the development of green finance products or the integration of green ratings or benchmarks into the market. From understanding green terminology, to complying with market regulations on emissions, or evaluating the environmental performance of companies, green finance presents a series of uncharted territories for both issuers and investors for which stock exchanges can provide essential guidance and leadership.

It is also recognised that imposing strict or overly prescriptive standards for instruments and vehicles may restrict the diversity and innovation necessary to develop the desired results of green finance, especially at the early stages of development of this area of finance. Therefore, stock exchanges may wish to evaluate the current status of their market, to determine the next steps appropriate to greening the local capital markets. To integrate green aspects into the mainstream market, a selection of key action points (2.1-2.3) are outlined below.

2.1 Market education

Does your exchange educate issuers and investors on the importance of incorporating environmental issues into investment practices?

Depending on their market, stock exchanges are providing education to both investors and issuers to ensure uptake of opportunities in green finance. Educating local markets is key to raising the level of awareness and interest in green issuers and services. Stock exchanges should keep in mind that while climate-aligned and environmentally themed financial products are on the rise, they are still relatively new to some market participants. Some issuers may not be aware of their options for accessing green project funding, and some investors may not be aware of their options in green investment.

Exchanges should not only focus on promoting the value of green products and companies but also the benefits of having these listed on public markets. For example, the Stock Exchange of Thailand (SET) encourages listed companies with large market capitalisation to be included in the Dow Jones Sustainability Indices (DJSI). The objective is to make Thai listed companies internationally recognised for their sustainable development efforts and attract global institutional investors who invest in sustainable businesses.³⁰

In Chile, the Santiago Stock Exchange worked with EY and the PRI to help to educate investors and to promote responsible investing with a guide to responsible investment.³¹ In its guide, the Santiago-based exchange highlights the importance of incorporating ESG into decision making and investment practices and states that it is committed to 'incorporating sustainability in the capital markets and to playing a key role as a promoter of ESG issues'. Many exchanges have also started awareness raising or educational activities for green product promotion (box III.9 & III.10).

Box III.9

Mexican exchange raising awareness of climate change and green bonds through investor commitment (Source: Bolsa Mexicana de Valores³²)

In order to raise awareness of climate change risks and promote green bonds in their market, the Mexican Stock Exchange (BMV) worked with pension funds, insurance companies, multilateral development banks, investment funds and independent investment advisors to launch a statement in favour of green bonds in Mexico. The statement was signed by 57 institutional investors managing a total of around US\$214 billion in assets on 31 May 2017. In the statement, signatories acknowledge that climate change represents a crucial risk for society, the economy and the long term investments they pursue on behalf of their clients and beneficiaries. Moreover, they affirmed in signing this statement that taking action on climate change will require large investments in key sectors such as renewable energy, low carbon transport, waste and water management infrastructure, sustainable construction and energy efficiency. The statement stresses that green bonds offer an opportunity for institutional investors to comply with their fiduciary duties with clients and beneficiaries in a responsible and sustainable manner. The statement also calls for government and financial authorities to consider public policies, regulation, risk mitigation and mechanisms that foster the development of the local green bond market.

Box III.10 Oslo Børs promoting green bonds in Norway through multi-stakeholder events (Source: Oslo Børs)

Oslo Børs was the first exchange that launched a separate list for green bonds. To further promote green bonds in the Norwegian market, the exchange hosts breakfast seminars with presentations by representatives from investment banks, independent party providers, as well as green bond issuers and investors. The presentations focus on the market development and outlook for green bonds both globally and regionally, the external verification process, and issuers' and investors' experiences with green bonds. The multi-stakeholder events at Oslo Børs have been well attended and represent an effective means for boosting green products and services in its market.

Sharing data with stakeholders on topics such as the relationship between ESG performance and overall economic performance, the relative performance of sustainability themed products or issuers, or the introduction of new products or services can also help to educate the market on this topic. Stock exchanges can accomplish this through newsletters or other frequent communications with stakeholders, or through their website. For example, FTSE Russell,

a part of the LSE Group, holds webinars on sustainability products, and often illustrates how environmental or broader sustainability products outperform their benchmarks (box I.5). The PRI Academy also offers online training for investors, whose exchanges can direct investors towards, or work with, PRI and other partners to provide training in your market (box III.11)

Box III.11 Partnership in Latin America & Caribbean bolsters responsible investor education (Source: SSE)

A fruitful partnership arose as a result of the feedback provided during the Sustainable Stock Exchanges Regional Dialogue: Latin America & Caribbean. During this event, participants discussed and agreed that more concerted efforts were needed in the region to promote, train and build capacity in the area of responsible investment among capital market institutions. Thus, the SSE initiative came together with LatinSIF, and with funding from the Government of the Netherlands, to create scholarships to PRI's online responsible investment training course, PRI Academy. Five SSE Partner Exchanges as well as representatives from pension fund associations and regulators, securities regulators, and banking associations in the region were chosen for their potential to lead the adoption of new ideas regarding the investment profession in Latin America and the Caribbean.

Training explores the key aspects of responsible investment, uses real-life case studies to illustrate the materiality of ESG issues in business, introduces strategies for identifying and managing new approaches to ESG, and identifies sustainability data in financial modelling. By providing exchanges and other capital market participants in Latin America access to responsible investment training, this partnership is enabling sustainable development in the region and is a concrete step towards stimulating demand among users of ESG information provided by corporate issuers.

2.2 Standards

Has your exchange incorporated environmental disclosure standards into its listing rules?

Stock exchanges and regulators are facilitating standardisation and growth of environmental reporting by requiring the disclosure of particular indicators or material information. Disclosure of comparable, accurate, timely and comprehensive corporate environmental information and broader corporate ESG information is being demanded by investors. Introducing requirements related to environmental reporting into listing rules ensures that this information is available and plays a key role in greening mainstream financial markets.

There is a strong preference among financial services providers and investors evaluating ESG for setting minimum listing requirements with regards to ESG disclosure. Depending on its regulatory authority and market composition, stock exchanges have several options to integrate disclosure standards into listing rules.

For markets where stock exchanges do not have the authority to set listing rules (where this authority lies with securities regulators), they may wish to engage in dialogue with their regulator to help develop listing rules that support the green economy. In markets where exchanges have the authority to set listing rules, stakeholder consultation is recommended to ensure issuers are prepared for any suggested changes and that any changes consider issuer

concerns. Exchanges already integrating environmental factors into their listing requirements include the Brazilian exchange B3, Bombay Stock Exchange, National Stock Exchange of India, Bursa Malaysia, Singapore Exchange, Johannesburg Stock Exchange, Stock Exchange of Thailand and HoChiMinh Stock Exchange.

Following the launch of the United Nations SDGs, B3 launched an initiative in collaboration with the Global Reporting Initiative (GRI) asking listed companies to disclose on an annual basis whether they publish sustainability or integrated reports that consider SDGs. If not, issuers listed on B3 will be asked to explain why not, ensuring all listed companies are aware of these goals and their impact on business. This initiative also included research on the current status of the market and workshops on how to report on the SDGs.

In markets composed of a high proportion of debt vs. equity, or where green bonds are being listed, a green bond listing platform can integrate requirements such as external reviews into listing requirements. For example, to be admitted to the green bonds list, some stock exchanges such as Oslo Børs and Nasdaq Stockholm require that issuers must provide an independent second opinion that certifies the environmental dimension of the bonds, and that must be made publicly available to enable investors to understand the environmental aspects of the projects to be financed by the bond. For admission into the Luxembourg Green Exchange, issuers are also required to declare the use of proceeds and commit to post-issuance reporting as well as providing an external review. Similar requirements are found in other green bond listings (box III.12)

Box III.12 Shanghai Stock Exchange setting up green bond listing requirements (Source: Shanghai Stock Exchange)

On 16 March 2016 the Shanghai Stock Exchange officially launched its green bond pilot programme with the publication of a 'Circular on Launching Pilot Program for Green Corporate Bonds'. The programme was designed to operate within the existing corporate bond framework, setting out requirements for listing 'green' assets, while also making the listing procedures more efficient. The Shanghai Stock Exchange incorporated the ICMA Green Bond Principles (GBP) as well as the Green Finance Committee (GFC) of the China Society for Finance and Banking's Green bond Endorsed Project Catalogue (2015 Edition), the latter used to evaluate the green status of green bond financed projects. Shanghai Stock Exchange requires proceeds of green corporate bonds to be applied exclusively to the green industry, namely to finance or re-finance the construction, acquisition or operation of eligible green projects, and issuers are required to track and report the use of funds and disclose the progress of the underlying projects and their environment benefits regularly during the tenor of the bond. The Shanghai Stock Exchange also recommends that green bonds are certified by an independent verifier to ensure market integrity.

In addition, the Shanghai Stock Exchange set up a 'Green Channel' to create a more efficient green bonds listing procedure. All green bonds are designated with ticker symbols starting with G (short for Green) and are displayed on a dedicated page on the exchange's bond market website, so that they can be easily tracked and located by investors. Besides corporate bonds, other fixed-income products such as asset-backed securities (ABS) can also be labelled 'green' if eligible.

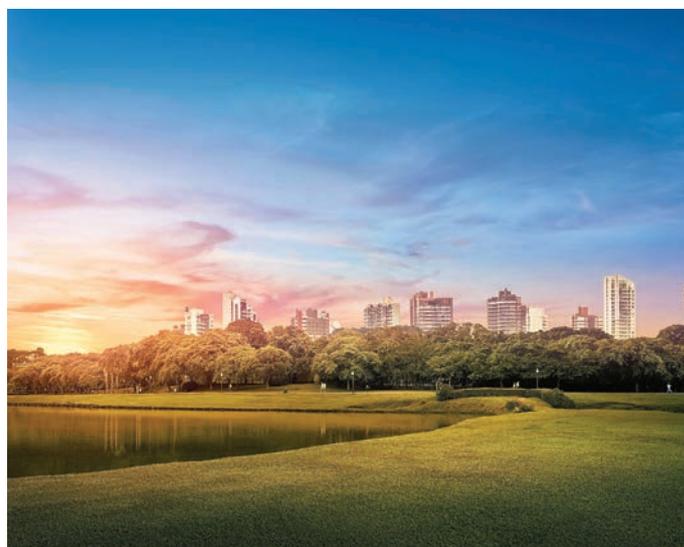
On 2 March, 2017, the China Securities Regulatory Commission (CSRC) released the Guidelines for Supporting the Issuance of Green Bonds, which has further stimulated the green bonds market. By the end of July 2017, 21 green corporate bonds and 5 green ABS had been successfully issued and listed on the Shanghai Stock Exchange, raising RMB 36bn (US\$5.36bn) in total. In addition to bonds, the exchange's green fixed-income product offerings have expanded to ABS, perpetual bonds and panda bonds, etc. Taking Goldwind (a Chinese wind turbine manufacturer) as an example, it issued the world's first RMB-denominated green ABS by a non-financial issuer. The underlying assets were the cash-flows generated by Goldwind's wind farms for the next five years. This was also China's first 'dual-verified' green bond, with external certification done by two well-known international institutions: DNV GL (a global quality assurance and risk management company) and International Finance Corporation (IFC).

Since the launch of the pilot programme, Shanghai Stock Exchange green bonds have raised funds for projects in all of the six fields defined by the GFC catalogue: energy saving; pollution prevention and control; resource conservation and recycling; clean transportation; clean energy; and ecological protection and climate change adaption. As one of the first standing members of the GFC and the third GBP observer exchange, Shanghai Stock Exchange draws on international and domestic market experiences and has become the world's leading listing venue with a dedicated green bond issuance scheme.

2.3 Benchmarking

Does your exchange make benchmarks available for your market in the form of green indices or environmental rating systems?

Stock exchanges are increasing the utility of green disclosure and environmental data of companies by promoting or integrating green indices or rating systems in their market. Indices that incorporate an environmental component can increase visibility into the relationship between environmental performance and financial performance, as well as incentivising environmental responsibility. Ultimately, green indices provide a foundation for the development of index tracking funds such as exchange traded funds (ETFs), facilitating investment into more sustainable enterprises. Indices can also incentivise corporations to either disclose appropriate information on their sustainability practices and/or improve their performance. For example, by launching its ICO2 index at the B3 exchange, the Brazilian market saw a significant increase in reporting on CO2 emissions (box III.13).



Box III.13 Brazilian exchange stimulates carbon emissions reporting with the ICO2 index (Source: B3)

Attentive to worldwide concerns about global warming, the B3 stock exchange and the Brazilian Development Bank (Banco Nacional de Desenvolvimento Econômico e Social/BNDES) formed a joint initiative in 2010 to create a new market index, the Carbon Efficient Index (ICO2). This index comprises the shares of companies participating in the IBrX-50 index (the 50 most actively traded and best representative stocks of the Brazilian stock market) that have agreed to join this initiative, by adopting transparency practices with respect to their greenhouse gas emissions (GHGs). The index's composition considers not only the free float of the companies' stocks, but also the efficiency levels of GHG emissions of these same companies. The main objective of this joint initiative is to encourage companies with actively traded stocks to assess, disclose and monitor their GHG emissions; thus, stimulating a 'low carbon' economy. In addition, the index aims to provide to the market with transparent information on emissions from Brazilian companies by creating investment opportunities for investors who are sensitive to climate issues.

Each year B3 assesses the minimum requirements related to GHG emissions inventories to be provided by participating companies. The minimum emissions reporting comprised by the initiative is gradually progressing, inducing participating companies to upgrade the quality and completeness of their inventories. Before the creation of ICO2, only 30% of IBrX-50 public reported their emissions, today more than 60% report their emissions, representing significant progress in companies' internal carbon management. In 2016, 30 companies participated in the ICO2 process. The 2017 portfolio represents 53.11% of total market value.

A number of stock exchanges have already created green indices (or sustainability indices with a green component). In Egypt, the Egyptian Stock Exchange (EGX) was an instigator in the development of the S&P/EGX ESG index (see more in box III.5 under action area 1.1). In Switzerland, the Swiss Stock Exchange (SIX) also initiated the launch of two indices based on sustainability criteria in their market. Based on research from Sustainalytics, SIX launched an index containing the 25 companies ranked best with regards to their ESG performance. Working with Ethos Foundation, SIX also created the Ethos Swiss Governance Index, which included an environmental component. In Latin America, all of the exchanges that are part of the regional MILA exchange initiated work with the International Finance Corporation (IFC) and RobecoSAM to develop a region-wide ESG index.

To expand from the financing of specific green products to supporting the greening of financial markets as a whole, stock exchanges can work with partners to develop a green evaluation of existing equities and other products at their exchange. The LSE Group worked with partners to track the green performance of the SMEs listed in its AIM market, to evaluate their collective contribution to the low-carbon economy (box III.14). Collaboration between stock exchanges and rating agencies or financial service providers working on the ranking of ESG factors could be expanded to different segments of the market, such as the example of SMEs above, as well as to other products, such as green bond indices.

Box III.14 Tracking the green performance of London Stock Exchange Group AIM market (Source: London Stock Exchange Group)

AIM is the LSE Group's international market for smaller growing companies. A wide range of businesses including early stage, venture capital backed as well as more established companies join AIM in the UK and Italy seeking access to growth capital. Since its launch in 1995, over 3,500 companies from across the globe have chosen to join AIM, raising over £100bn.

FTSE Russell, part of the LSE Group, is a global leader in benchmarks and analytics, providing institutional investors with tools to understand and measure the transition to a low carbon economy at a portfolio and stock level, and is working with asset owners to integrate climate risks into core equity benchmark construction.

To help understand AIM's contribution to the low-carbon economy, FTSE Russell has partnered with Impax Asset Management to create the FTSE Environmental Opportunities AIM Index, which is designed to represent the performance of all AIM listed environmental opportunities companies taken from the FTSE AIM All-Share Index. These include companies with green revenues over a specified threshold from the seven environmental sectors below:

- A. Renewable & Alternative Energy
- B. Energy Efficiency
- C. Water Infrastructure & Technologies
- D. Pollution Control
- E. Waste Management & Technologies
- F. Environmental Support Services
- G. Food, Agriculture & Farming

The index is suitable for benchmarking purposes and can be used as a tool in the creation of financial products, such as institutional and retail funds, ETFs and derivatives.

Increasingly, tools are being developed to enable asset owners and investment managers to incorporate material environmental factors into investment decision making. There are tools that rank funds (such as ETFs) and indices on their fossil fuel holdings, carbon footprint, and/or overall climate impact. For example, Morningstar, a provider of independent investment research, recognised a 'huge need and demand'³³ for ESG information and began in 2016 to provide ESG ratings for mainstream broad market ETFs. Similarly, CDP (via

Climetrics) has launched a climate impact rating tool, and As You Sow has released a website based tool (www.fossilfreefunds.org) to help uncover the exposure of mutual funds to fossil fuel companies. S&P Dow Jones Indices, via its 'Carbon Scorecard', offers various carbon metrics to rate its international range of broad market equity indices (box III.15). All of these tools demonstrate the way in which ESG issues and climate issues are being integrated into the analysis of mainstream equity indices and funds.

Box III.15 Carbon Scorecard measures carbon footprint of indices worldwide (Source: S&P Dow Jones Indices and Trucost)

There has been a market inflection with regard to the integration of climate risk and opportunities analysis into investment decisions. At the 21st Conference of the Parties of the UNFCCC1 in December 2015, 197 member states negotiated an agreement to make 'finance flows consistent with a pathway towards low greenhouse gas emissions and climate resilient development' and to limit the rise in global temperatures to no more than 2°C above pre-industrial levels. The investment community has been instrumental in translating these objectives into initiatives. The rhetoric has changed from 'how useful are portfolio footprints?' to 'how can we do more?' Alongside listed equity, market participants are addressing the carbon risks embedded in other asset classes, from fixed income to real estate and infrastructure. They are stress-testing holdings for the impact of future carbon regulatory scenarios, setting portfolio energy transition targets and quantifying revenues from green products and services. The current environment is a hotbed of collaboration, innovation and, crucially, action. By publishing the carbon footprints of major equity indices across the globe, the S&P Dow Jones Indices Carbon Scorecard is a barometer for the carbon efficiency of the markets today and the direction of travel for the economy. Market participants are increasingly applying a range of metrics to dig deeper into carbon risk and opportunities for green growth, from exposure to coal and fossil fuel reserve emissions to alignment with energy transition goals.

The Carbon Footprint of Selected S&P Indices around the world

INDEX	REGION	CARBON FOOTPRINT (TONNES CO ₂ E/USD 1 MILLION INVESTED)
S&P 500 Growth	US	61
S&P 500	US	140
S&P/TSX 60	Canada	166
S&P 500 Value	US	196
S&P Global 1200	Global	199
S&P/ASX All Australian 50	Australia	206
S&P Asia 50	Asia	206
S&P United Kingdom	UK	212
S&P Europe 350	Europe	277
S&P/TOPIX 150	Japan	331
S&P Latin America 40	Latin America	466
S&P/IFCI	Emerging Markets	505

Source: S&P Dow Jones Indices LLC and Trucost. Data as of Dec 31, 2016. Table is provided for illustrative purposes.

3. STRENGTHEN ENVIRONMENTAL DISCLOSURE

An exchange's mandate includes ensuring that investors have the information necessary to invest in their market, and the information being demanded by investors is increasingly including climate-related information.³⁴ High-quality corporate reporting of material environmental data can help identify targets and measure progress, and is now also being demanded by investors as an element of mainstream reporting practices (box III.16). Through a series of case studies, PRI's Green Equity Investing³⁵ publication shows how investors are already using green information, and illustrates that both buy and sell side analysts are using this information. In a growing trend of 'active ownership', investors are increasingly signalling support for environmental issues via corporate governance mechanisms such as proxy voting. For example, the 2017 ExxonMobil resolution where two thirds of shareholders voted for a resolution requiring

the company to analyse the business implications of a scenario in which global fossil fuel demand was constrained sufficiently to limit warming to no more than 2 degrees Celsius above pre-industrial levels. Asset managers are becoming increasingly active on climate change and other ESG issues, as the concept of fiduciary duty is seen by an increasing number of members of the investment community as requiring the integration of ESG issues into investment practice.³⁶ Asset managers are also increasingly being asked by asset owners to improve their own reporting on ESG issues related to their engagement with companies. According to PRI data, almost half of the 50 largest economies in the world have, or are developing, measures incentivising disclosure and/or integration of ESG factors into pension funds' investments, and about a quarter of the top 50 have, or are developing, investor stewardship codes or guidelines (the exercise of ownership rights in the pursuit of long-term, sustainable growth).³⁷

Box III.16 A demand for mainstreaming of climate reporting (Source: Climate Disclosure Standards Board)

As the financial impacts of climate change become clearer, climate change-related information is increasingly becoming demanded as a part of mainstream reporting. To support issuers in this, organisations such as the Climate Disclosure Standards Board, (CDSB), International Integrated Reporting Council (IIRC) and Sustainability Accounting Standards Board (SASB) have been developing guidance and other resources to integrate such information in mainstream corporate reports, such as a company's annual report. In 2016, the Financial Stability Board recognised the importance of this issue by convening a Task Force on Climate-related Financial Disclosures, which developed recommendations for issuers and investors, building on the work of voluntary and mandatory reporting provisions globally.

Increasingly, markets are beginning to be interested in the financial impacts of ESG-related matters. As such, there is an increasing need to disclose not only how an issuer might impact the environment (e.g. via carbon footprint or land use), but how the environment may impact the business in the future, e.g. its revenues, expenditures, assets and liabilities or capital and financing, among others.

Material climate change information in a company's main annual report, supported by a more comprehensive disclosure in the form of a CDP response or sustainability report in line with the Global Reporting Initiative (GRI) standards, provides not only a better understanding of an issuer's performance by its current and potential investors, but it can also be a method of incentivising flow of capital into sustainable business practices. Beyond its potential to influence issuer and investor behaviour, such information also forms an evidence base for other green finance instruments.

Given the potential impact on financial intermediaries and investors, the G20 Finance Ministers and Central Bank Governors asked the Financial Stability Board (FSB) to review how the financial sector can consider climate-related issues. As a part of its review, the FSB identified the need for better climate-related disclosure, and established the Task Force on Climate-Related Financial Disclosures (FSB TCFD) to develop voluntary, consistent climate-related financial disclosures. The Task Force reflected on the principle of materiality and climate-related disclosure, recommending climate-related information be disclosed in mainstream (i.e. public) financial filings (table III.1). The Task Force's recommendations highlight stock exchanges as one of the key stakeholders that can provide valuable contributions toward adoption of their recommendations.

Despite demand from investors, the supply of this information has not yet become widespread. For example, the 2017 Corporate Knights Measuring Sustainability Disclosure report³⁸ found that less than half of the 6,441 large companies evaluated were disclosing GHG emissions (43%) or reporting on energy usage (40%) and water usage (38%).

There are several studies³⁹ that evaluate quality of earnings, quality of financial reporting and continuity of risk-adjusted returns by companies that adopt ESG or sustainability measures. The results of these evidence-based studies indicate that ESG measures more broadly could be used to rationalise the quality of earnings and financial reporting, and improve the fundamental valuation of debt and equities.

Regulatory requirements to disclose information about greenhouse gas (GHG) emissions and risks related to climate change are emerging in some jurisdictions,⁴⁰ and the PRI has identified nearly 300 regulatory initiatives across the 50 largest economies that require or incentivise responsible investment, the majority of which relate to corporate disclosure.⁴¹ However, most climate-related corporate disclosure initiatives remain voluntary. To improve environmental disclosure in their markets, a selection of key action points (3.1-3.3) are outlined below:

TABLE III.1 FSB TCFD RECOMMENDATIONS ON CLIMATE-RELATED DISCLOSURE (SOURCE: FINANCIAL STABILITY BOARD'S TASK FORCE ON CLIMATE-RELATED FINANCIAL DISCLOSURES)

Governance	Strategy	Risk Management	Metrics and Targets
Disclose the organization's governance around climate-related risks and opportunities	Disclose the actual and potential impacts of climate-related risks and opportunities on the organization's businesses, strategy and financial planning where such information is material	Disclose how the organization identifies, assesses and manages climate-related risks	Disclose the metrics and targets used to assess and manage relevant climate-related risks and opportunities where such information is material
Recommended disclosures	Recommended disclosures	Recommended disclosures	Recommended disclosures
a) Describe the board's oversight of climate-related risks and opportunities	a) Describe the climate-related risks and opportunities the organization has identified over the short, medium and long term	a) Describe the organization's processes for identifying and assessing climate-related risks	a) Disclose the metrics used by the organization to assess climate-related risks and opportunities in line with its strategy and risk management process
b) Describe management's role in assessing and managing climate-related risks and opportunities	b) Describe the impact of climate-related risks and opportunities on the organization's businesses, strategy and financial planning	b) Describe the organization's processes for managing climate-related risks	b) Disclose Scope 1, Scope 2 and if appropriate, Scope 3 greenhouse gas (GHG) emissions and the related risks
	c) Describe the resilience of the organization's strategy, taking into consideration different climate-related scenarios, including a 2°C or lower scenario	c) Describe how processes for identifying, assessing and managing climate-related risks are integrated into the organization's overall risk management	c) Describe the targets used by the organization to manage climate-related risks and opportunities and performance against targets

3.1 Written guidance

Does your exchange provide written guidance on environmental disclosure?

Half of stock exchanges that are members of the SSE and/or WFE are already providing or committed to providing guidance to issuers on ESG reporting (box III.17). In addition to using the SSE's 'Model Guidance on Reporting ESG Information to Investors' or UNCTAD's 'Best Practice Guidance for Policymakers and Stock Exchanges on Sustainability Reporting Initiatives'⁴² stock exchanges can also partner with other agencies to guide their issuers. For example, the Lima Stock Exchange (BVL) worked with a local supporting network of investors affiliated with El Programa de Inversión Responsable to

publish a user guide in 2017 for filling in the corporate sustainability report required by the market regulator in Peru for all listed companies.⁴³

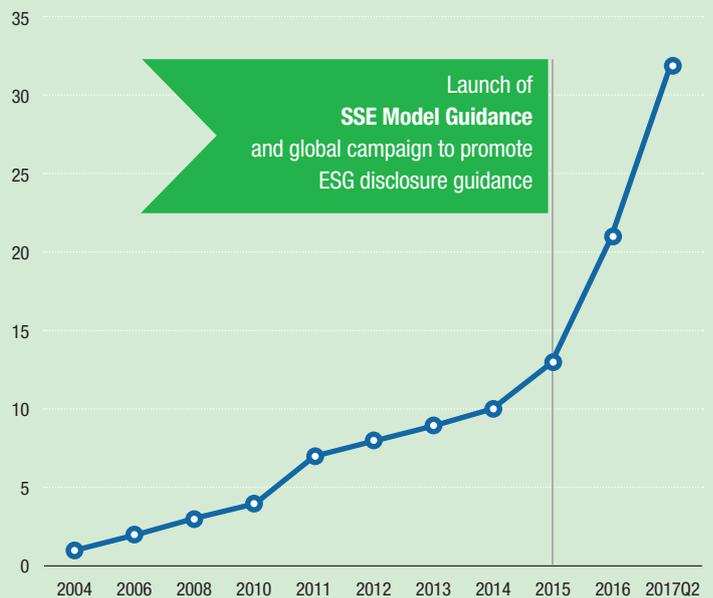
In markets where environmental disclosure has been mandated by market regulators, such as in the European Union (EU) with the EU non-financial reporting directive, stock exchanges can help guide issuers on how to comply with the regulation. Stock exchanges subject to the EU market, for example, could draw from the document created by the GRI Global Sustainability Standards Board which shows how the GRI Standards can be used to comply with all aspects of the European Directive on the disclosure of non-financial and diversity information.⁴⁴

Box III.17 Stock exchanges increasingly providing ESG reporting guidance (Source: SSE)

The UN SSE initiative encourages stock exchanges to provide guidance to their issuers on ESG reporting and aids stock exchanges in doing so by providing a template that can be adapted to their local market, the 'Model Guidance on Reporting ESG Information to Investors: A Voluntary Tool For Stock Exchanges to Guide Issuers'. In September 2015, when the SSE launched its Model Guidance for exchanges, less than one third of stock exchanges worldwide were providing guidance to issuers on reporting ESG information. As a result of the SSE Model Guidance campaign, the number of exchanges with sustainability reporting guidance has more than doubled.

The SSE Model Guidance was endorsed by the World Federation of Exchanges (WFE), who prepared their own complementary set of recommendations to exchanges, 'WFE ESG Recommendation Guidance and Metrics October 2015'. The WFE guidance identifies material ESG metrics which exchanges can incorporate into disclosure guidance to companies listed on their market. When looking specifically at the climate-related disclosure, exchanges are highly encouraged to consider the FSB TCFD recommendations.⁴⁵

Global trend in stock exchange ESG disclosure guidance, 2004-2017 Q2
(Number of stock exchanges with guidance)



As new green finance products are developed across asset classes, stock exchanges can either provide separate or integrated guidance documents addressing the requirements for these new products. For example, the LSE Group includes disclosure guidelines for green bonds in their ESG reporting guidance for issuers (box III.18).

Box III.18 Looking ahead to the FSB TCFD's Recommendations on climate-related financial disclosures: London Stock Exchange Group's ESG guidance⁴⁶ (Source: London Stock Exchange Group)

In February 2017, the LSE Group issued guidance to encourage and assist its over 2,700 issuers across the United Kingdom and Italy in providing ESG information that investors can use to inform their engagement with companies and their investment decisions. The guide in particular draws issuers' attention to the FSB TCFD's recommendations on climate-related financial disclosures, as an authoritative global framework driving standard harmonisation and data comparability across markets and jurisdictions. To help issuers and investors to meet the FSB TCFD's voluntary requirements, the guide offers guidance in two specific climate-related areas: (i) green revenues disclosure; and (ii) disclosures from bond issuers.

To implement the FSB TCFD recommendations, investors need to understand how their portfolios are exposed to low carbon economy subsectors, both through equities and debt securities. Therefore, investors need bond and equity issuers to provide a more detailed revenue breakdown at a green sub-segment level, and green bond issuers to provide clarity around the environmental impact of their use of proceeds. Some of the world's largest investors are already actively allocating additional capital to companies with higher green revenue exposure; so better reporting can directly lead to greater investment flows.

3.2 Training

Is your exchange providing training for capital market participants on environmental disclosure and/or integration?

Stock exchanges are helping to train market participants, both issuers and investors, in ESG disclosure through online and in-person platforms. This training can be formalised as a certification or formal education platform, or it can be more informal, following a seminar or ad hoc training format. Issuer education topics may include disclosure formats, investor demands for environmental disclosure, or the development of environmental indicators. Investor education topics may include how to integrate environmental or broader ESG information into analysis, how to use sustainability ratings and benchmarks, or how to evaluate green disclosures.

In 2017, The Mexican stock exchange (BMV) launched a dedicated climate finance course open for the general public which includes listing requirements and green products in the syllabus. Similarly, the Stock Exchange of Thailand (SET) aims to enhance practical knowledge and expertise about sustainability among listed companies through a combination of organised training, seminars and in-depth advisory programmes, while also incentivising performance with a yearly sustainability awards ceremony.⁴⁷

To initiate this, stock exchanges could either add sustainability and environmental disclosure reporting methods to existing training platforms at their exchange, or implement new training platforms.

Where stock exchanges do not have the resources to implement their own training, they can reach out to experts on green disclosure and evaluation techniques and tools to partner on training.

Stock exchanges can also integrate environmental developments into their current corporate governance training and recommendations. For example, exchanges can encourage climate leadership on boards either by providing training to board members, working with third parties to promote 'climate-ready' boards, or recommending that at least one board member of a listed company has knowledge and experience related to environmental and climate opportunities and risks.⁴⁸

3.3 Leading by example

Does your exchange produce a report on its own environmental policies, practices and impacts?

Like other companies, exchanges (many of which are listed) are increasingly disclosing their own environmental information within a stand-alone sustainability report or integrated annual report. Several stock exchanges report on their sustainability performance and impacts following the GRI standard. For example, the Santiago Stock Exchange recognised the importance of sustainability to their business by developing their own integrated annual report using GRI guidelines (box III.19). By preparing sustainability or integrated reports, stock exchanges can better understand the process which issuers go through when preparing environmental information for investors.

Box III.19 Santiago Stock Exchange launches first annual integrated report (Source: Santiago Stock Exchange)

Leadership at the Santiago Stock Exchange recognise that sustainability is one of the newest and greatest challenges imposed by today's market, and that sustainable development of the capital market involves addressing and responding to the multiple needs of those who take part in or could potentially take part in that market. As a result, in 2017 the exchange launched its first integrated annual report, which in addition to describing the exchanges performance, also addresses key aspects of its development in social, environmental and governance matters.

This document was prepared based on GRI guidelines (specifically G4) and it presents the main efforts of the Santiago Exchange to foster the sustainable development of the Chilean market, and to be in line with what the exchange has asked of its issuers in terms of sustainable reporting.



The LSE Group, for example, includes environmental information in their annual corporate responsibility report, as well as on their website.⁴⁹ Another example is the Brazilian exchange, B3, which highlights its environmental commitments in its SSE Communication to Stakeholders⁵⁰ as well as on the sustainability page of their website, and reports on its GHG emissions.⁵¹

4. GROW GREEN DIALOGUE

Stock exchanges are well placed to support the advancement of green finance both through capital raising activities (market development) as well as convening market actors to exchange views on emerging best practices (market dialogue). As the intersection between investors or investment banks, issuers and market regulators, stock exchanges have great convening power and can use this to promote national or regional green financial initiatives in their markets.

Collaboration is an important step in each of the action points below, as well as many of those above, and should therefore be at the forefront of an exchange's plan of action for green finance. Coordination with key market players is important for all stock exchanges that seek to develop green finance in their market.

In order to support or initiate dialogues on green finance in their markets, a selection of key action points (4.1-4.3) are outlined below:

4.1 Green financial centres

Does your exchange have an action plan or roadmap to grow green finance in your market?

Stock exchanges are establishing and convening strategic green finance processes. These include stock-taking exercises, examination of international best practices, market engagement and education efforts, and supporting policy dialogue. In order to start this, however, an exchange must first either engage in a dialogue already underway in their market, or initiate a dialogue on how the financial centre they work in can engage on green finance. Exchanges are encouraged to set out their own roadmaps for sustainable finance, as well as engage in national policy processes to support green finance.

Achieving sustainable development poses a strategic challenge for the world's financial centres. They are the places where action to connect finance and sustainability becomes tangible. Financial centres are not just places for financial activities, however. They are also the focus of financial regulation as well as public debate on financial performance, including on social and environmental metrics. Financial centres are where market innovation, social demands and policy frameworks come together in an array of interactions across banking, capital markets, insurance and institutional investment.

Financial centres are clusters of various different types of financial services companies, asset manager, asset owners and other market participants. To encourage more systematic action to scale up green and sustainable finance, it is necessary to engage with all members of these clusters. Stock exchanges can be instrumental in this. For example, Deutsche Börse launched its 'Accelerating Sustainable Finance' initiative (box III.20) which seeks to bring together key players from Frankfurt's financial centre to promote sustainable finance.

Box III.20 Deutsche Börse accelerates sustainable finance by convening key market players (Source: Deutsche Börse)

On 23 May 2017 Deutsche Börse AG launched its 'Accelerating Sustainable Finance' initiative, together with other key players from Frankfurt's financial centre. The participants aim to actively work together on the basis of their own core business, towards implementing sustainable milestones, such as the United Nation's SDGs, realisation of the Paris Agreement and also the design of the green finance focus of the German G20 presidency. In signing the 'Frankfurt Declaration',⁵² participants are making a joint declaration of intent to drive forward the holistic mobilisation of sustainable financial market infrastructures as a means of supporting the positive development of business and society, while also ensuring the protection of the natural environment. The conference is to be established as an annual format; the next one is scheduled for the first quarter of 2018.

4.2 Standards and policy dialogues

Does your exchange stimulate policy dialogue on green standards?

As an intersection between investors, issuers, regulators and policymakers, stock exchanges are ideally placed to facilitate or initiate dialogue on green finance. By participating in the dialogue, exchanges can ensure that standards being developed either locally in their market or within international bodies consider the unique circumstances of their national or local market, and the unique needs of their issuers and investors.

Stock exchanges have the opportunity to support policy or standards dialogue at national levels (i.e. with regulators), and internationally with other exchanges (i.e. through channels such as the SSE and/

or the WFE Sustainability Working Group or specific working groups on green finance). For example, the Singapore Stock Exchange participated in the FSB TCFD and contributed to the development of their international recommendations. On a national level, the Mexican Stock Exchange initiated dialogue in their market aimed at developing a set of policy measures to incentivise the green bond market by developing a Climate Finance Advisory Board including key market participants (box III.21). Another key partner for stock exchanges is the International Organization of Securities Commissions (IOSCO). Stock exchanges may wish to strengthen communications with IOSCO members to advance green priorities into international standards for securities markets.

Box III.21 Mexican Stock Exchange brings together advisory board to bolster green bond market (Source: MÉXICO2)

The Mexican Stock Exchange has brought together a Climate Finance Advisory Board to bolster the development of a green bonds market in Mexico and facilitate access to funding for low carbon projects that help fight climate change. The group also expects to propose a set of policy measures to incentivise the market. Members of the board include key market representatives of the Mexican financial sector, including: development, multilateral and investment banks; institutional investors; second opinion providers; and financial associations. The board is headed by two of the largest Mexican pension funds and convenes periodically.

4.3 Investor-issuer dialogues

Does your exchange facilitate a dialogue between issuers and investors on sustainability topics such as green finance?

Stock exchanges often facilitate a dialogue between issuers and investors when it comes to key market developments or opportunities such as the adoption of new standards or the innovation of new products. Financial products related to global climate action are developing faster than investors in some markets can keep up. At the same time, issuers in some markets are unaware of opportunities for capital raising opportunities via green finance products, or that investors are demanding greener products for their portfolios.

To ensure issuers and investors are aware of each other's demands and interests, the Johannesburg Stock Exchange, for example, holds investor-issuer sustainability dialogues on a yearly basis. Likewise, Borsa Italiana has launched its 'Italian Sustainability Day' conference in 2017 and the Egyptian Exchange (EGX) launched its first Sustainability Conference in 2015, aimed at facilitating the dialogue between investors, issuers, policy makers and sustainability advocates. Such services not only help educate market players on new opportunities or challenges, but also help investors and issuers to understand each other's requirements (such as disclosure needs). Facilitating direct communication between issuers and investors and other market stakeholders is an effective mechanism for promoting good practices.

ANNEX I: GLOSSARY OF TERMS

Climate resilient economy: The opposite of ‘vulnerability’ to current and future climate. This definition recognises that resilience is not only altered by deliberate adaptation activities, but is also conditioned by economic, social, environmental and political factors. Source: OECD (2013) [Climate resilience and economic growth in developing countries](#).

Green economy: An economy that results in improved human well-being and social equity, while significantly reducing environmental risks and ecological scarcities. In its simplest expression, a green economy can be thought of as one which is low carbon, resource efficient and socially inclusive. Source: [UN Environment \(2011\) Green Economy Report](#).

Green finance: Green finance is a broad term that can refer to financial investments flowing into sustainable development projects and initiatives, environmental products, and policies that encourage the development of a more sustainable economy. Green finance includes climate finance but is not limited to it. It also refers to a wider range of other environmental objectives, for example industrial pollution control, water sanitation or biodiversity protection. Mitigation and adaptation finance is specifically related to climate change related activities: mitigation financial flows refer to investments in projects and programmes that contribute to reducing or avoiding GHGs whereas adaptation financial flows refer to investments that contribute to reducing the vulnerability of goods and persons to the effects of climate change. Green finance instruments can include equity, debt and risk management tools, and include green bonds, green YieldCos, green indices, green ETFs and green REITs or other special purpose vehicles linked to environmental issues. Source: [UN Environment \(2016\) Inquiry into the Design of a Sustainable Financial System Definitions and Concepts Background Note \(working paper 16/13\)](#) and [Deutsches Institut für Entwicklungspolitik \(2014\) Definition of Green Finance](#).

Greenhouse gases (GHG): The atmospheric gases responsible for causing global warming and climate change. The major greenhouse gases are carbon dioxide (CO₂), methane (CH₄) and nitrous oxide (N₂O). Less prevalent, but very powerful, GHGs are hydrofluorocarbons (HFCs), perfluorocarbons (PFCs) and sulphur hexafluoride (SF₆). Source: [UN Environment \(2015\) Emission Gap Report](#).

Greenhouse gas emissions scope levels: There are three scope levels defined by the GHG Protocol developed by the World Resources Institute and the World Business Council for Sustainable Development. Scope 1 refers to all direct GHG emissions, Scope 2 refers to indirect GHG emissions from consumption of purchased electricity, heat or steam, and Scope 3 refers to other indirect emissions not covered in Scope 2 that occur in the value chain of the reporting company, including both upstream and downstream emissions. Source: [Greenhouse Gas Protocol](#).

Green transition: Refers to the process of transitioning to a green economy, or an economy that results in ‘improved human well-being and social equity, while significantly reducing environmental risks and ecological scarcities’. Source: [UN Environment \(2011\). Towards a green economy](#).

Low-carbon: A process or product that emits fewer GHGs in its operational lifetime than traditional ones. Low-carbon also includes avoidance of GHGs other than CO₂. A low-carbon economy is one in which economic activity is based on low-carbon processes and products. Source: [UNCTAD \(2010\) World Investment Report: Investing in a Low-Carbon Economy](#).

Two degree scenario: The two degrees warming scenario was originally proposed in the 1990s as an upper limit that would avert the worst consequences of climate change. The UNFCCC still labels a two degree scenario as ‘economically feasible’ and ‘cost effective’. A two degree warming scenario translates to deep cuts in emissions, with a decarbonised or even carbon negative economy by 2100, according to the Intergovernmental Panel on Climate Change (IPCC). The IPCC also suggests that such deep cuts would not affect economic growth. Source: [Environmental and Energy Study Institute \(2015\) Behind the 2 Degree Scenario Presented at COP21](#).

ANNEX II: GREEN FINANCE PRODUCTS AND INSTRUMENTS FOR STOCK EXCHANGES

The following green finance products and services were found to be currently used by stock exchanges. However, stock exchanges should not feel limited to these products.

GREEN INDICES

How they work

As benchmarks, ESG indices can increase visibility into the relationship between ESG performance and financial performance. ESG indices also provide a public relations and investor relations incentive to current and aspirant constituents of such an index to meet the particular ESG disclosure or performance criteria for inclusion in the index. Ultimately, ESG indices provide a foundation for the development of index tracking funds, facilitating investment into more sustainable enterprises. Indices intended to represent a total market benchmark should be developed so that they encompass the broad opportunity set without incorporating subjective criteria that are not broadly accepted within a market. Indices developed for specific green finance products (e.g. ETFs) should incorporate liquidity or regulatory requirements that the product must satisfy, to the extent possible.

It should be noted, however, that inclusion in an ESG index is not necessarily an indication of the sustainability of the enterprise, and to support the greening of financial markets indices will need to look increasingly at the quality of ESG risk management more than the existence of reporting. Market requirements to develop an index include sufficient environmental disclosure and market liquidity.

Examples of climate-aligned indices developed for specific markets

- B3 Carbon Efficient Index (Brazilian stock exchange)
- CUFE-CNI Green Bond Index Series (Luxembourg Stock Exchange and Shanghai Stock Exchange)
- DAXglobal Alternative Energy (Deutsche Börse AG)
- Euronext Low Carbon 100 Europe® Indices
- FTSE Environmental Markets Index Series (London Stock Exchange Group)
- KEHATI-SRI Index (Indonesia Stock Exchange)
- KRX SRI Eco (Korea Stock exchange)
- NASDAQ Clean Edge US Index
- NYSE Arca WilderHill Clean Energy Index (ECO)

- SSE Green Bond Index Series (Shanghai Stock Exchange)
- S&P 500 Carbon Efficient Index; S&P Europe 350 Carbon Efficient Index
- S&P BSE GREENEX (Bombay Stock Exchange India)
- S&P Green Bond Select Index
- S&P/TOPIX 150 Carbon Efficient Index (Japanese Stock Exchange)
- S&P/TSX 60 Fossil Fuel Free Carbon Efficient Index
- Urbanization Green Cities Index (Shanghai Stock Exchange)

How to enhance development of green indices in your market

The development of an index often involves more than one partner, including a sustainability data service provider or other research agency, an index creator and sometimes another exchange or other strategic partner.

GREEN EXCHANGE TRADED FUNDS

How they work

ETFs are popular financial instruments that allow investors to trade defined baskets of equities or bonds. Applying environmental criteria, green ETFs can track specific environmental, or sustainability related indices, or other groups of equities or bonds. This can appeal to investors for a number of reasons including asset diversification, liquidity, transparency, and exposure to a specific sector or investment strategy.

Initially green ETFs mostly focused on companies involved directly or indirectly with alternative energy, whether that be in research, development or production of alternative energy or the components necessary to produce it. However, ETFs can also group companies based on other factors such as emissions, carbon footprint, environmental reporting, environmental strategy, independence from fossil fuels, conservation efforts, clean air or water projects or other broader sustainability factors.

While bond ETFs are also a popular investment product, the first green bonds ETF was only just launched in 2017. Market requirements for developing ETFs include green indices for tracking, sufficient disclosure of environmental impact and market liquidity.

Examples of ETFs developed for specific markets with an environmental focus

- First Trust NASDAQ Clean Edge Green Energy Index Fund (Tracks NASDAQ Clean Edge Green Energy Index)
- VanEck Vectors Environmental Services ETF (Tracks NYSE Arca Environmental Services Index)
- VanEck Vectors Green Bond ETF (Tracks S&P Green Bond Select Index)

How to enhance green ETF listings in your market

ETFs often follow an index already developed, so the first step will be to initiate the development of a green index in your market. Following this, like ETFs, stock exchanges will require a partner to develop this fund, and may find its only role in connecting the index developer with an appropriate financial services provider, such as a bank or asset manager, equipped with creating an index tracking fund. Some ETFs may be developed without an index, but in all cases exchanges will require partners to develop this product in their market. Once the ETF has launched, exchanges can also help to promote the product by providing marketing support and investor education, perhaps in partnership with the ETF sponsor, to increase the visibility of the ETF.

GREEN BONDS

How they work

Green bonds are any type of bond instruments with proceeds being exclusively used to finance or refinance eligible green projects. This relatively new financial instrument can play an important role in engaging institutional market participants in the transition to low-carbon and climate-resilient economy to meet political agreements on climate-change mitigation as well as offering new financing opportunities for corporations and other issuers. Scaling up green bond issuances for green finance, and more broadly sustainable development, has become a key area of focus, especially since the introduction and ratification of The Paris Agreement (2016). The CBI outlines four main types of green bonds, as seen below.

Market requirements to develop green bonds can include issuers, green bond definitions and ‘green’ criteria on eligible projects or assets, green bond listing guidelines, green bond use of proceeds reporting and green bond external review requirements.

TYPES OF GREEN BONDS

Type	Proceeds raised by bond sale are	Debt re-course	Example
Green “Use of Proceeds’ Bond	Earmarked for green projects	Standard/full re-course to the issuer; therefore same credit rating applies as to issuers other bonds	EIB “Climate Awareness Bond” (backed by EIB)
Green “Use of Proceeds’ Revenue Bond	Earmarked for green projects	Revenue streams from the issuers though fees, taxes etc are the collateral for the debt	Hawaii State (backed by fee on electricity bills of the state utilities)
Green Project Bond	Ring-fenced for the specific underlying green project(s)	Re-course is only to the project’s assets and balance sheet	Alta Wind Holdings LLC (backed by the Alta Wind project)
Green securitized Bond	Either 1) earmarked for green project or 2) go directly into the underlying green projects	Re-course is to a group of projects that have been grouped together (i.e. covered bond or other structures)	1) Northland Power (backed by solar farms) or 2) Solar City (backed by residential solar leases)

Source: Climate Bonds Initiative

Examples of initiatives by stock exchanges enhancing their green bond market

Oslo Børs and LuxSe were the first stock exchanges to list green bonds, and LuxSE has already listed over 100 green bonds and further expanded their work in this area by launching the Luxembourg Green Exchange in 2016. Similarly, Nasdaq Stockholm was the first exchange to form a sustainable bond market and as of May 2017 had listed 60 green and sustainable bonds. Nineteen stock exchanges of the 84 the SSE tracks were found to list a green bond, but less than ten had introduced a separate listing or search option allowing investors to easily find these green bonds. While many stock exchanges break down bond listings into corporate, government, 'repo', or other categories, it is still only a few that have added 'green' or any other ESG related component to their bond categorisation. In addition, only a few stock exchanges are offering guidance on how to list a green bond.

Stock exchanges can also aid in the development of green bonds where they have sufficient resources. For example, the JSE worked with the Cape Town Municipality to develop a municipal green bond.

How to increase green bond listings in your market

The CBI together with Luxembourg Green Exchange, LSE, Borsa Italiana, the Nigerian Stock Exchange and the JSE developed a report on the role of exchanges in accelerating the growth of the green bond market in particular.⁵³ This report found six key areas where stock exchanges have a role to play (figure III.1), which include developing green bond guidelines, promoting transparency, establishing green bond lists, supporting green bond indices or ETFs, fostering market dialogue and collaboration and fostering market education.

For any green bond related activity, second opinions/impact monitoring should also be addressed. For example, special reference could be included in the stock exchange's or regulator's guidelines that govern exchanges on green bonds, or second opinions/impact reporting could be included in listing rules of green bonds. The CBI published a report jointly with Luxembourg Green Exchange, Berlin Hyp and Block Rock on the green bond after-issuance reporting and provided recommendations for issuers and regulators. The CBI has worked with many exchanges on developing their green bond market. Other partners such as investors, international organisations and development banks, regulators, and local governments may be potential partners for stock exchanges in this area.

YIELDCOS OR GREEN INFRASTRUCTURE FUNDS

How they work

A YieldCo (known as a Green infrastructure Fund in the UK) is a company that is formed to own operating assets that produce a predictable cash flow, primarily through long term contracts. While not an inherently 'green' product, YieldCos are commonly used in the solar and wind energy industry. YieldCos allow investors to benefit from the less volatile cash flow of operating assets in the renewable energy industry while avoiding some of the more volatile activities of development, R&D and construction that can take place in the same sector. YieldCos allow issuers to get immediate cash out of otherwise very long term projects like photovoltaic or wind electric plants; this cash can then be used for the construction of more renewable energy projects. Market requirements to develop green YieldCos or Green Infrastructure Funds include the underlying energy producers.

How to enhance green YieldCo/Green Infrastructure Fund listings in your market

Stock exchanges can enhance YieldCo listings in their market through market education, working with local or international partners to enhance both investor and issuer knowledge on the availability of this financial product. Partners stock exchanges can work with include other stock exchanges experienced with YieldCo listings, governments, universities, energy companies, rating agencies, data providers, banks and other financial services providers.

GREEN REITS

How they work

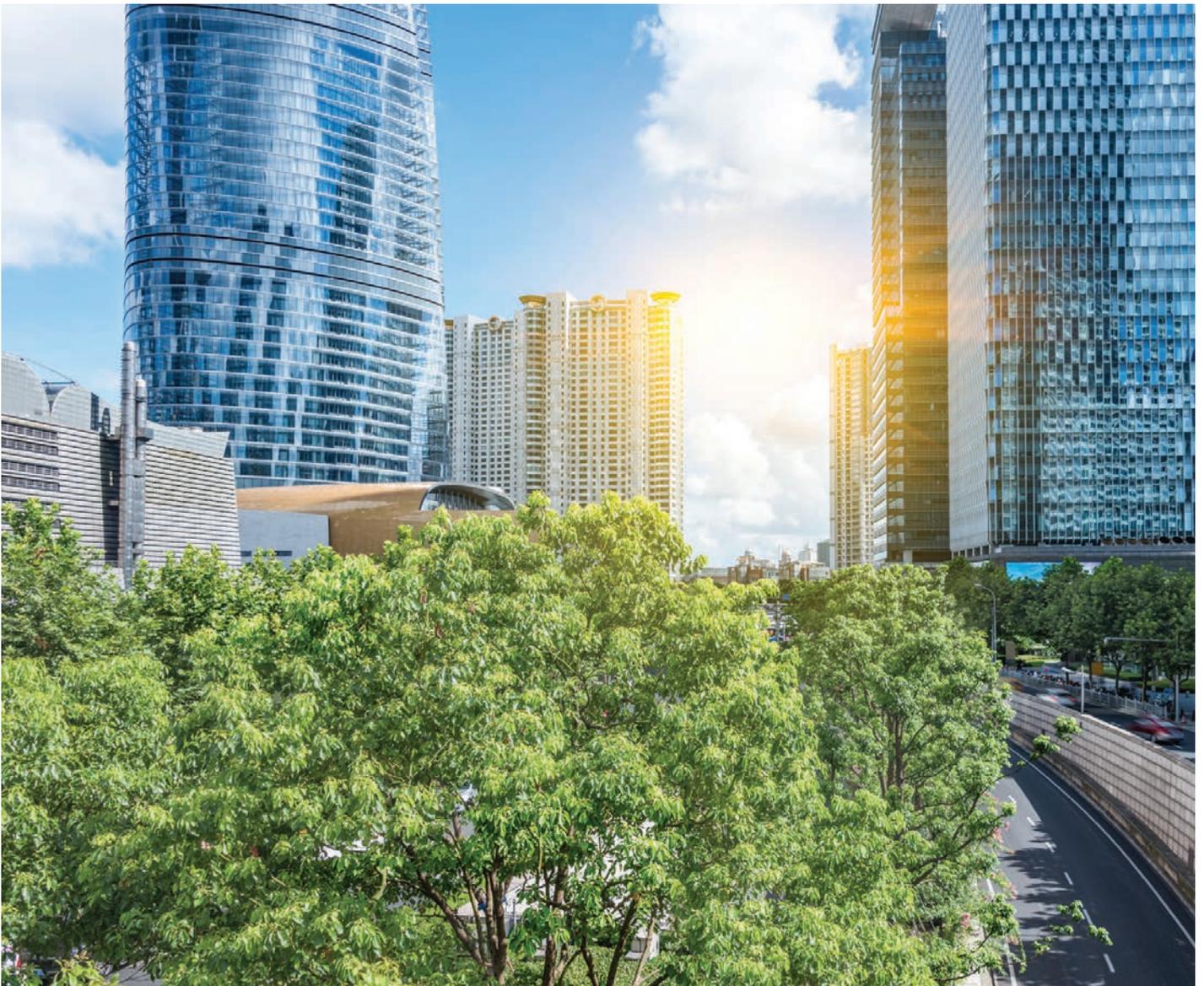
Real Estate Investment Trusts, or REITs, are a type of security that invests in real estate through property or mortgages. They are seen to provide investors with a liquid stake in real estate, often offer high dividend yields, and can receive special tax considerations. While REITs first appeared in the USA,⁵⁴ they are now showing up in a number of countries worldwide and are now listed on every continent. FTSE data shows that REITs in the developed world have a total market capitalisation of US\$842bn. The sector is dominated by the US which has 62% of the total. Emerging market REITs have a total market cap of US\$9.06bn, of which half comes from the Asia-Pacific region.

When investors choose REITs, selection criteria can be set on various factors, including location, type of property and market sector. There is also an emerging consideration evaluating REITs according to their exposure to environmentally certified or green buildings.

Real estate has a significant impact on the environment, consuming about 40% of the world's energy consumption and accounting for at least 30% of greenhouse gas emissions.⁵⁵ With increased global attention to combating climate change, the price of operating real estate may rise and new legislation governing resource efficiency could be passed. Investors are taking note of this situation and looking for more 'green' real estate that will be well insulated against any increase in energy prices or efficiency standards. If REITs with green credentials can be identified, then investment products based on these criteria can be developed. Market requirements for developing REITs can include green infrastructure, standards or definitions for 'green' and sufficient environmental disclosure.

How to enhance green REIT listings in your market

Stock exchanges can enhance green REIT listings in their market through market education, working with local or international partners to enhance both investor and issuer knowledge on the availability of this financial product. In addition, stock exchanges can work with specialised partners such as the World Green Building Council or Global Real Estate Sustainability Benchmark as well as other stock exchanges, governments, universities, rating agencies, data providers, banks and other financial services providers.



ANNEX III: MEMBERS OF THE SSE GREEN FINANCE ADVISORY GROUP

The Sustainable Stock Exchanges initiative gratefully acknowledges the valuable inputs to this document made by the experts listed here. The SSE expresses appreciation to the Luxembourg Stock Exchange for chairing the Advisory Group.

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- Mr Maurice Bauer, Secretary General, Luxembourg Stock Exchange
- Ms Julie Becker, Member of the Executive Committee, Luxembourg Stock Exchange

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As You Sow	Mr	Andrew Behar	CEO
Aviva	Mr	Steve Waygood	Chief Responsible Investor Officer
B3 (formerly BM&FBOVESPA)	Mr	Sérgio Gullo	Chief Representative Officer – EMEA and Asia
BlueOrchard Finance	Mr	Pierrick Balmain	Business Development Director
BNPP	Ms	Helena Viñes Fiestas	Head of Sustainability Research
Bolsa de Valores de Lima	Ms	Magaly Martinez Matto	Gerente Legal
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Egyptian Exchange	Mr	Ahmed Rushdy	Deputy Manager, Risk Management Department
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European Climate Foundation	Ms	Julia Bayer	Associate, Finance and Economics
European Investment Bank	Mr	Aldo Romani	Deputy head of funding
GIB Foundation	Mr	Hans-Peter Egler	CEO
GIZ - Emerging Market Sustainability Dialogues	Ms	Nina Roth	Senior Advisor
GRI	Ms	Eszter Vitorino	Head of Capital Markets Engagement
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HSBC	Mr	Ed Wells	Head, Financial Sector Policy, Markets and RMB Internationalisation
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New Zealand Stock Exchange	Mr	Hamish Macdonald	General Counsel & Head of Policy
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RobecoSAM	Mr	Daniel Wild	Head of Sustainability Investing Research and Development
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Swiss Sustainable Finance	Ms	Sabine Doebeli	CEO
Sydney Stock Exchange	Mr	Joseph Law	General Manager, Listings
SynTao Green Finance	Mr	Guo Peiyuan	Chairman
UN Environment Inquiry	Mr	Jeremy McDaniels	Program Manager
United Nations Climate Change secretariat (UNFCCC)	Mr	Grant A. Kirkman	Lead relationship management
VanEck	Mr	William Sokol	Product Manager, ETFs
Vigeo Eiris	Mr	Stephen Hine	Director, External Affairs
World Federation of Exchanges	Ms	Siobhan Cleary	Head of Research & Public Policy
Yes Bank	Mr	Rakesh Shejwal	Assistant Vice President

Note: Advisory Group experts participated in their personal capacity; their professional affiliations are provided for information only. The views expressed in this document do not necessarily represent the views of each member of the Advisory Group or the official views of their organisations.

ENDNOTES

- 1 See for example the 2017 interim report of the European Commission High-Level Expert Group on Sustainable Finance which highlights green financial centres.
- 2 In 2015 at the UN climate change conference referred to as COP21 (UNFCCC's 21st Conference of the Parties), governments worldwide committed to an ambitious target of limiting the increase in the global temperatures to between 1.5 and 2 degrees Celsius above pre-industrial levels.
- 3 New Climate Institute (2016). [The Emission Gap Report 2016: A UN Environment Synthesis Report](#).
- 4 International Energy Agency (2014). [World Energy Investment Outlook](#).
- 5 UNFCCC (2015). [Summary of The Paris Agreement](#)
- 6 Further information on the 17 goals and the objective of the 2030 agenda can be found at sustainabledevelopment.un.org
- 7 United Nations Department of Economic and Social Affairs Financing for Development Office (2015). [Addis Ababa Action Agenda of the Third International Conference on Financing for Development](#)
- 8 Source: UNFCCC
- 9 PRI and UN Environment have begun working with their constituents to take specific actions towards creating a more sustainable financial system. For example, see UN Environment Inquiry (2016) [Into a Sustainable Financial System, The Financial System We Need: From Momentum to Transformation](#) and PRI (2016) [Sustainable Financial System: Nine Priority Conditions to Address](#)
- 10 The New Climate Economy (2016). [The Sustainable Infrastructure Imperative. Financing for Better Growth and Development](#).
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- 13 PRI and Novethic (2017). [Investor action on climate change](#).
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- 15 Hong Kong Financial Services Development Council (2016). [Hong Kong as a Green Finance Hub](#).
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- 21 UN Environment (2017). [World's Financial Centres Join Forces to Promote Sustainable Finance](#)
- 22 Sustainable Stock Exchanges initiative (2017). [SSE participates in new network to build sustainable financial centres](#)
- 23 Luxembourg for Finance (2016). [Luxembourg Lists World's First Sovereign Green Bond, Announces its First Climate Finance Labels](#).
- 24 G20 Green Finance Study Group (2016). [G20 Green Synthesis Report](#).
- 25 As of the end of 2016 (Source: Climate Bonds Initiative)
- 26 For example, France's debut green bond was oversubscribed three times, Mexico City's first green bond was oversubscribed 2.5 times over and Poland's sovereign green bond was two times oversubscribed.
- 27 Climate Bonds Initiative (2017). [The role of exchanges in accelerating the growth of the green bond market](#).
- 28 Global Sustainable Investment Centre: www.lseg.com/sustainable
- 29 The Percentage can be changed to suit the fund definitions – for example, 30% Fossil Free (or 'Fossil Free + 30% Utilities')
- 30 Stock Exchange of Thailand (2015). [Encouraging listed companies to be included in sustainability rankings and indices](#).
- 31 Launched in 2017, in English as 'Santiago Exchange's Guide to Responsible Investment' and in Spanish as 'Guía de Inversión Responsable de la Bolsa de Santiago'.
- 32 [The Mexico Green Bond Investors Statement](#) can be found at www.mexico2.com.mx.
- 33 RIA Channel (2017). [Morningstar Launches Sustainability Ratings for Investment Managers](#).

- 34 For example, see CDP, the Ceres Investor Network on Climate Risk and Sustainability, Breakthrough Energy Coalition, the Green Infrastructure Investment Coalition, Initiative Carbone 2020 (IC20) and the Montreal Carbon Pledge.
- 35 PRI (2016). [Green Equity Investing](#)
- 36 UN Global Compact, PRI and UNEP (2015) [Fiduciary Duty in the 21st Century](#)
- 37 PRI (2016). [A Global Guide to Responsible Investment Regulation](#).
- 38 Corporate Knights (2017). [Measuring Sustainability Disclosure: Ranking the World's Stock Exchanges](#).
- 39 For example: Jagd (2015) [Investor Oriented Corporate Social Responsibility Reporting](#); Deutsche Asset Management and the University of Hamburg (2015) [ESG and Corporate Financial Performance: mapping the global landscape](#); Kim, Park and Wier (2012) Is Earnings Quality Associated with Corporate Social Responsibility?; Lu and Taylor (2016) Which Factors Moderate the Relationship between Sustainability Performance and Financial Performance? A Meta-Analysis Study; Zahller, Arnold and Roberts (2015) Using CSR Disclosure Quality to Develop Social Resilience to Exogenous Shocks: A Test of Investor Perceptions. Behavioral Research in Accounting.
- 40 For example, [Companies Act 2006 \(Strategic Report and Directors' Report\) Regulations 2013](#) which requires directors of a company qualifying as large or medium-sized in the UK to prepare a strategic report which includes disclosure of greenhouse gas emissions, and [Article 173-VI of the French law on energy transition for green growth](#).
- 41 PRI [Responsible Investment Regulation Database](#)
- 42 UNCTAD (2014). [Best Practice Guidance for Policymakers and Stock Exchanges on Sustainability Reporting Initiatives](#).
- 43 It is mandatory in Peru that all listed companies include in their annual report as an annex a report on their sustainability and their corporate governance, using a specific template provided by the regulator.
- 44 GRI (2017). [Linking GRI Standards and the EU Directive on Non-financial and Diversity Disclosure](#).
- 45 www.fsb-tcfd.org
- 46 London Stock Exchange Group ESG guidance resource centre: www.lseg.com/esg
- 47 More information can be found in the SET SR Center on their [website](#).
- 48 Cambridge Institute for Sustainability Leadership's Earth on Board Programme has developed a training programme to equip boards with the tools and know-how to address low carbon transformation, natural resource security, sustainability leadership and sustainable finance. More information can be found at <https://www.cisl.cam.ac.uk/executive-education/board>
- 49 Find out more about the London Stock Exchange Group's environmental commitments and performance on the dedicated page on their [website](#).
- 50 Find all Communication to Stakeholders reports on the [SSE website](#).
- 51 B3 has a sustainability section on their website in both [English](#) and [Portuguese](#).
- 52 Deutsche Börse (2017). [The Frankfurt Declaration](#)
- 53 Climate Bonds Initiative (2017) [The role of exchanges in accelerating the growth of the green bond market](#).
- 54 The first REIT was listed on the NYSE in 1965.
- 55 UN Environment (2009). [Common Carbon Metric for Measuring Energy Use & Reporting Greenhouse Gas Emissions from Building Operations](#).

