

Research Report

The Role of Exchange Platforms in Growing the Investment Product Ecosystem and Driving Green and Sustainable Finance



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SUMMARY

Exchanges can play a unique role as centralised and regulated marketplaces that provide listing, trading, and related services for products that incorporate environmental, social and governance (ESG) factors and connect issuers, investors, and other market participants to support sustainable finance and investment.

More specifically, exchanges can drive green and sustainable finance (GSF) by offering fundraising and exit channels, supporting product and service innovation, providing a standardised and regulated environment, and promoting enhanced disclosure.

Global initiatives like the Paris Agreement and the United Nations' 2030 Agenda for Sustainable Development are driving demand for GSF. To meet this demand, exchanges worldwide have developed a number of initiatives to accelerate GSF and ESG investment.

Such initiatives include innovations across different asset classes and products such as equities, bonds, exchange traded funds, real estate investment trusts, and derivatives. In addition, exchanges have introduced dedicated service platforms to connect issuers and investors.

While exchanges have made much progress in promoting and facilitating GSF, there are many opportunities to accelerate this. Possible measures include harmonising classification standards for ESG product labelling, providing incentives and a comprehensive policy framework, improving the availability and quality of data, increasing the spectrum and liquidity of ESG products, and driving inter-exchange cooperation.

By taking such steps, we believe that exchange platforms will continue to play a pivotal role in connecting different market participants in the global ecosystem of sustainable finance and investment and driving the development of products and services for the transition to a sustainable global economy.

1. THE ROLE OF EXCHANGE PLATFORMS IN SUPPORTING GREEN AND SUSTAINABLE FINANCE

Exchange platforms provide companies with access to a deep pool of capital, enable price discovery, spread risk, help wealth creation, and promote transparency and corporate governance standards

Exchange platforms are also centralised and regulated marketplaces that can provide listing, trading, and related services for environment, social, and governance (ESG) products and connect issuers, investors, and other market participants to support sustainable finance and investment.

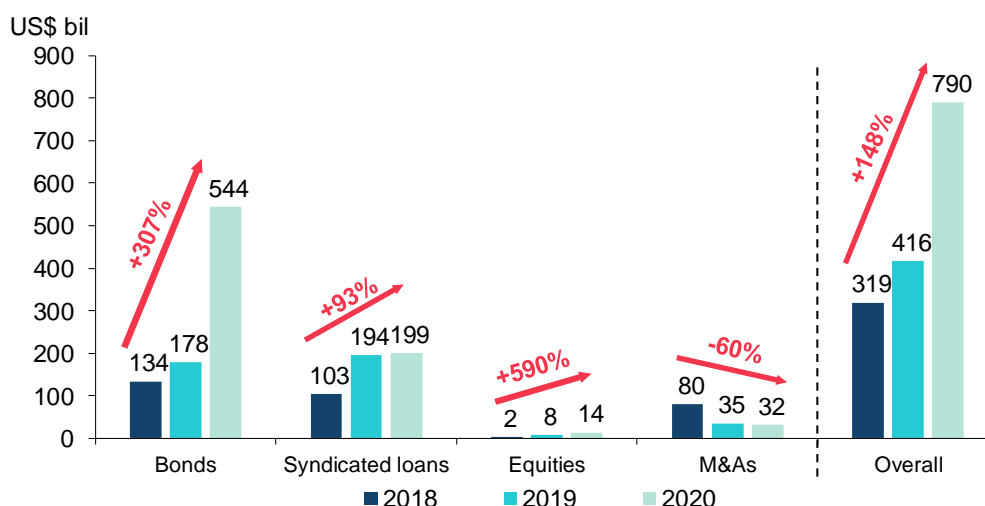
In light of the growing need for capital to finance sustainable development, many exchange platforms now offer products and services that support green and sustainable finance (GSF) and offer investments incorporating ESG factors (broadly referred to as ESG investment or sustainable investment) to mobilise capital and promote good governance¹.

Global initiatives like the Paris Agreement and the United Nations' 2030 Agenda for Sustainable Development are driving demand for GSF — and the sums required are substantial.

In 2014, the United Nations Conference on Trade and Development (UNCTAD) estimated that between US\$5 trillion to US\$7 trillion of annual global investments are needed through 2030 to meet the United Nations Sustainable Development Goals (UNSDGs)². The sums required may become even larger after the COVID-19 outbreak in 2020³.

GSF grew remarkably between 2018 and 2020 (see Figure 1). New issuance of equities and bonds grew fastest, increasing by 590% and 307%, respectively, in CAGR (compound annual growth rate) terms during the period, according to Refinitiv data.

Figure 1. Global GSF fund flows (US\$ billions) (2018-2020)



Note: The fund flows of GSF are those classified as “sustainable finance” by Refinitiv.

Source: “Refinitiv Sustainable Finance Review — Full Year 2020”, published on Refinitiv’s website, 2 February 2021.

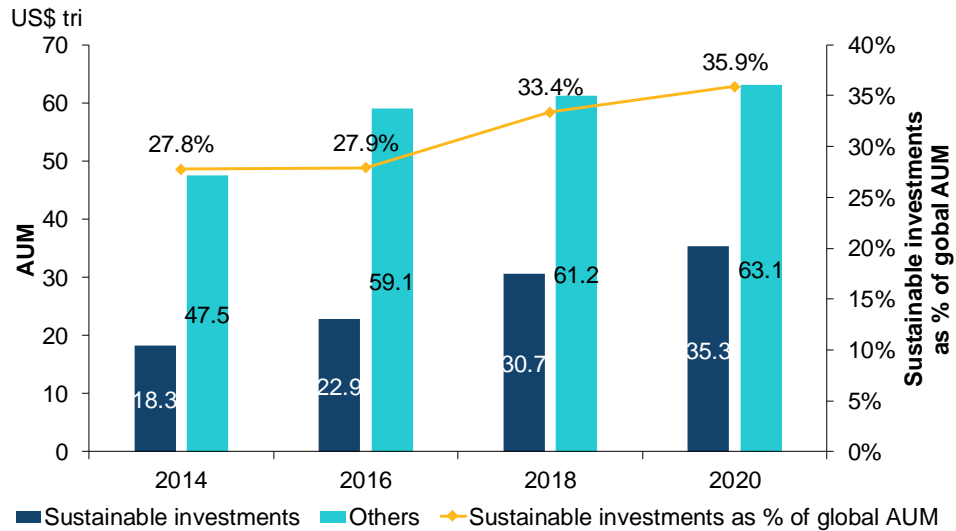
¹ See World Federation of Exchanges and United Nations Conference on Trade and Development (UNCTAD), “The role of stock exchanges in fostering economic growth and sustainable development”, published on UNCTAD’s website, 7 September 2017.

² See UNCTAD, “World investment report 2014 — Investing in the SDGs: An action plan”, published on UNCTAD’s website, 24 June 2014.

³ Source: “Mobilising institutional capital for renewable energy”, published on the website of International Renewable Energy Agency (IRENA), November 2020.

In 2020, assets under management (AUM) in sustainable investment strategies amounted to US\$35.3 trillion — almost double the US\$18.3 trillion registered in 2014, and about 36% of total global AUM, according to Global Sustainable Investment Alliance⁴ (Figure 2).

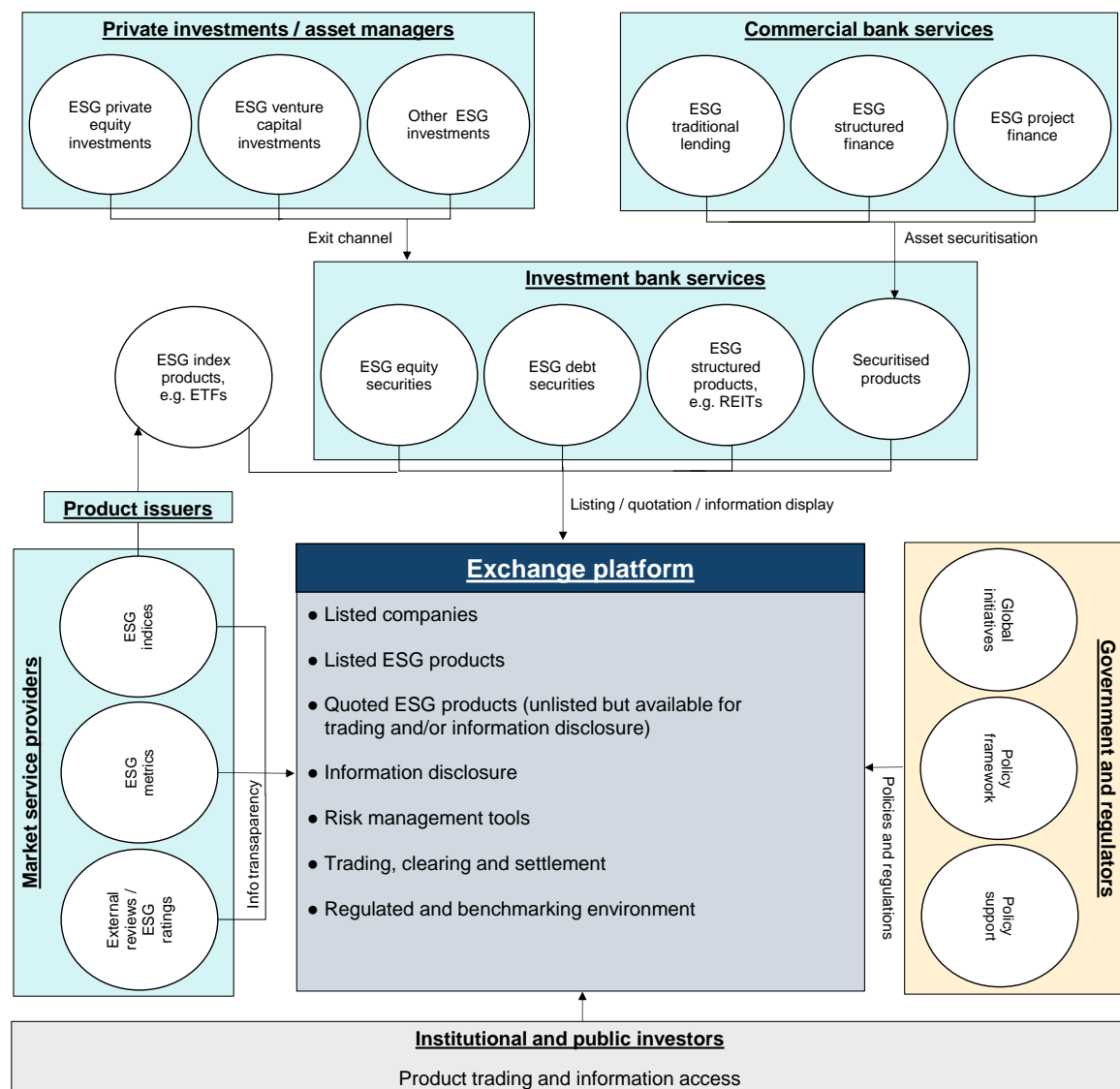
Figure 2. Global sustainable investment: total AUM (2014 – 2020)



Source: Global total AUM and AUM of sustainable investments (except the data in 2014) are obtained from “Global sustainable investment review”, 2016, 2018 and 2020 issues, published on Global Sustainable Investment Alliance’s website. The data of global total AUM in 2014 is obtained from “Global asset management 2021: The \$100 trillion machine”, Boston Consulting Group’s website, July 2021.

⁴ The sustainable investment assets refers to the AUM adopting ESG factors into investment processes based on the seven approaches defined by Global Sustainable Investment Alliance. See “Global sustainable investment review”, 2020 issue, published on Global Sustainable Investment Alliance’s website.

Figure 3. Illustration of the core support offered by an exchange platform



Looking in more detail, as depicted in Figure 3, exchange platforms can support sustainable finance and investment in four specific ways:

(1) Offering fund-raising and exit channels for sustainability-related investments

Private investment vehicles, asset managers, commercial banks and investment banks all play prominent roles in the fund-raising and exiting process.

Commercial bank lending has been a significant source of GSF for the transition to a sustainable economy. Banks can securitise loan assets into asset-backed securities (ABS), which can then be issued and listed through exchange platforms, thus freeing up capital and allowing banks to increase GSF support.

Apart from bank lending, private equity and venture capital may also fund small-scale, sustainability-related projects or start-up companies. Exchange platforms thus serve as both an exit channel for private investments and a continuous funding channel.

(2) Developing ESG investment products to widen funding sources

Investment banks help list various ESG investment products (e.g. equities, debt securities, structured products, ABSs) on exchanges.

Market service providers assess various sources of ESG information, including companies' related disclosures on exchanges, and transform them into metrics, ratings, and scores that help classify and label ESG products.

Index providers also formulate ESG indices on various asset classes to facilitate the development of ESG index products.

Product issuers launch index-related products, including exchange traded funds (ETFs) that cover ESG indices or themes.

The exchange platform will make these products available to institutional and retail investors and establish a secondary market.

In addition, exchange platforms continuously develop and offer related derivative products, such as futures and options, as portfolio management and risk management tools for ESG investments.

(3) Providing a regulated environment of recognised standards

Government and regulators formulate initiatives, policies, and regulations to promote and support the development of sustainable finance and investment.

Compared to off-exchange ESG products, exchange platforms usually provide more clarity on applicable rules, regulations, and classification criteria stipulated in, for example, related guidelines and best practices for listed ESG products.

Exchanges may refine the governance and disclosure framework for GSF and ESG products from time to time according to their engagements with relevant regulators and various service providers on the latest market developments.

Exchanges are often also responsible for monitoring both initial and ongoing compliance with applicable rules and regulations and classification criteria for listed ESG products.

(4) Enhancing ESG information disclosure

Disclosing more detailed information and making ESG products more identifiable can increase investor participation by meeting investors' needs for insights, raising awareness of ESG issues, and reducing information asymmetry between GSF issuers and ESG investors.

2. GLOBAL EXCHANGES' PRODUCT AND SERVICE INITIATIVES TO PROMOTE GSF AND ESG INVESTMENT

Exchange platforms have developed several initiatives to drive GSF and ESG investment.

The United Nations Sustainable Stock Exchanges Initiative (SSEI) and the World Federation of Exchanges (WFE)⁵ have recommended that exchange platforms promote green products and services, green financial markets by imposing sustainability standards and labelling, strengthen ESG information disclosure, and grow dialogue about GSF among stakeholders.

Between 2019 and 2020, world exchanges increased the amount and widened the range of green products and services available to investors, according to annual WFE surveys (see Figure 4).

The most popular green products listed across exchanges at the end of 2020 were equity indices and bonds, with 27 out of 39 surveyed exchanges offering sustainability indices and 30 offering green bonds, according to a 2021 WFE survey.

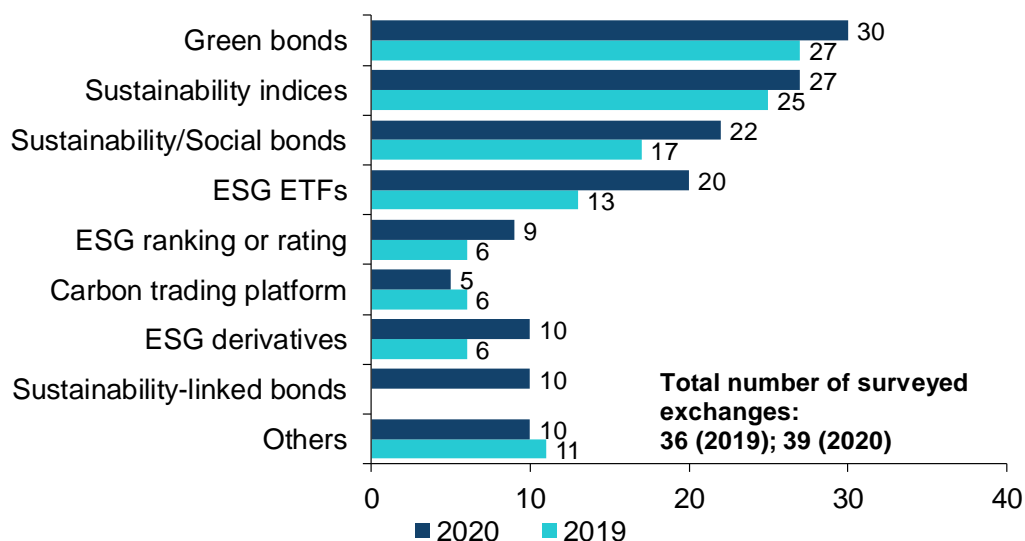
In terms of geography, exchanges in Europe and the US have developed more green products and services, but exchanges in Asia, particularly in China, are quickly advancing⁶.

Many global exchanges have also proactively supported ESG product development with a range of measures, such as enhancing ESG disclosure requirements, building capacity amongst market participants, and connecting issuers and investors via dedicated service platforms, like Hong Kong Exchanges and Clearing Limited (HKEX)'s Sustainable and Green Exchange (STAGE).

⁵ See "How stock exchanges can grow green finance" and "How derivatives exchanges can promote sustainable development", published on SSEI's website, 16 November 2017 and 5 May 2021 respectively; "WFE sustainability principles" and "The World Federation of Exchanges: Sustainability and commodity derivatives white paper", published on WFE's website, 4 October 2018 and 20 August 2019 respectively.

⁶ See *WFE Sustainability Survey April 2017* and *The WFE's 7th Annual Sustainability Survey*, published on WFE's website, April 2017 and 14 July 2021 respectively; "Sustainable finance: A global overview of ESG regulatory developments", published on Cleary Gottlieb's website, 22 October 2020; "China to see significant growth in responsible and ESG-themed investment", Invesco's website, 22 March 2021; "ESG in Asia: Accelerating momentum", Barings' website, May 2021.

Figure 4. Number of exchanges offering ESG products, by product type (2019 & 2020)



Note: The product categories are more granular in the 2020 survey where social bonds and sustainability bonds are separate categories and sustainability-linked bonds is a new category. Green bonds, social bonds, sustainability bonds and sustainability-linked bonds are classified according to recognised international standards, such as those of the International Capital Market Association.

Source: *The WFE's 6th Annual Sustainability Survey* and *The WFE's 7th Annual Sustainability Survey*, published on WFE's website, 15 July 2020 and 14 July 2021, respectively.

The following sub-sections take a more detailed look into new products and services developed by exchanges across the world to promote GSF and ESG investment.

2.1 ESG investment products

ESG product innovation continues growing to meet the different needs of issuers and investors.

Issuers can choose to issue an ESG product on their companies, projects, or underlying assets to generate financing.

Investors can choose ESG products that align with their ESG investment strategies and their preferred risk-return profiles.

We discuss global exchanges' experience of developing ESG products for equities, bonds, and indices, as well as structured products, like real estate investment trusts (REITs), below.

2.1.1 Equities

Equities can be classified as "green" if they meet certain ESG criteria. For example, service providers could base their criteria on a company's sector⁷, ESG ratings⁸, revenue sources, or business activities⁹.

Although classification is not part of the initial public offering (IPO) listing process on exchanges, listing rules may require the company to make an ESG disclosure.

⁷ See for example "Refinitiv Sustainable Finance Review — Full Year 2020", published on Refinitiv's website, 2 February 2021.

⁸ See "MSCI ESG ratings", published on the website of MSCI, viewed on 18 Mar 2021.

⁹ For example, the London Stock Exchange's list of companies/funds with "Green Economy Mark". See "London Stock Exchange launches Green Economy Mark and Sustainable Bond Market", news release published on the LSE's website, 11 October 2019; "Green Economy Mark", published on the website of London Stock Exchange Group, October 2020.

While major standard setters for ESG reporting are still in the process of harmonising their standards¹⁰, some exchanges may set out recommended reporting frameworks to facilitate the comparison of performance over time, possibly versus a comparable company in the same sector¹¹.

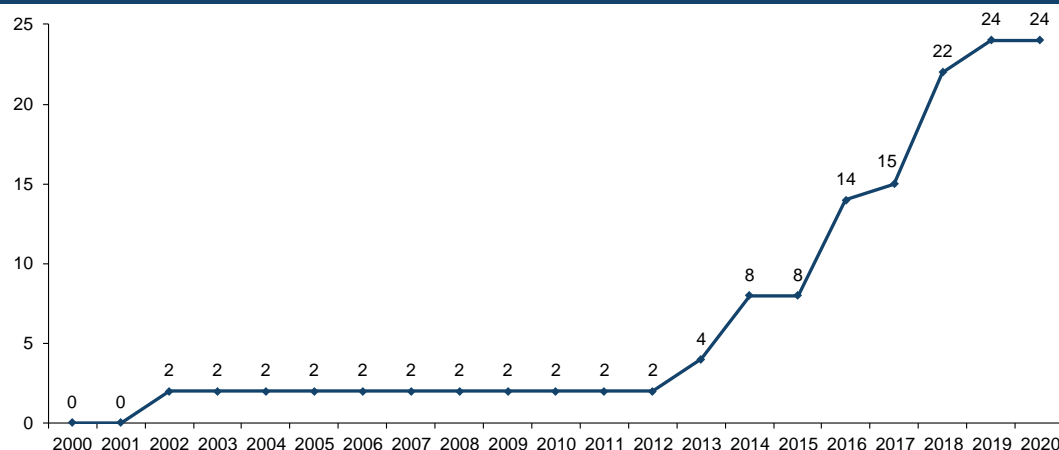
Such information is useful for investment analysis and may also shed light on management strength and the long-term prospects of the company.

An increasing number of listed companies across the world are required to disclose their ESG information. The number of stock exchanges with mandatory ESG reporting in their listing requirements has increased from two in 2010 to 24 in 2020 (see Figure 5).

These 24 stock exchanges had 16,359 listed companies with a total market capitalisation of US\$18.2 trillion as of 17 March 2021. Those listed companies accounted for 30.7% of total listed companies and 20.7% of the market capitalisation in a sample of 105 stock exchanges¹².

In Asia, HKEX was one of the first in the region to require listed companies to make ESG disclosures in 2016, and markets in Mainland China are expected to start mandatory ESG reporting in 2021¹³.

Figure 5. Number of stock exchanges with mandatory ESG reporting as listing requirements (2000 – 2020)



Source: “United Nations SSE initiative: 10 Years of Impact and Progress”, published on the website of SSEI (26 September 2019) for the data in 2000-2019; “Stock exchange database”, SSEI’s website (viewed on 17 March 2021) for the data in 2020.

¹⁰ See “Global sustainability and integrated reporting organisations launch prototype climate-related financial disclosure standard”, published on Climate Disclosure Standards Board’s website, 18 December 2020.

¹¹ An exchange may accept the ESG reporting of listed companies based on one set or multiple sets of international standards, e.g. Global Reporting Initiative (GRI), Sustainability Accounting Standards Board (SASB), Task Force on Climate-Related Financial Disclosure (TCFD), etc.

¹² Calculated based on the data on the number of listed companies and market capitalisation from “Stock exchange database”, SSEI’s website, viewed on 17 March 2021.

¹³ See Zembrowski, P., M. Leung and K. Schacht, “ESG disclosures in Asia Pacific: A review of ESG disclosure regimes for listed companies in selected markets”, published on the website of CFA Institute, 21 July 2019; “A green wave of ESG is poised to break over China”, published on the website of World Economic Forum (WEF), 4 December 2020.

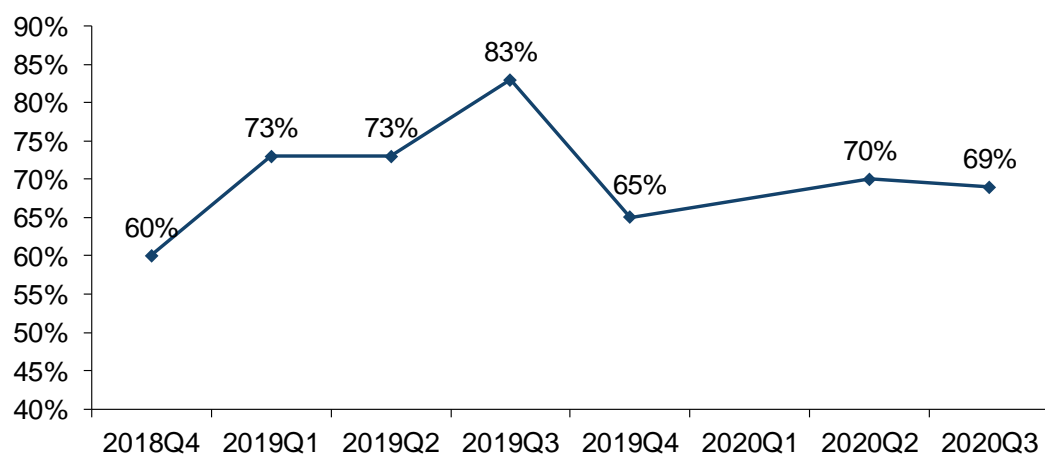
2.1.2 Bonds

Green, social, and sustainability (GSS) bonds, and more recently transition bonds and sustainability-linked bonds, support specific areas of sustainable development and are classified according to recognised international standards, like those from the International Capital Market Association (ICMA)¹⁴. These bonds usually follow a similar listing process to other bonds but ESG disclosures are required.

Listing GSS bonds on exchanges is rather popular for issuers. Take green bonds as an example, during the first three quarters of 2020, about 69% of newly issued green bonds were traded on global stock exchanges, while the remaining 31% were traded on over-the-counter (OTC) markets (including the China Interbank Bond Market (CIBM) in Mainland China) (see Figure 6). In this respect, GSS bonds are different from non-GSS bonds, which are usually only traded in OTC markets.

European exchanges, including the Luxembourg Stock Exchange (LuxSE), Euronext exchanges, German exchanges, and the London Stock Exchange (LSE), issued most of the green bonds in value terms in the first three quarters of 2020. In Asia, HKEX issued the largest amount of green bonds.

Figure 6. Share of green bonds listed on exchanges in terms of year-to-date global issue amount (2018Q4 – 2020Q3)



Note: Climate Bonds Initiative (CBI) did not publish the quarterly report for 2020Q1 and data is therefore not available for 2020Q1.

Source: “Green bond market summary”, issues from 2018Q4 to 2020Q3, published on the website of CBI.

In Mainland China, exchanges have supported the development of green ABS. The number of ABSs issued and the total amount raised has grown rapidly in recent years, with the majority issued and traded on exchanges¹⁵.

In the US, agency mortgage-backed securities (MBS) have dominated green ABS issuance. For example, Fannie Mae, one of the largest agency MBS issuers, was the world’s largest green bond issuer in 2020, with a total of US\$13 billion (about 5% of total

¹⁴ See *Green Bond Principles, Social Bond Principles, Sustainability Bond Guidelines, Sustainability-Linked Bond Principles and Climate Transition Finance Handbook*, published on ICMA’s website, viewed on 18 March 2021.

¹⁵ See HKEX research report, “The burgeoning Mainland Green ABS market and the potential support from the Hong Kong market”, published on HKEX’s website, 3 May 2021.

global green bond issuance)¹⁶. ABSs in the US are liquid but are mainly traded in the OTC market¹⁷.

In Europe, only eight green and other ESG-related ABSs were issued in 2020, reportedly because of a lack of green collateral and standardisation¹⁸.

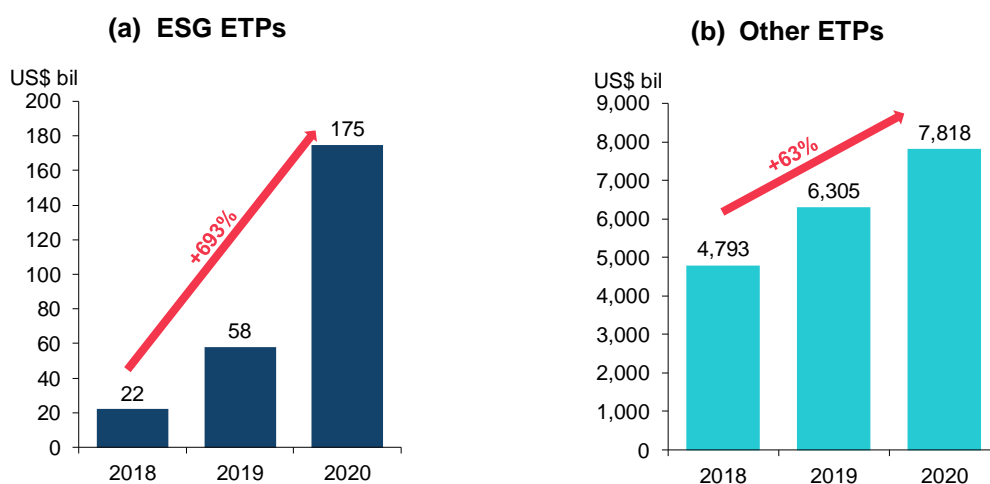
Exchanges also support product innovations in the GSS bond market, such as standardised bond repurchase transactions (repo) dedicated for green bonds to provide short-term financing to bondholders. The first standardised repos for individual green bonds, or for a basket of green bonds, were made available on Eurex in 2020¹⁹.

2.1.3 Indices, investment funds and index products

ESG index products such as exchange traded products (ETPs) are becoming more popular as ESG investment tools. From 2018 to 2020, the AUM of ESG ETPs grew much faster than for other ETPs (see Figure 7).

An increasing number of ESG indices have been introduced in recent years. Currently, ESG indices mainly cover equities in the US, Europe, Asia Pacific, China and other emerging markets, and their coverage has expanded to also include GSS bonds in major markets.

Figure 7. Total AUM of ESG ETPs and other ETPs in the global market (2018 – 2020)



Note: AUM of other ETPs is calculated as the total AUM of all ETPs minus that of ESG ETPs.

Source: Data in 2018 and 2019 for ESG ETPs are from “ETF reports assets invested in ESG (environmental, social, and governance) ETFs and ETPs listed globally reached a new record of 88 billion US dollars at end of June 2020”, *ETFGI.com*, 22 July 2020; data in 2020 for ESG ETPs are from “ESG observatory” webpage on *Trackinsight.com*, viewed on 29 March 2021; aggregate data for all ETPs are from “ETFGI reports assets invested in ETFs and ETPs listed globally reach a new milestone of US\$7.99 trillion at the end of December 2020”, *ETFGI.com*, 14 January 2021.

¹⁶ Source: “Green securitisation: Unlocking finance for small-scale low carbon projects”, published on CBI’s website, March 2018; “Record \$269.5bn green issuance for 2020: Late surge sees pandemic year pip 2019 total by \$3bn”, published on CBI’s website, 24 January 2021.

¹⁷ Source: “Fixed Income Market Structure: Treasuries vs. Agency MBS”, FEDS Notes published on the Federal Reserves’ website, 25 August 2020.

¹⁸ Source: “ESG-labelled ABS: a (very) brief history of the market”, published on *bondvigilantes.com*, 3 March 2021.

¹⁹ “Repo goes green”, published on Eurex’s website, 10 November 2020; “Repo market” and “Repo baskets” webpages on Eurex’s website, viewed on 19 March 2021.

To facilitate the development of ESG indices, index providers use their own assessment frameworks to measure an issuers' ESG performance²⁰. However, different providers use different methodologies, so assessments between providers may not be fully compatible.

Listed companies' ESG disclosures are one key source of information on which index providers compile ESG scores or ratings. As listed companies' disclosures usually follow the same or similar reporting framework, disclosures are more comparable, and therefore the development of ESG indices is relatively faster for equities than for fixed-income securities.

An ESG index is usually constructed from a broad market index (the parent index) in accordance with a specific ESG investment strategy — possible approaches could include positive/negative screening and weight tilts²¹.

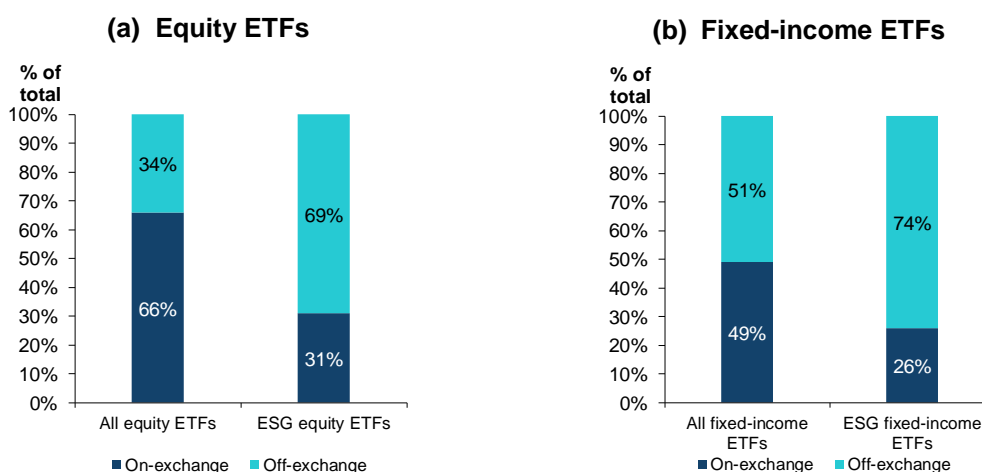
A wide range of index providers, including subsidiaries of major exchange groups (e.g. FTSE Russell of LSE Group and Qontigo of Deutsche Börse Group), have actively developed ESG indices. As such, these providers have developed an increasing number of ESG equity and bond indices which have home-market benchmark indices and popular regional and global indices as their parent indices.

As exchange platforms are where ESG ETFs are listed and traded, so they are pivotal in promoting investment through ESG indices.

ESG ETFs track ESG indices that cover companies having business practices aligned with UNSDGs and/or good ESG performance. Exchange platforms can also facilitate the secondary market liquidity of ESG ETFs.

In the US, the share of on-exchange trading of ESG equity and fixed income ETFs in 2020 was lower than the share for all equity ETFs and all fixed-income ETFs (see Figure 8). This indicates that the liquidity of ESG ETFs on exchanges still has room to grow, and may be boosted by incentives and supportive market mechanisms such as market making.

Figure 8. Distribution of ETF turnover in the US by trading venue (2020)



Note: The total turnover include on-exchange trades and off-exchange creation and redemption activities and block trades.

Source: "ESG ETF liquidity continues to warm alongside demand", published on *ETFDB.com*, 18 March 2021.

²⁰ See "MSCI ESG ratings methodology: Executive summary", published on MSCI's website, December 2020; "ESG ratings and data model: Integrating ESG into investment", published on FTSE Russell's website, viewed on 29 March 2021; "ESG evaluation", webpage on S&P Global's website, viewed on 29 March 2021.

²¹ See "An evolution in ESG indexing", published on BlackRock iShares' website, viewed on 29 March 2021.

Independent labelling agencies grant labels to ESG funds and exchanges and provide platforms with label recognition and identification of labelled products for investment decisions. For instance, LuxSE recognises the various ESG labels in the European markets for investment funds (including ETFs) listed on its exchange platform and requires on-going disclosure of the accreditation of these labels.

2.1.4 REITs

Exchanges can contribute to the classification of green REITs through enhanced transparency. In the US, which was the largest REIT market in 2020²², the share of the top 100 largest REITs with ESG disclosure increased from 78% of total in 2018 to 98% in 2020²³.

Certain REITs may make disclosures according to the specific standards for real estate industry (e.g. Global ESG Benchmark for Real Assets (GRESB)). This information helps identify green REITs in accordance with their classification criteria, e.g. the certifications of green building in their portfolios.

However, similar to equities, there are no universal standards for classification and no specific rules and regulations yet for listing green REITs. REITs can be classified into green REITs in accordance with certain “green” criteria such as how portfolio buildings measure against industry standards for sustainable real estate.

A green REIT must be a REIT with holdings in green buildings but the certification schemes of green buildings vary across the world²⁴ and the proportion of certified green buildings held vary across REITs.

In Europe, ESG fund labels have different thresholds on the share of green buildings for the classification of green REITs (e.g. 75% of AUM for LuxFLAG in Luxembourg and 90% of AUM for Greenfin fund label in France)²⁵. Certain fund labels are recognised by exchanges for classification as ESG ETFs/funds (see above).

In addition, a number of green REIT indices are constructed from their respective parent REIT indices to track the performance of green REITs in global, regional and local markets like the US and Japan²⁶. The availability of green REIT indices can facilitate the development of related index products. The first ETF covering green REITs was issued in the US in April 2021²⁷. The first ESG REIT index futures on Nikkei ESG-REIT Index futures started trading on the Singapore Exchange (SGX) in June 2021²⁸.

²² The US market accounted for 69% of the global total, compared to 21% for Asia-Pacific markets as of end-2020. (Source: “Global real estate total markets table Q4-2020”, published on European Public Real Estate Association’s website, January 2021.)

²³ Source: “REIT industry ESG report”, 2020 and 2021 issues, published on Nareit’s website.

²⁴ These include Leadership in Energy and Environmental Design (LEED) and Energy Star in the US, Building Research Establishment Environmental Assessment Method (BREEAM) in the UK, Haute qualité environnementale (HQE) in France, Green Star in Australia and New Zealand. See “Green building rating systems”, published on International Facility Management Association’s website, viewed on 19 July 2021.

²⁵ See “Eligibility criteria”, webpage on LuxFLAG’s website, viewed on 19 July 2021 and “Greenfin label: Criteria guidelines”, published on the website of French Ministry for Ecology and Inclusive Transition, April 2019.

²⁶ See “MSCI Global Green Building Index factsheet”, published on MSCI’s website, viewed on 19 July 2021; “Dow Jones select green real estate securities indices methodology”, published on S&P Dow Jones Indices’ website, April 2021; “FTSE EPRA Nareit green index series”, published on FTSE Russell, April 2021; “Nikkei ESG-REIT Index monthly factsheet”, published on Nikkei Indexes’ website, 30 June 2021; “Index guideline: Solactive CarbonCare Asia Pacific green REIT Index PR”, published on Solactive’s website, viewed on 19 July 2021.

²⁷ See “Invesco launches first ‘green building’ ETF”, *Financial Times*, 22 April 2021.

²⁸ See “SGX launches the world’s first ESG REIT derivatives”, press release on SGX’s website, 14 June 2021.

2.2 ESG derivative products

ESG derivatives are useful to facilitate ESG investment and manage associated risks.

The wide spectrum of ESG derivatives includes ESG index derivatives, carbon emission derivatives, sustainability-linked derivatives, renewable energy and renewable fuels derivatives and catastrophe and weather derivatives (see Table 1), according to a study²⁹ conducted by the International Swaps and Derivatives Association (ISDA) in 2021 (referred to as the “2021 ISDA Study”) and another study³⁰ conducted by the Futures Industry Association (FIA) in 2020 (referred to as the “2020 FIA Study”). Exchanges offer the trading platform for many of these products.

Table 1. Illustrative product suite of ESG-related derivatives in the global market		
Trading venue	On-exchange	Off-exchange
ESG index derivatives	<ul style="list-style-type: none"> • ESG equity index futures and options 	<ul style="list-style-type: none"> • ESG-related credit default swap (CDS) indices
Carbon emission trading and derivatives	<ul style="list-style-type: none"> • Emission caps and allowances <ul style="list-style-type: none"> ➢ Spot bilateral transactions • Futures and options 	<ul style="list-style-type: none"> • Emission caps and allowances <ul style="list-style-type: none"> ➢ Spot bilateral transactions ➢ Forwards
Sustainability-linked derivatives	Not identified	<ul style="list-style-type: none"> • Interest rate derivatives • Foreign exchange derivatives (with an ESG pricing component)
Others	<ul style="list-style-type: none"> • Commodity futures and options (product design and encompassing sustainability factors in physical delivery) • Renewable energy and renewable fuels derivatives <ul style="list-style-type: none"> ➢ Futures and options on credits of renewable energy and fuels and wind index • Weather derivatives • Temperature-based index futures and options 	<ul style="list-style-type: none"> • Catastrophe and weather derivatives • Catastrophe swap

Source: Compiled from the 2020 FIA Study and the 2021 ISDA Study.

Exchanges possess a number of advantages over the OTC market to support the development of ESG derivatives³¹.

For ESG derivatives, global exchanges’ initiatives include widening the product spectrum to meet risk management needs, introducing market-making incentives to support secondary liquidity, and applying sustainability elements to pricing and physical delivery.

2.2.1 ESG index derivatives

Global exchanges offer a range of ESG index derivatives to meet the growing demand for ESG investment and risk management, and particularly for equity index futures³².

²⁹ “Overview of ESG-related derivatives products and transactions”, published on ISDA’s website, January 2021.

³⁰ “How derivatives markets are helping the world fight climate change”, published on FIA’s website, September 2020.

³¹ See Nystedt, J. (2004) “Derivative market competition: OTC markets versus organised derivative exchanges”, *International Monetary Fund Working Paper*, WP/04/61.

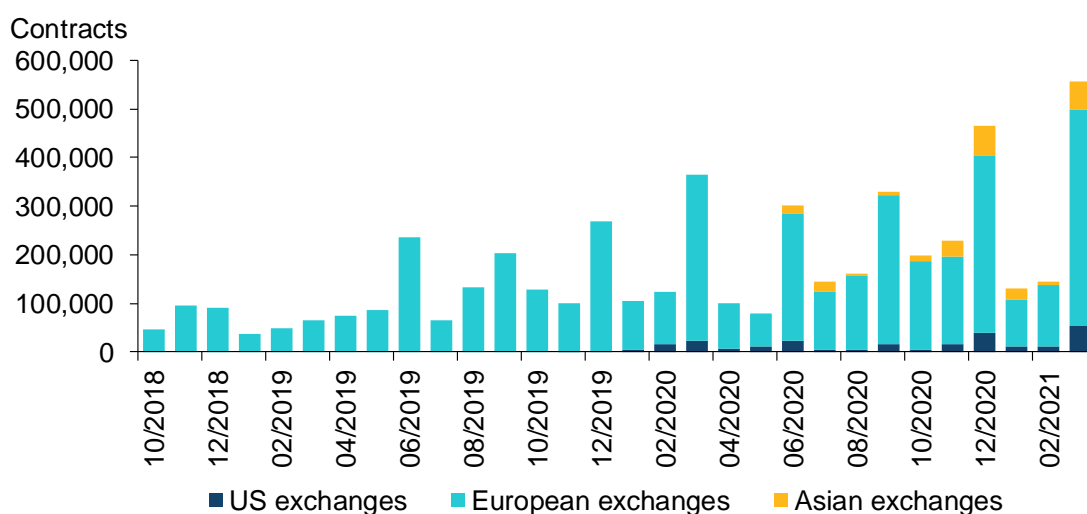
³² See HKEX research paper, “ESG equity index futures: Meeting the increasing needs for ESG investment”, published on HKEX’s website, 12 April 2021.

According to the 2020 FIA Study, as of September 2020, there were 18 futures and options products on major local, regional and global ESG equity indices traded on CME, Eurex, Euronext, Intercontinental Exchange (ICE) US, NASDAQ and Taiwan Futures Exchange.

Apart from trading, exchanges can also offer central clearing services for transactions in ESG index derivatives through their associated clearing houses.

Investor demand and exchanges' market-making incentives have increased the liquidity of ESG index derivatives traded on exchanges. After the first ESG equity index futures product was launched in October 2018³³, the trading volume of major ESG equity index futures has grown steadily to reach a record high in March 2021, with European exchanges seeing the highest amount of trading volume (see Figure 9).

Figure 9. Monthly trading volume of futures on major ESG equity indices (Oct 2018 – Mar 2021)



Note: US exchanges comprise CME and ICE US; European exchanges comprise Eurex, Euronext and NASDAQ Stockholm; Asian exchanges comprise Singapore Exchange and Taiwan Futures Exchange. The list of ESG equity index futures follows that in the HKEX research paper, "ESG equity index futures: Meeting the increasing needs for ESG investment", published on HKEX's website, 12 April 2021, and is not exhaustive.

Source: Calculated based on daily trading volume of individual index futures from Bloomberg.

However, the number of ESG index derivatives traded off-exchange was still limited, according to the 2021 ISDA Study. One example are derivatives on the first ESG-related CDS index — iTraxx MSCI ESG Screened Europe Index — launched by IHS Markit in May 2020³⁴.

Nevertheless, the liquidity of ESG equity index futures is still relatively low compared to the futures of their parent index³⁵. To support the liquidity of ESG index futures, exchanges may need to offer incentives to help grow market making activities³⁶.

³³ The world's first ESG futures was NASDAQ's futures on OMX Stockholm 30 ESG Responsible Index launched in October 2018. See "The world's first ESG future — The result of a successful collaboration", published on NASDAQ's website, 7 June 2021.

³⁴ See "iTraxx MSCI ESG Screened Europe Index: Provisional methodology", published on IHS Markit's website, viewed on 14 April 2021; "Markit Credit Indices — the market standard for credit derivatives", published on IHS Markit's website, viewed on 14 April 2021.

³⁵ See example of Stoxx Europe 600 ESG-X Index futures on Eurex ("ESG Futures — How is the industry tracking in the ESG transition?", published on Qontigo's website, 9 December 2020).

³⁶ See, for example, Eurex's initiative — "Product specific supplement for futures on STOXX® and DAX® ESG indices", issued by Eurex, 22 March 2021.

2.2.2 Carbon emission trading and derivatives

Under the Paris Agreement, countries can set their own reduction targets for greenhouse gas (GHG) emissions, which can be achieved through emissions trading.

An emissions trading system (ETS) covers a defined scope of companies and facilitates the creation and trading of carbon allowances between those who pollute more and those who pollute less. The trading unit is usually one tonne of carbon dioxide equivalent (CO₂e).

Examples of ETSs include the European Union Emissions Trading Scheme (EU ETS), the national ETSs in Korea and New Zealand, regional ETSs in US and Canada — Western Climate Initiative (WCI) and Regional Greenhouse Gas Initiative (RGGI), and eight Chinese pilot ETSs in Beijing, Shanghai, Chongqing, Hubei, Fujian, Tianjin, Guangzhou, Shenzhen. Notably, China has recently launched its national ETS in July 2021, initially run by the Shanghai Environment and Energy Exchange (SEEE).

In terms of trading volumes and values, the EU ETS dominated the global market from 2017 to 2020, followed by regional markets in North America and Asia Pacific³⁷.

In terms of the scale of emissions covered, China's national ETS covers the largest amount of emissions — exceeding 4 billion tonnes of CO₂e, about 40% of total emissions in the Mainland (similar to the level in the EU)³⁸. On its commencement day of 16 July 2021, more than 4 million tonnes of CO₂e were traded.

Exchanges can also provide platforms for auctions of newly created carbon allowances and secondary trading of carbon allowances.

Take EU Allowances (EUAs) of EU ETS as an example:

- The number of EUAs are created by governments of nations in Europe in accordance with EU regulations³⁹.
- There is a central registry (the Union Registry) of EUAs to guarantee accurate accounting for all allowances issued under the EU ETS. Some EUAs are allocated to companies free of charge, while others are allocated through auctions conducted on designated exchange platforms.
- European Energy Exchange (EEX) is the EUA auction platform for all participating countries of EU-ETS⁴⁰, and Deutsche Börse (DB) owns a majority interest in the platform.

³⁷ Source: "Carbon market year in review: Record high value of carbon markets in 2019" and "Carbon market year in review 2020: Blooming carbon markets on raised climate ambition", published on Refinitiv's website, 22 January 2020 and 26 January 2021 respectively.

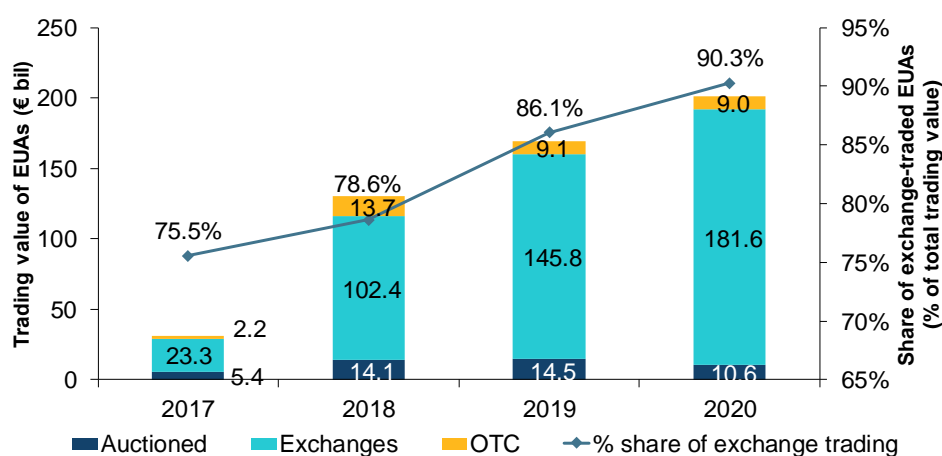
³⁸ Source: "Xinhua Headlines: World's largest carbon trading market opens in Shanghai", *Xinhua*, 17 July 2021; "China National ETS", published on International Carbon Action Partnership's website, 9 August 2021; "EU Emissions Trading System (EU ETS)", webpage on European Commission's website, viewed on 16 September 2021.

³⁹ See the details of creation, allocation, trading and clearing of EUAs at "Emissions Trading System", webpage on European Commission's website, and "Interplay between EU ETS Registry and Post Trade Infrastructure", published on European Commission's website, January 2015.

⁴⁰ Source: "Auctioning of allowances" webpage on EU's website and "EU ETS auctions" webpage on EEX's website. ICE offers auctions of EUAs in the UK before Brexit (see "Emissions auctions", webpage on ICE Europe's website, viewed on 15 September 2021).

- Secondary trading of EUAs is conducted either through bilateral spot trading transactions on the OTC market, or spot futures contracts on exchanges. Futures and options of EUAs with longer tenors are traded on exchanges.
- The majority of secondary trading of EUAs is conducted via exchanges, including ICE Futures Europe, EEX, CME, and NASDAQ OMX.
- Trading of futures and options on EUAs on exchanges reached EUR 181.6 billion and accounted for about 90% of total trading value in 2020 (see Figure 10).
- The European Commission has reported that most secondary transactions of EUAs, including both on-exchange and off-exchange transactions, were centrally cleared through exchanges' associated clearing houses⁴¹.

Figure 10. Trading value of EUAs by venue (2017 – 2020)



Source: “Carbon market year in review: Record high value of carbon markets in 2019” and “Carbon market year in review 2020: Blooming carbon markets on raised climate ambition”, published on Refinitiv’s website, 22 January 2020 and 26 January 2021 respectively.

Exchange platforms have facilitated the development of the carbon market in the EU and other major economies⁴².

In Europe, the UK is in the process of setting up its UK ETS after Brexit and the first auction was held through ICE Europe on 19 May 2021.

In Mainland China, it was reported that the national ETS will pave the way for launching the first carbon emission futures product on the Guangzhou Futures Exchange.

In North America, futures and options on regional carbon credits have been actively traded on ICE US and Nodal Exchange. However, in the US, there has been no consensus to set up a national ETS yet, but it was reported that major financial trade groups have called for carbon pricing.

⁴¹ See “Interplay between EU ETS registry and post trade infrastructure”, European Commission’s website, January 2015.

⁴² See “Expanding carbon markets show big potential in 2021”, published on the website of FIA, 12 March 2021; “Top finance trade groups join calls for U.S. carbon pricing”, published on *Reuters.com*, 18 February 2021; “Participating in the UK ETS” webpage on the UK Government’s website; “China to launch national carbon emissions trading scheme on Feb 1”, published on S&P Global’s website, 6 January 2021.

2.2.3 Sustainability-linked derivatives

Sustainability-linked derivatives are conventional derivatives (e.g. interest rate swaps, cross-currency swaps or forwards) with the addition of an ESG pricing component. These derivatives are highly customised for specific issuers and use various key performance indicators (KPIs)⁴³ to determine the sustainability goals to be achieved by their issuers.

As the contract terms of sustainability-linked derivatives is difficult to standardise, exchanges only support the listing of certain types of these derivatives. The transactions of these derivatives may be conducted in the OTC market and there is no secondary market and central clearing for these transactions yet. For example, a number of sustainability-linked derivatives are listed in the form of “certificates with sustainability focus” on Börse Frankfurt (FWB) and the trading of which are redirected and conducted through banks and brokers⁴⁴.

2.2.4 Commodity derivatives

Commodity futures traded on exchanges are a crucial element in global supply chains⁴⁵ in the real economy. Therefore, exchanges can support a sustainable economy by imposing sustainability factors on the trading of their commodity products.

Major commodity exchanges recently began incorporating sustainability standards on the sourcing of commodities for physical delivery:

- In 2015, crude palm oil futures on Bursa Malaysia, one of the world’s most active palm oil futures markets, began to require that sellers fill out a document with information on the mill used to produce the oil. This requirement gives buyers more information on whether the oil was produced responsibly and supplements the national certification scheme for the Malaysian Sustainable Palm Oil (MSPO) standards⁴⁶.
- In 2015, COMEX of CME Group required that gold producers for its gold futures comply with the London Bullion Market Association (LBMA) Responsible Gold Guidance for the physical delivery of gold⁴⁷.
- In 2019, London Metal Exchange (LME) (wholly owned by HKEX) published its requirements for the responsible sourcing of all LME-listed brands of metals. In 2020, LME published a discussion paper⁴⁸ to explore how to expand its sustainability strategies, including the potential launch of LMEpassport, a digital register to enhance disclosure of sourcing information further. In July 2021, it launched six new cash-settled metals futures (including lithium hydroxide, steel scrap, and aluminium scrap) to support the transition to electric vehicles (EVs) and the sustainable economy⁴⁹.

⁴³ See “Sustainability-linked derivatives: KPI guidelines”, published on ISDA’s website, September 2021.

⁴⁴ See “Certificates with sustainability focus”, webpage on Börse Frankfurt’s website.

⁴⁵ See HKEX research paper, “Global experience of commodity futures serving the real economy”, published on HKEX’s website, 21 April 2020.

⁴⁶ The physical delivery of certified palm oil started in 2018. See “Supply chain documentation helps indicate sourcing”, published on FIA’s website, 27 November 2018; “How derivatives exchanges can promote sustainable development”, published on SSEI’s website, 5 May 2021.

⁴⁷ Source: “Amendment to gold produce requirements”, notice issued on CME Group’s website, 24 March 2015.

⁴⁸ See “LME sustainability: Discussion paper”, published on LME’s website, August 2020.

⁴⁹ Source: “LME progresses sustainability agenda with launch of new lithium and scrap cash-settled futures”, press release on LME’s website, 19 July 2021.

2.2.5 Other ESG derivatives

US exchanges offer derivatives on renewable energy and renewable fuels, which help hedge against risks associated with fluctuations in renewable energy production and encourage more capital to be directed to sustainable projects. These products include futures and options on renewable energy certificates (RECs)⁵⁰ traded on ICE US, NASDAQ Commodities, New York Mercantile Exchange and Nodal Exchange.

Additionally futures on credits for compliance with the renewable fuel standard (RFS) programme in the US (i.e. renewable identification numbers) and the low carbon fuel standard (LCFS) programme in California are traded on CME, ICE US and Nodal Exchange. A number of these derivatives are settled with physical delivery, which support the needs of the real economy.

2.3 ESG-related service platforms

Exchanges set standards for and require ESG information disclosure to develop ESG metrics. Such metrics evaluate underlying issuers and projects and can help drive innovation in ESG investment products and derivatives.

Since 2010, an increasing number of exchanges have set mandatory ESG reporting as part of their listing requirements (see above). To provide a starting reference point to help exchanges develop their ESG reporting regimes, WFE introduced ESG guidance and metrics in 2015, which were updated in 2018⁵¹.

Compliance with listing requirements regarding ESG disclosures and metrics by listed companies can facilitate communication between issuers and investors on how listed companies deal with different ESG issues and can potentially lower issuers' financing costs.

Some exchanges have also introduced different initiatives to promote ESG disclosure. In Hong Kong, for example, HKEX has promoted corporate governance and ESG disclosures and implementation. ESG reporting helps improve transparency and enhance stakeholders' understanding of listed companies' ESG practices.

Exchanges may also contribute to the classification (or labelling) of ESG investment products. One way to facilitate the labelling of listed products is for exchanges to develop their own classification methodology which is complementary to external reviews versus recognised international standards. In Europe, the LSE introduced its Green Economy Mark to identify listed green issuers (see above)⁵². In addition to the classification based on the international standards for green bonds, social bonds, sustainability bonds, and sustainability-linked bonds, the LSE also labels a bond issued by a LSE-listed company as a "Green Revenues" bond if at least 90% of the company's revenues are green revenues.

Another way to support the labelling of listed ESG investment products is to accept a broad range of recognised international standards. LSE and LuxSE explicitly specified the standards for the classification of GSS bonds (e.g. the ICMA's standards and also those standards specifically for EU and Mainland China)⁵³. For the classification of investment

⁵⁰ A REC is issued when one megawatt hour of electricity is generated and delivered to the electricity grid from a renewable energy resource. See the 2021 ISDA Study.

⁵¹ See WFE Sustainability Working Group, "Exchange guidance and recommendations — October 2015", published on WFE's website, October 2015; "WFE ESG guidance and metrics (Revised June 2018)", published on WFE's website, 27 June 2018.

⁵² See "A comprehensive guide: Navigating the green finance landscape", published on LSE's website, January 2021.

⁵³ See "Sustainable bond market (SBM)", published on LSE's website, 18 June 2020; "Sustainability standards and labels", published on LuxSE's website, viewed on 26 April 2021.

funds, LuxSE accepted not only the recognised standards in Luxembourg, but also those in Germany, France, Austria and Nordic markets.

However, the classification of listed products is often considered prudentially on a case-by-case basis to avoid the risk of labelling based on misleading ESG information (i.e. “greenwashing”).

Certain major global exchanges have also launched dedicated ESG information platforms. These include FWB’s webpage on sustainable investment, Euronext’s webpage on ESG bonds, HKEX’s STAGE, JPX’s webpage on ESG-related products, LSE’s Global Sustainable Investment Centre, LuxSE’s Luxembourg Green Exchange (LGX), NASDAQ’s NASDAQ Sustainable Bond Network (NSBN), SGX’s Future in Reshaping Sustainability Together (FIRST) and the Shanghai Stock Exchange (SSE)’s Green Securities.

These dedicated information platforms are one-stop, web-based portals offered by exchanges to better serve ESG communication between issuers and investors on (1) classification and labelling of ESG investment products, (2) enhanced disclosure of these products, and (3) capacity building and market education (see Table 2).

Table 2. Dedicated information platforms of selected exchanges						
Exchange	Dedicated information platform	Geographical focus	Free access to the list of individual products	Labelled product types by asset class	Types of enhanced disclosure	Resources for capacity building
DB	FWB's Sustainable Investment webpage	Europe	Yes	Indices, green bonds, ETFs, mutual funds, sustainability-linked derivatives	<ul style="list-style-type: none"> Price and trading information of products 	Not found
Euronext	ESG bonds; ESG ETFs	Europe	Yes	Bonds, ETFs	<ul style="list-style-type: none"> Bonds: External review ETFs: Names of underlying indices 	Not found
HKEX	STAGE	Asia	Yes	Bonds, ETPs	<ul style="list-style-type: none"> Bonds: External review ETPs: Investment strategy 	Guidance materials (e.g. international standards), case studies, webinar and research papers
JPX	Sustainability webpage	Japan	Yes	Indices, ETPs, Infrastructure funds, green and social bonds	<ul style="list-style-type: none"> Bonds: External review ETPs: Names of underlying indices ETPs: Methodologies of indices 	Practical handbook for ESG disclosure
LSE	Global Sustainable Investment Centre	Global, mainly Europe	No	Bonds, ETFs	<ul style="list-style-type: none"> List of green companies List of bonds and external reviews (not publicly available) 	Comprehensive guide for listing by types of ESG products on LSE
LuSE	LGX	Mainly Europe, Mainland China	Yes (except ESG metrics)	Bonds, funds	<ul style="list-style-type: none"> Bonds and funds: External review Price and trading information ESG metrics of issuers (not publicly available) 	Guidance materials (e.g. international standards), online courses, webinars, industry reports
NASDAQ	NSBN	Global, mainly Europe and US	No	Bonds	<ul style="list-style-type: none"> List of bonds (as well as external reviews) and ESG metrics of issuers (not publicly available) 	Factsheets of the platform

Table 2. Dedicated information platforms of selected exchanges						
Exchange	Dedicated information platform	Geographical focus	Free access to the list of individual products	Labelled product types by asset class	Types of enhanced disclosure	Resources for capacity building
SGX	FIRST	Asia	Yes	Bond, equities (and index derivatives), commodities, indices	<ul style="list-style-type: none"> External review (bonds) ESG ratings of issuers Factsheets of indices and index derivatives 	Market reports and research papers
SSE	Green securities	Mainland China only	Yes	Indices, bonds (incl. ABSs), ETFs	<ul style="list-style-type: none"> List of indices, bonds, ABSs and ETFs 	Rules and guidelines for issuance, research papers

Note: The table is compiled based on information on the public websites of selected exchanges and may not be complete.

Source: Respective exchanges' websites, viewed on 4 May 2021.

2.4 What other measures are needed to unleash sustainable finance and investment through exchange platforms?

Since financial markets are a crucial source of the required funding to propel the world economy to its sustainability goals, exchange platforms with a wide range of products and services are indispensable.

Looking to the future, with the support of exchange platforms, measures that could accelerate GSF include:

(1) Harmonising classification standards for labelling ESG products. Exchanges offer transparency on the classification criteria of ESG products, but they may have different market practices for classification. For example, global exchanges adopt different sets of classification standards for GSS bonds⁵⁴ and some of them (e.g. European exchanges) require external reviews for GSS bonds to confirm their alignment with the core components of the standards while others do not (e.g. exchanges in Mainland China)⁵⁵. In Mainland China, green bonds issued and listed on exchanges are required to follow the relevant official guidelines of specific bond types, which include the classification criteria of green bonds⁵⁶. The underlying classification standards of ESG products in China, including green bonds, are in the process of being harmonised with European markets. The International Platform on Sustainable Finance (IPSF) has developed the “Common Ground Taxonomy” (an initiative led by China and the EU) and released in 2021⁵⁷, which

⁵⁴ See “Sustainability standards and labels”, webpage on the website of LuxSE; “Euronext ESG bonds process”, published on Euronext’s website; “Segment for green bonds”, webpage on FWB’s website; “Factsheet: Sustainable bond market”, published on LSEG’s website; “Inclusion criteria: Nasdaq Sustainable Bond Network (NSBN)”, published on NASDAQ’s website.

⁵⁵ See “Guidelines for green, social and sustainability bonds external reviews”, published on ICMA’s website, June 2020.

⁵⁶ See *Green Bonds Endorsed Project Catalogue (2015 Edition)* 《綠色債券支持項目目錄 (2015年版)》, issued by the People’s Bank of China (PBOC)’s China Green Finance Committee, 22 December 2015; *Notice on the Publication of Green Bonds Endorsed Project Catalogue (2021 Edition)* (關於印發《綠色債券支持項目目錄 (2021年版)》的通知), issued by the PBOC, the National Development and Reform Commission (NDRC) and the China Securities Regulatory Commission (CSRC), 22 April 2021; *SSE Guidelines on Review and Approval of Corporate Bond Issuance and Listing No.2 — Specific Types of Corporate Bond* (《上海證券交易所公司債券發行上市審核規則適用指引第2號——特定品種公司債券》), issued by the SSE, 27 November 2020; *SZSE Business Guidelines on Innovative Types of Corporate Bond No.1 — Green Corporate Bonds* (《深圳證券交易所公司債券創新品種業務指引第1號——綠色公司債券》), issued by the Shenzhen Stock Exchange (SZSE), 27 November 2020.

⁵⁷ See “The European Green Deal”, “International platform on sustainable finance: Annual report 2020”, “Annex to the Communication ‘Strategy for financing the transition to a sustainable economy’” and “IPSF Common Ground Taxonomy Instruction Report”, published on European Commission’s website, 11 December 2019, 16 October 2020, 6 July 2021 and 4 November respectively; “EU taxonomy for sustainable activities” and “International Platform on Sustainable Finance” webpage on European Commission’s website; *Notice on the Publication of Green Industry Guidance Catalogue (2019 Edition)* (關於印發《綠色產業指導目錄 (2019年版)》的通知), issued by NDRC, Ministry of Industry and Information Technology, Ministry of Natural Resources, Ministry of Ecology and Environment, Ministry of Housing and Urban-Rural Development, PBOC and National Energy Administration; *Notice on the publication of Green Bonds Endorsed Project Catalogue (2021 Edition)* (關於印發《綠色債券支持項目目錄 (2021年版)》的通知), issued by PBOC, NDRC and CSRC, 22 April 2021.

attempts to enhance transparency for all investors and companies by constituting common references for labelling green products.

- (2) Providing a comprehensive policy framework and incentives to promote GSF and ESG products.** Governments and regulators can formulate tailor-made comprehensive policy frameworks to suit their local market circumstances for promoting GSF and ESG products. Such policy frameworks can enhance ESG disclosure and provide guidance on classification (e.g. Sustainable Finance Disclosure Regulation) to give clarity to both issuers and investors on ESG products. These efforts can facilitate the issuance and investment of ESG products and may also reduce the risk of “greenwashing” — e.g. conveying a false impression or providing misleading information about how a company’s products are environmentally friendly. Complementary to providing a comprehensive policy framework, issuers can be given incentives (e.g. subsidies for external reviews of GSS bonds) to issue ESG products for financing purposes. Similarly, cost incentives in addition to education efforts can also motivate investors to take up and increase ESG investment.
- (3) Improving both the availability and quality of ESG data.** Depending on the commitment of the issuer, ESG data disclosed by issuers may not be sufficient. ESG data may also be sourced from alternative sources like media reports, governments and non-government organisations⁵⁸. Market data service providers, in collaboration with other market participants, may offer support in this regard. Standardisation of market practices may also help improve the assessment processes of ESG data.
- (4) Widening the spectrum and supporting the liquidity of ESG products to meet demand.** To meet investors’ diversified demands, ESG product innovations should be encouraged to cover different asset classes and themes (e.g. UNSDG-aligned themes). These products can be made available to investors through listing on the exchange platform. As ESG investment products become increasingly popular, demand for ESG risk management products, including futures and options on ESG indices and carbon emissions, is expected to increase. To support this, the on-exchange liquidity of ESG products and their derivatives needs to grow and exchange platforms may provide incentives for this.
- (5) Further inter-exchange cooperation.** Areas of exchange cooperation may include joint initiatives and enhancement of ESG-related products and services. These include cross- or dual-listing of ESG products⁵⁹ to widen product spectrum and mutual market access between exchange platforms⁶⁰ to support the liquidity. In addition, there are some exchange partnerships on information display for foreign GSS bonds on dedicated information platforms of local exchanges⁶¹.

In China, further inter-exchange cooperation between the Mainland and Hong Kong can be expanded into ESG-related products and services. The Hong Kong market has been the most effective gateway connecting the Mainland market and the rest of the world,

⁵⁸ See the example of MSCI ESG rating, “MSCI ESG ratings methodology: Executive summary”, published on MSCI’s website, November 2020.

⁵⁹ See the example of the dual-listing initiative of Indian green bonds on India International Exchange (India INX) and LuxSE (“LuxSE takes first important steps into Indian market”, news release on LuxSE’s website, 19 November 2020).

⁶⁰ See the example of cross membership for trading on LuxSE and Euronext (“Luxembourg Green Exchange: The world’s leading platform for sustainable securities”, published on LuxSE’s website, January 2021; “LuxSE and our partnership with Euronext”, webpage on LuxSE’s website).

⁶¹ Examples include the Mainland green bonds traded on the CIBM, SSE and SZSE being displayed on the LuxSE’s LGX and the GSS bonds traded on SGX being displayed on NASDAQ’s NSBN. See “Chinese domestic Green Bond Channel”, webpage on LuxSE’s website; “SGX strengthens commitment to sustainability with S\$20 million plan”, news release on SGX’s website, 15 December 2021.

exemplified by its status as the largest offshore equity and bond financing centre for Mainland enterprises⁶² and the success of the Stock and Bond Connect schemes⁶³. Policies on mutual market development have recently been extended to GSF initiatives in the Guangdong-Hong Kong-Macao Greater Bay Area (GBA)⁶⁴. Specific steps include the inter-exchange cooperation agreement signed in August 2021 between Guangzhou Futures Exchange and HKEX to promote sustainability and develop the GBA⁶⁵.

3. CONCLUSION

Exchanges can play a unique role in the financial system as a central marketplace for issuers, investors, and other stakeholders.

Exchange platforms with a wide range of products and services can also play a crucial role in developing GSF and ESG investment by offering fundraising and exit channels, supporting product innovation, providing a standardised and regulated environment, and promoting enhanced disclosure.

In recent years, many exchanges have increased the number and widened the range of green products and services available to investors. Exchanges in Europe and the US are taking the lead in delivering GSF and ESG investment products and services, but exchanges in Asia, particularly China, are advancing.

The most popular green products listed across exchanges at the end of 2020 were equity indices and bonds. However, product and service innovation is speeding up in other areas, such as ESG-related ETPs, REITs, and derivatives.

In the future, exchange platforms will continue to play a pivotal role in connecting different market participants in the global ecosystem of sustainable finance and investment. With the support of exchange platforms, GSF may be accelerated by harmonising classification standards for ESG product labelling, providing incentives and a comprehensive policy framework, improving the availability and quality of ESG data, increasing the spectrum and liquidity of ESG products, and driving inter-exchange cooperation.

⁶² See HKEX research paper, "Hong Kong's role in supporting the fund-raising of Mainland private enterprises", published on HKEX's website, 13 June 2019.

⁶³ For example, the trading value through Northbound Stock Connect accounted for 7% of A shares' average daily turnover in March 2021 (up from 2.8% in 2018) and the trading value through Northbound Bond Connect accounted for 51% of total trading values of overseas investors on CIBM cash bonds during the first quarter of 2021 (up from 28% in 2018). Source: HKEX.

⁶⁴ See *Outline of Development Plan for the Guangdong-Hong Kong-Macao Greater Bay Area* (《粵港澳大灣區發展規劃綱要》), issued by the State Council, 18 February 2019 and *Guiding Opinions on Supporting the Financial Development of Guangdong-Hong Kong-Macao Greater Bay Area* (《關於金融支持粵港澳大灣區建設的意見》), jointly issued by the PBOC, the China Banking and Insurance Regulatory Commission, the China Securities Regulatory Commission and SAFE, 24 April 2020.

⁶⁵ See "HKEX signs MOU with Guangzhou Futures Exchange", news release on HKEX's website, 27 August 2021.

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