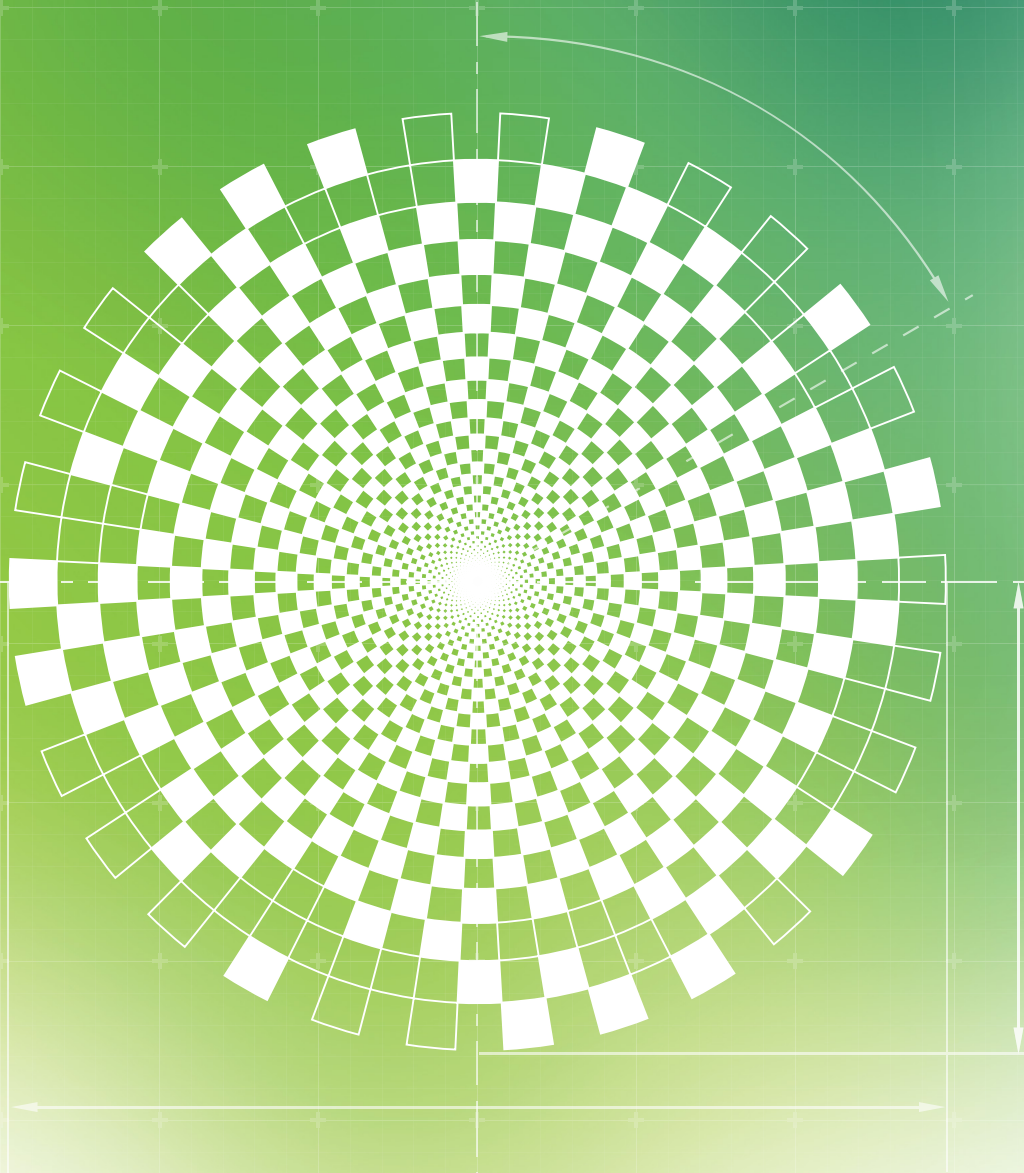


GREEN FINANCE PROGRESS REPORT



The UN Environment Inquiry

The Inquiry into the Design of a Sustainable Financial System has been initiated by the United Nations Environment Programme (UN Environment) to advance policy options to improve the financial system's effectiveness in mobilizing capital towards a green and inclusive economy—in other words, sustainable development. Established in January 2014, the Inquiry published its first global report, 'The Financial System We Need' in October 2015, with the second edition launched in October 2016. The Inquiry has worked in around 20 countries and produced a wide array of briefings and reports on sustainable finance.

More information on the Inquiry is at: www.unep.org/inquiry and www.unepinquiry.org or from:

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About this report

This input paper has been prepared by the authors as a contribution to the G20 Green Finance Study Group (GFSG) but has not been endorsed by it nor does it represent the official views or position of the GFSG or any of its members.

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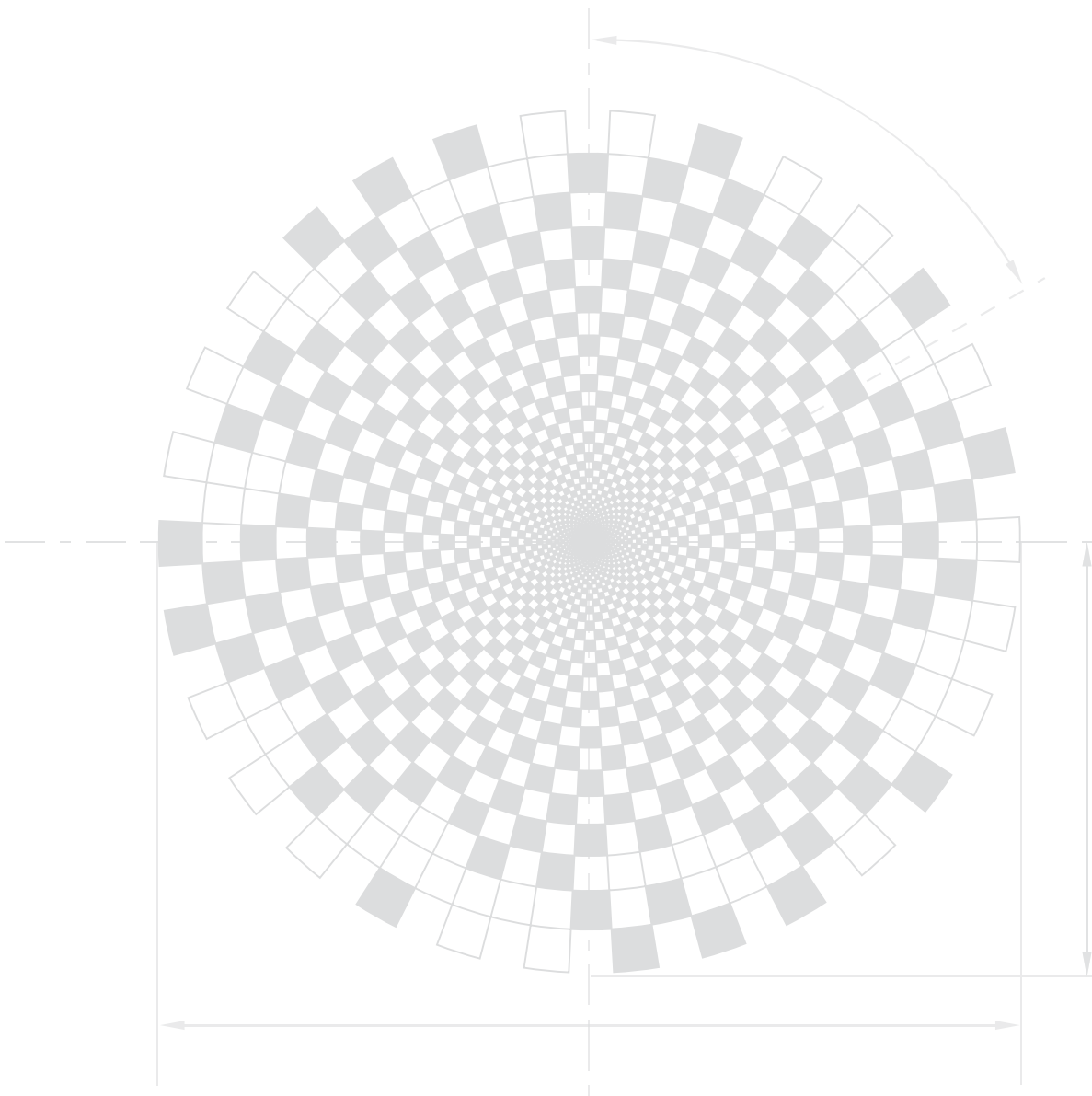
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GREEN FINANCE PROGRESS REPORT



FOREWORD FROM THE GREEN FINANCE STUDY GROUP'S CO-CHAIRS

Green financing at scale will be critical to achieve the G20's goal of securing balanced and sustained growth. Establishing the Green Finance Study Group during China's G20 Presidency in 2016 signalled this significance, reinforced by Germany's decision to continue this work stream during its G20 Presidency this year. In addition, placing this work in the G20's finance track has made it a priority of finance ministers and central bank governors who are responsible for the resilience and effectiveness of the global financial system.



Over the last two years, the Green Finance Study Group has mapped green finance needs, barriers to overcome, and progress made across G20 members and other countries as well as internationally. The Synthesis Report released on the occasion of the Hangzhou Leaders Summit in September 2016 highlighted seven options that G20 members might adopt to scale up green finance. This report was a milestone in mainstreaming the concept of green finance among key policymakers, and in delivering high-level policy signals to encourage green investment by the private sector.

We are pleased to release the first annual progress report on green finance, a working paper associated with the activities of the Green Finance Study Group. It has been prepared by UN Environment, which has served as the Secretariat of the Green Finance Study Group since it was established in early 2016, and also as a key knowledge partner. The report reviews the progress on green finance – in terms of policies and financial product development – across the G20 and internationally against the seven options set out in the Synthesis Report. Given the rapid development of green finance activities across the world, it cannot hope to be complete at the time of publication. Yet it does cover much of the ground with inputs from most of the G20 members and many knowledge partners.

As Co-Chairs of the Green Finance Study Group, we are gratified to see how much action is being taken on green finance across the world in the past year. The report highlights progress in almost every G20 member, and much that is happening internationally. We believe that many of these actions have benefited or been encouraged by the G20's focus on green finance

Much remains to be done, despite the meaningful progress so far in the green finance space. We hope that the G20 can continue to play a critical role in catalysing such developments.



Ma Jun
Chief Economist, Research Bureau
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MESSAGE FROM THE UN ENVIRONMENT EXECUTIVE DIRECTOR

The world has shown its clear commitment to creating a better future for people and planet through the Paris Agreement, the 2030 Agenda for Sustainable Development and many other international processes. We are seeing progress across the globe as we tackle environmental challenges that damage economies and human health, such as air pollution, unsustainable resource use and climate change.



But we will not be able to truly reshape our societies without throwing the weight of the global financial system behind our ambitions and finding better and greener ways of doing business. In this regard, the growing momentum in green finance is hugely encouraging.

This new report from UN Environment, which is a contribution to the G20 Green Finance Study Group, shows just how far we have come. From a record number of new measures related to green finance over the last year to ambitious plans for green finance hubs, we are seeing the smart money move to green financing – reflected in an all-time high issuance of green bonds in 2016.

The challenge now is to take the groundwork that has been laid and turn it into real and significant flows of private and public capital to investments that both support our sustainable development objectives and bring secure long-term profits for investors. The G20 – along with the G7, individual nations and much of the private sector – have set the wheels in motion. Now is the time to press hard on the accelerator.

Erik Solheim

UN Environment Executive Director
United Nations Under-Secretary General



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EXECUTIVE SUMMARY



The G20 Green Finance Synthesis Report adopted at the G20 Leaders Summit in Hangzhou in September 2016 set out seven options identified by the G20 Green Finance Study Group (GFSG) to accelerate the mobilization of green finance.¹ This paper highlights some of the progress made against these seven options in G20 members and internationally since the GFSG meeting in June 2016 in Xiamen.² Progress described is illustrative and non-exhaustive, drawing on voluntary contributions from GFSG members and a broader review of global trends. While not comprehensive, it provides a useful summary of many of the key developments and the overall progress made to mobilize private capital for green investment.

Progress observed and reported in this paper indicates that momentum is growing in mainstreaming green finance into the architecture and practice of financial and capital markets. This momentum has directly resulted in an increased mobilization of green finance. UN Environment tracks a range of green finance measures including, for example, green financing mobilized, policies, regulations, standards, guidelines, principles and fiscal incentives. This report shows that more measures related to green finance have been introduced since June 2016 compared with any other one-year period since 2000.³

Progress can be described in terms of three mutually reinforcing trends: (i) increasingly systemic national action, (ii) greater international cooperation, and (iii) increased market leadership at the individual and collective level. Together these trends have resulted in a measurable increase in flows of green finance, most notably in the issuance of green bonds, which grew by around 100% to US\$81 billion in 2016.⁴ The interdependence of these three trends highlights the close connections between policy and market evolution. National action involving public and private actors working together has underpinned the emergence of more systemic approaches to greening the financial system. These national efforts tend to focus on green finance needs and flows, barriers to scaling and priority actions. Each country's approach is a function of national development priorities and as such varies considerably. However, all approaches have at their core the development of long-term, systemic plans to enhance the ability of the financial system to mobilize green finance.

Action at the country level has helped catalyse more ambitious thinking beyond national boundaries. Systemic approaches are now evident at the regional level, such as the comprehensive sustainable finance strategy being developed by the European Union (EU) and the roadmap for a sustainable global financial system developed by the World Bank Group and UN Environment.⁵

International cooperation on green finance has broadened and deepened over the past year. This is both a consequence of more ambitious national actions, as national champions capitalize on a deeper understanding of key issues to advance the agenda on the international stage, and also the cause of it. Tracks of work linked to green finance and associated areas have spread across fora for policymakers and regulators such as the G20 (notably the GFSG and GreenInvest)⁶ and the G7; multi-stakeholder groups such as the FSB's industry-led Task Force on Climate-related Financial Disclosures (TCFD);⁷ the Sustainable Banking Network (SBN) hosted by the IFC;⁸ the Green Finance and Investment Centre hosted by the OECD;⁹ and the Inquiry for Sustainable Finance and the Finance Initiative (UNEP FI) hosted by UN Environment.¹⁰



At the core of systemic national action and greater international cooperation is the mobilization of green finance. Catalysts for market level innovation include national and international policy signals, and increasing client demand and technological advances. While no single metric can capture the scope, magnitude and diversity of market developments, notable recent innovations include: record capital reallocation and issuance of green securities;¹¹ the emergence of dedicated green investment funds and new green finance products;¹² rapidly expanding global knowledge-sharing and capacity-building networks;¹³ new risk management tools developed by actors along the length of the investment supply chain;¹⁴ and new and more ambitious market-led principles and guidelines.¹⁵



OVERVIEW



GREEN FINANCE UNDER THE G20 GREEN FINANCE STUDY GROUP (GFSG)

The G20 brings together the world's leading economies to promote strong, sustainable and balanced growth. Green finance was incorporated into the G20 agenda for the first time under the Chinese Presidency of 2016 in form of the Green Finance Study Group (GFSG), and was continued under the German Presidency of 2017. The GFSG was specifically tasked to 'develop options on how to enhance the ability of the financial system to mobilize private capital for green investment'.

Green finance can be understood as the financing of investments that provide environmental benefits in the broader context of environmentally sustainable development, and will require tens of trillions of dollars in the coming decade.¹⁶ To build a platform of common understanding on the opportunities and challenges facing green finance, the GFSG focused on five research areas in 2016. These included greening the banking system, greening the bond market, greening institutional investors, risk analysis and measuring progress.

The process of dialogue and analysis was captured in a summary report welcomed by G20 Finance Ministers and Central Bank Governors, who concluded that "in order to support environmentally sustainable growth globally, it is necessary to scale up green financing". At the September 2016 Hangzhou Summit, G20 Heads of State welcomed seven broad financial sector options, "for voluntary implementation by countries in light of national circumstances", to achieve this goal. Key options are highlighted below:

- 1 Provide strategic policy signals and frameworks
- 2 Promote voluntary principles for green finance
- 3 Expand learning networks for capacity-building
- 4 Support the development of local green bond markets
- 5 Promote international collaboration to facilitate cross-border investment in green bonds
- 6 Encourage and facilitate knowledge-sharing on environmental and financial risk
- 7 Improve the measurement of green finance activities and their impacts

TRENDS IN GREEN FINANCE DEVELOPMENT

At the request of the GFSG Co-Chairs, UN Environment has been monitoring progress against these seven broad options since the Xiamen GFSG meeting held in June 2016. A repository of measures allows the number, function and characteristics of financial policy and regulatory measures to be assessed. Included are actions by public sector bodies, such as governments, central banks, financial regulators and public financial institutions that influence the overall architecture of financial system rules.

Although less than one year has passed, it is clear that green finance momentum is building in both the public and private sector. Across a broad range of initiatives, the 12-month period from June 2016 is on track to be the year with the greatest number of green finance measures ever recorded since 2000.¹⁷ These measures can be broadly grouped into financial market developments to reallocate capital, improve risk management, enhance transparency and clarify responsibilities of financial institutions.



Examples of green finance innovation since June 2016 linked to at least one of the seven GFSG options were found in every G20 member.¹⁸

TABLE 1: G20 MEMBER SUMMARY TABLE

G20 member	1. Provide Strategic Policy Signals and Frameworks	2. Promote Voluntary Principles for Green Finance	3. Expand Learning Networks for Capacity-building	4. Support the Development of Local Green Bond Markets	5. Promote International Collaboration to Facilitate Cross-border Investment in Green Bonds	6. Encourage and Facilitate Knowledge-sharing on Environmental and Financial Risk	7. Improve the Measurement of Green Finance Activities and their Impacts
Argentina	✓			✓			
Australia	✓			✓			
Brazil				✓	✓	✓	
Canada	✓			✓	✓		
China	✓	✓	✓	✓	✓	✓	✓
France	✓	✓		✓	✓	✓	
Germany	✓		✓	✓		✓	
India	✓			✓	✓		
Indonesia	✓		✓	✓		✓	
Italy	✓			✓			
Japan				✓			
Mexico	✓			✓	✓		✓
Russian Federation				✓		✓	
Saudi Arabia			✓				
South Africa	✓			✓	✓		
South Korea		✓		✓			
Turkey				✓			✓
UK	✓		✓	✓	✓	✓	✓
US				✓		✓	
EU	✓			(N/A)	✓		
International	✓	✓	✓	✓		✓	✓

Three key mutually reinforcing trends emerge from the data collected: (i) increasingly systemic national action, (ii) greater international cooperation, and (iii) increased market leadership at the individual and collective level.

NATIONAL ACTIONS

The most notable feature of this momentum is the rapid emergence of systemic approaches to national action. These identify system-wide needs, barriers to scaling and priority actions. Over one third of the measures consistent with the option to ‘provide strategic policy signals and frameworks’ (Option 1) are financial system ‘roadmaps’ or national action plans. Examples include Argentina, China, Italy, Singapore and South Africa. The specific mix of policy-led, market-led and public-private initiatives in each country is a function of national development priorities and as such varies considerably. However, all have at their core the development of long-term, systemic plans to enhance the ability of the financial system to mobilize private capital for green investment.



Prominent in national action plans is the development of local green bond markets (Option 4). Record green bond issuance in 2016 and Q1 2017 has been supported by the interplay between market innovation and government encouragement. The public sector's role in market creation, involving demonstration issuance, guidelines and regulatory frameworks has featured prominently in the stocktaking exercise, and complements increasingly aligned market-based principles and standards. Supply-side innovation has triggered broad-based demand. Improved liquidity and new related products (e.g., green bond indices to track performance and green bond-linked exchange-traded funds (ETFs) suitable for retail investors) have opened up an expanded investor universe as capital can increasingly be redeployed to green bonds within existing product, liquidity and creditworthiness constraints.

The development of national action plans generates first-mover advantages. While efforts to promote international collaboration for cross-border investment in green bonds (Option 5) remains less pronounced than domestic green bond innovation, G20 members with strategic approaches to green finance are at the centre of international dialogue, new product innovation and increased issuance, including, for example, in the issuance of sovereign and sub-sovereign green bonds (e.g., Argentina, Canada, France, Germany, Mexico and Japan).

Beyond systemic national action, similar approaches are now evident at the regional level, such as the comprehensive sustainable finance strategy being pursued by the EU and at the global level, where the World Bank Group and UN Environment are developing a roadmap for a sustainable global financial system.

INTERNATIONAL COOPERATION

International cooperation on green finance has broadened and deepened over the past year. This is both a consequence of more ambitious national actions, as national champions capitalize on a deeper understanding of key issues to advance the agenda on the international stage, and also the cause of more recent developments. Tracks of work linked to green finance and associated areas have spread across fora for policymakers and regulators such as the G7 and G20; international groups such as the FSB's industry-led Task Force on Climate-related Financial Disclosures;¹⁹ and multi-stakeholder groups convened by international organizations such as the IFC, the OECD and UN Environment.²⁰

International cooperation is evolving along two prominent dimensions. First, the scope has broadened to include a more diverse array of actors. Examples include: (i) work within the G7 under Italy's 2017 presidency and, (ii) efforts by developing countries through the GreenInvest platform to share knowledge and build capacity on specific concerns and opportunities that are often shaped by different conditions compared to G20 members.²¹ Second, international cooperation has started to focus more deeply on key topics. The TFCF's recommendations on climate-related financial disclosures are one example, as is the Green Digital Financial Alliance that has been set up to advance the understanding of the nexus between financial technology and green finance from ad hoc initiatives to more formal cooperation.²²

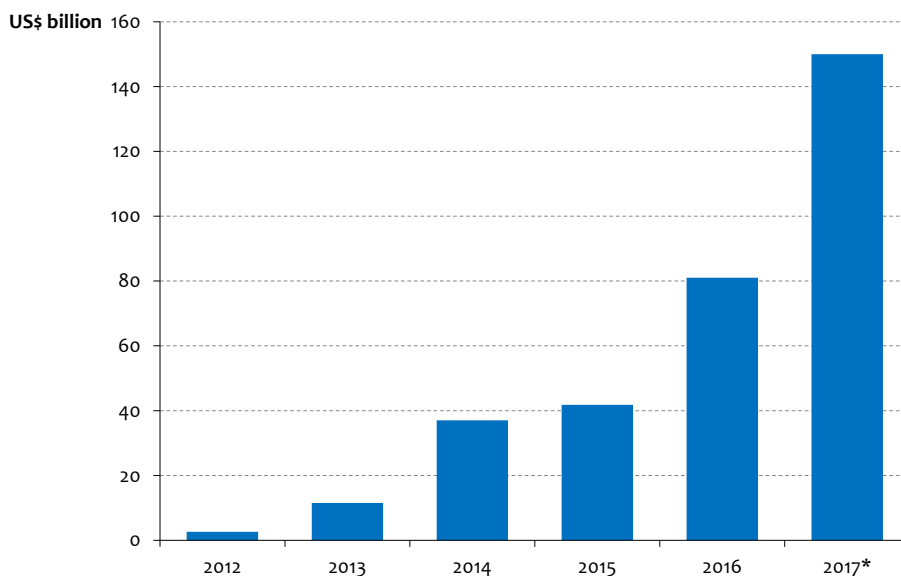
MARKET LEADERSHIP

Efforts to promote systemic national action and greater international cooperation are closely linked with market leadership. Catalysts for market-level innovation include national and international policy signals, direct impacts from environmental risks, increasing client demand and technological advances. Policy signals have helped trigger market innovation but there is also a clear feedback loop from the market back to policymakers. Ambitious market activity confirms to policymakers and regulators that ambitious behavioural and policy changes are in fact feasible, especially when these signals originate from mainstream sector leaders.

Progress in the measurement of green finance activities and their impacts (Option 7) has been relatively limited to date. Advances currently focus on stocks and flows around relatively few topics such as climate change or the banking sector. An understanding of the macroeconomic impacts of green finance remains in its infancy. Although no single metric can capture the scope, magnitude and diversity of market developments, there has been a clear surge in market-led green finance activity. Indicators of such momentum include the following:

- *Record capital reallocation:* A comprehensive review looking beyond green finance to assess sustainable finance more broadly indicates that global sustainably managed assets under management has increased by 25% in the two-year period from 2014 to 2016.²³
- *Record issuance of green debt and use of green financial products:* Following 100% growth in green bond issuance from 2015 to 2016, there has been record green bond issuance in Q1 2017 (see Figure 1).²⁴ This has been driven by new types of green bonds, a more diverse pool of issuers and investors, longer tenors (see Figure 2), tighter pricing and greater issue size.²⁵ Critical mass has catalysed development in green bond-related products, such as green bond indices and green bond ETFs. New debt products outside the universe of green bonds are emerging. Different types of green loans have been launched in 2017 with interest payments linked to a variety of sustainability and green criteria for clients ranging from SMEs to multinational corporates.²⁶

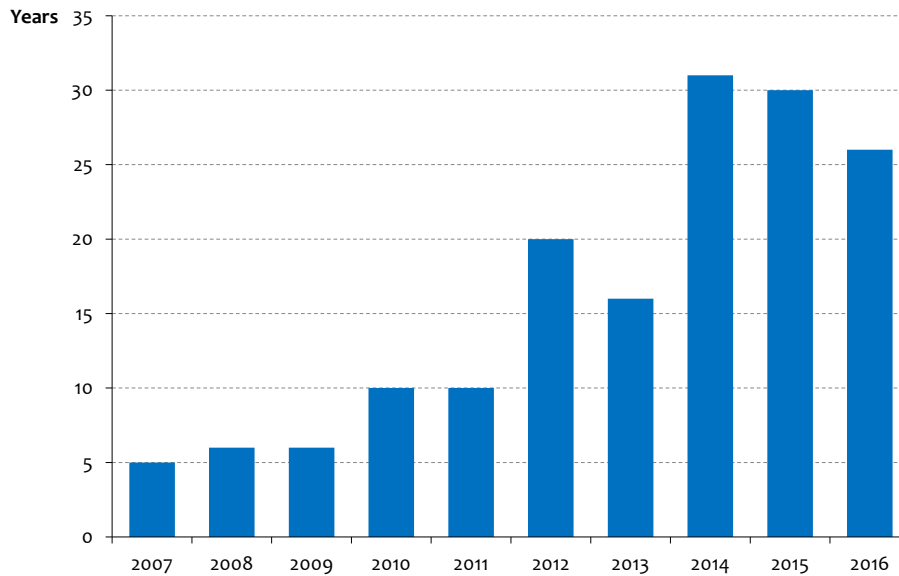
FIGURE 1: GREEN BONDS ANNUAL ISSUANCE



Source: Climate Bonds Initiative; *Climate Bonds Initiative estimated value for 2017

- *New tools:* Actors along the length of the investment chain have developed a variety of new tools to support new product development and stimulate demand. This includes new risk management tools by assets owners (e.g., Transition Pathway Initiative toolkit),²⁷ data providers (e.g., MSCI ESG data),²⁸ and investment banks (e.g., HSBC's Climate Risk Analysis Framework). Other tools include new indices (e.g., China alone has launched seven green bond indices since mid-2016 to complement the 19 existing green equity indices),²⁹ listing requirements (such as the Johannesburg Stock Exchange's green bond listing requirements), toolkits (such as the G20 Energy Efficiency Investment Toolkit)³⁰ and standards (ISO in partnership with 2 Degrees Investing will launch a standard to measure investor's contributions to climate change goals).³¹
- *The emergence of dedicated green investment funds:* Increases in green bond primary market issuance has improved secondary market liquidity and reduced funding costs. This has helped advance the generation of new products, allowing new funds to open and operate within existing product, liquidity and creditworthiness constraints. Four new green bond funds were launched in Q1 2017 and a number of green private equity firms are also being launched.³²

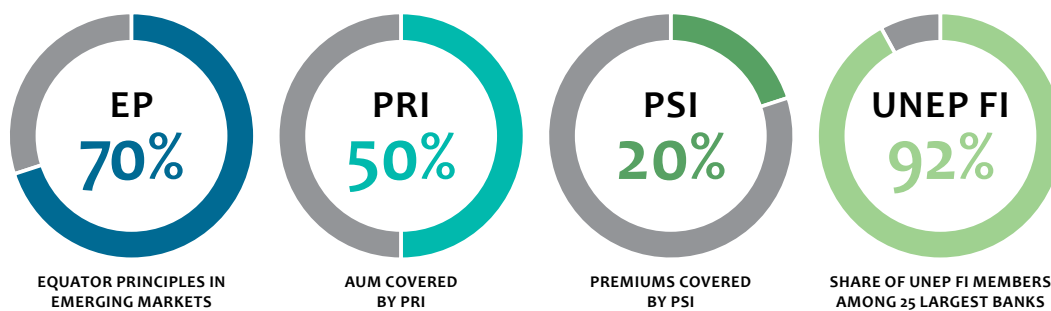
FIGURE 2: GREEN BONDS LONGEST TENOR BY YEAR



Source: Environmental Finance Magazine

- Expanding global knowledge-sharing and capacity-building networks:* A rapid expansion in green finance-related partnerships has been evident across banking, insurance and investment. Membership of the Principles for Responsible Investment (PRI) has increased by over 185 members from 30 countries since June 2016 and represents over 50% of global assets under management (AUM). Membership of the Principles for Sustainable Insurance (PSI) accounts for over 20% of the global insurance market by premiums booked, while 92% of the world's 25 largest banks are members of the UN Environment Finance Initiative (see Figure 3). Financial centres from Casablanca to Hong Kong, London, Frankfurt and Paris have also launched initiatives to become green finance hubs, and these are often private sector-led.

FIGURE 3: GLOBAL SUSTAINABLE FINANCE NETWORKS



- New and more ambitious market-led principles and guidelines:* New principles have emerged within and across sectors. These include an environmental, social and governance (ESG) covenant that will be drawn up by the Dutch pension fund sector and the 19 global banks and investors totalling US\$6.6 trillion in assets that launched the Principles for Positive Impact Finance in January 2017.³³ Existing principles are also being updated to reflect growing momentum, product innovation and improved knowledge, such as a new version of the Green Bond Principles that were released in June 2017.³⁴
- More active engagement from asset owners and managers on environmental issues:* More than 100 firms, including asset owners and asset managers, have provided statements of support to encourage take-up of the June 2017 recommendations of the industry-led TFCF.³⁵ There are indicators of growing shareholder support for environmental issues.³⁶



The cases referenced above are only selected examples of developments that are taking place across the G20 and beyond. This Progress Report has been prepared less than one year after the Xiamen June 2016 GFSG meeting.

Many of the important green finance developments listed above and in the annex are grouped under the seven options identified by the GFSG, but they are not exhaustive. Developments in other areas, such as green insurance, the role of public finance and development banks in green investment and the application of financial technology ('fintech') in green finance are also gaining momentum and market attention.

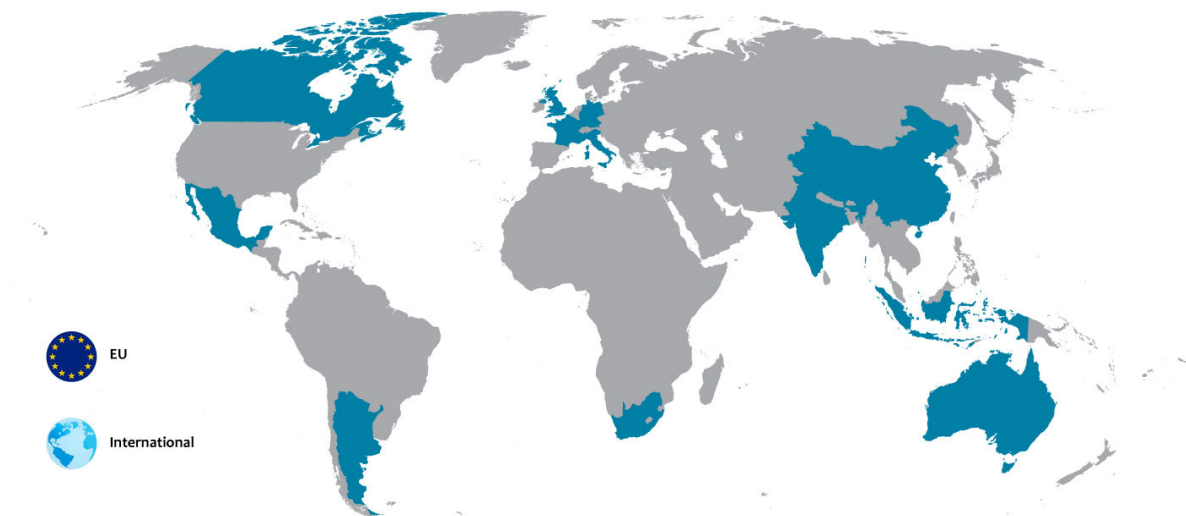
ANNEX: PROGRESS BY OPTION³⁷



OPTION 1: PROVIDE STRATEGIC POLICY SIGNALS AND FRAMEWORKS

Strategic policy signals and frameworks can help reduce perceived policy uncertainties for green investment, and thereby help accelerate the development of green finance. These complement the many broader market and policy initiatives that deliver or enhance green finance, such as Australia’s memorandum of opinions on climate change and director’s duties in October 2016;³⁸ Canada’s Pan-Canadian Framework on Clean Growth and Climate Change;³⁹ Korea’s establishment of the First Climate Change Response Master Plan (December 2016);⁴⁰ or Saudi Arabia’s announcement to invest between US\$30 billion and US\$50 billion in renewable energy by 2030.⁴¹

At the international level, by July 2017, 148 countries representing 83.9% of global emissions had ratified the Paris Agreement.⁴² Of the seven GFSG options, progress in this area has been strong. Considerable momentum was generated internationally and regionally in the second half of 2016, and a number of national and international initiatives have been announced over the past year.



Examples of financial market development relevant to this option include:

- **Argentina:** commenced a process in February 2017 examining how its financial system supports sustainable financing, including green finance.
- **Australia:** the Australian Prudential Regulation Authority (APRA) stated its views on climate change as a “material” physical and transition risk that it will be consider much more closely in its monitoring of banks, insurers and asset managers.⁴³
- **Canada:** the Canadian Association of Pension Supervisory Authorities has amended its guidance in February 2017, to list ESG issues as typical risks to be evaluated by pension trustees.⁴⁴
- **China:** the State Council approved the “Guidelines for Establishing the Green Financial System” in August 2016 to incentivize and promote green loans, green bonds, green funds, green insurance, and



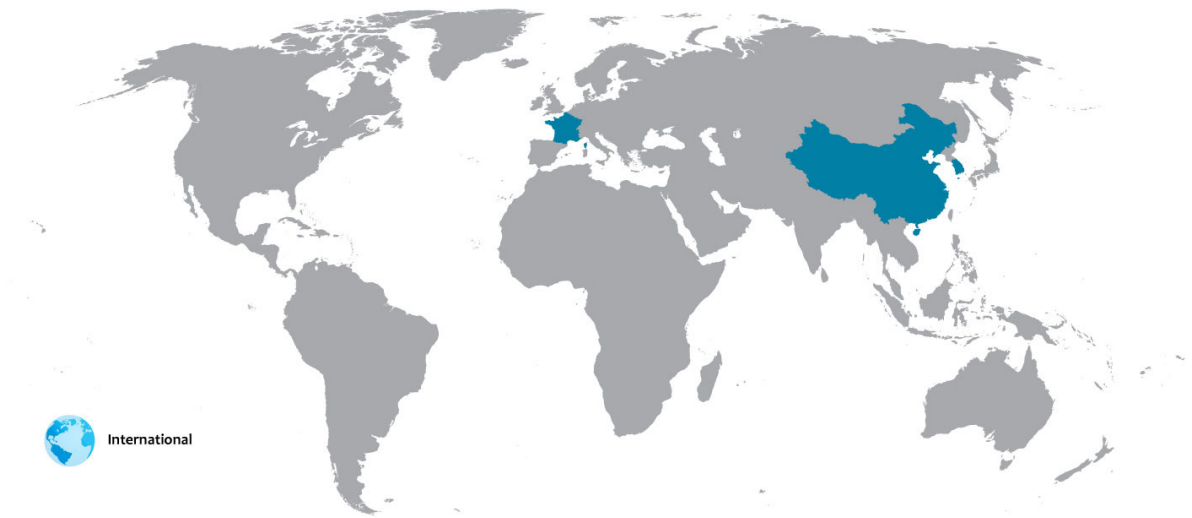
mandatory environmental information disclosures, among others.⁴⁵ In June 2017, the State Council announced five pilot areas for green finance.⁴⁶

- **EU:** the European Commission launched the High-Level Expert Group on Sustainable Finance to provide recommendations for a comprehensive EU strategy on sustainable finance as part of the Capital Markets Union in December 2016.⁴⁷
- **France:** published in February 2017 a synthesis report by DG Trésor, Banque de France and Autorité de Contrôle Prudentiel et de Résolution (ACPR) on climate-related risks assessment in the banking sector with a view to provide banks with a framework and guidance on how to develop their expertise going forward.⁴⁸
- **Germany:** (i) the federal state of Berlin introduced a sustainability index to reallocate its pension fund investments as of 2017; (ii) the federal state of Hesse has announced the intention to make the city of Frankfurt a green finance hub.
- **India:** the Reserve Bank of India, internally, is in the process of formulating a roadmap for green banking in India by looking into various aspects of green finance.
- **Indonesia:** (i) the Financial Services Authority (OJK) Board of Commissioners has agreed to issue regulation on Sustainable Finance in 2017 for banking, capital markets and nonbank financial institutions (ii) OJK has also issued voluntary financing guidelines for renewable energy, energy efficiency, green buildings, organic farming and palm oil.⁴⁹
- **Italy:** released the results of a one-year national dialogue on sustainable finance, which identified 18 options for further action in February 2017.⁵⁰
- **Mexico:** the Government announced its intention to establish a carbon market by 2018 and signed a collaboration agreement with the Mexican Stock Exchange to launch a voluntary pilot programme of an emissions trading system that will comprise 60 domestic and international companies.
- **Singapore:** (i) the Singapore Exchange launched ‘comply or explain’ reporting rules covering environmental policies and performance in June 2016 that will cover all listed companies by 2018; (ii) the Monetary Authority of Singapore supported the launch of an industry-led initiative to develop a vision for green finance in Singapore.
- **South Africa:** the National Treasury has co-convened a national steering committee to identify a sustainable finance roadmap for action that will be released for public consultation by the end of 2017.
- **UK:** (i) the Pension Regulator clarified in July 2016 that ESG material issues, including environmental issues, should be taken into account by pension fund trustees; (ii) the London Stock Exchange Group (LSEG) released ESG guidance in February 2017 incorporating recommendations of the TCFD.⁵¹
- **Internationally:**
 - Launch of the OECD Centre on Green Finance and Investment, whose mission is to support the transition to a green, low-emissions and climate-resilient global economy through effective policies, institutions and instruments for green finance and investment.⁵²
 - A Group of Friends of Sustainable Development Goal Financing has been set up at the UN, involving 30-40 member states, co-chaired by the Canadian and Jamaican Ambassadors to the UN.⁵³
 - The World Bank Group and UN Environment have launched an initiative to build out a Roadmap for Sustainable Finance, to be released at the IMF/World Bank Annual Meetings in 2017.⁵⁴
 - The SBN supported seven member countries to develop or update sustainable banking regulations/guidelines.

OPTION 2: PROMOTE VOLUNTARY PRINCIPLES FOR GREEN FINANCE

Voluntary principles take advantage of market-led opportunities that allow the advancement of green finance without the potential cost and delays associated with some regulations. The promotion of voluntary principles has been most prominent among investors. Examples include:

- **China:** the Securities Regulatory Commission publicly encouraged Chinese investors to become Principles of Responsible Investment (PRI) signatories (October 2016).

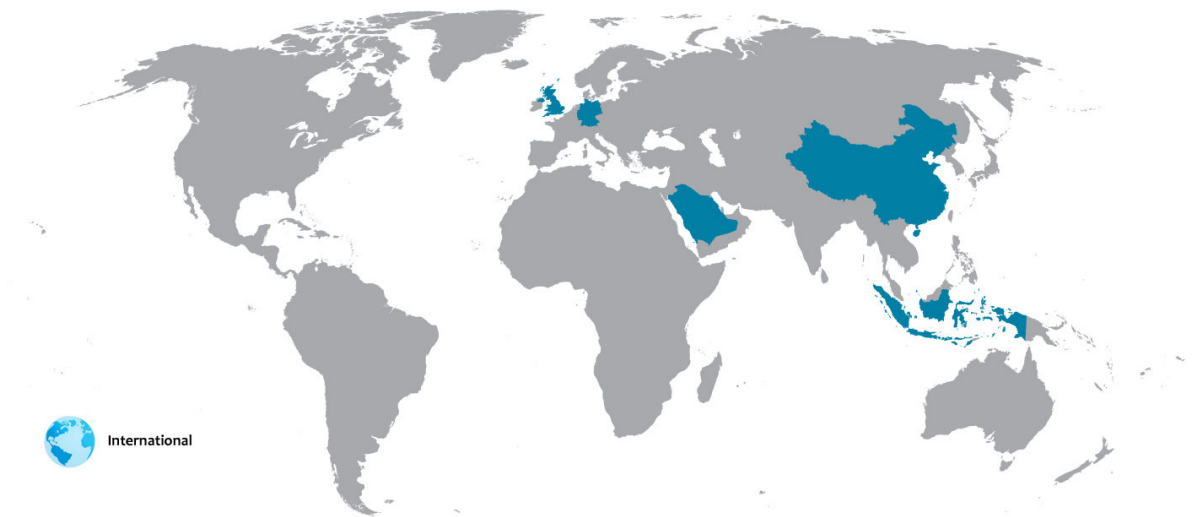


- ⦿ **France:** launched “the energy and ecology transition for climate” label to help identify green investment funds (November 2016).⁵⁵
- ⦿ **South Korea:** the Financial Services Commission is developing a Stewardship code.
- ⦿ **Internationally:**
 - ⦿ The SBN has initiated work on ‘Sustainable Banking Principles’ for banks and banking regulators, as has the Sustainable Stock Exchanges Initiative (SSE), which has focused on stock exchange application.
 - ⦿ Banks and investors representing US\$6.6 trillion in assets from countries including Australia, Brazil, France, the Netherlands, South Africa and the UK launched the Principles for Positive Impact Finance.⁵⁶

OPTION 3: EXPAND LEARNING NETWORKS FOR CAPACITY-BUILDING

Even though green finance is rapidly developing within and beyond the G20, there is still a lack of awareness of its benefits and existing international practices. Learning networks can facilitate green finance activities, improve information flows, and can help to improve analytical capabilities.

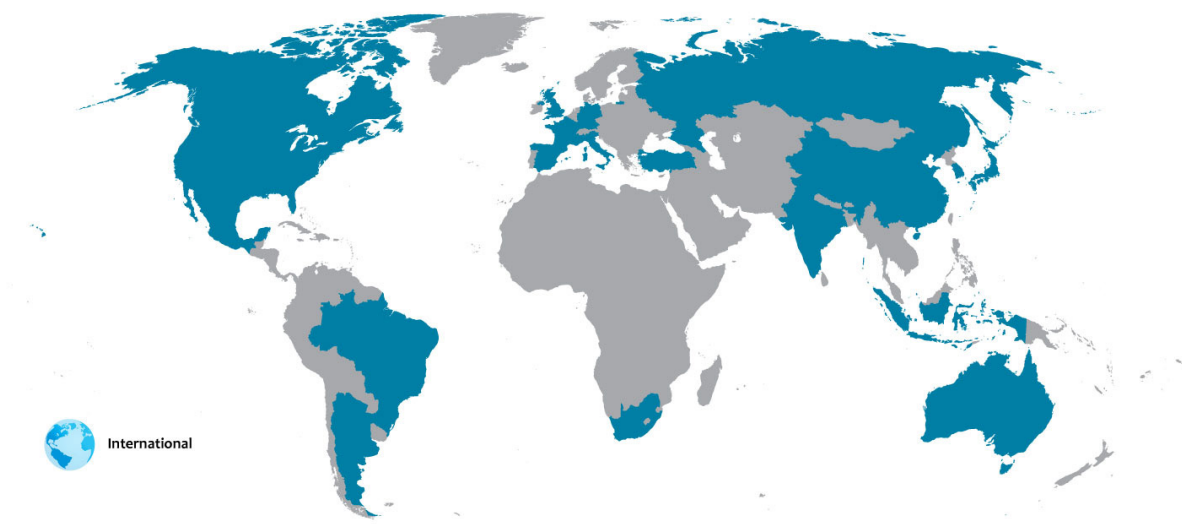
Progress at the national level within G20 members has been relatively limited, but rapid expansions in multi-stakeholder partnerships have been evident across banking, insurance and investment. New platforms include thematic multi-stakeholder partnerships and platforms serving the green finance needs of developing countries. Examples include:



- ⦿ **China:** the Central University of Finance and Economics launched the International Institute of Green Finance in September 2016.⁵⁷
- ⦿ **Germany:** Deutsche Börse announced it will launch a Sustainable Finance Initiative in May 2017.⁵⁸
- ⦿ **Indonesia:** OJK and the Udayana University launched the Bali Centre for Sustainable Finance in July 2017.⁵⁹
- ⦿ **Singapore:** the Singapore Exchange (SGX) joined the SSE in September 2016 as a partner exchange. The SSE now includes over 60 stock exchanges, representing more than 70% of listed equity markets and some 30,000 companies with a market capitalization of over US\$55 trillion. Singapore's Stewardship Principles for Responsible Investors were launched in November 2016.⁶⁰
- ⦿ **Saudi Arabia:** the Central Bank has indicated its intention to join the SBN.
- ⦿ **UK:** the Bank of England is in dialogue with other UK financial regulators on green finance and climate-related financial risks.
- ⦿ **Internationally:**
 - ⦿ the SBN has expanded from 24 to 31 countries, and most market-led international networks including the Principles for Responsible Investment, the Sustainable Stock Exchanges Initiative and the UN Environment Finance Initiative are providing increasing capacity development support to financial communities in both developing and developed countries.⁶¹
 - ⦿ The Sustainable Insurance Forum (SIF) was launched in December 2016 including regulators and supervisors from a range of jurisdictions including Brazil, France, the Netherlands, Singapore, South Africa, the UK and the US, as well as the International Association of Insurance Supervisors.⁶²

OPTION 4: SUPPORT THE DEVELOPMENT OF LOCAL GREEN BOND MARKETS

Local green bond markets provide an additional source of long-term green finance to bank lending and equity finance. This is especially valuable in countries where demand for green infrastructure investment is high but supply of long-term bank loans is limited. Of the seven options, support for the development of local green bond markets has been very strong. Governments have been playing an active role (including through sovereign and sub-sovereign issuance) and development banks are increasing their support. Examples include:



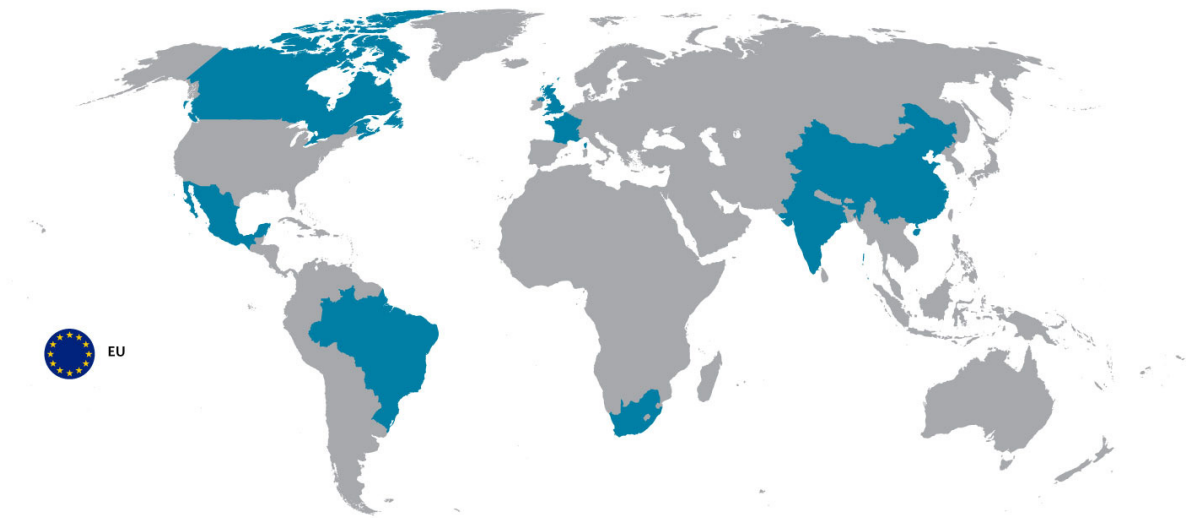
- ⦿ **Argentina:** La Rioja Province issued its first green bond.⁶³
- ⦿ **Australia:** the State of Victoria became the first Australian Government to issue a green bond.⁶⁴
- ⦿ **Brazil:** the Brazilian Federation of Banks (FEBRABAN) and the Brazilian Business Council for Sustainable Development (CEBDS) launched the voluntary “Guidelines for Issuing Green Bonds in Brazil 2016” (October 2016).⁶⁵

- **Canada:** the Province of Ontario issued its third and largest green bond to date in January 2017, while the Province of Quebec launched its first green bond issuance in February 2017.⁶⁶
- **China:** following the issuance of a domestic green bond catalogue and green bond guidelines, green bond issuance (domestically and internationally) reached US\$34 billion in 2016, up from US\$1 billion in 2015. The China Security Regulatory Commission released guidelines for green bonds issued by listed corporates in March 2017.⁶⁷
- **France:** in January 2017, France issued a landmark EUR7 billion long-dated 22-year sovereign green bond, with a view to promote best market practices (especially in terms of evaluation and impact reporting) and support the development of the green bond market.⁶⁸
- **Germany:** (i) the state development bank of North Rhine-Westphalia issued another green bond,⁶⁹ (ii) the Federal Government has decided to extend and expand KfW's mandate to support the Green Bond market as an anchor investor, and (iii) the Association of German Public Banks launched a German Green Bond Initiative in June 2017.⁷⁰
- **India:** the Securities and Exchange Board of India (SEBI) issued disclosure requirements for the issuing and listing of green debt securities.⁷¹
- **Indonesia:** OJK announced it will launch a framework and introduce regulation for green bond issuance in Indonesia in 2017.⁷²
- **Italy:** Borsa Italiana launches a green and social bonding listing in March 2017.⁷³
- **Japan:** (i) the Ministry of the Environment released green bond guidelines in March 2017,⁷⁴ and (ii) the Metropolitan Government of Tokyo announced plans for issuing green bonds.⁷⁵
- **Mexico:** the Mexican development bank, Nacional Financiera, issued the first green bond in local currency.⁷⁶
- **Russian Federation:** the Central Bank of Russia conducted a “Review of financial market regulation: green bonds”.⁷⁷
- **Singapore:** the Monetary Authority of Singapore will offer a grant fund to offset the costs of corporates issuing sustainability-related bonds.⁷⁸
- **South Africa:** the National Treasury is exploring the possibility of a sovereign green bond.
- **South Korea:** (i) the Ministry of Finance and Strategy is developing Green Bonds Guidelines, (ii) the State-owned Korea Development Bank issued its inaugural green bond (US\$300 million) in June 2017.⁷⁹
- **Spain:** the Comunidad de Madrid has announced it will launch a 5-year EUR-denominated sustainability bond adhering to the Green Bond Principles and a number of the SDGs.⁸⁰
- **Turkey:** the country's first green infrastructure bond was issued in November 2016 under a public-private model with development bank credit enhancement. The proceeds will be used for the Government's hospital building programme and the bond has been certified as both a green and social bond.⁸¹
- **UK:** the LSEG issued a ‘Guide to ESG Investing’, including debt finance in February 2017.⁸²
- **US:** the California State Treasurer released plans to scale up the green bond market in January 2017.⁸³
- **International:** the IFC is developing the US\$2 billion Green Bond Cornerstone Programme dedicated to emerging markets.⁸⁴

OPTION 5: PROMOTE INTERNATIONAL COLLABORATION TO FACILITATE CROSS-BORDER INVESTMENT IN GREEN BONDS

Opportunities for cross-border investment in green bonds can help reduce the funding costs of green bonds, potentially enhance the return of global investors and support the development of local bond markets. Advances in international collaboration have been slower than local green bond market development, as barriers including differences in local definitions, disclosure requirements and capital controls need to be resolved. Most progress for this option is currently being advanced through bilateral cooperation, particularly between developed and developing countries. Examples include:

- **Brazil:** organized a bond-focused green infrastructure road show to the UK (December 2016).⁸⁵
- **Canada:** the provinces of Ontario and Quebec issued their recent green bonds as global bonds, which effectively encouraged cross-border investment in these issuances.⁸⁶



- **China:** China's Vice-Premier and the French Minister of Economy and Finance agreed to closely collaborate to facilitate the growth and internationalization of robust green bond markets involving Chinese and French market participants.⁸⁷
- **EU:** the European Investment Bank and the People's Bank of China launched an initiative on green bonds in March 2017. Issues related to the reporting of green bonds, definitions of sectors and projects eligible for financing through green bonds, project evaluation, management of the proceeds of green bond and use of external reviews will be examined.⁸⁸
- **France:** authorized the launch of the first green bonds ETF tracking a portfolio of 116 investment grade green bonds (March 2017).⁸⁹
- **India:** (i) organized a bond-focused green infrastructure roadshow to the UK (June 2016), and (ii) NTPC lists the world's first Indian green masala bond and first masala bond by a quasi-sovereign issuer on the London Stock Exchange.⁹⁰
- **Mexico:** Mexico City's US\$2 billion green bond is listed in Singapore.⁹¹
- **South Africa:** the Johannesburg Stock Exchange is developing green bond listing requirements in line with international best practice.
- **UK:** collaboration with China led to the issuance of the first Chinese green covered bond listed on the London Stock Exchange (November 2016).⁹²

OPTION 6: ENCOURAGE AND FACILITATE KNOWLEDGE-SHARING ON ENVIRONMENTAL AND FINANCIAL RISK

The linkages between environmental factors and financial risks are complex and often involve the development of new capacities which can be challenging, especially for small and medium-sized financial firms. Sharing knowledge therefore has elements of a public good. Examples include:

- **Brazil:** the Central Bank issued guidelines on integrated risk management including environmental risk at the end of March 2017.
- **China:** promoting environmental risk analysis, including environmental stress testing by financial firms, became a key component of China's "Guidelines for Establishing the Green Financial System". This effort is led by the Green Finance Committee of China Society for Finance and Banking.⁹³
- **France:** DG Trésor and Banque de France were among the conveners of a December workshop on understanding, assessing, pricing and managing climate-related financial risks.
- **Germany:** the Federal Ministry of Finance released a commissioned research report on the potential impact of climate change on financial market stability.
- **Indonesia:** OJK and the SBN co-hosted the 2016 International Sustainable Finance Forum and SBN 4th Annual Meeting in Indonesia in December, to facilitate knowledge-sharing on sustainable finance among 30 countries.⁹⁴

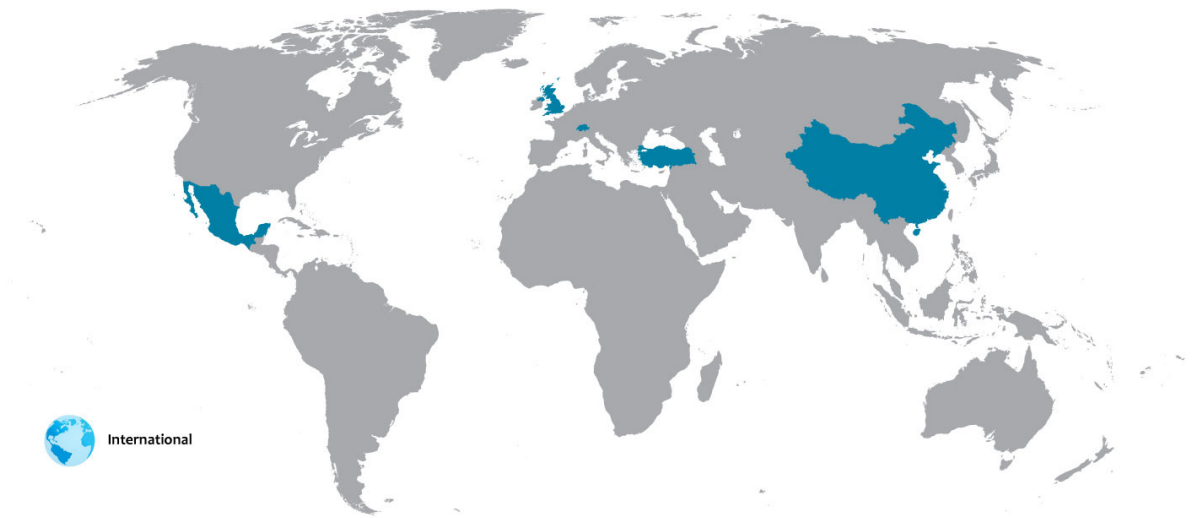


- ⦿ **Netherlands:** the Central Bank is conducting a thematic review into climate risk within its financial institutions.
- ⦿ **Russian Federation:** held an international conference on ‘Green Financing for Sustainable Development’ in May 2017.⁹⁵
- ⦿ **UK:** the Bank of England outlined its responses to financial risk from climate change in June 2017.⁹⁶
- ⦿ **US:** the California State Insurance Commissioner launched the Climate Risk Carbon Initiative online database in January 2017 providing information on high-carbon investments of large insurance companies.⁹⁷
- ⦿ **Internationally:**
 - ⦿ the German Development Cooperation (GIZ) and the Natural Capital Finance Alliance (NCFA) developed jointly with nine banks from Brazil, China, Mexico and the US an environmental and drought stress testing tool.⁹⁸
 - ⦿ the TCFD published final recommendations in June 2017. Environmental scenario analysis is a key recommendation for understanding the financial impact of environmental sources of risk.⁹⁹
 - ⦿ the OECD adopted a Recommendation on Disaster Risk Financing Strategies that provides high-level policy guidance on the financial management of disaster risks in February 2017.¹⁰⁰

OPTION 7: IMPROVE THE MEASUREMENT OF GREEN FINANCE ACTIVITIES AND THEIR IMPACTS

Greater clarity on green definitions, as well as the measurement of green finance flows and associated impacts is important to guide market decisions and enable policymakers and regulators to achieve their goals. Currently, there is no systematic methodology for assessing progress on the greening of the financial system and the number of initiatives in this space has been relatively small. Progress has been most pronounced in relation to improved reporting by financial institutions particularly on climate change and within the banking sector. Examples include:

- ⦿ **China:** (i) the Ministry of Environmental Protection and the China Securities Regulatory Commission signed an agreement to jointly promote mandatory environmental disclosure for listed companies,¹⁰¹ and (ii) the China Bank Association measures the volume and efficiency of green loans.¹⁰²
- ⦿ **Mexico:** the Mexican Bankers Association is developing a framework for climate finance reporting.
- ⦿ **Switzerland:** the Federal Office for the Environment will offer all Swiss pension funds and insurance companies the opportunity to measure the 2°C-alignment of their equity and corporate bond portfolios.
- ⦿ **Turkey:** the Banking Regulation and Supervision Agency has started to develop a reporting template.
- ⦿ **UK:** the UK Green Investment Bank published a report on measuring the “green impact” of projects for the first time (November 2016).



⦿ **Internationally:**

- ⦿ the TCFD published recommendations in June 2017. ‘Metrics and targets’ is one of four thematic areas covered.¹⁰³
- ⦿ the SBN launched a “Sustainable Finance Measurement Working Group”. The working group will develop technical guidance and tools to help assess the effectiveness of green finance policies and harmonize measurement frameworks and indicators.¹⁰⁴
- ⦿ the EU countries are transposing into national legislation the EU Directive on non-financial reporting. This will require large companies listed on EU markets, or operating in the banking and insurance sectors, to disclose relevant environmental and social information in their management reports.

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- ⁴ Climate Bonds Initiative green bond database. More online at: <https://www.climatebonds.net/cbi/pub/data/bonds>
- ⁵ <http://unepinquiry.org/publication/roadmap-for-a-sustainable-financial-system/>
- ⁶ GreenInvest is a G20 Initiative that has been promoted by the German Presidency. More online at: <https://www.green-invest.org/>
- ⁷ <https://www.fsb-tcfd.org/>
- ⁸ http://www.ifc.org/wps/wcm/connect/topics_ext_content/ifc_external_corporate_site/sustainability-at-ifc/company-resources/sustainable-finance/sbn
- ⁹ <http://www.oecd.org/cgfi/>
- ¹⁰ <http://unepinquiry.org/> and <http://www.unepfi.org/>
- ¹¹ A comprehensive review looking beyond green finance to assess sustainable finance more broadly indicates that global sustainably managed assets under management have increased by 25% compared to the last survey undertaken in 2014. More online at: http://www.gsi-alliance.org/wp-content/uploads/2017/03/GSIR_Review2016.F.pdf. Record green bond issuance in Q1 2017 has been driven by new types of green bonds, issued over longer tenors and in greater size. For more, see: <http://www.greenbonddata.org/>
- ¹² Increases in green bond primary market issuance have improved secondary market liquidity, allowing new funds to open and operate within existing liquidity and creditworthiness constraints, with four new green bond funds launching in Q1 2017.
- ¹³ A rapid expansion in green finance-related partnerships has been evident across banking, insurance and investment. Membership of the Principles for Responsible Investment (PRI) has increased by over 185 members from 30 countries since June 2016, now representing over 50% of global AUM. Membership of the Principles for Sustainable Insurance (PSI) now represents over 20% of the global insurance market by premiums booked and 92% of the world's 25 largest banks are members of the UN Environment Finance Initiative. Financial centres from Casablanca to Hong Kong, London and Paris have also launched ambitious plans to become green finance hubs, and are often private sector-led.
- ¹⁴ New risk management tools have been developed by a range of market players along the investment supply chain, including assets owners (e.g. Transition Pathway Initiative toolkit), data providers (e.g. MSCI ESG data) and investment banks (e.g. HSBC's Climate Risk Analysis Framework)
- ¹⁵ New principles have emerged within and across sectors. These include the ESG covenant that will be drawn up by the Dutch pension fund sector and the 19 global banks and investors totalling US\$6.6 trillion in assets that launched the Principles for Positive Impact Finance in January 2017 (<http://www.unepfi.org/news/industries/banking/launch-of-the-principles-for-positive-impact-finance-2/>). Existing principles are also being updated to reflect growing momentum, product innovation and improved knowledge, such as a new version of the Green Bond Principles that were released in June 2017.
- ¹⁶ These environmental benefits include, for example, reductions in air, water and land pollution, reductions in greenhouse gas emissions, improved energy efficiency while utilizing existing natural resources, as well as mitigation of and adaptation to climate change and their co-benefits
- ¹⁷ Source: UN Environment Inquiry analysis and internal database
- ¹⁸ Source: UN Environment Inquiry analysis and internal database
- ¹⁹ <https://www.fsb-tcfd.org/>
- ²⁰ See <http://www.oecd.org/cgfi/>, http://www.ifc.org/wps/wcm/connect/topics_ext_content/ifc_external_corporate_site/sustainability-at-ifc/company-resources/sustainable-finance/sbn, <http://unepinquiry.org/> and <http://www.unepfi.org/>
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- ²² More online on the FSB TCFD at : <https://www.fsb-tcfd.org/> and on the Green Finance Digital Alliance at : <https://www.greendigitalfinance.org/>
- ²³ More online at: http://www.gsi-alliance.org/wp-content/uploads/2017/03/GSIR_Review2016.F.pdf
- ²⁴ <https://www.climatebonds.net/>
- ²⁵ For more, see: <http://www.greenbonddata.org/>
- ²⁶ Since February 2017, new types of green loans include: (i) a EUR500 million BBVA green loan to Iberdrola (first green loan to an energy company) <https://www.bbva.com/en/news/economy/business-economics/responsible-business-plan/bbva-signs-first-green-loan-energy-utility-iberdrola/> (ii) a EUR600 million syndicated loan led by Lloyds Bank to Unibail-Rodamco, Europe's largest commercial real estate business, involving 12 banks where a discount of 10bp is available if Unibail-Rodamco achieves 3 green targets (the first time a green syndicated loan has had a margin discount linked to green KPIs) <https://connect.savills.com/community/united-kingdom/uk-business-intelligence/uk-daily-news-snapshot/blog/2017/04/06/lloyds-bank-commercial-banking-has-arranged-a-600m-debt-financing-for-europe-s-largest-commercial-real-estate-business-unibail-rodamco-se>, and, (iii) ING led a syndicate of 16 banks for a EUR1 billion loan to Philips where the interest rate is linked to the rating provided by Sustainalytics (the first time a loan has been structurally linked to a 3rd party sustainability rating) <https://www.>



ing.com/Newsroom/All-news/ING-and-Philips-collaborate-on-sustainable-loan.htm, and (iv) in April 2017, Shinhan Bank launched its 'Green Management Firm Loan Program' with the South Korean Ministry of Environment and KEITI, a UNEP FI Supporting Institution. The program allots US\$87 million for Eco-friendly Small and Medium Enterprises, and loans are made with interest rates of up to 1.3% lower than existing programmes.

²⁷ <http://www.lse.ac.uk/GranthamInstitute/tpi/the-toolkit/>

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²⁹ As of May 2017, the following green bond indices exist in China: (i) China Bond China Green Bond Index (China Government Securities Depository Trust & Clearing Co., Ltd. (CCDC) and CECEP Consulting Co., Ltd.); (ii) China Bond China Green Bond Select Index (China Government Securities Depository Trust & Clearing Co., Ltd. (CCDC) and CECEP Consulting Co., Ltd.); (iii) China Climate-Aligned Bond Index (Climate Bonds Initiative); (iv) China Bond CIB Green Bond Index (CCDC and Industrial Bank Co., Ltd.); (v) CUFE-CNI High Grade Green Bond Index (International Institute of Green Finance, CUFE and Shenzhen Stock Exchange); (vi) CUFE-CNI High Grade Unlabelled Green Bond Index (International Institute of Green Finance, CUFE and Shenzhen Stock Exchange); (vii) CUFE-CNI High Grade Labelled Green Bond Index (International Institute of Green Finance, CUFE and Shenzhen Stock Exchange)

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³⁷ Some of these measures are relevant to one or more of the seven options, but have only been included under one option for the purpose of this mapping exercise.

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NOTES





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