

# Economic Commentaries

## Green bonds – big in Sweden and with the potential to grow

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Green bonds are one example of a financial instrument that gives investors the opportunity to steer capital to climate- and environmentally-friendly investments. In recent years, the market for green bonds has grown significantly and in Sweden the market is large, in an international perspective.

Green bonds and traditional bonds are similar financially and technically. As with traditional bonds, investors in green bonds have a claim on the issuer's entire balance sheet and not merely specific projects or assets. The difference between green bonds and traditional bonds is that the issuer produces a so-called green bond framework, where they describe the use of proceeds, process for project evaluation and selection, management of proceeds and reporting.

It is important for the continued development of the market for green bonds to have clear and common definitions of what are green and brown projects, and for investors to have good access to climate-related information. It is also a necessary condition for investors to be able to allocate capital more efficiently from brown to green activities and thereby support a transition to a less fossil-based economy.

Limiting global warming requires a global transition to a less fossil-based economy. Attaining the goals in the Paris Agreement – which states that the global temperature increase shall be limited to less than 1.5-2 degrees Celsius in relation to pre-industrial levels – is primarily the Governments' responsibility.<sup>2</sup> However, the financial system also plays an important role in response to climate change.<sup>3</sup> It will require a substantial amount of capital and new financial products and instruments to finance the response.<sup>4</sup> This involves steering capital to initiatives that support a transition to a less fossil-based economy; moving away from oil, coal and gas towards fossil-free alternatives. Green bonds are one example of a financial instrument that enables investors on the fixed-income market to steer their capital towards investments that can contribute to the transition.

In recent years, the market for green bonds has grown significantly. It is therefore important from a financial stability perspective for the Riksbank to understand and follow this market.<sup>5</sup> This is partly because the market for green bonds is a source of funding for companies, and partly because green bonds are a part of the financial system's development towards steering capital to green investments.

We begin this Economic Commentary by explaining the concept of climate-related risks and the link to financial risks. After that, we explain what a green bond is, how the risk linked to green bonds relates to the risk linked to traditional bonds, who issue green bonds and the market growth.<sup>6</sup> We conclude by discussing some aspects that are important in the continued development of the market for green bonds.

### Climate-related risks can create financial risks

Both the effects of global warming and the transition in itself create climate-related risks – physical risks and transition risks. The size of these risks depends on whether or not the transition to fossil-free is gradual and in an orderly manner, and whether society succeeds in making the transition in time. The risks can be greater if the transition takes longer, is not gradual and orderly, and if society does not succeed in

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<sup>2</sup> See Olovsson (2020).

<sup>3</sup> The role of the financial markets in the transition to a sustainable economy is raised, for instance in the Paris Agreement (see Chapter 7 for a more detailed description). The budget bill for 2016 introduced a new goal for the financial system to contribute to sustainable development. (See Budget Bill 2015/16:1 Expenditure area 2).

<sup>4</sup> IPCC (2018) has compiled estimates of the investments in the energy sector needed to attain the goal of limiting the temperature increase to 1.5 degrees. This compilation shows that investments amounting to almost USD 2,400 billion will be required in the energy sector alone between 2016 and 2035.

<sup>5</sup> For further information on the Riksbank's role and tools to counteract climate change, see Breman (2020).

<sup>6</sup> This Economic Commentary is limited to charting green bonds on the primary market. This means that we do not discuss, for instance, yield and risks on the secondary market. Nor do we discuss other green financial products, such as green loans, sustainable bonds, blue bonds or social bonds.

making the transition. Ensuring an orderly transition requires political measures that reduce global carbon emissions.<sup>7</sup>

For the participants in the financial system – banks, insurance companies and other financial companies, public authorities and non-financial corporations – climate-related risks can create financial risks, such as credit risk. Climate-related credit risk can be defined as the risk that losses will occur because one party (for instance, an issuer) has difficulty paying its debts due to climate-related events. This could either be losses caused by actual climate events (physical risk), or losses related to the transition to a less fossil-based economy (transition risk).<sup>8</sup> Examples of this are the risk of credit losses as a result of physical damage from climate change, or the risk of credit losses in connection with political measures to meet the commitments of the Paris Agreement.

If climate-related risks are not managed, they can entail risks for the financial system, which can in turn develop into threats to financial stability.<sup>9</sup> It is therefore part of the Riksbank's mandate to promote resilience to climate-related risks in the financial system.

## Green bonds finance climate- and environmentally-friendly investments

Green bonds give investors access to more climate-friendly investment alternatives. They can thus choose to place their capital in green investments. This may sound simple, but in practice is rather complicated. Green projects and assets (or brown ones for that matter) can actually be difficult to define.<sup>10</sup> Over the years, however, the market has developed standards for issues of green bonds, which create common guidelines and transparency. There is also work on regulation of green bonds under way within the EU.

### What are green bonds?

Green bonds are debt instruments linked to investments aiming to reduce impact on the climate and environment and contribute to sustainable development.<sup>11</sup> This means that issuers of green bonds use the borrowed capital to finance specific projects or assets classified as green. For green bonds, the use of proceeds is stated.<sup>12</sup>

The main difference between green bonds and traditional bonds is that for green bonds the issuer works out a green bond framework that describes, for instance, the purpose of the borrowing (this is described in the section Global standards). The issuer shall then also report back to the investors how the amount issued was used and what environmental and climate effects have been achieved.

Green bonds are issued by many different types of issuer, including supranational development banks, sovereigns, municipalities and companies. One example is the World Bank, which also issued the very first green bond in 2008 in collaboration with the Swedish bank SEB. As with the World Bank's traditional bonds, the green bond financed projects

<sup>7</sup> A global carbon tax is the most cost-effective measure to attain this, according to economic theory. See Olovsson (2020).

<sup>8</sup> For instance, a large and diversified energy company that issues green bonds and invests significantly in green projects can at the same time be active in, for instance, coal mining and thereby be subjected to transition risk, e.g. changes in carbon taxes. There can also be green bonds that are not exposed to any transition risk, but have an income flow exposed to physical risk, such as wind turbines, which can be subjected to a risk of flooding.

<sup>9</sup> See Sveriges Riksbank (2019).

<sup>10</sup> There are as yet no clear definitions of green, non-green and brown assets. For more information, see NGFS (2019) and NGFS (2020).

<sup>11</sup> For instance, investments that are in line with the goals in the Paris Agreement (which reduce emissions of greenhouse gases and help to limit global warming) or linked to one or more of the UN's sustainability goals, see <https://www.un.org/sustainabledevelopment/sustainable-development-goals/>.

<sup>12</sup> There are different types of green bond. The majority of the green bonds issued are those referred to as "use of proceeds" bonds.

designed to promote local economies and reduce poverty, but with the specific purpose of reducing climate impact in developing countries.<sup>13</sup>

Another example of an issuer is the Swedish property company Vasakronan, which issued the very first green corporate bond in 2013. This bond financed a project portfolio with both new construction and renovation of properties with strict environment requirements.<sup>14</sup>

A much more recent issuer of green bonds is the Government of Sweden, which in September this year issued a sovereign green bond for the first time. The money borrowed with the sovereign green bond is linked to an equally large volume of expenditure in the government budget. This expenditure has already been decided by the Riksdag (Swedish parliament) and has been defined as green.<sup>15</sup>

### **The credit risk in green bonds reflects the issuer's repayment ability - just as for traditional bonds**

Green bonds and traditional bonds are similar financially and technically.<sup>16</sup> As with traditional bonds, investors in green bonds have a claim on the issuer's entire balance sheet and not merely specific projects or assets. This means that both types of bond are exposed to the risk in the assets on the issuer's balance sheet. In theory, the credit risk is thus identical for green bonds and other equivalent traditional bonds issued by the same issuer. If one wishes to assess the credit risk for a green bond, it is therefore necessary to assess repayment ability of each specific issuer, in the same way as for traditional bonds.

The transition to a less fossil-based economy that now needs to be made will favour some sectors and companies, for instance, those who apply or develop new technology that enables this transition. The sectors and companies that do not make the transition will lose out, including sectors that are dependent on coal, oil and steel, and thereby have a high carbon footprint. Ultimately, some companies with a lot of green on their balance sheets may experience lower costs and have a higher probability of survival in the long run, which should reasonably entail a lower credit risk.<sup>17</sup> When making comparisons between issuers who issue green bonds and issuers who do not, on the other hand, there is no strong evidence that the company issuing green bonds will also reduce its carbon emissions when regarding the company's total emissions.<sup>18</sup>

### **Issuing green bonds can encourage companies to make the transition faster and create a dialogue with investors**

Going through the actual process of issuing green bonds may in itself be positive, from a sustainability perspective. This applies in particular to issuers with less environmentally-friendly operations. A company that issues green bonds can focus on sustainability and climate issues and better integrate them into its business model, which can help the company make the transition faster. The fact that issuing green bonds can lead to a faster transition for a company can be regarded as a positive side-effect.<sup>19</sup>

A further aspect is that there is an element of impact among green bonds that the traditional bonds lack. As the issuers report to the investors on how the amount issued has

<sup>13</sup> Examples of investments made include the financing of new technology to reduce greenhouse gas emissions and the efficiency improvements in transports (e.g. change of fuel). Other examples include protection against flooding and replanting forests. This is described in the World Bank Treasury (2018).

<sup>14</sup> Examples of environmental measures taken include charging units for electric cars, re-use or recycling of construction waste and measures for heat recovery. For further information see Vasakronan 2013.

<sup>15</sup> Examples of expenditure areas in the budget that are linked to the green bond include "measures for marine and water environments", "protection of valuable natural environments" and "measures to improve the agricultural environment". For more information see Swedish Government 2020.

<sup>16</sup> See SOU 2017:115.

<sup>17</sup> See SOU 2017:115.

<sup>18</sup> See Ehlers et al. (2020).

<sup>19</sup> See SOU 2017:115.

been used and what positive environmental and climate effects have been achieved, this creates the conditions for a dialogue between the issuer and the investor.<sup>20</sup>

### **Greenwashing can damage confidence in green bonds**

Greenwashing means that an issuer tries to create an image of being environmentally-friendly, despite conducting operations that are more or less damaging to the environment. Greenwashing is thus a form of misleading marketing. If a company practices greenwashing and issues green bonds where the proceeds from the issue are used for projects that are not really green, this could damage confidence in both the individual company and the market for green bonds.<sup>21</sup>

### **Market standards and regulations create common guidelines and transparency**

When issuing green bonds, there are international standards that market players can apply. The aim is to promote transparency and standardisation. These standards thus contribute to reducing the risk of greenwashing. However, they are voluntary, and not legally binding.

#### *Global standards*

With broad support from market agents, the Green Bond Principles (GBP) have come to be the global standards for green bonds.<sup>22</sup> By issuing bonds in line with GBP, the issuers work out a green bond framework, where they describe the use of proceeds, process for project evaluation and selection, management of proceeds and reporting. The reports are to be made annually and the positive environmental and climate effects of the green investments, such as reduced greenhouse gas emissions, should be described. As guidance, the GBP propose a number of green project categories, including:

- Renewable energy and energy efficiency
- Pollution prevention and control
- Environmentally sustainable management of living natural resources and land use
- Terrestrial and aquatic biodiversity conservation
- Clean transportation
- Sustainable water and waste water management
- Green buildings

The GBP also recommend that the process for evaluating and selecting projects should be subject to independent external reviews. The CICERO Centre for International Climate Research is one example of an independent body that has, for instance, examined the Government Offices' framework for Swedish sovereign green bonds.<sup>23</sup>

Another example of a global and voluntary standard is the Climate Bonds Standard (CBS).<sup>24</sup> The major difference with regard to the GBP is that the CBS has produced an accompanying classification system (taxonomy) with criteria for what is regarded as climate and environmentally sustainable. Bonds and loans can be certified under the CBS system, which means that the assets and projects financed are assessed to be compatible with the goal of the Paris Agreement to limit global warming to 2 degrees.

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<sup>20</sup> See SOU 2017:115.

<sup>21</sup> See SOU 2017:115.

<sup>22</sup> See ICMA (2018).

<sup>23</sup> See the Swedish Government (2020).

<sup>24</sup> See Climate Bonds Initiative (2019).

*EU standard for green bonds and classification system for green activities*

Work is under way within the EU to develop a standard for green bonds that is based on the current market practice, like the GBP.<sup>25</sup> In the EU, green projects are defined as projects in line with the EU's classification system for what is green, the EU taxonomy.<sup>26</sup> The EU taxonomy aims to help investors, companies, issuers and project managers to navigate the transition to a low-carbon, resilient and resource-efficient economy.<sup>27</sup> The primary objective is to steer capital to environmentally-friendly and green activities, but the taxonomy may also be used for other purposes, such as calculating the banks' exposures to different sectors and thereby to climate-related risks. It is as yet unclear how the risk assessments of the banks' balance sheets will be based on the taxonomy.

The work on an EU standard for green bonds and the EU's taxonomy is part of a larger work on regulation within the EU. An action plan was presented for the entire area of sustainable finance in the EU in 2018. The aim is to increase private investment in sustainable projects that contribute to climate change adaptation and to managing and integrating climate and environmental risks in the financial system.<sup>28</sup>

## Strong growth for green bonds<sup>29</sup>

### **Strong global growth - but from a low level**

As mentioned earlier, the first green bond was issued by the World Bank in 2008.<sup>30</sup> To begin with, it was only supranational development banks that issued green bonds. In the year 2013, several other types of issuer, such as municipalities and both financial and non-financial companies, began to issue green bonds (see Chart 1). Among companies, it is mainly financial companies that issue green bonds. The non-financial companies issuing green bonds are primarily companies in the energy sector, although also some companies in other sectors, such as property companies and transport companies.

Furthermore, a number of sovereigns have issued green bonds. The first country to do so was Poland, which in 2016 issued a green bond to a value corresponding to almost SEK 7 billion. Since then, around ten or so countries over several continents have issued green bonds, including Sweden.

Globally, the volume of green bonds issued has grown substantially since 2013 (see Chart 1). During 2019, green bonds to a value of more than USD 230 billion were issued (equivalent to over SEK 2,200 billion). This is about 50 per cent more than in 2018. In total, USD 930 billion (SEK 8,300 billion) has been issued since 2008.

Although green bonds have grown substantially in recent years, they only account for a small share of the total bond issue volume. In global terms, green bonds accounted for almost 2 per cent of the bond volumes issued in 2019.<sup>31</sup>

<sup>25</sup> See Technical Expert Group on Sustainable Finance (TEG) of the European Commission (2019) and (2020b).

<sup>26</sup> Regulation (EU) No 2020/852 of the European Parliament and of the Council of 18 June 2020 on the establishment of a framework to facilitate sustainable investment, and amending Regulation (EU) 2019/2088.

<sup>27</sup> See Technical Expert Group on Sustainable Finance (TEG) of the European Commission (2020a).

<sup>28</sup> The EU's work is more extensive than this and also includes the EU Green Deal, which was presented by the Commission in December 2019. This places climate and sustainability high up on the EU agenda in the coming years for several sectors, not just the financial sector.

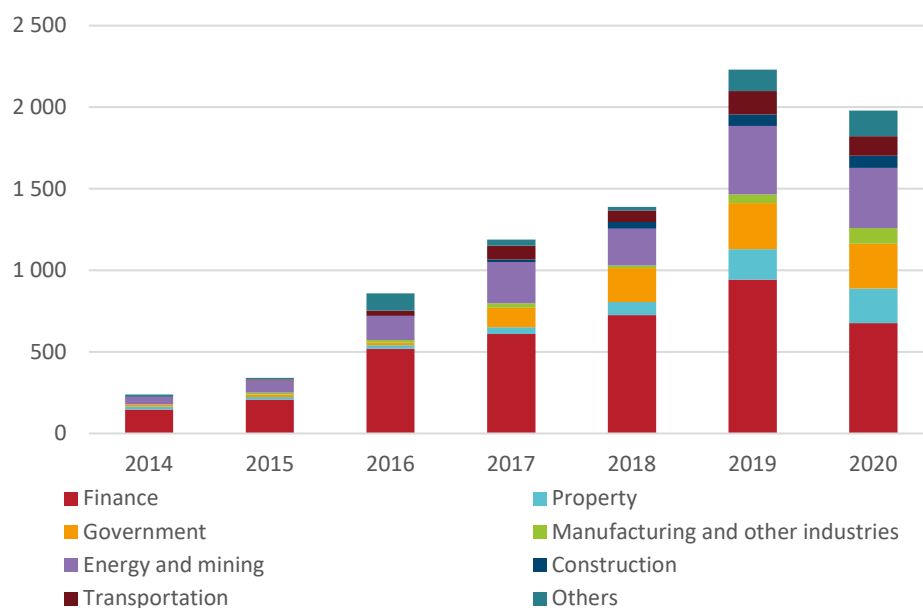
<sup>29</sup> This entire section uses Dealogic as source, unless otherwise stated.

<sup>30</sup> As early as 2007, the European Investment Bank issued what it called a Climate Awareness Bond. In some contexts, this is referred to as the very first green bond.

<sup>31</sup> Refers to all debt instruments with a maturity of more than 1 year in the category Debt Capital Markets, DCM, according to Dealogic.

**Chart 1. Issue volumes of green bonds globally, broken down by sector**

SEK billion, 2008 - 30 Sept. 2020



Source: Dealogic

Note: Sector breakdown according to Dealogic's Company General Industry Group, and then aggregated for certain sectors. For the global market, this means: Manufacturing and other industries (Auto/Trucks, Chemicals, Forestry & Paper, Machinery, Metal & Steel and Textile), Energy and mining (Utility & Energy, Oil & Gas and Mining) and Others (Computers & Electronics, Consumer Products, Dining & Lodging, Food & Beverage, Healthcare, Insurance, Professional Services, Retail and Telecommunications).

### The Swedish market for green bonds is large in an international perspective

The Swedish market for green bonds in relation to the entire Swedish bond market is large in an international perspective. In 2019, green bonds accounted for 20 per cent of the bond volumes issued in Swedish krona (see Chart 2).<sup>32</sup> This is a very large share in relation to currencies such as EUR, GBP, CNY, AUD, NOK and USD, where green bonds accounted for between 0.8 and 5 per cent of the bond volumes issued. Green bonds issued in DKK amounted to 15 per cent of the bond volumes issued in DKK, but this is entirely due to the World Bank issuing a green bond in DKK in 2019.<sup>33</sup>

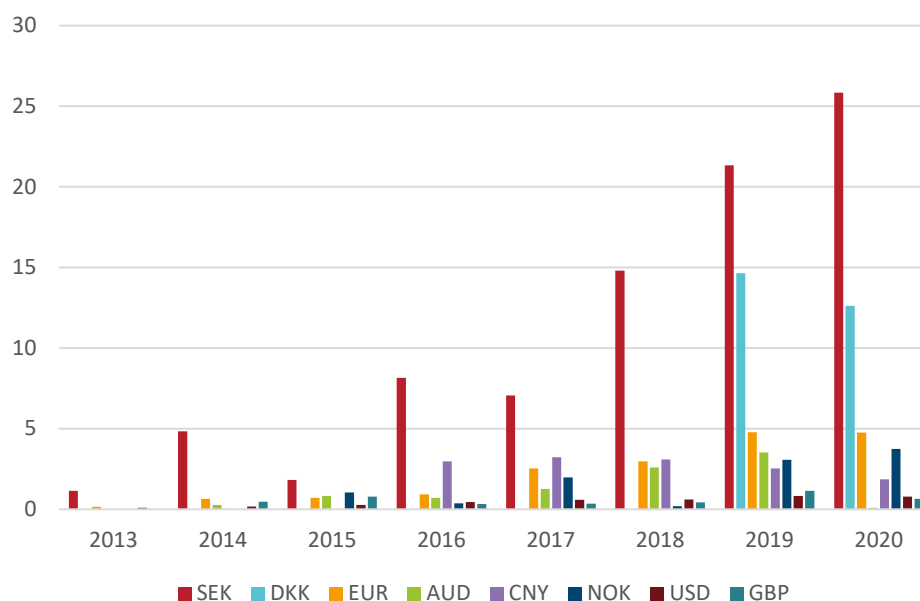
The Swedish market for green bonds is large even in absolute figures, in an international perspective. The Swedish krona was the fourth largest currency for issues of green bonds in 2019. The market for green bonds in Swedish krona is thus only smaller than the market for green bonds in EUR, USD and CNY.

<sup>32</sup> The Swedish market for green bonds is defined here and in Chart 2 as the green bonds that have been issued in Swedish krona. Another way of defining the Swedish market is to use only issuers located in Sweden, regardless of which currency the bonds are denominated in, which is used further down in the text in connection with Chart 3. Basing the definition on the currency means, with regard to the Swedish market, that more bonds are included. During 2019, green bonds were issued in Swedish krona to a value of SEK 103 billion, while green bonds were issued in Sweden to a value of SEK 91 billion. The main reason that more green bonds are issued in SEK than are actually issued in Sweden is that there are a number of supranational banks based in other countries that issue green bonds in Swedish krona. In addition, there are foreign companies with some activities in Sweden that have also issued green bonds in SEK. Some of the green bonds issued in Sweden are denominated in another currency than Swedish krona. These currencies are EUR, USD, NOK and AUD.

<sup>33</sup> The green bond in DKK in 2020 was also issued by the World Bank.

**Chart 2. Share of green bonds of the total bond volumes in SEK and a selection of other currencies**

Per cent, 2013 – 30 Sept. 2020



Source: Dealogic

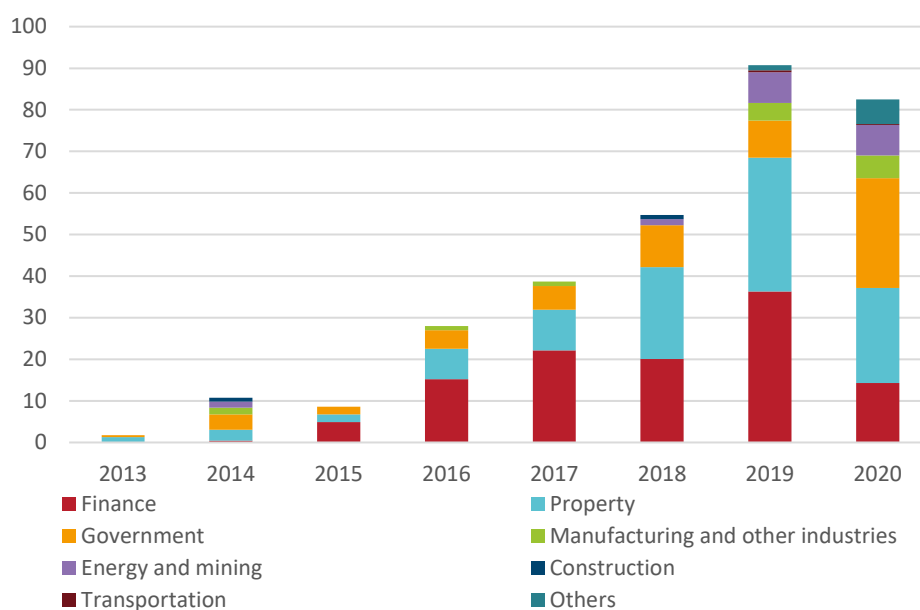
Note: Refers to green bonds issued in the respective currency regardless of geographical placement of actual issue.

As in global terms, growth in green bonds in Sweden has been very strong since 2013 (see Chart 3). The first to issue a green bond in Sweden was the City of Gothenburg, closely followed by Vasakronan property company. These were the world's first green bond issued by a city and first green corporate bond respectively. Since then, the market for green bonds has been dominated by financial companies, property companies and municipalities/regions as issuers. It is only in recent years that issuers in other sectors have become common. During the past year, for instance, companies in the industrial, energy, transportation and telecommunications sectors have issued green bonds.

As mentioned earlier, the Government of Sweden has also become a new type of issuer of green bonds in Sweden. So far this year, the first sovereign green bond in Sweden, which was issued on 1 September, accounts for a large share of the total issue volumes of green bonds in Sweden. The issue amounted to SEK 20 billion.

**Chart 3. Issue volumes of green bonds in Sweden, broken down by sector**

SEK billion, 2013 - 30 September 2020



Source: Dealogic

Note: Includes green bonds issued in Sweden regardless of currency. Sector breakdown according to Dealogic's Company General Industry Group, and then aggregated for certain sectors. For the Swedish market, this means: Manufacturing and other industries (Auto/Trucks, Forestry & Paper, and Machinery), Energy and mining (Utility & Energy and Mining) and Others (Computers & Electronics, Consumer Products and Telecommunications)

## Green bonds pave the way for increased transparency in climate-related information on the fixed-income market

This survey shows that the market for green bonds has grown substantially in recent years. There are many indications that this development will continue, partly thanks to the EU's sustainable finance agenda and the increased interest in promoting green projects, which leads to increased demand for green bonds. However, going forward, there are some aspects on the continued development of the market for green bonds that it is important to illuminate.

**One aspect is that it will be even more important going forward to have good access to climate-related information.** Here we are not thinking just about the issuers' reporting back to investors on how the amount issued was used, but also the issuers' reports on how they manage and integrate climate-related risks and opportunities into their business models. An important part of assessing credit risk is to look at the issuer's capacity and ambition to change its activities, that is, the transition risk – and thereby financial risk – that the issuer is exposed to. Just as for traditional bonds, investors in green bonds have claims on assets in the issuer's entire balance sheet. To enable investors to measure and assess the credit risk for green bonds – as for traditional bonds – the issuers thus need to disclose their climate-related risks and opportunities. Disclosure in line with the TCFD's (Task Force on Climate-related Financial Disclosures) recommendations and the Commission's guidelines on reporting climate-related information make this possible.<sup>34,35</sup>

<sup>34</sup> See TCFD (2017) and the European Commission (2019).

<sup>35</sup> TCFD was created in 2015 by the Financial Stability Board, with the task of increasing transparency regarding climate-related risks and opportunities. To this end, the TCFD has developed voluntary recommendations for companies. The idea is for them to disclose how climate change affects their operations and how they manage their climate-related risks and opportunities. An important part of this is



**Another aspect is the need for clear and common definitions of what are green and what are brown projects.** This makes it easier not only for those who issue and invest in green bonds, but is also significant for other parts of the financial system. It creates better conditions for banks and other financial and non-financial agents to quantify and assess climate-related risks. Work is currently under way in the EU on defining green activities. However, there is also an aim to define brown activities going forward.

In future, green bonds will probably pave the way for further transparency regarding climate-related information for investments in the fixed-income market. The new normal will then be that investors demand information about to what extent a bond finances climate-friendly and environmentally-friendly investments – and this regardless of whether it is green or traditional.

Better access to climate-related information and clear and common definitions of green and brown activities are a necessary condition for investors to be able to allocate capital more effectively from brown to green activities and thereby support a transition to a less fossil-based economy. In a broader perspective, it is also a necessary condition for all participants in the financial sector to be able to effectively measure, price and manage their exposures to climate-related risks.

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