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METHODS

Increasing importance for green bonds with an increase in global warming

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Global warming has affected the whole world negatively as it is experiencing uncertainty in weather. It is the long-term warming of the Earth's climate system that has been seen since pre-industrial times (between 1850 and 1900). Human activities and the combustion of fossil fuels contribute to global warming by increasing heat-trapping greenhouse gas levels in the Earth's atmosphere. Although the phrases are commonly interchanged, the latter refers to both man-made and natural warming, as well as the consequences for our world. It is generally calculated as the average increase in the Earth's global surface temperature. To save mother earth and to save themselves from the negative impacts of global warming, many countries have started taking initiatives of which green finance is one. Many countries have started issuing green bonds. The bonds are issued to raise money to be used in climate and environmental projects. This manuscript aims to define the importance of green finance for the world's environment. It will describe how the term green finance emerged and the status of different countries within it. The manuscript is based on secondary data only, collected by accessing various online sources.

Keywords: green finance, green bonds, global warming, climate

1. Introduction

According the Intergovernmental Panel on Climate Change (IPCC), "All the pieces of evidence present on global warming show that due to change in climate, the net damage costs are possibly to be consequential and will rise over time." Scientists are pretty much sure about the increase in temperatures globally in the coming 10 years, and the main reason behind it is greenhouse gases emitted by human activity. There are over 1,300 scientists in IPCC, and they are from the United States and other countries. These scientists predict that in the next 100 years, there will be an increase of 2.5–10 degrees Fahrenheit (1).

In this scenario, the importance of green finance or green bonds is increasing worldwide. When an organization issues debt security to finance or refinance projects that benefit the environment and/or the climate, it is termed a green bond. Therefore, it is also known as a climate bond. To qualify, a bond must meet certain criteria for the use of proceeds, as well as have a procedure for project evaluation and selection, effective administration of any proceeds, and detailed reporting.

The United States, China, and France are the most prevalent countries to issue green bonds. Despite the fact that it only started buying corporate bonds in 2016, the European Central Bank now owns about 20% of all euro-denominated green debt, indicating that it sees this as a method to further its green agenda.

The below figure shows the share of different countries in the global green bond market.

Source: https://www.weforum.org/agenda/2020/11/what-is-green-finance/#:$\sim$:text=Green%20finance%20is%20any%20structured,the%20US%2C%20China%20and%20France

1.1. Brief history of green bonds

In 2008, the World Bank first issued green bonds for institutional investors. Green bond issuance amounted to

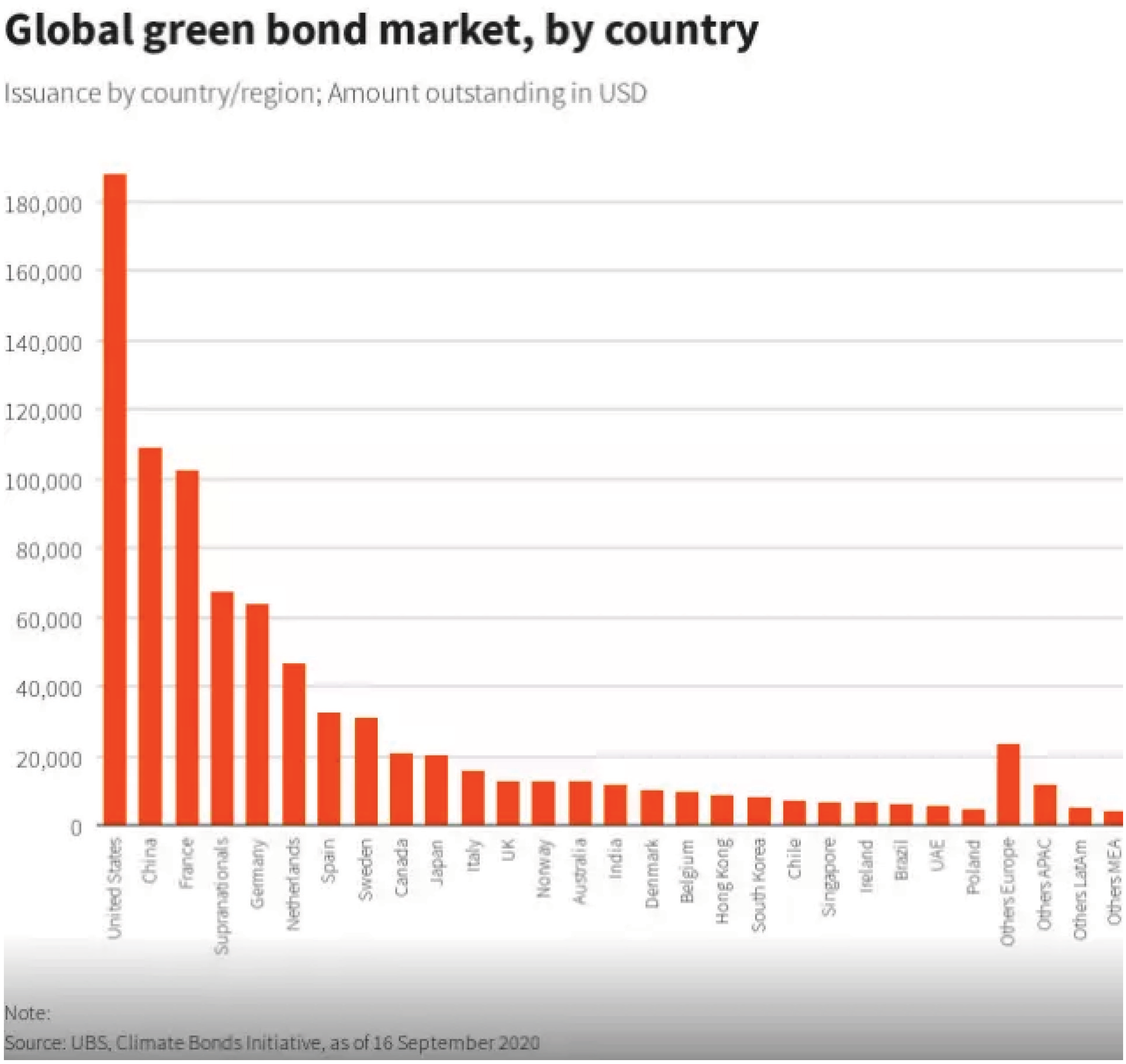

FIGURE 1 |

only $2.6 billion in 2012. Green bonds began to sprout in 2016. Chinese borrowers accounted for $32.9 billion of the total, or more than a third of all issuances, accounting for much of the activity. However, there is a global interest, with the European Union and the United States among the leaders. According to the most recent Moody's report, green bond issuance reached a new high in 2017, accounting for $161 billion in global investment. Growth slowed slightly in 2018, reaching $167 billion, but rebounded the following year, thanks to a more climate-conscious market. Green bond issuances hit a new high of $266.5 billion in 2019, and nearly $270 billion the following year (2).

1.2. Real-world example of green bonds

One of the major issuers of green bonds is the World Bank, which has issued $14.4 billion in green bonds since 2008. The funds raised through the issuance of green bonds were used to hold up to 111 projects across the globe, out of which the prime focus was on renewable energy and efficiency (33%), clean transportation (27%), agriculture, and land use (15%) (2).

1.3. Types of green bonds

There are various categories of green bonds. The below figure shows all the categories of green bonds:

Source: https://www.climatebonds.net/market/explaining-green-bonds

2. Review of literature

1. The health of living beings can suffer as a result of global warming. High blood pressure and heart disease can be the results of stress caused due to overabundance of heat. Global warming has its direct impacts on land in the form of crop failures and draught. This in turn can decrease the protection

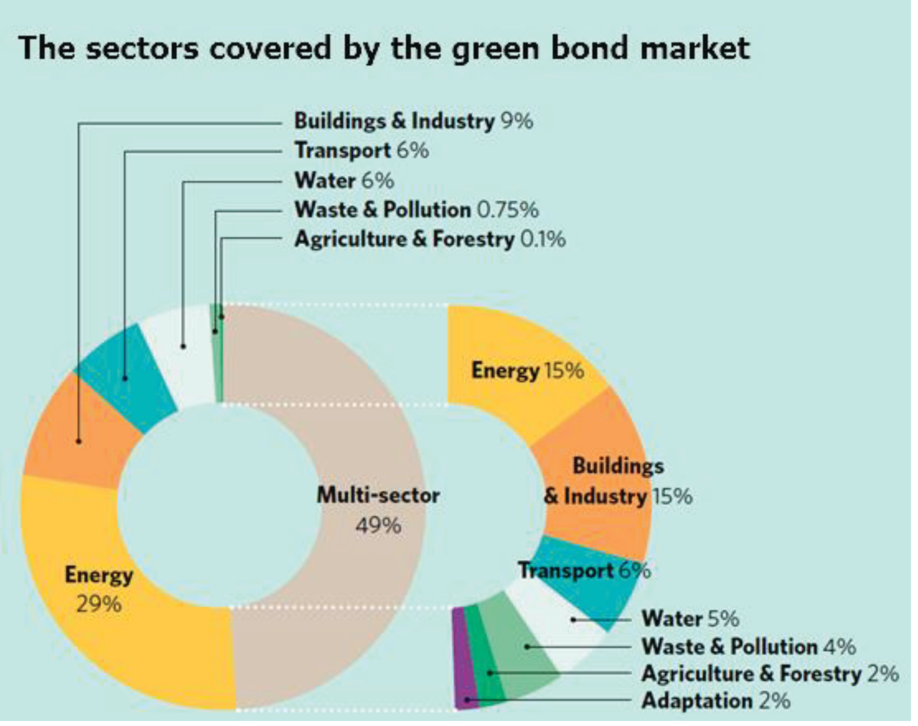

FIGURE 2 |

ability of the human body against viruses and infections. Global warming can also transmit numerous diseases due to the relocation of people from those areas where the temperature is high to those areas where the temperature is comparatively low (3).

2. Green credit and green finance are used interchangeably. When research and development activities are carried out by commercial banks and various financial institutions to get the results on the facilities that can be used for pollution treatment, it is termed green finance. It also includes administrative activities related to the protection and renovation of the environment. The research and development activities done by green finance issuing organizations include the expansion and employment of new energy resources, a focus on circular economic production, and the manufacturing of green and ecological agricultural products (4).

3. Green finance has attracted attention in the recent consensus for environmental protection, climate change action, and the achievement of the United Nations Sustainable Development Goals by 2030. The other terms interchangeably used for green finance are "sustainable finance," "environmental finance," "climate finance," and "green investment." During the G-20 11th meeting that was held in Hangzhou, China, in the year 2016, green finance was the only center of attraction, and hence it was widely publicized and discussed. Different interpretations of green finance reflect the form of the approach that is important to the researcher, resulting in differences in understanding and interest in green finance (5).

4. The financial services sector makes a significant contribution to the global economy. With the help of traditional lending, financial facilitating, and a variety of intermediary functions and investor roles, banks play an important role in the development of businesses and the facilitation of the economy. However, it is a well-known fact that industrialization endangers the environment. As a result, many companies' economic activities are harmful to the environment, threatening environmental sustainability. As a result, banks have taken on social responsibility by pledging to support a viable economy and the progression to a green financial system (6).

5. To protect the environment in a viable manner, the need to reduce the environmental harm caused by fossil fuel emissions has led to calls for divestment from fossil fuel activities and a shift toward investing in low-carbon projects and activities. This call has both national and international implications. Many countries, including Canada, Japan, Mexico, and the United Kingdom, have issued policy statements to raise citizens' awareness of the negative effects of fossil fuel emissions on the climate, as well as the associated climate change risks. At the international level, countries have signed the Paris Agreement, which is a legally binding international treaty on climate change mitigation (7).

6. "Green" finance is a new financial concept that combines environmental conservation and financial gain. It is a logical complement to the concept of sustainable development, which is supported by 170 countries, according to the UN. Renewable energy and energy efficiency, pollution

Types of green bonds

Type	Proceeds raised by bond sale are	Debt recourse	Example
"Use of Proceeds" Bond	Earmarked for green projects	Recourse to the issuer: same credit rating applies as issuer's other bonds	EIB "Climate Awareness Bond" (backed by EIB); Barclays Green Bond
"Use of Proceeds" Revenue Bond or ABS	Earmarked for or refinances green projects	Revenue streams from the issuers though fees, taxes etc are collateral for the debt	Hawaii State (backed by fee on electricity bills of the state utilities)
Project Bond	Ring-fenced for the specific underlying green project(s)	Recourse is only to the project's assets and balance sheet	Invenergy Wind Farm (backed by Invenergy Campo Palomas wind farm)
Securitisation (ABS) Bond	Refinance portfolios of green projects or proceeds are earmarked for green projects	Recourse is to a group of projects that have been grouped together (e.g. solar leases or green mortgages)	Tesla Energy (backed by residential solar leases); Obvion (backed by green mortgages)
Covered Bond	Earmarked for eligible projects included in the covered pool	Recourse to the issuer and, if the issuer is unable to repay the bond, to the covered pool	Berlin Hyp green Pfandbrief; Sparebank 1 Bolligkredit green covered bond
Loan	Earmarked for eligible projects or secured on eligible assets	Full recourse to the borrower(s) in the case of unsecured loans. Recourse to the collateral in the case of secured loans, but may also feature limited recourse to the borrower(s).	MEP Werke, Ivanhoe Cambridge and Natixis Assurances (DUO), OVG
Other debt instruments	Earmarked for eligible projects		Convertible Bonds or Notes, Schuldschein, Commercial Paper, Sukuk, Debentures

FIGURE 3 |

prevention and control, biodiversity conservation, circular economy initiatives, and sustainable use of natural resources and land are examples of "green finance" projects. Estimates of funding requirements vary, but they are substantial. Ukraine's total needs for developing a "green" economy, according to the German think tank DIW Econ, amount to at least 200 billion euros. According to the International Power Energy Agency, a total investment of $53 trillion in the energy sector alone is required by 2035 (8).

7. The stream of contemporary finance targets environmental viability and the interests of the participants. It includes any actions that have a major positive impact on the environment and assures the environmental system's security and protection for future generations. Green finance encompasses actions such as lending money for environmental projects at lower interest rates than the market rate, borrowing capital through green bonds, forestry securitization, weather derivatives, nature-linked securities, using e-payment services, using electronic vehicles, and all other practices that aid financial activities by reducing natural resources or generating new sources (9).

3. Objectives of the study

This study aims to understand the importance of green finance concerning increasing global warming. The concept of green finance or green bonds will motivate companies to fulfill their corporate social responsibility. This manuscript discusses if green finance will be able to accomplish the objective of saving the climate and mother earth from the increasing negative impacts of global warming.

4. Research methodology

Research methodology means the type of research design used to write a manuscript; in this manuscript, the method or design that is used is descriptive. This type of design is based on secondary sources. Therefore, in this manuscript, data are collected using secondary sources.

5. Research gap

Several studies have been done so far on global warming and green finance/bonds. While reviewing the available literature, it was found that no study has been done on the topic of this manuscript. This study was done on a global level. Therefore, there is scope for further study in a particular country.

6. Future of green bonds

Green bond growth has been ferocious in the capital markets, and it is progressively garnering investor interest. We have observed a shift in attitudes toward sustainable investing for a variety of reasons. Investors are becoming increasingly aware of the risks that climate change poses to their portfolios, and they are starting to report on them through platforms like the Task Force on Climate-related Financial Disclosures.

Stakeholders are also pressuring the investing community to adopt stronger environmental, social, and governance regulations. Green bonds address some of the changes in the new landscape. They give investors a place to engage in ethical behavior while also influencing bond issuers' commercial objectives.

They provide a mechanism to hedge against the danger of climate change, while obtaining equivalent, if not superior, returns on investment. As a result of the rise of green bonds and green finance, high-carbon-emitting projects are inadvertently disincentivized. According to climate bonds, the green bond market grew at a 49% annual rate in the 5 years leading up to 2021, and the annual issuance might reach $1 trillion by 2023. The progress of green bonds has influenced the development of other branded bonds, such as social bonds.

7. Conclusion

Looking at the current status of green bonds across the globe, it is concluded that the scope of green bonds is wide. The world has started understanding the seriousness of the negative impacts of global warming on the climate. Hence, countries are taking initiatives in issuing green bonds. The market for green bonds has grown tremendously in recent years. In the coming years, the green bonds market can grow bigger than other investment avenue market.

8. Suggestions

The green bonds market has not gained importance like the equity market or crypto market. Many countries are still falling behind in issuing or investing in green bonds. There is a need to create more awareness about green bonds. Countries should encourage companies to develop more green projects and issue a high volume of green bonds. Green bonds should also be accessible to retail investors by making their trading as easy as equities on stock exchanges.

9. Findings

The below figure shows the worldwide investment of green bonds in different sectors. The highest investment (49%) is done in multisector, whereas 29% of investment is done in the energy sector. The sectors that have experienced the least importance are water, waste and pollution, and agriculture and forestry. There is a need for investment in these sectors to resolve issues related to them, especially waste and pollution, as waste composition is still one of the biggest problems in countries like India.

Companies need to fulfill corporate social responsibility, but governments should also ensure the protection and conservation of mother earth. Countries like the UK, Australia, India, Denmark, UAE, Brazil, Ireland, Chile, Poland, and many others that are lagging behind need to increase the issue of green bonds.

Source: https://www.weforum.org/agenda/2016/08/here-s-why-the-green-bond-market-is-set-to-keep-growing/

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