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STRIDES – A STUDENTS' JOURNAL OF SHRI RAM COLLEGE OF COMMERCE
ISSN 2581-4931 (PRINT)

Shri Ram College of Commerce is well known for its academic excellence and dedicated approach towards dissemination of knowledge in the academic world. The college appreciates the role of research in education and is committed to developing an inclination towards research in both faculty and students. In this pursuit, the college has taken the initiative to launch a new Journal named 'Strides – A Students' Journal of Shri Ram College of Commerce'.

ABOUT THE JOURNAL

It is a double blind reviewed bi-annual Journal launched exclusively to encourage students to pursue research on the contemporary topics and issues in the area of commerce, economics, management, governance, polices etc. The journal provides an opportunity to the students and faculty of Shri Ram College of Commerce to publish their academic research work.

PUBLICATION POLICY

Shri Ram College of Commerce is committed to upholding the high academic standards. Therefore, the Committee On Publication Ethics (COPE) follows a 3-Stage Selection Process while approving a paper for publication in this Journal. The policy is as follows:

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To maintain high academic standards, academic ethics and academic integrity each research paper received by COPE (Committee On Publication Ethics) is sent for screening of plagiarism on "Turnitin". The committee adheres to the maximum tolerance limit of 25%.

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The journal adheres to a rigorous double-blind review policy. Each research paper received by COPE is sent for review to the *Referee* (Subject Expert). The reports submitted by the *Referees* are sent to the respective students for improvement (if any, suggested by the *Referees*). After reporting all the suggestions recommended by the *Referees*, the revised and improved version of the papers are re-submitted by the students to the COPE.

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The following guidelines are to be carefully adhered by the students before final submission of the manuscript. The submitted manuscripts not conforming to the following guidelines are not taken into consideration for any further processing.

Format

Format of the article on the front page should be:

a) Title
b) Name(s) of the student(s) and mentor along with their details
c) Abstract
d) Keywords

Abstract

The abstract should capture the essence of the article and entice the reader. It should typically be of 100 -150 words, and in Italics.

Font type and word limit

The research paper is to be typed on A-4 size paper with single line spacing. The complete length of the paper should not exceed 5000 words including endnotes and references. The font size should be 12 and font style should be Times New Roman.

Referencing style

The Journal adheres to the APA (American Psychological Association) Referencing Style, Sixth Edition. Students must refer to the APA Referencing Guidelines to ensure conformance to this reference style. For further information you may visit the following link - http://www.apastyle.org

Endnotes

Endnotes should be serially arranged at the end of the article well before the references and after conclusion.

Table, Figures, Graphs

The first letter of the caption for table, figure, graph, diagram, picture etc. should be in capital letter and the other words should be in small letter - e.g. Table-1: Demographic Data of Delhi, Figure-1: Pictorial Presentation of Population etc.

MANUSCRIPT SUBMISSION GUIDELINES

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Hard Copy: The hard copy (3-Sets) of the manuscripts should be submitted in the Administrative Office of the College.

Declaration

As part of the submission process, the student and mentor needs to declare that they are submitting original work for the first publication in the Journal and that their work is not being considered for publication elsewhere and has not already been published elsewhere. Again, the paper should not have been presented in any seminar or conference. The scanned copy of duly signed declaration by the students and their respective mentors has to be emailed along with the research paper.

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The student(s) remain the whole and sole author of their respective research papers published in 'Strides – A Students' Journal of Shri Ram College of Commerce' and hold its copyright. Also, the 'author' is wholly and solely responsible for plagiarism caught after publication (if any). The Editor, Referees, Mentors, COPE, SRCC, Printer, Publisher and Printing Press shall not be responsible for any plagiarism.

AWARD

The authors of best three papers from every Issue are awarded – First Prize, Second Prize and Third Prize on the SRCC Annual Day.

Principal's Message

The mission statement of the college signifying the existence and its road map to the achievement of its vision, reads as:

"To achieve and sustain excellence in teaching and research, enrich local, national and international communities through our research, improve skills of alumni, and to publish academic and educational resources"

To achieve and promote excellence in publications and applied research, the college has taken the initiative to launch a new journal exclusively to publish students' research papers and articles. It will be an add-on to the enriched catalogue of college publications and academic literature.

The Journal has provided an opportunity to the students of our college to focus on research. Since the students were not opened to the research methodologies at the undergraduate level, they were mentored by experienced faculty of our college. Simultaneously, their articles were also reviewed by the referees and tested for plagiarism before publication. After reporting all the suggestions recommended by the referees, the articles were revised and then finally published. The college had successfully released the foundation issue of the Journal **"Strides - A Students' Journal of Shri Ram College of Commerce, Volume 1, Issue 1, 2016-17"** on the occasion of 91st Annual Day of the College held on 13th April, 2017. The Journal was released by **Shri Prakash Javadekar, Honb'le Union Minister of Human Resource Development, Government of India.**

I would like to congratulate the students whose papers are published in this issue of the journal and simultaneously encourage all the students to contribute their research papers and articles for the successive issues of the Journal.

Best wishes for their future endeavors.

Prof. Simrit Kaur
Principal

Editor's Message

Shri Ram College of Commerce is well known for its academic excellence and dedicated approach towards dissemination of knowledge in the academic world. The college appreciates the role of research in education and is committed to developing an inclination towards research in both faculty and students. In this pursuit, the college has taken the initiative to launch a new Journal named 'Strides - A Students' Journal of Shri Ram College of Commerce' to encourage students to pursue research under the guidance of the faculty of Shri Ram College of Commerce.

It is a bi-annual Journal launched exclusively to publish academic research papers and articles by the students on contemporary topics and issues in the area of commerce, economics, management, governance, policies etc.

In order to maintain the high standards of publication, COPE (Committee On Publication Ethics) has been constituted. The COPE shall be the apex authority to take all the decisions related to the publication of research papers and articles in Strides. The decision of COPE shall be final and binding.

To maintain the high academic standards, academic ethics and academic integrity, a rigorous process of double blind review of research papers is followed along with screening of plagiarism of each manuscript received by the COPE for publication. The research work published in Strides is original and not published or presented at any other public forum.

The foundation issue of the Journal **"Strides - A Students' Journal of Shri Ram College of Commerce, Volume 1, Issue 1, 2016-17"** was successfully released on 91st Annual Day of SRCC held on 13th April, 2017 by **Shri Prakash Javadekar, Honb'le Union Minister of Human Resource Development, Government of India.**

The successive Issues of 'Strides - A Students' Journal of Shri Ram College of Commerce' shall be bi-annually released.

I congratulate all the students whose research papers are published in this Issue of Strides and express my sincere thanks to their mentors and referees.

Dr. Santosh Kumari
Editor

STRIDES - A STUDENTS' JOURNAL OF SHRI RAM COLLEGE OF COMMERCE

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RESEARCH PAPERS

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Redressing Climate Changes: The Green Bonds

ABSTRACT

The paper studies the potential of green bonds in mobilising funds for financing the climate change and various benefits available for investors to invest in climate bonds market. An analysis of ongoing market trends and key sectors and agents involved in facilitating the flow of market is presented. The results highlight emerging economies still struggle and lack public support in green bonds market. There are many impediments which restrain the overall development of this market, including lack of aggregations mechanisms, relevant framework and risk profile. In order to overpower such barriers, some policy measures have been discussed from demand, supply and general side.

KEYWORDS:

climate change, green bonds, developing economies, public agents, market development.

Mentor:
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Assistant Professor
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OVERVIEW

Mounting temperature, shrinking glaciers, depleting natural resources, retreating ice sheets, burgeoning incidences of droughts, accelerated rising of sea levels, stronger and much-intensified heat waves and all the other considerable inimical climate alterations on earth highlight what a formidable catastrophe we might have to confront due to this meltdown. The global climate crisis has already seen many observable adverse implications on the environment and a report by IPCC (The Intergovernmental Panel on Climate Change) draws attention towards a temperature surge of around 2.5-10 degrees Fahrenheit over the following century owing to immense greenhouse gas emissions. The net damage costs of such crisis are likely to be significant and would escalate eventually. Energy, being lifeblood to all sectors, amounts for 70% of the emissions from burning of fossils and it is high time for transmogrifying from current energy system to a more sustainable and renewable energy-based regime. Electrification of transport and espousing a circular economy that solicits curtailments in waste and demand for energy is the need of the hour but petitions trillions of dollars of investment. The sheer enormity of these deepening concerns cannot be accommodated by mere taxes, subsidies or any such regulations. An estimate by 'Bloomberg New Energy Finance' in 2015 insinuates that in order to keep the globe below the 2 degrees Celsius projection would demand over 12 trillion dollars auxiliary to huge sums imperative to conform to deleterious conditions. Furthermore, OECD, 2017 report alleges that USD 93 trillion would be necessitous for infrastructural investments in the coming 15 years for a low- carbon future. In this paper, let us explore the source of such a tremendous amount of funds, its effectiveness, the market for such a solution, what might be the impediments in growth of this market, followed by a set of plausible measures which can be undertaken by the public sector.

LITERATURE REVIEW

This paper pertains to various strands of the financial literature which consider social and environmental aspects. Sharfman and Fernando, 2008; Chava, 2014 report examines the lower cost of capital been documented for firms which have better environmental risk management and greater environmental performance. Also, few papers including Hachenberg and Schiereck (2018) have explored the assessment of price of climate bonds and identified compelling evidence that green bonds are priced in a significantly unusual way as compared to ordinary bonds. Even though climate bonds are a contemporary setting, the study fits into the available literature on socially responsible investing. Renneboog, Ter Horst, and Zhang (2008) survey highlights that a subset of investors is willing to meet social objectives and thus accept lower financial performance and trade-off higher returns on other investment opportunities.

In order to promote green bonds, the Climate Bonds Initiative was also set up to mobilise the USD 100 trillion bond market for finding a solution for climate change.

It is an investor-focused not-for-profit organisation operating internationally. It focusses on helping drive down the cost of capital to support governments seeking investments in the capital market and for large-scale climate and infrastructure projects to attain environmental goals. Much of the data has been taken from reports published by the entity to analyse the recent development in the market for such bonds and various bottlenecks restraining its growth.

Another strand of literature recognizes the need of the public sector to play a crucial role in the evolution of the bond market. However, there are divergent views on this public intervention. While some experts believe mainly private actors drive the growth with limited government role, other stakeholders examine public sector to play a larger role. Against this background, the paper examines a wide range of key impediments in growth and few potential policy measures to address them through public intervention.

1. Financing the way out of Climate Variability

In the wake of truancy and inefficacies in a global carbon pricing system, bond markets play a pivotal role in financing initiatives to channel funds in environmentally amicable motives while concomitantly raising awareness and sensitivity towards environmental risks. Among all the instruments of sustainable finance, green bonds exemplify the most promising and budding market-based solution. In this section, let us see what exactly qualifies as a green bond and the benefits it derives an investor of a green project.

Green bonds are those securities whose proceeds are explicitly designated and earmarked to be employed for environment- friendly projects or business activities. They stimulate the flow of funds towards sustainability and climate-related matters. In basic terms, they are just like a conventional debt instrument with a key difference in its usage to endorse green projects financially. Also titled as climate bonds popularly, they are generally asset-linked and banked by the balance sheet of the issuing body. In a broad sense, the avenues of investment for green bonds incorporate all the green projects which are aimed at a whole lot of following eco- friendly operations:

- Renewable and sustainable sources of energy like solar or wind energy
- Clean or pollution-free transportation
- Sustainable water management
- Effective waste management

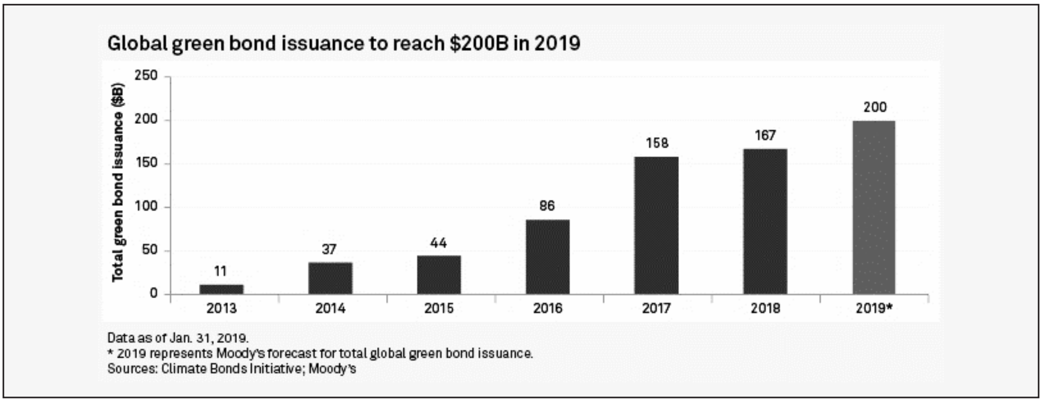
- Contamination control
- Energy potency
- Biodiversity conservation
- Climate change adaptation
- Nature-based assets including land utilization, sustainable agriculture, forestry and fishery
- Industry and energy-intensive commercial
- Cultivation of ecologically pure technologies

This class of financial obligation fosters and strengthens the eminence and public goodwill of the issuer on account of an exhibition of commitment towards comprehensive sustainable development. Due to subsistence of the "green angle", it additionally opens up the window of opportunity for enticing investors globally who seek just green ventures. It has something to do with the fact that pro-environmental inclinations and other non- pecuniary drivers induce investors to hold onto the green assets. Consequently, the issue of green bonds is likely to mitigate the cost of capital as an elevated demand for such bonds from investors lowers the borrowing costs. On the investors' standpoint, minimized expenses of borrowing means decreased expenditures which descend to investors in the guise of dividends and declining operational costs for bonds or ETFs (Exchange-Traded Funds). Furthermore, they stipulate tax incentives like exemptions and tax credits for financiers with a feeling of personal complacency that comes from the conviction that their funds are being applied towards favourable causes and in a responsible and positive manner. Overall, a green bond engenders monetary impetus to tackle conspicuous environment-related concerns and encouraging a move towards sustainable energy sources by investing in them. Substantiation by third parties such as the 'Climate Bond Standard Board' is indispensable to authenticate the green bond status.

Besides the public sectors, the corporate world is also progressively and gradually moving towards the use of corporate green bonds for mobilising their finance requirements. They are so tremendously in vogue now that the 'Morgan Stanley' cites this phylogeny as the "green bond boom". As an instance, Unilever issued almost £250 million worth of climate bonds in 2014 with the intention of cutting down the quantum of water usage, waste and greenhouse gas emissions by half of the prevailing factories. Similarly, as reported by Forbes, 2017, the American multinational tech giant, Apple, made green bonds of an estimated cost of 1 billion dollars publicly available for the sake of capitalising funds needed to encompass renewable and efficient energy within its supply chain and across its facilities. A fundamental concern for green-minded investors that whether the issuers would genuinely embark to keep the funds reserved for climate control or not remains largely due to the odious practise of "greenwashing".

Simply stated, greenwashing denotes the act of making fallacious and uncorroborated claims with regard to the company's onus of doing well to the earth. For ensuring satisfactory incitements for boosting both the demand and supply side of the green bond market, policy intervention is apparently cardinal allowing enhancement of the market. Financial institutions also play a crucial role and have been one of the most dominant players in this market so far. In fact, banks minimize the lending to more polluting sectors, thus "greening" both the sides of its balance sheets up to some extent. Albeit various findings validate that there has been a persistent rise in the environmental scores, assessed by the ratings given by Thomson Reuters' ASSET4, of several companies accompanied by lessened CO2 emissions. Also, there has been an up rise in the filing of green patents lately indicating a push by investors towards amelioration in environmental footprint.

2. The Market For Climate Bonds

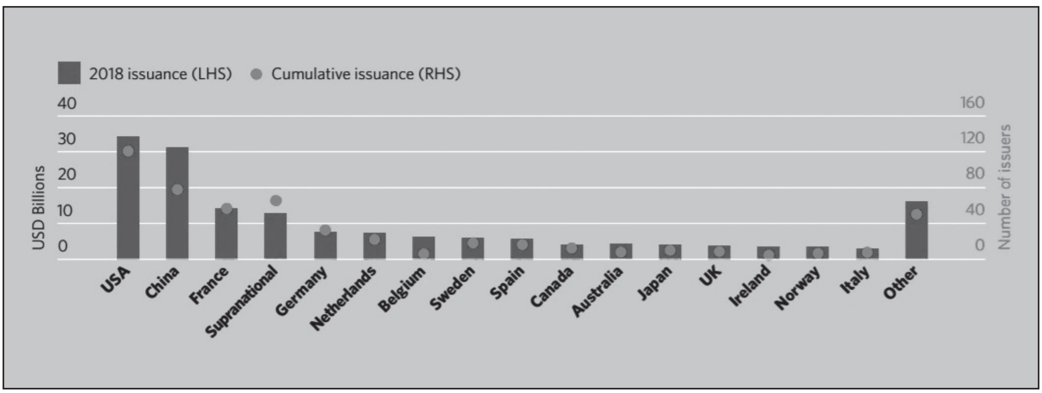


The green bonds embark its foundation from the year 2007 when it kicked off as an AAA-rated issuance from EIB (European Investment Bank) as well as the World Bank. It acquired its momentum and rose to prominence with the issue of first USD 1 billion worth of green bonds in March 2013 by the supranational issuing body, International Finance Corporation. Eventually, corporate bodies too stared engaging in this market and French utility EDF and Vasakronan, the

Swedish property development corporation, were among the first to commence the issue of corporate bonds. As a matter of fact, voluntary guidelines have also been formulated by a consortium of investment banks in 2014 for the proper regulation of the market. These guiding principles, termed as the "Green Bond Principles", take into consideration basic four elements, precisely, the use of proceeds; the process of evaluation of projects undertaken for environmental purposes; management of such proceeds obtained from bond issue; and reporting and disclosing such proceeds and project so financed.

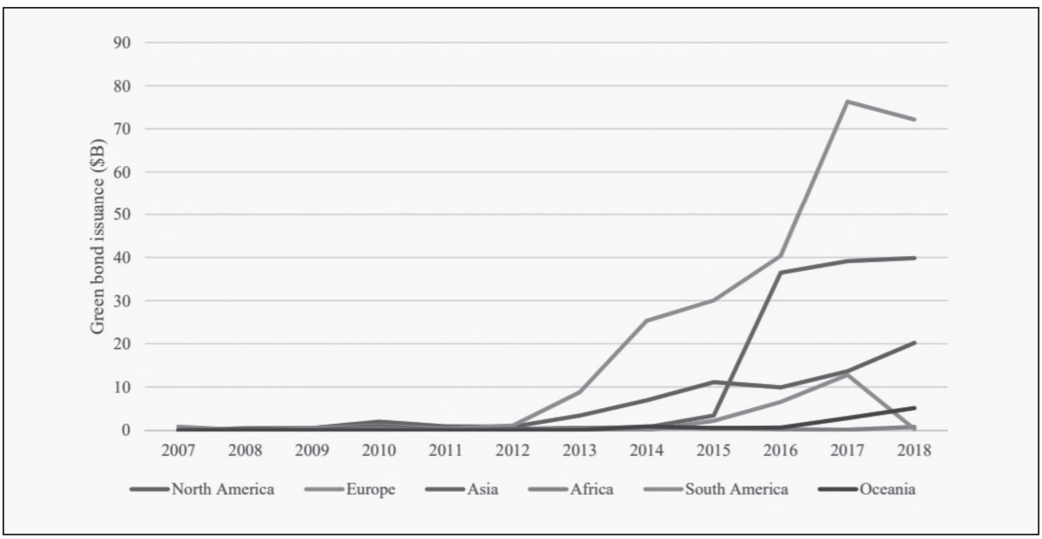
The adjacent figure portrays total dissemination of climate bonds initiating from the year 2013 till the projection for the year 2019 in billion dollars. Accounting for just a pint-sized fraction of the entire bonds market, the green bond market has grown exponentially over a couple of years. It was virtually negligible in 2012 but heightened in 2017 by growing at a terrific rate of 78 per cent from last year and attaining $158 billion valuations globally.

Since its incipience, large volumes of green bonds are being traded at an increasing rate and the potential of proliferation of the market remains gigantic de facto Moody's reckons it to reach over USD 200 billion worldwide in 2019 by burgeoning at a rate of almost 20% despite the sluggish demand in the past year where whole bond issuance dwindled around the world. This is chiefly owing to higher active participation from nonfinancial corporations, robust investor demand for greener and more sustainable investments and greater push by governments on addressing climate variation- related issues. Having said that, now let us take a look at the largest contributing economies at a global scale.



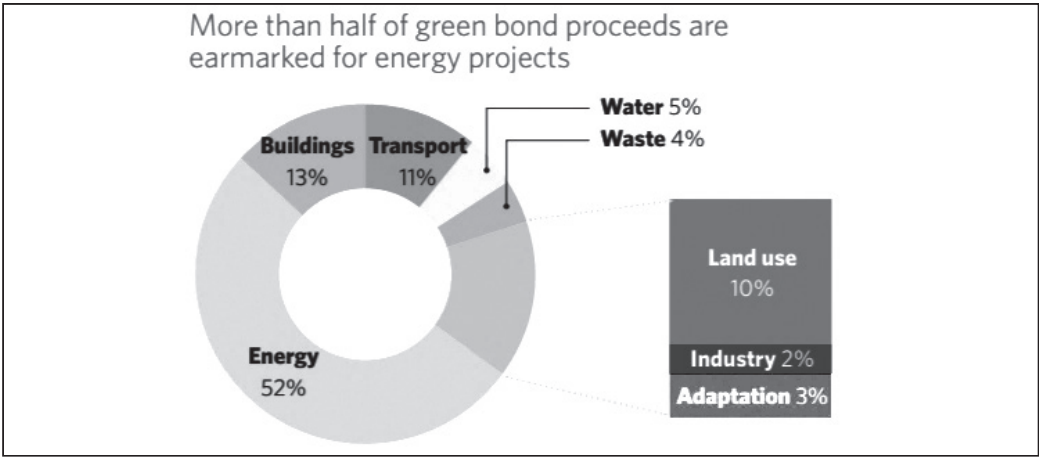
This type of debt instrument presents a prospect for financing long- term and sustainable infrastructure. At the commencement of green bonds issuance, only a few multilateral development banks like World Bank, the European Investment Bank, etc. entered into this market to carry out transactions. Steadily, it picked up its pace and spread to commercial banks, institutional investors and a couple of corporations. The aforementioned figure outlines the biggest issuing economies as of 2018 in concordance with the report published by Climate Bonds Initiative. The United States of America being the grandest contributor holds 20% of the market share with green bonds valued over $34 billion. In 2018, near 63 issuing bodies actively participated in the market from the USA. Federal National Mortgage Association, popularly referred to as Fannie Mae, is a US government-sponsored enterprise which remained the most prominent issuer not just in the USA but worldwide with proceeds above 20.1 billion dollars. The USA was followed by China that garnered 18% market share amassed by its 69 issuing entities. A fair share in enabling China to grow out as the second-biggest issuer of green bonds was contributed by the Industrial Bank with bonds worth USD 9.6 billion. With about 8 per cent of proportion in the entire market and institutes like the Republic of France that catered to green investors pooling roughly around 6 billion US dollars, the Western European country – France turned out to be a herculean economy which issued climate bonds valued at over $14 billion.

A majority of developing nations are not yet included in this booming market of mobilising proceeds for climate finance as still have a long way to go for implementing mitigation and adaptation projects. Nonetheless, a magnifying number of emerging economies are incrementally penetrating in this market. 2018 saw issuance from 8 new markets inter alia Iceland, Portugal, Thailand, etc. amounting to USD 3.3 billion. An incredible fact is the year saw 130 of repeat issuers from the preceding annum which were instrumental in contributing up to 63% of volume worth USD 106 billion.



Observing the following figure, in accordance with the statistics disseminated by Bloomberg, confers an evident demonstration of the evolution of these bonds from their origin in 2007 to 2018 regionally throughout the world. Europe dominates all the other areas as the issuance has mushroomed perpetually since 2013 on a massive scale. Also, remarkable progress has been exhibited by the largest continent – Asia in the recent years by means of a stark growth in 2016 from a mere marginal development in 2015.

Climate Bonds Initiatives alleges that as of today, green bonds predominantly enrich the renewable energy sector granting 52% of its accumulated proceeds to investments in this division. 13% and 11% of the collected funds are allocated to expenditures in low- carbon buildings and transport sector mutatis mutandis. Another essential sector for which 10% of funds are earmarked is sustainable land use. It has been emphasized over the last 2 years, especially with the issuance of bonds from the pulp and paper industry in Brazil. In the emerging markets, sustainable agriculture, fisheries and forestry are the chief sectors that green investors desire investing in. Even pension funds and insurance companies are fast entering into this source of finance by diversifying their portfolios triggering demand for climate bonds to rise rapidly. In compliance with global commitment to transform into low carbon and sustainable economy, the market for such bonds will keep on ascending by alluring diverse investors and issuers.



3. Principal Actors in the Market of Green Bonds

The core players in investments for environmentally friendly ambitions involve:

- Issuers such as financial institutions, municipalities, corporations and supranational entities who indeed are the borrowers of money so raised.

Their quality essentially signifies the credit risk of a given bond.

- Underwriters who supervise the public distribution and issue of bonds and operate jointly with issuing bodies to establish the bond- offering price.
- External reviewers to basically validate the “greenness” of the bonds and affirm the alignment of bonds with the set guidelines, composing of specialized consultants, certifiers and rating agencies.
- Other market intermediaries like stock exchanges which list the securities. Currently, 11 stock exchanges provide a platform for green bond issuance.
- Index providers, in particular bank and credit rating facilities, to design indexes for benchmarking the efficiency of bonds.
- Investors who finance green projects or invest in green assets covering banks, insurance companies, private investors, pension funds, etc.

Apart from these, policymakers, multi-stakeholder groups and civil society organisations also play a pivotal role in market development by imparting transparency in the whole system.

4. Critical Bottlenecks In Green Bonds Market

Regardless of immense potential in these form of bonds to cater to a significant proportion of climate finance by attracting multiple investors, this market is till now plagued by plenty of obstacles. They are relatively more challenging for the developing economies and despite their tremendous growth in recent times, the market share of green bonds is extremely small in comparison to the bond market in totality. In this section, let us investigate some of most principle impediments which torment this market from developing to its thorough potential.

4.1. Lack of Relevant Framework:

One of the greatest blockade in market development for climate bonds globally and nationally is a lack of any proper and uniform green bonds definition and structure. There is an urgency of drafting sound green credentials in order to benefit the environment. Right now, only Climate Bonds Standards and Green Bonds Principles form the basis of international frameworks employed to label green bonds but no adequate monitoring apparatus is available to safeguard the meeting of compliance. Given this, issuing bodies, such as financial institutions and companies, may find it tricky to label certain assets as eligible for green projects which would ineluctably restrain them in issuing green bonds. Inexistence of any penalty arrangements like an obligation to buy back bonds due to default in purpose for which green bonds were issued or forfeiture of any tax benefits available, etc. might also suppress willingness of financers to invest in green assets.

Moreover, missing common standards can drive up higher transactional costs as issuers have to depend upon external reviewers for examining the credentials of green labelled bonds due to lack of clarity in regulations.

4.2. A Dearth of Aggregation Mechanisms:

Another challenge faced by the market is paucity in the formulation of suitable aggregation mechanisms, suchlike ABS (Asset-Backed Securities) or covered bonds, as green projects are commonly small-sized in relation to the conventional infrastructure investments. In reality, a huge segment of bonds issued is commonly miniature for large institutional investors who appreciate investing in higher bond values with issuance sizes of 200 million to 1 billion dollars deals. Much of energy efficiency and renewable energy funding projects are lesser in size and often fragmented leading to discouragement among financers. Presence of aggregation mechanisms can ensure the reach of assets accessible for investments to the large investors. As a consequence of a dearth of these mechanisms and models, even cash flows may be unstable and underlying contracts and projects are not normalised.

4.3. Inadequacy of Green Bonds and Projects Pipelines:

Even though the issuance of climate bonds has risen enormously over the past few years, supply is still very meagre. The investor demand for such bonds is quite strong but continues to transcend supply dramatically. Bonds released some of the eminent financial institutions like European Investment Bank of KfW – a development bank in Germany, are generally oversubscribed by a multiple of 5 or 6. This situation also prevails in case of corporate issues by large entities and several regional government bonds. The market falls short on viable and bankable projects for financing for climate change which is desirable for raising funds through bond issuance. There is no as such transparent and well-drafted strategic project pipeline by governments on national or regional levels that are instrumental in building a positive and conducive environment for mobilising private sector investors. On the other hand, even the investors have limited capabilities due to which government authorities remain dubious of the fact that whether the sponsors would be willing to offer their capital for funding some projects. This inevitably creates a vicious circle. Investors need to be enlightened to know the positive implications of green bonds and issuers should be stimulated to diversify their portfolios for tapping resources from green bonds issuance.

4.4. Poor Market Knowledge and Information:

The market faces yet another detrimental scenario wherein market participants in a climate bonds market, especially of lesser developed economies, have confined and insufficient knowledge and acquaintance with green projects. Probable issuing entities are not able to assess green investments and requirements to raise funds from issuing such debt securities. Rating agencies, such as S&P and Moody's, normally have a tendency of awarding good credit ratings, a prerequisite for inducing investors – particularly large ones, only to investments with long records of performance and past issuers. This makes it intricate for new entrants with novel business models in the market to get higher ratings, thus constraining them to tap green bond markets.

Over and above this, investors may not be able to track the authentic influence of green projects they are investing in due to lack of transparency. Imperatively, forming annual reports for investors would enhance the information system.

4.5. Ambiguity in the Risk Profile of Green Investments:

The climate bond market is not established enough to integrate mature and advances technologies critical to assess related opportunities and risks associated owing to a paucity of sufficient historical records and confirmation of performance. Undeniably, this leads rating agencies and large institutional investors to measure the technology risk to be far greater for emerging green investments than the established sectors with past performance. For instance, DG CLIMA, in a study on climate investments, claimed that utility companies with a bigger share of traditional sources of energy in their energy mix obtained greater credit ratings than the ones with more renewable and eco- friendly energy sources. Green investments generally mitigate risks by countering climate alterations and mitigating other risks associated with the environment for the economy. But climate mitigation and adaptation impacts materialise in the long run, creating troubles for investors looking for a short term horizon. These long- term climatic trends are not taken into consideration or incorporated into their investment estimates. Since no proper risk calculation methods have been formulated, funding in proven fields as in case of oil and gas industry might appear to be less perilous than green investments from a short-run perspective.

5. Measures to Overcome Impediments in the Green Bond Market

For any unaccustomed bond market, public sectors play a vital role in engendering an enabling environment to assist dynamic growth. With a focus on alleviating the market from the key bottlenecks, they can utilise certain tools ordinarily used in general bond market and implement them in a more concentrated fashion to expedite particular green investments for the overall development of the climate bond market. This section attempts to provide some public measures that can help in dealing with the constraints in market development. These policy actions are studied as a measure related to the supply side and demand side of the market coupled with some generic measures that impact both the market forces.

5.1. Demand-Side Arrangements (linked to investments)

5.1.1. Strategic Public Investment in Green Bond

Government spending indicates a prominent signalling effect and private investments into the green bond market can be facilitated by setting an appropriate example by the state. This is because it denotes the fact that public agents reflect the bond to be as a credible and reputable investment, enabling the reduction in first- mover and perceived risks for private sector financiers. By prescribing funding targets for green projects or modifying investment regulations to make green bonds more propitious, authorities can relocate inclination of public investors such as sovereign wealth funds, development banks and public pension funds from conventional bonds to climate bonds. For public institutes which already have decreed to issue decisions related to investment, administrative costs tend to be fairly low and where guidelines or rules are to be amended, these costs are moderate and occur only once.

This scheme works optimally for the lesser developed economies and new bond markets, wherein public agents can act as cornerstones for private investors for their more active participation. However, this measure is not that effectual developed markets and markets where demand outweighs the supply of green bonds as is the case with most of the markets currently.

5.2. Supply-Side Initiatives (with regard to issuance)

5.2.1. Public Issuance of Climate Bonds

As mentioned earlier, the demand for green bonds presently outrun the supply significantly and there is a pressing need for public entities to kickstart the green bond market by strategic public issuances. It can engage many investors by demonstrating the functioning of this asset class, thereby incentivising private actors to tap this form of market. The key players in this regard can be national governments, international and national development banks, cities, provinces and public utilities. Administrative costs are lower for large public entities and financial institutes which are already familiar with this process of the issue but comparatively higher for smaller public bodies or new entities. Thus, growth of the market can be encouraged by public issues, effective promotion and enhancing knowledge about the green bonds market.

5.2.2. Credit Enhancements

In nascent stages of the market, issuing bodies are not able to obtain satisfactory ratings crucial for investments from private investors, primarily large institutional investors. To combat this predicament, public financial institutes should reinforce good credit ratings by absorbing some portion of risks in these investments, portraying the bonds to be financially competitive. To do so, loan guarantees at project financing stage can be done, financial insurances can be provided to cover principal and interest of bonds by these entities. Additionally, to compensate investors, in case policy that formed the basis of investment decision is altered, policy risk insurance schemes can be formulated.

5.2.3. Assistance in Aggregation and Securitization

Green projects in smaller denominations are unattractive for large investors, as stated earlier, leading to higher costs of capital for such projects. Public financial bodies and financial regulators can effectively mitigate this concern. They need to step in to support securitisation and aggregation mechanisms for building bonds that address the needs of investors with regard to volume as well as diversification of risk portfolio, thus lowering the costs and enhancing project pipeline. Warehousing, which involves aggregation of loans or cash flows underneath a unified entity called a financial warehouse, allows packaging of loans to be issued in the form of asset-backed securities. For the purpose of securitization of loans, new green loans should be standardised by direct assistance from public sectors to existing market efforts financially. Furthermore, offering preferential lending rates can induce the inception of standardised loans to finance green projects. This proved beneficial in Mexico where local and international development entities partnered to offer a minimal rate of interest to fund sustainable homes. Green covered bond is yet another tool to stimulate market development as it benefits investors by providing them access to long- term funding at low costs and risks involved due to the presence of high-quality underlying assets.

5.4. Other Considerable Measures

5.3.1 Tax Incentives

Abatement of taxes for both issuers and investors can facilitate their active role in market development by making green bonds more appealing than traditional bonds on which taxes can be increased. Since supply is way too less than demand, currently target should be on bond issuers by tax alterations and subsidising the issuance. Tax- credit bonds, on which investors gain tax credits instead of payment of interest; tax-exempt bonds, on which no tax is applicable on interest; and direct subsidy bonds, which entail direct financial support from the government on interest payments, are substantial strategies which can be employed by finance ministries in this respect.

5.3.2. Establishing Relevant Frameworks

As discussed before, the biggest problem with further market development is the inexistence of pertinent frameworks and green bonds definition. Presence of harmonised standards would mitigate transaction costs, consequently raising demand and supply of green bonds. Financial regulators, ministries of finance, public entities and municipalities can be key actors in this. Compliance, transparency, stimulation of cooperation between various stakeholders and mandating accounting and disclosure requirements can help in the attainment of the overall green bonds market.

CONCLUSION

Present and future generations face a daunting challenge due to climate change which impersonates an existential threat to all communities and ecosystems throughout the world. This calls for a gargantuan amount of funds and a significant market-based solution to mobilise funds for the welfare of the environment seems to be the use of green bonds. The market for these bonds is growing steadfastly owing to elements like increasing climate awareness, similar maturity yields as compared to conventional bonds and tax benefits. The market for climate bonds initiated in 2007 and has been growing ever since with a projected 200 billion dollars capitalisation by 2019. Issuing entities, underwriters, external reviewers, investors and other intermediaries are key agents in the market for green bonds. This paper also attempts to note the reasons why despite tremendous growth and rising global commitment for being environmentally friendly, the share of climate bond market still remains considerably low. Lack of appropriate frameworks, concern for good credit ratings and paucity of aggregation mechanisms are few of the impediments in this regard. The paper also demonstrates that the public sector role is crucial for combating such bottlenecks. It outlines public investment, public issuance, standardisation and aggregation mechanisms, credit enhancements and other tools that can be employed by the public entities. Both the nation's efforts and private solutions are prudent for overall market development. The need for addressing climate variations is imminent and green bonds provide an effective front-line response from the financial markets which ought to be availed.

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HISTORY OF THE JOURNAL

The idea to launch this Journal was discussed in December 2016 by the former Officiating Principal, **Dr. R. P. Rustagi** with **Dr. Santosh Kumari,** the Editor of the Journal. Since the idea appealed to **Dr. Santosh Kumari**, she took the initiative to contribute to SRCC by creating this new academic research Journal and took the responsibility for its Creation, Registration, License and ISSN (International Standard Serial Number) etc. along with *Editorship*. Therefore, **Dr. Santosh Kumari, Assistant Professor in the Department of Commerce, Shri Ram College of Commerce** was appointed as the Editor of the Journal vide. Office Order – SRCC/AD-158/2017 dated March 14, 2017. She meticulously worked hard in creating the concept and developing the structure of the Journal. She introduced the concept of COPE (Committee On Publication Ethics) to maintain the high academic standards of publication.

On behalf of SRCC, **Dr. Santosh Kumari** made every effort in seeking License from Deputy Commissioner of Police (Licensing), Delhi to register the Journal at "The Registrar of Newspapers for India, Ministry of Information and Broadcasting, Government of India". The paper work for seeking license started under the former Officiating Principal, **Dr. R.P. Rustagi** on March 27, 2017. The foundation Issue of the Journal "**Strides – A Students' Journal of Shri Ram College of Commerce, Volume 1, Issue 1, 2016-17**" was successfully released on the 91st Annual Day of SRCC held on April 13, 2017 by **Shri Prakash Javadekar, Honb'le Union Minister of Human Resource Development, Government of India**. The title of the Journal got verified and approved by the Registrar of Newspapers for India, Ministry of Information and Broadcasting, Government of India on April 21, 2017. On September 1, 2017, **Prof. Simrit Kaur** joined SRCC as Principal and signed each and every legal document required for further processing and supported **Dr. Santosh Kumari**.

On December 18, 2017, the College got the license "**License No. - DCP / LIC No. F. 2 (S / 37) Press / 2017"** to publish 'Strides – A Students' Journal of Shri Ram College of Commerce'. Due to change of Printing Press, the License got updated on March 09, 2018. On April 26, 2018, the SRCC Staff Council unanimously appointed **Dr. Santosh Kumari as the 'Editor of Strides**' for the next two academic years.

On April 27, 2018 (The Foundation Day of the College), **Dr. Santosh Kumari** submitted the application for the registration of the Journal. On May 04, 2018, the SRCC received the '**Certificate of Registration**' for ***"Strides – A Students' Journal of Shri Ram College of Commerce"*** and got the **Registration No. DELENG/2018/75093** dated May 04, 2018. ***On behalf of Shri Ram College of Commerce, it was a moment of pride for Dr. Santosh Kumari to receive the 'Certificate of Registration' on May 04, 2018 at the Office of Registrar of Newspapers for India, Ministry of Information and Broadcasting, Government of India (website - www.rni.nic.in).***

On May 07, 2018, **Dr. Santosh Kumari** submitted the application for seeking ISSN (International Standard Serial Number) at "ISSN National Centre – India, National Science Library, NISCAIR (National Institute of Science Communication and Information Resources). Weblink - http://nsl.niscair.res.in/ISSNPROCESS/issn.jsp". Finally, the College received the International Standard Serial Number "**ISSN 2581-4931 (Print)**" **on June 01, 2018.**

We are proud that this journal is an add-on to the enriched catalogue of SRCC's publications and academic literature.

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