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GREEN FINANCE FOR SUSTAINABLE DEVELOPMENT: A BIBLIOMETRIC REVIEW OF CURRENT STATUS, DEVELOPMENT AND PROSPECTS

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ABSTRACT

This research paper is a theoretical review of work on green finance and is supposed to probe into the prominence of green finance in the arena of sustainable development and environmental protection. There is an overview of concepts, mechanisms, products, services of green finance along with the prospect of it. This paper put major consideration to the development of market mechanisms and formulation of policies through key drivers explained for policymakers. An attempt is made to eradicate contradictions between business demands and environmental issues in the context of green finance. Several measures are proposed essentially for the good accomplishment of ecological balance and objectives of green finance.

Keywords: *Green Finance, Green Finance Mechanism, Green Bond, Climate Finance, Sustainable Development.*

Introduction

In this era where humans are struggling with their environment in the context of pollution and other atmospheric disorders, business organizations must have the responsibilities towards the turbulences aroused by human activities both commercial and personal. Humans are impounding all types of resources for business expansion and technological advancement which in return hampering the environmental properties. It is time to wake up and think about the solutions and measures to counter the negative outcomes of these advancements(Mohd Saleem, 2013). In this context, environmentalists and educationists emphasize the concepts of financing which promote environmental protection and ensure sustainable development. Further, there is a need to cut finance availability to such projects which may be harmful to sustainability. Environmental disorders and sustainability have got comprehensive attention globally and as a result, world leaders have an accord on it. Financial development has been an important determining factor for further advancement and it must be decided based on global environmental issues.

Green finance is a mechanism that syndicates financing and business with an environmentally friendly attitude of its stakeholders including consumers, manufacturers, investors, and financial financiers. Unlike old-style financial actions, green finance stresses the natural environs advantages and gives more consideration to the environmental protection business. For two reasons, as of now, there is no particular and established definition of green finance. First, various concerned organizations did not attempt to outline the term, for example, neither Spratt and Griffith-Jones (2013) norIFC (2013) comprises a definition of green finance, and secondly, the proposed definitions differ pointedly. Few established definitions in the literature are following:

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- Höhne / Khosla / Fekete / Gilbert (2012) explained green finance as “a broad term that can be referred to financial investments flowing into sustainable development projects and initiatives, environmental products, and policies that encourage the development of a more sustainable economy. Green finance includes climate finance but is not restricted to it. It also refers to a wider range of other environmental objectives, for example, industrial pollution control, water sanitation, or biodiversity protection”.
- Zadek and Flynn (2013) supposed green finance is a notion which often used interchangeably with green investment. Though, in practice, green finance is a broader idea including more than investments as defined by Bloomberg New Energy Finance and others.
- Price water house Coopers Consultants (PWC) (2013) considered it as “in context of the banking sector, green finance is defined as financial products and services, under the consideration of environmental factors throughout the lending decision making, ex-post monitoring and risk management processes, provided to promote environmentally responsible investments and stimulate low-carbon technologies, projects, industries, and businesses."
- Böhnke / Eidt / Knierim / Richert / Röber / Volz (forthcoming): say that "Green Finance" encompasses various types of investment or lending considering the ecological influence and boost environmental sustainability. Sustainable investment and banking is a key component of Green Finance, where financial decisions are based on screening and risk assessment in the context of environment to meet sustainability norms."

In academics, the study of green finance is more apprehensive with simple conceptualization and green finance mechanism, market research and exploration are some of the dark sides. Based on the literature reviewed previously, the development of green finance, problems connected with it and policy will be highlighted. From the market and policy perspective, this paper is supposed to reconnoiter and disclose how green finance will help to obtain and sustain the objectives of ecological balance.

Need For Building Green Finance Ecosystem

This paper is supposed to analyses the facts due to which a study is to be carried out for a deep understanding of green finance and its need. Deteriorating environmental conditions, excessive exploitation of natural resources, excessive emission of toxic and harmful gases, and substances are some of the important factors which have propelled human thinking towards sustainable development. The Climate Change worries globally have further pushed the governments and leaders to draw a complete blueprint for green and sustainable power for all. The story of green finance could be traced back to the Cancun Agreements in 2010 where Green Climate Fund (GCF) was conceptualized. Under this agreement, developed countries are devoted to the aim of organizing together 100$ billion annually by 2020 to discourse the requirements of emerging countries. Major events like United Nations Framework Convention on Climate Change (UNFCCC), the Kyoto Protocol, Paris Agreement that come out to discuss environmental apprehensions, appealed for monetary assistance from rich countries to less capable and more vulnerable countries. It was proposed and expected to fulfill the objectives of “common but differentiated responsibility and respective capabilities”.

Intended Nationally Determined Contributions (INDCs) are national binding coordinators to match the targets adopted under UNFCCC. India has to reduce Green House Gases’ emissions under it, which involves climate financing. National Clean Energy Fund was created to promote clean energy. It is funded through carbon tax levied on industries for using coal. Further, it is entitled to fund research and development projects for innovations in clean energy technologies. Another important funding unit for climate-based projects is National Adaptation Fund. It was created in 2014 to bridge the gap between the need and the available funds. Clean Development Mechanism (CDM) consents to emission-reduction projects in emerging economies to produce certified emission reduction (CER) credits, each equivalent to one tonne of CO_2. Internal Programmes like Compensatory Afforestation Fund Management and Planning Authority (CAMPA), Disaster Management Fund, etc are also playing a crucial role in such kind of funding.

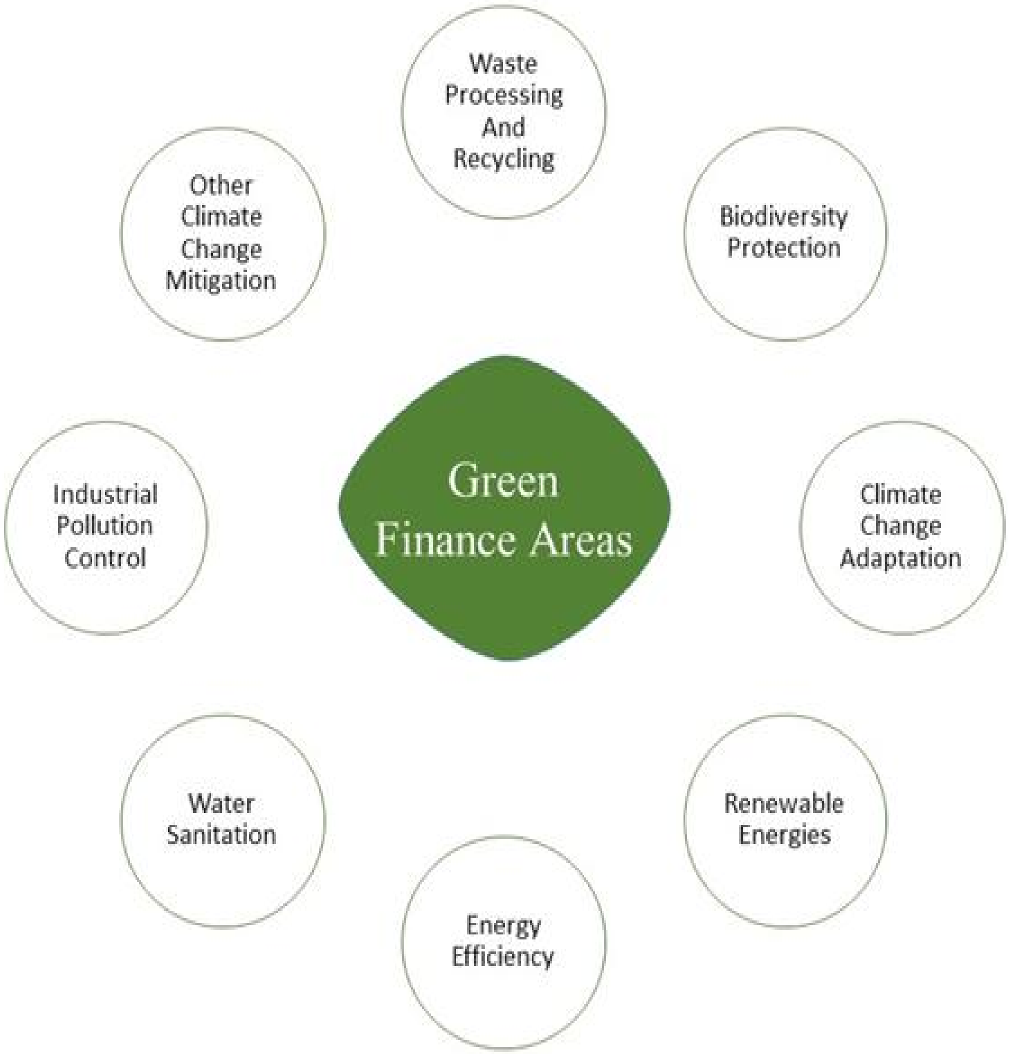

Figure 1: Green Finance Areas

The adverse effects arising from climate change are at present evident in erratic rainfall, escalating number of cyclones and their destructive capabilities, the surge in extreme weather events, glacier melting events. Humans are the main sufferer of climate change and its ill effects. But on the contrary, their mitigation and adaptation capabilities are very insufficient. Their efforts of survival heavily depend on climate finance. Green finance is an extension of the notion of clime finance on the part of individual governments, institutions, and global organizations. The responsibility is on the financing institutions to take measures so that eco-friendly projects must be supported in the form of financing and funding(MU Khan, 2013). Green or eco-friendly projects must not be understood by only solar or wind energy. There are globally appropriate domains to receive green financings such as water and waste management, pollution prevention, and control systems, sustainable land use, energy efficiency projects, green buildings, and clean transportation. For readers' reference, figure 1 is here to exhibit the areas awaiting for green finance to be used. Basically, through these areas, the core objectives of green finance are to be achieved.

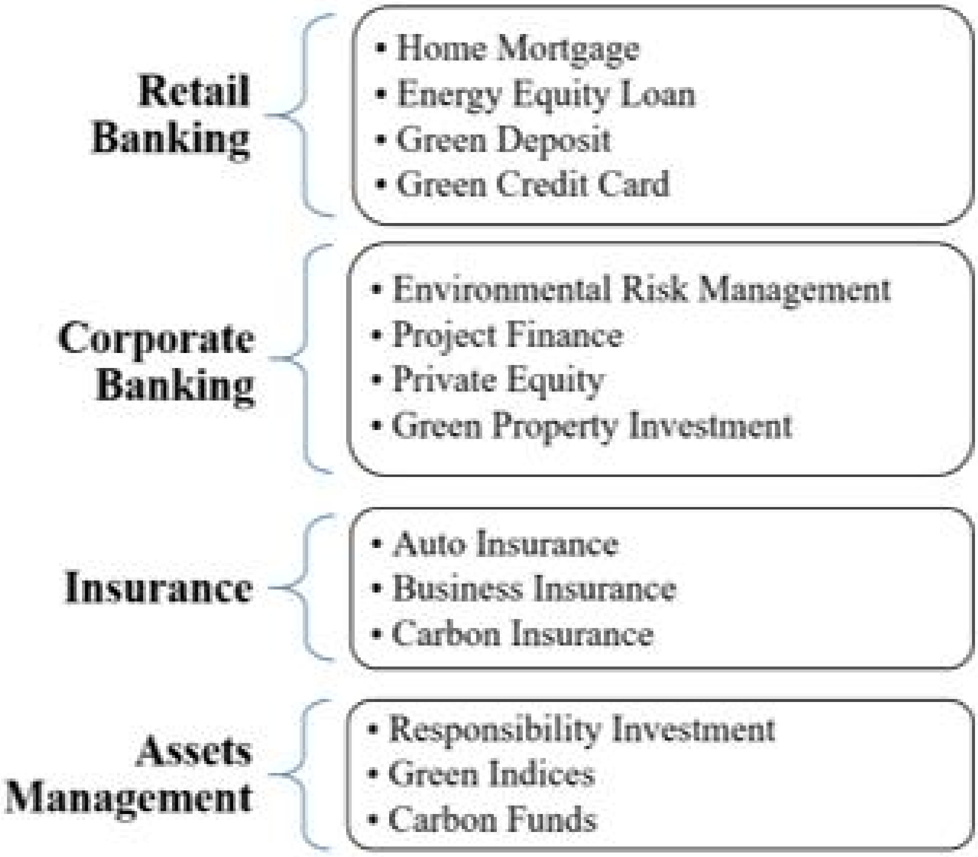

Figure 2: Categorization Of Green Finance & Its Products
Source: Author's Illustration

Market Mechanism and Products of Green Finance

Financial instruments are very crucial in delivering the objectives of green financing. Green finance is oriented towards sustainable development to curb toxic emissions into the environment(Saleem, 2018). Like other commercial domains, the green finance market comprises a market-based mechanism, products, and services. Green finance comprises several new age products such as ecological funds & bonds, weather derivatives, nature linked products whereas sustainable development is more concerned with ecological balances. This study is supposed to understand the green market's effects and influences on the environment. The green market is supposed to fulfill the role of intermediary between environmental protection projects and financial avenues. This environmental protection's funds effort encirclements the allocation to hoard and apportionment of funds and commands the capital shortage of businesses. Further, this initiative will improve productivity. Figure 2 is representing different domains and products of green financing available to the public and investors.

- **Emissions-Trading Market Mechanism (Yao Wang, 2016)**

Yao Wang suggests the establishment of an emissions trading market. This should come across3key premises. Firstly, the total volume of emissions trade off in the region; secondly, provision of permission for tradable amount; lastly, market information sharing among emissions trading stakeholders. Furthermore, emissions trading market formation comprises the operation focus, transaction process and management and regulation of the market, etc.

- **Green Bonds: Gateway for Environment-friendly Investment**

At present, green bonds are assisting companies to mobilize money from specialized funds dedicated to sustainable development, climate change, and ecological balances. A green bond is a blended form of both "bonds" and "green" features. Green bonds are like ordinary bonds with the same functionality and characteristics like the cost of issuance, secure rate of return to investors, tax benefits properties but the fund raised through these funds to be disbursed on renewable energy and sustainable green projects. This is the green aspect of these bonds which makes them unique in comparison to ordinary bonds. The Institutional Investors' Group on Climate Change has attracted 120 FIIs (Foreign institutional investors) from 9 nations to come together. Apart from this, the United Nations' Principles for Responsible Investments has over 1,500 signatoriesinstitutions.IMF, International Finance Corp., and ADB, as well as Sovereign funds like GIC, Abu Dhabi Investment Authority are organizations that are proactively directed funds to green sustainable schemes. These international financial giants are of the view that the world must understand the philosophy of "growing responsibly" and henceforth they are committed to investing to cut the influence of ecological imbalances in the form of global warming, climate change, and so on(Yao Wang, 2016).

- **Green Bonds in India**

The green bonds were allotted in 2015 first time in India. The green bonds market is still emerging. An encouraging &translucent regulatory atmosphere will reveal the full prospective of strategies to green finance in India, further which will be helpful to the country for accomplishing its objectives to Paris Climate Accord. If we have a look at overall fundraised through bonds by India, it is $6 billion approximately. Comparatively, China is much ahead in issuing green bonds with a 22% share, trailed by the US (13%) in the $120 billion global markets. The expectations are bullish on green bonds as the issuances of a green bond in Asia are expected to go beyond $600 billion in the coming five years. Green financing will be in demand from global investors and it is in the interest of India to progress for a full-bodied green financing system.

Key Elements for Policy to Impact on Green Financing Decisions

The emergence and progress of the conservational industry desire lots of direct investment. Such projects have an extended payback cycle that's why the conservational industry is required to have its distinctive financing route and practices. The appropriate policies of green finance will simplify the funding blockage that the government experience to some extent jointly with reform and innovative financial tools. The policies must look forward to innovative products in the existing financial instrument portfolios and reforms are another important aspect that is equally a game-changer(Dr. Danish Ather Dr. Matloob Ullah Khan, 2021).

- **Polluter Pays**

This principle is the basis and guiding document for green financing. The "*Polluter Pays*" principle is the universally accepted exercise that says that those who pollute, must bear the prices of handling it to avert the reparations to human health or the environment. This principle formally known as the Rio Declaration1992, emphasizes most of the directive son pollution to land, water, and air. It has also been functionalized more precisely to the emissions of greenhouse gases causing climate change. Policymakers should have considerations of it while preparing policies.

- **Common but Differentiated Responsibility and Respective Capability**

Anorminside the United Nations Framework Convention on Climate Change (UNFCCC) known as "Common but Differentiated Responsibility and Respective Capability*",* recognizes the diverse competencies and divergent responsibilities of countries in focusing on climate change. The developed countries must have big responsibilities as they have already created pollution at large but under-developed or developing nations have just started the progress which producing emissions. This statement is the important guiding force for policymakers to frame policy.

- **Mandatory Disclosure Requirements**

Disclosure of climate-based risks undoubtedly will help to gauge the influences of climate change and may not be properly valued by financial marketplaces effectively without it. The Financial Stability Board's Task Force on Climate-related Financial Disclosures, therefore, applauds compulsory disclosure requirements for all including banks, insurance firms, asset managers, and owners. The transparency of climate-related jeopardies supports proper assessing of risks and apportionment of funds and propositions the base for "green macro-prudential regulation" and climate-related pressure analysis.

- **Green Credit Policy**

According to Fry (1995: 306), there are six categories of credit policy mechanisms, explicitly, subsidized rates for priority sectors, distinction rediscount rates, direct budgetary subsidies, credit floors, credit ceilings, and creation of specialized financial institutions. For climate projects, priority sectors need to be identified. The central bank plays a crucial role and it must use differential rediscount rates to incentivize commercial banks to offer loans to priority green sectors at lower loan rates. Banks must be motivated and empowered to extend credit to green project investment.

- **Central Banks as A Powerful Anchor**

In emerging economies, central banks and financial regulators are the most sophisticated and commanding community establishments. A conservational role of a central bank can be understood from the resilient influential positions hold by it in strategy agendas in a developing country. Integrating ecological sustainability in their methodical agendas in principle relates to all central financial regulators. Conveying a conservational command to central banks and monetary watchdogs maybe even resilient in emerging economies where environmental regulations are often not implemented or even unnoticed due to pathetic public institutions' lack of clout. Banks and financial institutions can commendably exercise their influence over private investment decisions through the power they had over the banks. Furthermore, financial market know-how and their transcontinental networks of central banks can support them to endorse "best practice" restructurings in the financial sector.

Conclusion:

Green finance is a new-fangled financial form intended for environment fortification and the achievement of sustainable consumption of natural resources. Green finance will guide the movement of funds and accomplish in effect management objectives of ecological risk mitigation, the finest distribution of environmental assets, and community resources if the market mechanism of green finance is balanced. The material directive of strategies will sidestep the information asymmetry phenomenon and determine the moral menace. There are some areas of concern to working upon for green financing promotion and acceptance.

- Firstly, the public sector must be supported in creating a supportive environment for green finance initiatives.
- Secondly, public-private partnership on financing mechanisms such as green bonds must also be considered as important because the PP model is an effective tool to promote an environmental cause.
- Thirdly, Community enterprises are a vital key player in any economic setup. So it has become more important to empower these enterprises through capacity building.

Green financing and its products can be encouraged from side to side effective alterations in key governing frameworks, harmonization of public financial motivations. Increasing green financing from different sectors is an important aspect and it must be promoted. Multi-sectoral involvement is the key to unlocking the potential of green finance. Positioning of civic segment funding decision-making with the conservational aspects of the Sustainable Development Goals, surges in investment in unsoiled and green expertise, financing for "viable natural resource-based" green markets and climate-oriented blue economy, improved use of "green bonds" are some of the key drivers for rapid and sustainable growth of green finance.

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