



# Green Finance: Opportunities And Challenges In India

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## ABSTRACT

We know that to achieve goals we should require sufficient fund i.e., finance. The Prime Minister of India in Cop-26 climate summit announced that India will attain net zero emissions by 2070. In order to meet these climate targets, countries like India will need approximately USD 1trillion in additional financing over the next ten years. Here, it is clear that India has need to extra finance to achieve above desired goals. Such needed extra finance known as GREEN FINANCE. Green Finance is to increase the level of financial flow from banking (micro credit, insurance and investments), from the public private and NPOs sector to sustainable development priorities.

A Key part of this is to better manage environmental and social risk take up opportunities that bring both a decent rate of return and environmental benefit and deliver greater opportunities. Green Finance is responsible for the financing of both public and private investment along with the preparatory and capital costs. Green Finance invested in various areas just like waste processing and recycling, climate change, adaptation renewable energy, water sanitations and other climate change mitigation. But various difficulties are to be seen in implementation of Green Finance. This paper try to study about opportunities and challenges in regard with Green Finance in India.

**Keywords:** Green Finance , Climate change, Sustainable Development, Green Investment, Green Bonds, Green Initiatives.

## INTRODUCTION

In present time climate change acts as a great threat to the environment. Every living thing are affected by climate change .Human, Birds, trees, rivers, mountains etc. all are disguised due to effect of climate change. We see in our society how climate change effect mainly human life we see that the age of child facing vision problems, young are facing various diseases like a high low blood pressure, diabetes, heart problems, asthma etc. These effects of climate change is on individual basis or familiar basis. But, we seen scary form of climate change as tsunami, cloudburst, floods, earthquake, volcanic eruption etc. on world basis. This natural disaster brought loss of lives, destroyed economic system and given on unforgettable pain to human life. Climate change is a great barrier in survival of human life and sustainable growth.

There is various reason of climate change out of which one most reasonable factor is excessive usage of fossil fuels. If the usage of fossils fuels continues at the existing level the temperature of our planet is likely to increase by 4 to6 degree Celsius above the pre-industrial level, which will prove detrimental to the human health, food production and can even threaten the survival of some communities and the biodiversity at large. Many government of world including India started to be cautions of this issue and have agreed to abide by and follow the path of sustainable development goals and the Paris agreement (adopted in 2015)

which states the global warming should be well below 2 degree Celsius and the countries should pursue efforts to limit the increase to 1.5 degree Celsius compare to pre –industrial levels.

In COP-26 climate summit the Prime minister of India announced that India will attain net zero emission by 2070. It means that India neutralised carbon emission by 2070. Really it will great achievement of India and world human. But how is it possible? So, to implement above objective/goals we should require sufficient fund to change the traditional technology with modern technology which reproduce less volume of carbon emission or zero carbon emission. In order to meet these climate target India will need large amount of fund / finance, that known as GREEN FINANCE in recent time.

Thus, GREEN FINANCE can be defined as “The strategic alignment of the finance sector to promote project which seek to achieve climate change mitigation, renewable energy advancement, low carbon emission, efficient use of resources and thus strive to achieve a greener economy at large”. There are three major constituents of green finance – financing of green investments, green finance system and financing public green policy.

Such green project can not only help to reduce the carbon emissions but also foster energy security and energy self-sufficiency in line with Sustainable Development goals and the Paris Agreement.

### **GREEN FINANCE INITIATIVES IN INDIA**

The first ever strategic step taken in this direction by government of India was the signing of international solar alliance with France on 1<sup>st</sup> December 2015, the aim of which was to address the climate concerns by taking joint global efforts in this regards. Financing for green projects become more crucial for a developing country like India given the increased demand for energy due to high economic growth ,rapid industrialisation and urbanisation .Initiatives like Make in India and other smart city projects were also introduced in the country to scale up the required financing for such increasing consumption and production. India is expected to witness an addition of 600 million consumers of electricity by 2040, which will lead to a performed increase in the electricity demand. At present the government of India is primarily department debt fund for financing such green and renewable energy projects. According to the report of ‘Task force for creating National Infrastructure pipeline ‘ India is project to require infrastructure funding of 4.5 trillion dollar by 2040 mainly for green housing, electric vehicle and for achieving nation renewable energy targets.

The ministry of New and Renewable Energy [MNRE] was founded in 2006 which stands responsible for the task like research and development, promotion of intellectual property and promotion and coordination of renewable energy resources. Three types of incentives schemes prevail in the Indian context of renewable energy financing e.g., accelerated depreciation, viability gap funding and generation based incentive.

Accelerated depreciation is a tax-based incentive for the developers of the projects. Earlier introduced in 2009 mainly for wind projects and discontinued in 2012. It was reinstated in 2014 and now continues to drive the zeal of investment mainly for solar power projects.

Variability gap funding is a onetime grant for infrastructure projects which are economically justification but not financially viable meaning those projects which are necessary for the development of the economy as a whole but which may not be earning any profit in financing terms. Generation based incentives focuses on the actual generation of solar and wind energy rather than focusing only on the setting up of projects. It provides an incentive of INR2.00 each unit (KWH) of solar power generation and incentives of INR 0.50 for unit (KWH) of wind power generation.

In addition to these incentives, several other efforts have been made to establish new mechanism and institutions to accelerate the generation of green and clean energy in India.

### **Priority sector lending [PSL] recognition**

The Reserve Bank of India has labelled the sector of green financing and renewable energy as a ‘Priority Sector’ in April-2015. It was done to boost up the competitiveness of the Indian economy and to enhance employability. The guidelines stated that the banks ought to allocate 40% of their net credit or an amount equivalent to off-balance sheet exposure, whichever is higher for the priority sector like mills, solar power generation, street lighting system, micro – hydro plants and the bike. A positive trends in this direction

commenced years, the required finance was not flowing from the bank to such a crucial sector. This was mainly due to the including of 'renewable energy' within the term energy which resulted in a large amount of time flowing to the non-renewable energy sector. But, now some rationalised banks have increase their priority sector lending to housing, education and renewable energy.

## Green Bank

The first ever step in the direction of green bank was the conversion of 'Indian Renewable Energy Development Agency-IREDA' a non – banking financial company into a green bank in 2016. Green Bank refers to an institution which finances environment friendly practices and strive to reduce carbon emissions with the help of banking activities. IREDA was established with the aim of boosting clean and green energy and to mobilize the fund of the private sector of such projects.

Consequently, several banks have converted themselves into green banks. State Bank of India offers long term loans at concessional rate of interest to finances green projects and has launched 'Green Home Loan Scheme' for providing loan at concessional rate for residential projects which environment friendly. Bank of Baroda has initiated a eschewed for assisting the small and medium size enterprise in the acquisition of the required equipment and necessary. Measures to enhance energy conservation. Likewise ICIC bank has been able to provide the necessary finance for undertaking projects related to clean energy efficiency, missions and clean technologies

## GREEN BONDS

Green Bonds are those fixed income securities & which raising capital from investor through the debt capital market .A green bond differentiated from a regular bond by being Labelled' as green by the issuer Whereby a commitment is made to use the proceeds of green bond in a transparent manner and exclusively to finance or refinance green projects, assets or business activity with an environmental benefits Green bonds broadly classified into six categories:

- 1 Corporate bond
- 2 project bond
- 3 Assets backed security
- 4 Supranational, sub-sovereign and agency bond
- 5 Municipal bond
6. Financial sector bond

The first green bond in India first issued by YES Bank in 2015. Subsequent by IREDA launched its unique 5-year green bonds in 2017 which were named 'Green masala Bonds'. These bonds became the first to be listed on the international security market. According to a report by India crop Law Indian corporates have been able to raise nearly \$4.96 billion through such green bonds. Also Ghaziabad Nagar Nigam has become the first issuer of Green Municipal Bond in the year 2021. The report further states that India is the second largest emerging issuer of green bond after china. The successful acceptance of such green bonds depend on their risk perception by the investors, a stand0..ardized process and lucrative incentives for the issuers and the investors.

## Soft loans from IREDA

IREDA offers loans at concessional rate for several environmentally concerned projects. It gets its funding from international banks and other agencies. European investment Bank granted a long term loan of Euro 150 million for financing projects of renewal energy and World Bank extended 100 million dollar to IREDA for the construction and development of solar park. In addition to the soft loans, IREDA plays an agency role by engaging in the discounting of energy bills, providing credit enhancement facilities and the like.

Recently, IREDA has come up with some new schemes and policies- 'Loan against securitization of future cash flow of renewable energy project,' ' Bridge loan against generation based incentives scheme claims payable to renewable energy developers under ministry of new and renewable

energy scheme for GBI grid interactive wind and solar power projects . 'IREDA schemes for discounting of energy bill – for fostering a climate of green finance in our economy.

### **Crowd Funding**

Crowd funding, which basically implies many investors investing in a specific project via a pooled fund, has been successfully able to mobilize the required fund from the private investors in countries like Western Europe and North America. In India too, it is witnessing great popularity due to increasing awareness and use of information and communication technology. In India Bettervest and Sun Funder have been able to induce the needed investment for green projects. Bettervest is a Germany based crowd funding platform. It has invested in projects like 'Boond Engineering' and 'MeraGao Power' to strengthen renewable energy production and consumption in the rural India. Sun funder, which is based in Kenya, launched a 47 million dollar 'Beyond the Grid' fund in 2017, focusing on sub-Saharan Africa, India and the Pacific region. The aim of this fund is to bridge the gap between the demand and supply of reliable electricity and to provide debt financing to off-grid solar companies.

### **Green Mutual Fund**

Investment funds that pool money from multiple investors to invest in a diversified portfolio of green assets, such as renewable energy of company and sustainable infrastructure projects.

### **Green Private Equity and Venture Capital**

Investment firms that provide capital to start up and established businesses engaged in environmentally sustainable projects of technologies.

### **Impact Investing**

In impact investing investment are made with the intention of generating measurable social and environmental impact alongside a financial return.

### **Carbon Credit and offsets**

Financial instruments that represents the reduction or removal of one metric ton of carbon dioxide equivalent emissions, which can be purchased by individuals or organizations to offset their carbon footprints.

### **GREEN INVESTMENTS IN INDIA**

Green investment refers to allocation of financial resources to projects or companies that focus on sustainable practices, environmentally friendly technology and the conservation of natural resources. The soul of green investment is to support a beginner that contributes positively to the environment while generating financial returns for investors.

Green investment plays a crucial role in the transition to a low- carbon economy , helping combat climate change and promote sustainable development .These investment also have the potential to create new jobs, drive innovation and foster long-term economic growth.

Growth and international organisation have played a vital role in promoting green investments by establishing regulatory frame works, setting climate goals and providing financial incentives. Initiative such as Paris Agreement and the United Nations Sustainable Development Goals has further spurred the growth of green investment worldwide.

The demand of green investment has surged in recent years, driven of green investments has surged in recent years, driven by the increasing recognition of environment risks and the potential for sustainable development. However, the sector faces challenge such as the lack of standardized criteria for defining green investment, potential green washing and the need of more extensive disclosure and reporting. There are various areas where green investments are to be made:

### **Renewable energy**

- (a) Solar Power: Investment is solar energy projects including photovoltaic panels projects and concentrated solar power system.
- (b) Wind Power: Funding the development construction and operation of wind farms.
- (c) Hydro Power: Investing in hydroelectric power plants and small-scale hydro projects.
- (d) Geothermal Power: Financing the exploration, development and operation of geothermal power plants.
- (e) Biomass Energy: Supporting the production and utilisation of biomass for energy generation, including bio fuels and biogas.

## Energy Efficiency and Conservation

- (a) Green Building: Investing in the construction and retrofitting of building to improve energy efficiency and reduce environmental impacts.
- (b) Smart Green Technology: Fund the development and implementation of smart grid system to optimize energy distribution and consumption.
- (c) Energy Storage Solution: Supporting the development and deployment of energy storage technology such as batteries and pumped hydro storage.

## Sustainable agriculture and forestry

- (a) Organic Farming: Investing in agriculture practice that prioritize environmental stewardship and avoid synthetic pesticides and fertilizers.
- (b) Agroforestry: Financing integrated land-use system that combine trees with crops and lives stock production to enhance biodiversity and ecosystem services.
- (c) Reforestation and Afforestation: Funding projects that aim to restore and expand forest cover to forest cover to sequester carbon and improve ecosystem.

## Sustainable Transport

- (a) Electric Vehicles: Investing in the development, production and adoption of electric vehicle and charging infrastructure.
- (b) Public Transportation: Supporting the expansion and improvement of public transportation system to reduce greenhouse gas-emissions and traffic congestion.
- (c) Alternative Fuel vehicles: Financing the development and commercialisation of alternative fuels, such as biofuels and hydrogen.

## Waste Management and Recycling

- (a) Circular Economy: Investing in business that promotes the efficient use of resources, waste reduction and recycling.
- (b) Waste-to-energy technologies: Supporting the development and implementation of technologies that convert waste into energy such as biogas and incineration.
- (c) Pollution Control: Financing Projects and technologies that aim to reduce or prevent pollution, such as air filtration system and water treatment facilities.

## CHALLENGES TO GREEN FINANCE IN INDIA

### Present and Projected competitiveness:

Private investment in green growth in developing in green growth in developing countries is constrained by both the activity-specific and the country-specific barriers that adversely affect the attractiveness of such investment both in term of investment return and risk management. Increasing private investment in green growth will depend on exact to which these investments become attractive relative to other opportunities, both domestically and internationally. Because the international investor can look across different countries for opportunities, the government may need to implement a series of public interventions to make green investment opportunities more attractive.

### Mispricing and no pricing of risks

The overall investment and policy environment of a country contribute to its effectiveness in attracting private investors. The capital market in some countries is not effective in pricing the green growth-related risks. The extents to which the market misprices these risks or refuses to price them represent a barrier. In general, these risks include those associated with new technologies or processes that are not well understand and those related to the design, stability and transparency of domestic policies.

### Market distortions and short coming

A long as the subsidies for fossil fuel and the failure to internalize environmental externalities continue to distort the market price of energy, the investment in green energy will have a hard time yielding attractive returns for investors. A capital to that is the limited number and diversity of green finance products and the respective market in which they can be traded.

## Competing objectives

While private investors aim to maximise the risk adjusted returns for their investments, the public green finance providers seek to achieve the highest possible environmental improvement and the host-country policy makers are interested in achieving the best development prospects.

### Limited Capital and limited awareness:

Many small and medium sized business are characterized by a limited liquidity the asses to capital, which ninders their participation in the green financing sector. The prevailing myopic time horizon of business strategies, which ignore the benefits of green industries that lie in the far future, is another fundamental hurdle to private investments another. Adding to that is the lack of experts who understand the complex relationship between environment issues and financial markets

### Regulatory gaps

Another barrier to the expansion of green finance is that gap in the adequate regulatory and technical infrastructure to measure, assess and analyse green business strategies and financing

### Lack of awareness

Lack of awareness amongst the investors about the innovation finance instrument also creates hurdle in green finance.

### High cost of debt capital

Due to high cost of debt capital the investment in green projects become very expensive. High cost of debt is attributed to the factors like high rate of interest, short maturity period and non- exist of non-resource doubt.

### Technology related barriers

Several challenges associated with green finance in the form of technology related barriers, currency barriers off takes barriers becomes hurdle in the taker barriers becomes hurdle in the availability of financial resources.

### Lack of Efficient Framework

Lack of efficient framework for projects evolution of sustainable projects mainly in case from early stage innovation becomes a challenge for channelizing funds towards green projects.

## IMPLEMENTING STRATEGIES

Although there is no single best solution for the various situation and projects that demand green financing, there exist a number of interventions and measures that may be appropriate for the common constraints and level of development. In general when business compare enabling environment for trade and investments they look for trade and investment they look for the macroeconomic stability, the potential for conflict and the degree of good government, among other factors. Public interventions must address these topics and be applied in a manner that is transparent, long lasting and consistent if they want to stimulate the private investment

The following describes the various policy options that can improve the regulatory landscape to overcome investment challenges:

### Information –building policy

Customers producers and investors all need to understand the positive economic and environmental effects of the low carbon green growth, it is important they realise that this strategy poses an opportunities rather than a burden and that it will most likely transform from a voluntary path to a mandatory one in the long term to improve the transparency needed to promoting a green financial market, the impacts along the lines of

Corporate social responsibility needs to be expanded, such as the Carbon Disclosure Projects or the UN Principles for responsible investment. It is also important to adopt stringent verification schemes for green technology and green business to avoid confusion among consumers, to ensure that only those companies benefit from the green industry image that are truly a part of it and to provide investors with the necessary information to make prudent investment choice.

### **Environment regulations**

Environment regulations include the pollution standards and control the public disclosure of information about environmental impacts, the elimination of the implicit subsidies for the environment harmful or unsustainable growth such as the land use controls, building standards, the land use planning the protection of natural buffer zones and the water management and pricing. These are improved sector governance and monitoring.

### **Market for green finance products and environment goods and services**

An often cited example of a green market launched and developed by government in the carbon market. In many countries so far, an emissions trading scheme was set-up first, this include usually the enacting of legislation to govern the membership trading condition and market surveillances for the emissions trading. To ease the transition, government can introduce pilot projects or voluntary trading schemes first and they slowly more to a mandatory lessons schemes, encompassing lessons learned from the pilot phase, a legal base shift to “cap and trade” and the diversification of the traded products.

### **Public Financing**

Because the cost of green investment projects, such as a renewable energy facility is generally higher the conventional projects, government should subsidize a portion in order to attract investors. Financing mechanisms include the public competitive bidding, the public procurement and public loans, grants or funds like the venture capital funds.

### **Government Support**

On the risk associated with the use of new technology and their relatively weak stance against the well-established brown technologies, which externalise environment costs and profit from a fitting infrastructure system and well developed supply chain, green business need the government support, especially in the initial stage of their development. However the government should aim to attract and empower other finance institutions to take over their role as active facilities of green businesses once they enter the mature stage.

### **CONCLUSION**

No doubt, the environment in which we live must be green, so that we survive healthy life. To make environment green we have need of sufficient fund which called “Green Finance”. Green Finance is a new-fangled financial from 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 objective of strategies will side step the information asymmetry phenomenon and determines the moral menaces. 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 mechanism such as green bonds must also be considered as important because the public-private model is an effective tool to promote an environment cause.
- Thirdly, community enterprises are a vital key player in any economic setup. So it has become more important to empower these enterprise though capacity building.

Green financing and its products can encouraged from side to side effective alterations in key governing frame works, harmonization of public financial motivations. Increasing green financing

from different sectors is an important aspect and it must be promoted. Multi-sectorial environment is the key to unlocking the potential of green finance. Positioning the civil segment funding decision-making with the conservational aspect of the sustainable development goals. Surges in investment in unsoiled and green expertise, financing for “vital nature resources based “ green market 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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