Green Finance-A Green Investments Perspective A Qualitative Study of Global and Indian Companies.

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Abstract

The Term 'Green Finance' is often used interchangeably with the term 'Green Investment'. However, in practice, green finance is a wider lens covering a much wider scope than simply investments as defined by Bloomberg New Energy Finance and others. Green Investments, includes but is not limited to: climate related investments such as climate change adaptation, renewable energies, energy efficiency, and other climate change mitigation such as afforestation. This paper attempts to examine recent trends, opportunities in green finance made by Indian companies. It provides a review of various companies and measures they have adopted with the broader view of Green financing in comparison with the Green investment. It also attempts to identify the benchmark for the selected companies and to draw useful conclusions to this effect.

Key words: Green Investments, Green Finance, Climate Change

Introduction

Back ground paper to the report-Establishing China's Green Financial System published by the Research Bureau of the People's Bank of China and the UNEP Inquiry into the Design of a Sustainable Financial System, 2015, indicates that Green Finance had its roots in western

■ Sustainable Financial System, 2015, indicates that Green Finance had its roots in western countries, which were the first to experience widespread environmental problems from consumption of fossil fuels and industrialization. These environmental problems are, most likely, owing to the significant pressure exerted by the economic development processes and hence presumably undermines the future development. Green Growth and Green Investment are some of the most important strategies which would alleviate the environmental related problems and enable future sustainable development.

The Gap in the Literature:

According to an OECD paper, OECD and Green Growth, 2009, Green growth describes the achievement of economic growth while reducing pollution and greenhouse gas emissions, minimizing waste and improving efficiency in the use of natural resources. This requires long-term investment and sustained financing which are termed as Green Investment and Green Finance. This will ultimately lead to the generation of sustainable funds, namely Green funds and its basic objective is to invest in those companies which are committed to the environment. This enhances the citizens' experience and makes the citizens not only socially responsible but provides financial security.

Objectives

The Objectives of the paper is primarily to understand the concepts of Green Investment and Green Finance, to review selected Indian companies with regard to measures adopted by them in green financing/Green Investment, to study green finance v/s green investment, and to bring about the differentiation of terms and to compare them in a meaningful way in the context of India and finally to identify the bench mark in the area of green financing and green investment and to arrive at a constructive conclusion.

Review of Literature

According to Keerthi B.S 2013, School of Commerce & International business, Dr. GRD College of Science, Coimbatore in her paper 'A Study of Emerging Green Finance in India: Its Challenges and Opportunities' trends and future opportunities in green finance in developing India are very prominent and suggests valuable contributions towards various environment crises with respect to water, Economic crises, urban climate, Energy savings etc.

According to Inderst et al. 2012, in their OECD working papers on Finance, Insurance and Private Pensions 'Defining and measuring green investments: Implications for Institutional Investor's Asset Allocations', due to a lack of knowledge about green investment, an open and a dynamic approach towards investment should be taken, emphasizing on different classes, size of green investments.

Nannette Lindenberg, 2014, German development Institute highlights definitions of green finance and provides broader aspects of green investment comprising of 9 elements including climate change, energy efficiency etc. According to Dr. Nannette, the nine elements are Green Investment targets, Waste processing and recycling, Biodiversity protection, Water sanitation, Industrial pollution control, Reforestation (other climate change mitigation), Renewable energies, Climate change adaptation and Energy efficiency.

Zadek and Flynn, 2013, in their paper highlights the inclusion of Green finance as defined by Bloomberg New Energy Finance and others. The authors also highlight operational costs of green investments that are not included under the definition of green investment and costs such as project preparation and land acquisition costs, both of which are not only significant but can have distinct financing challenges.

Understanding Green Investment and Green Finance

Green Investment

Green investments are traditional investment vehicles such as stocks, exchange-traded funds and mutual funds, in which the underlying business is somehow involved in operations aimed at improving the environment. This can range from companies that are developing alternative energy technology to companies with the best environmental practices. The leading edge green companies that are traded on the major stock exchanges, which include startups that are developing new methods for creating biofuels or solar panels, and traditional market cap heavyweights that are expanding their product lines to include environmentally friendly products such as General Electric's development of wind-powered electric generators. Green investing can also be achieved through exchange-traded funds (ETFs), which mimic the stock indexes made up of green companies. Mutual funds can be another alternative, in which case a professional portfolio manager makes the green asset allocation decisions based on the fund's prospectus.

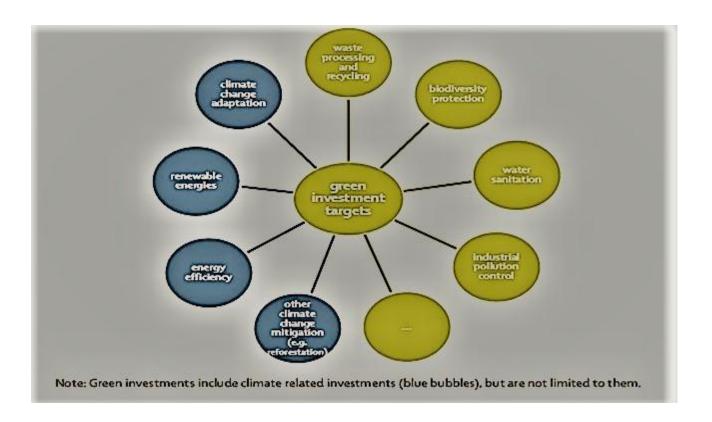


Fig 1-Green Investment Targets

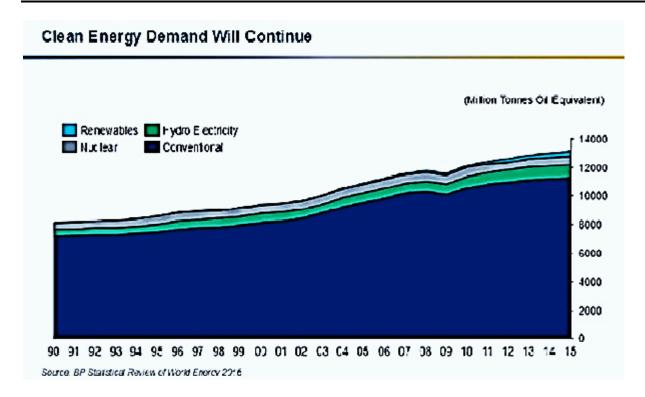


Fig 2 – Clean Energy Demand Source: BP Statistics Review of World Energy 2016

The above graph indicates that only 3 % of the total energy generation, is covered by renewable energy signifying the enormous growth potential in the Green Investment sector.

Green Finance

It is argued that we do not have a precise and commonly accepted definition of green finance for two reasons. First, many publications do not try to define the term – for instance neither the IFC 2013, nor Spratt and Griffith-Jones 2013, include a definition of green finance and secondly, the definitions that are proposed vary significantly.

However, some definitions that can be found in the literature are the following:

According to Höhne / Khosla / Fekete / Gilbert. 2011, Green finance is a broad term that can refer 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 limited to it. It also refers to a wider range of other environmental objectives, for example industrial pollution control, water sanitation, or biodiversity protection. Mitigation and adaptation finance

is specifically related to climate change related activities: mitigation financial flows refer to investments in projects and programs that contribute to reducing or avoiding greenhouse gas emissions (GHGs) whereas adaptation financial flows refer to investments that contribute to reducing the vulnerability of goods and persons to the effects of climate change.

Zadek and Flynn, 2013, indicate that Green finance is often used interchangeably with green investment. However, in practice, green finance is a wider lens including more than investments as defined by Bloomberg New Energy Finance and others. Most important is that it includes operational costs of green investments not included under the definition of green investment. Most obviously, it would include costs such as project preparation and land acquisition costs, both of which are not only significant but can pose distinct financing challenges Please note that Climate finance is merely one aspect of green finance, which is particularly focused on the adaptation to the impacts of climate change or the reduction or limitation of greenhouse gas emissions.

Measures adopted by Indian Companies

The climate change talks of the 21st Conference of the Parties at Paris in December 2015, though seemingly promising, are not legally binding. The meeting only culminated in discussions on financing climate change initiatives, especially for developing nations. In its Intended Nationally Determined Contribution (INDC), India has proposed to reduce the emissions intensity of its GDP by 33-35 per cent by 2030 from 2005 levels. To achieve these goals, India has to rely on external funds. The role of Indian banks and development financial institutions (DFIs) as a facilitator of green growth is critical in this regard.

Green financial products

In the above mentioned context, it was realized that there is a need to introduce green financial products. India needs about \$200 billion to attain a target of 100 GW of solar power and 60 GW of wind power installation by 2022, according to Bloomberg report dated 26 Sep 2016. The Indian Government had approached lenders such as Rural Electrification Corporation, Power Finance Corporation, Indian Renewable Energy Development Agency and Yes Bank for low-cost, long-term funds. To meet green financing need, DFIs and banks are expected to float 'green bonds' both in the domestic and international markets. For example, according to a press release of YES bank dated 17 Feb 2015, YES Bank commits to financing 5 GW of renewable energy projects by 2019. YES Bank has also catalyzed Green Energy Commitments (GECs) from 45 of its clients, amounting to more than 160 GW of renewable energy projects.

YES Bank has also launched India's first ever Green Infrastructure Bonds to raise INR 500 Crores (with a green shoe option to retain additional investment). The bonds are for a tenor of 10 year and are rated AA+. The amount raised will be used by YES bank to finance Green Infrastructure Projects in renewable energy and energy efficiency projects including Solar Power, Wind Power, Biomass, and Small

Hydel Projects and in turn meet the banks Green Energy Commitments. It is worthwhile to bring in two important RBI initiatives which are indeed are noteworthy. They are

- (a) Renewable energy project financing was included under the priority sector lending category in July 2015.
- (b) Companies are allowed to sell rupee-denominated bonds overseas which, in turn, facilitates the institution to obtain overseas debt without exposure to currency risks.

With the RBI initiatives and with the motive of giving a major thrust to green finance, Indian companies are beginning to fund environmentally friendly projects, as they also look to capitalize on Prime Minister Narendra Modi's push on clean energy. India Inc. is looking to boost renewable energy in one of the world's most polluted nations and tap rising investor demand. Green bonds figured in discussions at Conference of Parties 21 (COP21) in Paris that began November 30, 2015. These bonds are certified to show that funds raised will be used for environmental projects. Becoming the first state-run commercial lender to issue green bonds, according to the IDBI Green Bond framework, IDBI has begun to attract global investors in this area. IDBI is a signatory to Carbon Disclosure Projects (CDP) and will issue Green bonds to fund new and existing projects with environmental benefits in alignment with the Green Bond Principles, 2015. This is a major sign for Asian companies that the benefits of diversification and positive branding that green financial instruments bring is more than the costs they have to pay to investors who buy the bonds.

India is the world's third-largest individual greenhouse gas emitter. India has sought investments of USD 100 billion over seven years to boost its solar energy capacity by 33 times to 100,000 megawatts. Solar power is expected to reach parity with conventional energy by 2017. This would help address India's chronic power shortages

COMPARATIVE TABLE OF GLOBAL AND INDIAN COMPANIES ON GREEN INVESTMENT

| <u> </u> | 16 IJKAR October 2016, Volume 5, ISSUE 4 | | www.ijiai.org (E-155N 2348-1269, P- 155N 2349-5138) | | | |
|----------|--|--------------|---|------------|----------------------------|--|
| S. No | Company | Industry | Market Cap | Place | Green Power Resource | Green Investment (annual electricity use generated from green power) |
| 1 | Empire State | Real Estate | \$2 billion | New York, | Wind | Approximately 48.3 |
| | Building (Empire | | | N.Y | | million kilowatt-hours |
| | State Realty | | | | | |
| | Trust. | | | | | |
| 2 | Keurig Green | Food & | \$18.2 billion | Waterbury, | Solar, | Approximately 78.8 |
| | Mountain | Beverage | | Vt | Wind | million kilowatt-hours. |
| | | | | | | |
| 3 | SAP America | Technology & | \$88.6 billion | Newtown | Various | Approximately 86 |
| | (parent | Telecom | (pc) | Square, Pa | | million kilowatt-hours |
| | company(pc): | | | | | |
| | SAP SE | | | | | |
| 4 | Herman Miller | Industrial | \$1.7 billion | Zeeland, | Biomass, | Approximately 86.5 |
| | | Goods & | | Mich | Wind | million kilowatt-hours. |
| | | Services | | | | |
| 5 | Washington Real | Real Estate | \$1.8 billion | Rockville, | Wind | Approximately 117 |
| | Estate | | | Md | | million kilowatt-hours |
| | Investment Trust | | | | | |
| 6 | Steelcase | Consumer | \$2.3 billion | Grand | Wind | Approximately 121 |
| | | Products | | Rapids, | | million kilowatt-hours. |
| | | | | Mich. | | |
| 7 | NYSE Euronext | Banking & | Market Cap: | New York, | Wind | Approximately 126.2 |
| | (parent | Financial | \$25.8 | N.Y | | million kilowatt-hours |
| | company(pc) | Services | billion.(pc) | | | |
| | :Intercontinental | | | | | |
| | Exchange | | | | | |
| 8 | Deutsche Bank | Banking & | \$46 billion | New York, | Wind | Approximately 211 |
| | | Financial | | N.Y | | million kilowatt-hours, |
| | | Services | | | | or 109%, of the |
| | | | | | | company's annual |
| | | | | | | electricity use generated |
| | | | | | | from green power. |

| | | | | | | Approximately 211 |
|----|-------------------|--------------|----------------|--------------|----------|-------------------------|
| 9 | State Street Corp | Banking & | \$31.6 billion | Boston, | C - 1 | million kilowatt-hours, |
| | | Financial | | Mass | Solar, | or 109%, of the |
| | | Services | | | Wind | company's annual |
| | | | | | | electricity use |
| | | | | | | generated from green |
| | | | | | | power. |
| 10 | Toronto- | Banking & | \$84 billion | Cherry | Solar, | Approximately 270.8 |
| | Dominion Bank | Financial | (parent | Hill, N.J | Wind | million kilowatt-hours, |
| | | Services | company) | | | or 101%, of TD |
| | | | | | | Bank's annual |
| | | | | | | electricity use |
| | | | | | | generated from green |
| | | | | | | power |
| 11 | Unilever | Consumer | \$84 billion | Engelwood | Biomass, | Approximately 514.8 |
| | | Products | (pc) | Cliffs, N.J. | Wind | million kilowatt-hours. |
| 12 | Kohl's | Retail | \$15.2 billion | Menomone | Solar | Approximately 1.53 |
| | | | | e Falls, | | billion kilowatt-hours, |
| | | | | Wisc | | or 113%, of Kohl's |
| | | | | | | annual electricity use |
| | | | | | | generated from green |
| | | | | | | power |
| 13 | Microsoft Corp | Technology & | \$2.49 billion | Redmond, | Biogas, | Approximately 2.49 |
| | | Telecom | | Wash | Biomass, | billion kilowatt-hours |
| | | | | | Small- | |
| | | | | | hydro, | |
| | | | | | Solar, | |
| | | | | | Wind | |
| 14 | Intel | Technology & | \$3.1 billion | Santa | Biogas, | Approximately 3.1 |
| | | Telecom | | Clara, | Biomass, | billion kilowatt-hours |
| | | | | California | Small- | |
| | | 1 | İ | 1 | 1 | i l |

| | | | | | Solar, | |
|----|------------------|----------------|---------------|--------------|------------|--------------------|
| | | | | | Wind | |
| 15 | Suzlon Energy | Wind Energy | 90.12 billion | Pune, India | Energy | 9.50 GW |
| 16 | Orient Green | Biomass, | 7.88 billion | Chennai, | Biomass, | 429.23 MW through |
| | Power Ltd | wind | | India | wind | Wind Power and 106 |
| | | | | | | MW through |
| | | | | | | Biomass/Biogas |
| | | | | | | Power. |
| 17 | Indowind Energy | Wind Energy | 381.5 million | Chennai, | Wind | 50 MW |
| | Ltd | | | India | Energy | |
| 18 | Suryachakra | Thermal | 419.11 | Hyderabad, | Thermal | 20 MW |
| | Power | Power | million | India | Power | |
| | Corporation Ltd | | | | | |
| 19 | NEPC India | Solar, Wind | 110.82 | Chennai, | Solar, | 830 KW |
| | | Turbine | million | India | Wind | |
| | | | | | Turbine | |
| 20 | Azure Power | Solar, Wind | 104.5 MW | Rajasthan, | Solar, | 500MW |
| | | | | India | Wind | |
| 21 | AuroMira | Renewable | 49 MW | Chennai, | Renewab | 15000 MW |
| | Energy | Energy | | India | le Energy | |
| 22 | Husk Power | Wind | NA | Bihar, India | Wind | NA |
| | Systems | | | | | |
| 23 | RRB Energy Ltd | Infrastructure | NA | New Delhi, | Infrastruc | 2400 MW |
| | | and wind | | India | ture and | |
| | | power | | | wind | |
| | | | | | power | |
| 24 | Moser Baer Solar | Solar Energy | 1.96 billion | New Delhi, | Solar | 435 MW |
| | Ltd | | | India | Energy | |
| 25 | Tata BP Solar | Solar Energy | 190.4 billion | Bengaluru, | Solar | 185 MW |
| | | | | India | Energy | |
| 26 | NTPC | Solar Energy | 1.29 Trillion | Rajasthan, | Solar | 460 MW |
| | | | | India | Energy | |

Sources: 1. Individual company websites

2. Moneycontrol.com

Green investments are essentially investment activities that focus on companies or projects that are committed to the conservation of natural resources, the production and discovery of alternative energy sources, the implementation of clean air and water projects, and/or other environmentally conscious business practices. Green investments may fit under the umbrella of SRI, but are fundamentally much more specific.

The above table provides us with the players both global and Indian which have chosen the highest green investment. They are

- (a) Globally Unilever has invested to the tune of about 514.8 million KW hours and
- (b) From the Indian point of view, **AuroMira energy** has invested about 15000 MW.

Benchmark in Green Investment

One of the principal benchmarks for green investments is to support the easy preference of what is called "thematic investments". Thematic investing is about capitalizing on future trends –identifying (and profiting from) the winners and avoiding the losers. Its forward-looking nature stands in clear contrast to the more widely used approach namely "Market-capitalization investing" where it is implicitly assumed that the past winners will continue to win out and therefore deserve more attention and weight in the portfolio. Another benchmark for Green Investment would be the concept called SRI (Socially Responsible Investing) and ESG (environmental, social and governance investing). Although these concepts can also act as alternatives to Green Investment, in order to better the functioning of the Green Investment concept, the alternatives could be taken as benchmarks. In fact, the current investment volumes in ESG / SRI assets, estimated at over USD10 trillion, are a multiple of those in pure green investments which is estimated to be in the tens or hundreds of billions.

One more benchmark identified with respect to Green Investment is Green bonds which are a relatively new development but are an area of growth.

It is suggested that the institutions could take a governance approach to green investment. This would mean an extension of the existing governance frameworks of policy recommendations for corporate governance of companies, investments, pension funds, infrastructure investments, etc.

The Green Bonds Principles (GBP), launched in January 2014, are aimed at establishing guidelines for the issue of green bonds used to finance projects with environmental value added. In December 2014 the GBP had 73 members, of which a majority of banks acting as arrangers. Of the companies in the sample, 12 banks and one insurer (Zurich Insurance Group) are GBP members, while seven others only have subsidiaries that are signatories. A further initiative on investing in green bonds has been made through the **Investors** Statement on Green Bonds & Climate Bonds. The signatories agree to support the development of the green bond market and in particular the efforts of the GBP to standardize the market. Launched in September 2014 by 11 signatories, the statement now has nearly 20 signatories, including BNP Paribas Investment Partners, BPCE's Mirova and Natixis AM subsidiaries, Aviva Investors and Zurich Insurance Group.

Highlights in Green Finance

According to an analysis of the report World Energy Outlook 2016 by International Energy Agency (IEA), the following are some select highlights.

- (a) An increasing slice of the roughly \$1.8 trillion of investment each year in the energy sector has been attracted to clean energy, at a time when investment in upstream oil and gas has fallen sharply. The value of fossil-fuel consumption subsidies dropped in 2015 to \$325 billion, from almost \$500 billion the previous year, reflecting lower fossil-fuel prices but also a subsidy reform process that has gathered momentum in several countries.
- (b) A 30% rise in global energy demand to 2040 means an increase in consumption for all modern fuels, but the global aggregates mask a multitude of diverse trends and significant switching between fuels. Moreover, hundreds of millions of people are still left in 2040 without basic energy services
- (c) More than half a billion people, increasingly concentrated in rural areas of sub-Saharan Africa, are still without access to electricity in 2040 (down from 1.2 billion today). Around 1.8 billion remain reliant on solid biomass as a cooking fuel (down by a third on today's 2.7 billion); this means continued exposure to the smoky indoor environments that are currently linked to 3.5 million premature deaths each year
- (d) A cumulative \$44 trillion in investment is needed in global energy supply, 60% of which goes to oil, gas and coal extraction and supply, including power plants using these fuels, and nearly 20% to renewable energies. An extra \$23 trillion is required for improvements in energy efficiency
- (e) With regard to efficiency, another important highlight in WEO-2016 is that the potential for further improvement in the performance of electric motor systems, which account for more than half of today's electricity consumption in a range of end-use applications (e.g. fans, compressors, pumps,

vehicles, refrigerators). In the industrial sector alone, additional cumulative investment of around \$300 billion in the 450 Scenario (consistent with a 50% chance of limiting global warming to 2 °C) reduces 2040 global electricity demand by about 5% and avoids \$450 billion in investment in power generation. Capturing these energy savings requires a system-wide approach that encompasses not only strict regulation of motors and motor-driven devices, but also larger uptake of variable speed drives and the implementation by operators of other measures to enhance the efficiency of the system as a whole, such as predictive maintenance.

- (f) Electricity takes an ever-larger share of the growth in final energy consumption: from just over onequarter over the last 25 years, electricity accounts for almost 40% of additional consumption to 2040 in our main scenario and for two-thirds in the 450 Scenario. The worldwide stock of electric cars reached 1.3 million in 2015, a near-doubling on 2014 levels. According to the report, this figure rises to more than 30 million by 2025 and exceeds 150 million in 2040, reducing 2040 oil demand by around 1.3 million of barrel/day (mb/d). If the policies, including tighter fuel-economy and emissions regulations as well as financial incentives, become stronger and more widespread, as they do in the 450 Scenario, the effect is to have some 715 million electric cars on the road by 2040, displacing 6 mb/d of oil demand.
- (g) In order to finance the transition to a low-carbon economy compatible with the objective of capping temperature increase at 2°C, requires an annual \$500 billion between 2016 and 2020 and an annual \$1 trillion between 2020 and 2050.

The objective is to redirect financing currently allocated to fossil fuels and at the same time to increase the financing of renewable energies and energy efficiency projects. This is precisely the concept of Green Financing. Banks and insurers have a key role to play in these efforts. Through financial services, loans and project finance, banks are in a position to support renewable energy and green technology projects and prevent the construction of plants with high emissions levels.

According to UNEP's Executive Director Achim Steiner, 2016 was set to be the year of green finance. Steiner also indicated that across the world, a growing number of countries are aligning their financial systems with the sustainability imperative is seen. A report was produced and was entitled, *The UK: global* hub, local dynamics - mapping the transition to a sustainable financial system profiles the actions that have been taken over the past 15 years to make environmental and social factors a core part of banking, capital markets, investment and insurance. The report illustrates a number of firsts in sustainable finance that the UK has achieved. These include:

(a) In 2000, the UK was the first country to require pension funds to state whether they took social and environmental issues into account.

(b) In the year 2015, the Prudential Regulatory Authority, part of the Bank of England, undertook the world's first review of the implications of climate change for the UK insurance sector.

Also the report determined a set of priorities which includes the following

- Establish a Green Bond hub to take forward the UK's position as one of the top issues of bonds focused on environmental solutions
- Empower individuals with the right information on the sustainability performance of their investments
- Rethink housing finance to reduce energy costs and environmental impacts
- Take a system-wide view on environmental risk, extending the Bank of England's review of insurance to other sectors such as banking
- Explore the green potential of alternative finance, building on the UK's leadership in areas such as peer to peer lending.

A Summary of the Interpretation

- 1. Only 3 % of the total energy generation, is covered by renewable energy signifying the enormous growth potential in the Green Investment
- 2. Prominent among the Indian Companies who have established into the Green Finance/Green Investment are IDBI and Yes Bank. More Indian companies are following suit and are either scaling up or initializing their efforts.
- 3. The Comparative analysis provided that the companies both global and Indian which has gone for highest green investment are respectively **Unilever** which has invested to the tune of about 514.8 million KW hours and AuroMira energy which has invested about 15000 MW.
- 4. The benchmarks for Green investment are:
 - (a) Thematic Investments
 - (b) SRI and ESG and
 - (c) Green Bonds
- 5. The benchmarks for Green Financing are as follows:
 - (a) Through financial services, loans and project finance, banks are in a position to support renewable energy and green technology projects and prevent the construction of plants with high emissions levels.
 - (b) In UK, the requirement of pension funds to state whether they took social and environmental issues into account.
 - (c) The Prudential Regulatory Authority, a part of the Bank of England, undertook the world's first review of the implications of climate change for the UK insurance sector.

6. Apart from the benchmarks, certain priorities were also set in order to build up the efforts in the Green Finance and Green Investment process.

Conclusion

Although this study was primarily aimed at the understanding of the emerging concepts such as Green Investment and Green Finance and their application in the natural environment, it also provided the opportunity to consider global involvement and its benchmarks, looking at selected Indian companies contribution towards improving India in particular, and making it a better place to live both from personal as well as from the societal perspectives. This study has also provided an examination of the facts and statistics and evidence in addition to the several priorities and initiatives that are intended to build a better society and a better planet.

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