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INTRODUCTION

REVIEW OF LITERATURE

NEED/IMPORTANCE OF THE STUDY

STATEMENT OF THE PROBLEM

OBJECTIVES

HYPOTHESES

RESEARCH METHODOLOGY

RESULTS & DISCUSSION

FINDINGS

RECOMMENDATIONS/SUGGESTIONS

CONCLUSIONS

SCOPE FOR FURTHER RESEARCH

ACKNOWLEDGMENTS

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APPENDIX/ANNEXURE

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- Hunker, H.L. and A.J. Wright (1963), "Factors of Industrial Location in Ohio" Ohio State University, Nigeria.

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- Schemenner, R.W., Huber, J.C. and Cook, R.L. (1987), "Geographic Differences and the Location of New Manufacturing Facilities," Journal of Urban Economics, Vol. 21, No. 1, pp. 83-104.

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- Garg, Sambhav (2011): "Business Ethics" Paper presented at the Annual International Conference for the All India Management Association, New Delhi, India, 19–22 June.

UNPUBLISHED DISSERTATIONS AND THESES

- Kumar S. (2011): "Customer Value: A Comparative Study of Rural and Urban Customers," Thesis, Kurukshetra University, Kurukshetra.

ONLINE RESOURCES

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- Garg, Bhavet (2011): Towards a New Natural Gas Policy, Political Weekly, Viewed on January 01, 2012 http://epw.in/user/viewabstract.jsp

GREEN INVESTMENT BANKS: A NEW PHASE OF CORPORATE INVESTMENT

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ABSTRACT

Since the industrialisation era started in this world, which took its first birth in the England in 1880s which further progressed ingrowth which reached the height destroying the environment and bringing the pollution scenario to the top of the limit which polluted the River Thames. This industrial revolution later on spread to other parts of the world which further threatened the future existence of the humans with the concept of end of the world. Even several theories have been suggested by Jean-Claude Koven (End of World Theories). Hence the time has come to protect the world with new revolution which can sustain the world with the previous greenery and healthy environment. Hence several developed countries have come forward to put an end for the threats of the end of the world. Hence under United Nation Organisation and International Union of Conservation of Nature and Natural resource, an effective plan have been implemented to go green production and business activities and also to cut down the carbon in the business environment. Hence the establishment of many international and national bodies have been undertaken by many countries government. Under this Green Investment banks which was undertaken by the England for the purpose of effective and non-pollution scheme of investment in the corporate sector is an astounding concept which was presently successful in the business scenario. Hence this paper emphasise on the process of green investment and its effectiveness and challenges in the present world which is better for the corporate business.

KEYWORDS

Green Investment Banks (GIB), Carbon trading, Investment etc.

INTRODUCTION

For a long time environmental externalities have not been priced properly. Combined with externalities in research and development this has resulted in a lack of innovation in low carbon technologies. Many of these externalities have been corrected, but only recently, and the process of urgent reform of the UK's infrastructure has begun. As the UK moves to decarbonise, it finds that the financial markets are still unaccustomed to the risks involved in low carbon technologies, which is in contrast with their familiarity with established technologies. Left to themselves, financial institutions would become accustomed to these risks at a rate that is too slow given the pace of investment now needed.

The economic rationale for GIB intervention in selected sectors is that it can address the under-provision of capital and/or increase the speed of its deployment, thus improving green outcomes. To determine whether the GIB constitutes value for money for tax payers, one has to assess how the GIB interventions compare to other possible policy vehicles. The analysis conducted for this report shows that the GIB can substantially improve green policy outcomes through targeted investment because it can deliver policy objectives more efficiently or equitably than other policies (with less redistribution).

The value for money analysis on the three illustrative sectors is based on a thorough, scenario based approach: it uses scenarios of future policy demand for investment, coupled with sensitivity analysis around the cost of projects, to explore the value for money of investment programmes supported by the GIB. It follows the Green Book approach. The assumptions on alternative policies are: an increase in the level of Feed in Tariff support for new offshore wind projects; an increase in the Landfill Tax for commercial and industrial waste; and, an increase in the Climate Change Levy.

The analysis found that in all three cases, the GIB is more efficient and equitable than the alternative policies and acts as a complement to current policy. It is able to make contributions to policy targets in all three sectors. It has the greatest impact in waste, because of the large size of the GIB relative to the investment need in the sector. In contrast, the GIB's ability to influence the achievement of the renewable energy target is potentially quite limited in the short term, although still helpful, because of the scale of investment needed in comparison to the GIB's balance sheet.

The analysis shows that the consumer will experience greater impacts through product prices from taxation, than through changes in product prices due the value of investments. Hence the redistribution effects are important from a customer perspective. The value for money analysis also assessed whether the projects the GIB could finance would have a positive or negative net present value for society. It finds that while some of the investments have a positive net present value such as materials recovery facilities for waste and energy efficiency investments, others do not, namely offshore wind and direct combustion energy from waste due to the higher cost of low carbon products (e.g. renewable electricity generation) compared to more traditional products (e.g. fossil fuel electricity generation). These net present value results corroborate existing impact assessments for the current policies in these sectors. What is new is the finding that the GIB, through a targeted investment, can substantially improve the policy outcome even without taking into account a reduction in the cost of finance.

LITERATURE REVIEW

1. GREEN INVESTING

At its simplest, green investing entails evaluating potential investments from both a financial and environmental performance standpoint, focusing on the risks and opportunities to a company's bottom line. Analysts research how issues like climate change, water scarcity, pollution, and waste management impact the company's overall profitability.

Green investing has its roots in a fairly narrow, values-driven investment philosophy that focused on excluding companies from investment consideration—regardless of financial performance—if they were believed to be part of the environmental problem. Green investing has also come to include so-called "pure-play" companies engaged in environmental initiatives such as manufacturing smart electrical meters that help consumers save energy.

But in recent years, investors looking for green investment assets have started to cast a substantially wider net, looking at companies from a fundamentally different point of view: Is the company playing a part—even a minor one—in supporting the movement to sustainable alternatives? Caught in that net is a much broader spectrum of investment possibilities, such as companies in traditionally non-green industries, like oil, where industry leaders like Suncor are developing leading edge, clean retrieval solutions; or in unrelated industries, where a company stands out as the best environmental performer, such as IBM. A company like IBM has a wide range of environmental initiatives in place, and recently completed a green data center, which is expected to use 50 percent less energy than comparable size traditional data centers that normally consume about two percent of the total energy generated in the United States.

At this intersection, green investing now represents a striking combination of financial and environmental performance that may benefit the retirement and institutional investor. Many investors believe that proactively seeking greener companies has the potential to deliver better overall portfolio performance and lower risk.

2. GREEN INVESTMENT BANKS

Green Investment Bank is a funding scheme initiated in 2010 by the UK government and assigned the task of attracting private funds for the financing of the private sector's investments related to environmental preservation and improvement. Under its environmental obligations, the United Kingdom is legally

committed to significantly reducing its carbon emissions by 2050. More importantly, by 2020, a significantly higher percentage of energy generated in Britain must originate from renewable sources.

A non-partisan, House of Commons committee on climate change was established to study and recommend ways of meeting the country's obligations. The committee reported that for a new, low-carbon business and government infrastructure to be established, the necessary investment would range between £200 billion and £1 trillion over the next two decades. The committee further stated that since traditional sources of capital for investment in green infrastructure could not provide even half that amount by 2025, there would be a funding gap that needed to be covered by the state budget.

The Fiscal year 2010 British government budget contains the first mention of a "green investment bank" scheme, earmarked with £2 billion. Chancellor Alistair Darling stated that the Labour government was committed to "to support offshore wind energy" and other forms of alternative energy, which he also billed as "crucial to guiding the country out of recession". After the 2010 general election, the newly formed Conservative-Liberal Democrat coalition government defined its primary economic objective to be the drastical reduction of Britain's debt and yearly deficits. Accordingly, the government sought to create a financing scheme for the environmental investment needs of the country that would be funded mainly by the private sector, including the banks.

In June 2010, the "Green Investment Bank" Commission, after holding hearings, recommended that the government creates an eponymous banking entity within the year. Chancellor George Osborne remained sceptical after objections to the creation of such a bank were raised by the Treasury, since a Green Investment Bank would "swell the state deficit" as it would appear as a liability on the government's balance sheet. The UK government's Spending Review of October 2010 that announced a raft of austerity measures to deal with the UK government deficit also included an announcement about the creation of a Green Investment Bank. The government now expects to obtain by early 2013 the European Commission's approval for state aid to the Bank, with investment in green projects estimated to begin by April 2012

OBJECTIVES OF THE STUDY

1. To understand the concept of green investment
2. To analyse the value for money in green investment
3. To analyse the efficiency of green investment in England
4. To analyse the market failure and barriers to the investments
5. To know the process of implementation of this GIB on an Indian scenario

1. GREEN INVESTMENT (GI)

GI refers to the investment necessary to reduce greenhouse gas and air pollutant emissions, without significantly reducing the production and consumption of non-energy goods. GI covers both public and private investment. The approach in this paper is GI differs from that of the forward-looking economic literature on mitigation and abatement costs, which measures the *incremental* investment needed to meet a certain climate target relative to a businessscenario

Core strategies for reducing emissions can be classified according to their intermediate objective. Most GI is intended either to reduce the pollution caused by *energy generation*, or *to decrease energy consumption*. In addition, GI also covers technologies that sequester carbon, as deforestation and agriculture are important sources of carbon emission. Accordingly, Table 1 identifies three main components of GI:

- **Low-emission energy supply.** GI involves shifting energy supply from fossil fuels to less polluting alternatives, either for electricity generation (wind, solar, nuclear, hydropower, etc.), or as direct sources of energy (biofuel, for example). The GI concept thus extends not only to emerging environmental technologies such as wind and solar photovoltaic power, but also to more established technologies, like nuclear and hydropower.
- **Energy efficiency.** GI also includes technologies that reduce the amount of energy required to provide goods and services. In the electricity sector, there is scope for improving efficiency in power generation (moving from sub- to super-critical coal) and transmission and distribution (by using more efficient grids and smart grid technologies). There is also potential for efficiency gains in transport, includingthrough the utilization of more fuel-efficient and hybrid cars, as well as greater use ofmass transit. In industrial equipment, efficiency gains can be achieved throughenergy-saving appliances and improved waste management. In construction,efficiency could be enhanced through improved insulation and cooling systems.
- **Carbon sequestration.** After fossil fuel combustion, deforestation is the second largest contributor to carbon emissions worldwide, accounting for 20 percent of total emissions (Report of the Intergovernmental Panel on Climate Change 2007). Halting on-going deforestation, reforesting, and sequestering more carbon in soils through new agricultural practices, are therefore crucial to reducing carbon emissions. Deforestation and agriculture may also offer some of the lowest-cost abatement opportunities. However, the main mitigation strategies in these areas rely on labour, rather than physical capital (for example, changes in crop and soil management practices), and available data on GI in this area is limited.

TABLE 1: STRUCTURE OF GREEN INVESTMENT BY CATEGORY

	Component	Item and Sub-Item
Supply Factors	Low-emission energy supply	1. Low-emission electricity supply ➢ Nuclear ➢ Renewable sources of electricity: • Hydropower • Wind • Solar • Biomass 2. Other low-emission/renewable energy supply ➢ Biofuels ➢ Biomass ➢ Solar and geothermal for heating 3. R&D in clean energy
	Carbon sequestration	➢ Agriculture ➢ Deforestation ➢ Carbon capture and storage technologies
Demand Factors	Energy efficiency in energy consuming sectors	➢ Households ➢ Services ➢ Industry ➢ Agriculture ➢ Transport
Mixed Factors	Energy efficiency in the electricity sector (generation, transmission, distribution)	

2. THE VALUE OF MONEY

For a long time environmental externalities have not been priced properly. Combined with externalities in research and development, this has resulted in a lack of innovation in low carbon technologies. Many of these externalities have been corrected, but only recently, and the process of urgent reform of the UK's infrastructure has begun. As the UK moves to decarbonise, it finds that the financial markets are still unaccustomed to the risks involved in low carbon

technologies, which is in contrast with their familiarity with established technologies. Left to themselves, Efficiency of green investment in England financial institutions would become accustomed to these risks at a rate that is too slow given the pace of investment now needed.
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3. EFFICIENCY OF GREEN INVESTMENT IN ENGLAND

The UK Government is committed to leading the way in the transition to a green economy. However, investment in the green economy remains hampered by a range of market failures as well as by its heavy reliance on policy interventions by Government. The financial sector cannot always commit capital at the scale required due to a number of market failures. These include risk aversion, as a result of imperfect information, and high transaction costs. The availability of finance has been reduced by the financial crisis and may be further constrained by upcoming regulatory changes. The GIB can help address these market failures by providing targeted financial interventions, including risk mitigation products to improve the risk/return profile of investments, innovative financing mechanisms and capital.
In addition to the in depth analysis of value for money across the three main sectors (offshore wind, nondomestic energy efficiency, and commercial and industrial waste), a briefer review of value for money has been completed for a 13 further sectors. This sets up a framework of comparison across sectors and presents basic qualitative and quantitative results for all sectors together. A full quantitative approach was beyond the scope of this report except for the main sectors. The sectors considered are:

- Carbon capture and storage;
- Electric vehicle infrastructure ;
- Flood defences;
- Green Deal (domestic energy efficiency and micro-renewables);
- Marine;
- Non-domestic energy efficiency;
- Non-local authority commercial and industrial waste;
- Nuclear;
- Offshore wind;
- Onshore wind;
- Photovoltaics;
- Renewable heat;
- Rolling stock;
- Smart meters (domestic);
- Smart meters (non-domestic).

The GIB will find itself constrained in its available capital because of the large scale of the capital investment required in the low-carbon transition and in other areas of environmental improvement. Consequently, in order to maximise its value for money, thought must be given both to the private return on capital that it achieves, the environmental benefits and the social benefits which it generates. In addition there are operational considerations such as the timing of intervention and deal flow.
The quantitative analysis allows a clearer ranking of sectors. They are ranked on three attributes, which are listed in Table 2 to Table 4. In each of these tables, the best-performing sector is shown at the top of the list, and the worst performer is placed at the bottom.

TABLE 2: ESTIMATED GREEN IMPACT, TCO2 SAVED PER £M OF CAPITAL INVESTMENT, IN DESCENDING ORDER

Sector	tCO2 saved per £m capital investment
MRF (materials recovery facility)	96
Nuclear	66
Carbon capture and storage (capture)	71
Smart meters (non-domestic)*	40
Onshore wind	25
Non-domestic energy efficiency	23
Renewable heat*[a]	18
EFW (energy from waste)	10
Marine	9
Domestic energy efficiency/Micro-renewables (via Green Deal)	5
Offshore wind	5
Smart meters (domestic)	3
Photovoltaics	2
Flood defences	N/A
EV infrastructure	N/A
Rolling stock	N/A

*Notes: - *Green impact is calculated as tCO2 per £m total project costs;*
- *[a] Based on the DECC Impact Assessment. Using Arup (2011), as typical renewable heat project, such a ground source heat pump, has a green impact factor of around 6*

Sources: Vivid Economics calculations, Arup (2011), DECC Impact Assessments, DTI (2007), Defra (2010a), Ernst and Young (2010), Pöyry (2007).

TABLE 3: ESTIMATED SOCIAL RETURN, NET PRESENT VALUE PER £M OF CAPITAL INVESTMENT, IN DESCENDING ORDER

Sector	NPV per £m capital investment
Flood defences	12.45
Smart meters (non-domestic)*	6.02
Nuclear	2.82
Non-domestic energy efficiency	1.51
MRF	0.92
Domestic EE/Micro-renewables (via Green Deal)*	0.48
Smart meters (domestic)*	0.44
Onshore wind	0.15
Renewable heat*	-0.30
Offshore wind	-0.44
EFW	-1.13
Carbon capture and storage	-1.56
Photovoltaics	-1.78
Marine	-1.85
EV infrastructure	N/A
Rolling stock	N/A

*Note: * includes the value of untraded CO2. Since the price of untraded CO2 is lower than the price of traded CO2 these figures are likely to be underestimated.*

Source: Vivid Economics calculations based on Vivid modelling, Arup (2011), DECC Impact Assessments, DTI (2007), Defra (2010a), Ernst and Young (2010), Pöyry (2007).

TABLE 4: ESTIMATED RETURNS ON ASSETS FOR GIB PRODUCTS, BY SECTOR

	Financing mix			Return on			
Sector	**Equity**	**Subordinated debt**	**Senior Debt**	**Equity**	**Subordinated debt**	**Senior debt**	**Risk adjusted return to GIB**
Electric vehicle infrastructure	50%		50%	25%	8%	6.75%	15.9%
Marine	33%	16%	50%	20%	8%	6.75%	11.3%
CCS	50%	25%	25%	15%	8%	6.75%	11.2%
Offshore wind	33%	16%	50%	15%	8%	6.75%	9.6%
Nuclear	33%	16%	50%	15%	8%	6.75%	9.6%
Green Deal (domestic energy efficiency and micro-renewables)		100%		10%	8%	6.75%	8.0%
Smart meters (domestic)	33%		66%	10%	8%	6.75%	7.8%
Smart meters (non-domestic)	33%		66%	10%	8%	6.75%	7.8%
Flood defences	25%		75%	10%	8%	6.75%	7.6%
Non-local authority commercial and industrial waste processing (EFW and MRF)			100%	25%	8%	6.75%	6.8%
Non-domestic energy efficiency			100%	10%	8%	6.75%	6.8%
Renewable heat			100%	10%	8%	6.75%	6.8%
Photovoltaics			100%	10%	8%	6.75%	6.8%
Onshore wind			100%	15%	8%	6.75%	6.8%
Rolling stock			100%	12%	8%	6.75%	6.8%

Source: Vivid Economics calculations based on Vivid modelling, Arup (2011), DECC Impact Assessments, DTI (2007), Defra (2010a), Ernst and Young (2010), Pöyry (2007).

4. MARKET FAILURE AND BARRIERS TO THE INVESTMENTS

To assess the ability of every country to meet these challenges and deliver the necessary investment, a report on the consultation of widely on which projects would be delivered by the market inside expected policy frameworks, which would not be and the market failures and investment barriers that cause the

shortfall. In addition, because of the ongoing global banking and investment constraints, it was examined whether previously working markets had ceased to function. It has been identified four fundamental barriers to the necessary investment, discussed below:

- **Market investment capacity limits:** More mature low carbon technologies, such as large scale on and offshore wind, require large amounts of long-term debt and equity finance. Long-term, reasonably priced debt, in particular, is required to provide equity investors with the necessary returns and to lower the cost of electricity to the consumer. Today, these pools of capital are neither large nor long enough.
- **Political and regulatory risk:** Political and regulatory risk is of particular significance for technologies related to decarbonisation because of the reliance of the market on government intervention (subsidies, renewable obligation contracts). The question from an investor perspective is whether to trust politicians to maintain policies that would force future customers to pay for long enough to ensure their return is generated 15-20 years on. History is littered with examples of private sector investments being made on long-term promises only to see regulatory regimes change and returns reduce with them. Ex-ante capital costs have exposed investors to ex-post expropriation through the political and regulatory process. Project operators with years of sunk cost and low operating marginal cost have no choice at this point but to continue to operate the projects on lower returns than anticipated. Since investors cannot control the political and regulatory risk, this translates into a higher cost of capital. We believe this is a major deterrent to investment in long-term low carbon projects.
- **The confidence gap:** Many of the new technologies needed to deliver decarbonisation are at an early stage and face obstacles to commercialisation and scale-up that are the result of significant barriers:

➢ The "valley of death" − a gap between the initial grant and research funding available to emerging technologies with high capital costs at the outset and the private sector funding they need later to demonstrate commercial viability. The longer it takes to develop – wave and tidal technologies can take as long as 15-20 years to come to market – the deeper the valley of death.

➢ The challenge of attracting capital from the global venture capital funding market. There are three types of fund at work in the UK market:

- Venture capital funds which take early stage technology risk;
- Private equity funds which take limited technology risk but will take project development risk and some market adoption risk;
- Infrastructure funds which take no technology or development risk but will generally take construction and operation risk.

For all these investors, as the risks decline the returns demanded by their institutional backers also fall. If the UK had a perfect balance of each of these funds, technologies and projects, it would be able to find the right type of capital at the right time. However there is not a perfect balance in the UK market at all levels and therefore funding gaps emerge as the funds designed to take each type of risk are not adequately provided at exactly the right point in the development chain.

➢ Scalability – small projects may offer unattractive economic returns for many banks and investors. Several banks explained that modest local projects, for example those requiring debt of less than £20 million, involve the same transaction and diligence costs as large projects and require the attention of a limited pool of qualified staff. To maximise their effectiveness and the time of their investors, banks focus on larger projects. Several equity investors noted the same concern.

➢ A lack of clarity on business models, some of which are likely to be based on public-private structures, or on the source of returns for new and as yet unregulated infrastructure assets such as a CO2 transport network, electric car charging networks, heat networks or smart grids.

➢ Finally, the plethora of Government bodies involved in this area and the mixed history of PPP/PFI programmes, have made a number of projects too complex for insurance and pension fund investment. Such funds will require greater certainty about the legislation governing the returns generated by these projects and more transparency on the funding process and parties involved before they will invest.

- **The aggregation challenge:** One of the essential elements in delivering a low carbon Britain is to introduce energy efficiency improvements such as high efficiency windows, lighting, temperature control and more efficient boilers in millions of homes and commercial buildings in the public and private sectors. This large number of small investments could easily add up to more than £100 billion. Making that happen will require co-ordination between individuals, private companies, finance sources and public policy. Such co-ordination does not currently exist. The challenges of aggregation, making funds available and then repaying them, deal execution and transaction cost management are surmountable, but the current institutional frameworks and capital markets are unlikely to execute what is required. "Retrofitting" older homes with new energy saving appliances is a perfect example because of the huge number of small buildings involved. Community renewable energy projects are another: a substantial pipeline of viable projects exists but a lack of financial and legal expertise combined with a lack of equity funding is preventing these deals from going ahead

5. PROCESS OF IMPLEMENTATION OF THIS GIB ON AN INDIAN SCENARIO

Since India is a developing country and industrial backward country it is not much effected as compared to the developed country. But at the same time it is also cannot be neglected on the basis of developing country because pollution and industrialisation are like two faces of the same coin. Since the industries are rapidly establishing in India and also the process of carbon trading is not much effective on Indian soil, a care has to be taken for the purpose of establishing the greener way for the improvement. Since the green marketing is in progress on Indian soil and many Indian companies have adopted the concept of green marketing the concept of Reduce, Recycle and Reuse are in progress. The top indian companies like Suzlon Energy, ITC Limited, Tata Metaliks Limited (TML), Tamil Nadu Newsprint and Papers Limited (TNPL), Wipro Technologies, HCL Technologies, Oil and Natural Gas Company (ONGC), IndusInd Bank, IDEA Cellular, Hero Honda Motors have adopted the green marketing system. But from the investors point of view the scenario may be totally different because they don't understand where they can invest which also include the banks. Hence a clear knowledge is required to go through this process.
The GIB has to be established so that they can take the future challenges in the present context and for the safer and eco-friendly investment.

6. CONCLUSION

Since the global business has gone polluting with the mass production and extraction, a remedial measures are in needed to overcome this scenario. Hence the establishment of typical body such as green investment banks has led to the top for the establishment of green investing and eco-friendly business. thus England tasted the success of the nature of working of this green investment banks starting from birth to the present. But when taken on the account of the Indian scenario these types of organised business body has not properly established and also these types of bodies are most needed for the development of the green environment. Even though environment of India has not fully destroyed such as European countries a precautionary measures are important in bring the business under eco-friendly environment and also bring the pollution down with suitable remediation. Hence it would be better to avoid than curing the incoming, Indian government has to take steps in bringing these banks into live action.

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