

# ADOPTION OF GREEN BANKING IN INDIA – AN EMPIRICAL INVESTIGATION

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## ABSTRACT

Banking sector is one of the chief economic factor that effects industrial and economic growth of any economy. As in the industrial sector banking is one of the main stakeholders, which can face credit risk, liability risk and its quality of assets and rate of return can be influenced by environmental effects in the long run. In view of this banks have to play a positive role to go green and inculcate the environmental and ecological factors in their policies which will ultimately compel industries to make investment in environmental sustainable industries. Green banking strategies mean promoting environment-friendly practices and reducing carbon footprint from day to day banking activities. Banks in India especially top leading banks has developed several green banking initiatives. By adopting these practices the customers as well as banks employee can contribute a lot towards the environment. This paper aims to highlight the green banking initiatives introduced by top leading which will help in suggesting the possible gaps of green initiatives in India. To achieve this objective, secondary data has been used. The study found that Green banking initiatives has significant impact on sustainability. However, we find that there has not been much initiative in this regard by the banks and other financial institutions in India though they play an active role in India's emerging economy. Some possible policy measures and suggestions are given to promote green banking in India.

**Keywords:** Sustainable Environment, Ecological, Green Banking, Credit Risk, Carbon Footprints

## 1. INTRODUCTION

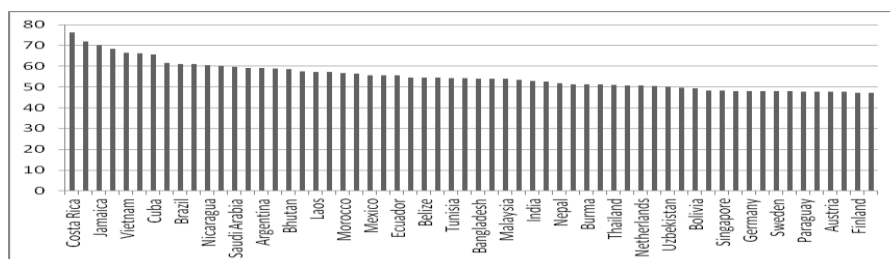
To achieve sustainable development, markets should be allowed to work in suitable structure of cost efficient rules and economic instruments. Banking sector is one of the chief economic factor which effects industrial and economic growth of any economy. Today industries and firms are susceptible to rigorous laws and environmental policies. As in the industrial sector banking is one of the main stakeholder, it can face credit risk, liability risk and its quality of assets and rate of return can be influenced by environmental blow in the long run. Therefore banks have to play a positive role to go green and inculcate and embed the environmental and ecological factors in their policies which will ultimately compel industries to make investment in environmental sustainable industries. The objective of this paper is to examine the comparative picture of green banking initiatives in India and overseas which will help in suggesting the possible gaps of green initiatives in India and will also suggests the potential channels to promote green banking in India. For banking professionals green banking involves the doctrine of sustainability, ethical lending, conservation and energy efficiency. Banks of today are committed internally and externally to energy efficiency and are on a

green mission to lower their own carbon footprint with an ambitious IT energy reduction program and conservation program within their bank operations. Outside of the bank, they cater to businesses that are involved in green technology and delivers highly personalized customer service to their loan clients.

According to the estimates made by the World Bank to lessen the cost in the emerging economies like India it ranges from US\$140 billion to US\$175 billion annually until 2030. This is a huge confront, Indian banks actually are now in a sturdy position for leveraging and channelling of this investment and to use this opportunity as the development of low carbon economy. The National Action Plan on climate change has led to opportunities for the financial sector and there have been proactive initiatives across the spectrum of public, private and foreign banks in India. In UNFCCC and the Kyoto Protocol India is a signatory and Clean Development Mechanism (CDM)\* of Kyoto Protocol, has provided India with a significant opportunity for reducing carbon emissions at a relatively low price through renewable energy projects and energy efficiency projects. India gets an opportunity to make money in trading in carbon credits via regulated carbon emission trading schemes.

The Clean Development Mechanism (CDM), defined in Article 12 of the Protocol, allows a country with an emission-reduction or emission-limitation commitment under the Kyoto Protocol to implement an emission-reduction project in developing countries. Such projects can earn saleable certified emission reduction (CER) credits, each equivalent to one tonne of CO<sub>2</sub>, which can be counted towards meeting Kyoto targets. The CDM allows developed countries to invest in emission reductions where it is cheapest globally.

All the nations across the global are working towards sustainability and trying to do every bit of positive steps to conserve and protect the environment. The resources are not being over used now as everyone has become sensitive towards saving the planet, as earth will not give us another chance. Owing to its importance and implementation and to know how much the earth's resources are used there is a quantitative index called Happy Planet Index (HPI). The Happy Planet Index (HPI) is a quantitative measure of the greenness and general happiness of a country. The index calculated by the New Economics Foundation measures how much of the Earth's resources each country uses, as well as how long and happy a life their citizens enjoy as a result. Green = Happy is the philosophy behind this green index. The winner? Costa Rica. Looking for a green and happy place to vacation or reside, according to this study – Costa Rica is the answer. If you are looking for the advanced countries like United States, Japan and England on this list, they did not even make the top 60 which is a real sad state of affairs. Without further ado, here are the results of the Happy Planet Index (HPI) with their recorded scores see Figure 1:



**Figure 1. HAPPY PLANET INDEX (HPI)**

Considering India position, it is very encouraging that at least we are on the path of sustainable development, which is right and the need of today and is even better than countries like Nepal, Burma, Thailand, Germany, Singapore and Finland.

Union Minister for Corporate Affairs launched the BSE Greenex, a new share index of sustainable stocks, by ringing the bell at the Bombay Stock Exchange on Dalal Street ON **22 FEBURARY 2012**. Greenex includes stocks of 20 companies from BSE 100, that meet energy efficiency norms, allowing investors to derive benefit from the related cost savings. ICICI Bank, SBI, HDFC, Sun Pharma and BHEL are the major constituents of the Index. The index will help create viable market based solutions for industries, investors and governments, to promote energy efficient practices and encourage impact investing in economically and environmentally sustainable businesses.

### Objectives of the study

- To enumerate benefits of green banking.
- To emphasize initiatives taken by various banks adopting green banking in India vis – a vis international scenario.
- To examine the factors which can help the banks in achieving in spreading the awareness of green banking.

To conclude the objectives of the study the paper is divided in following sections. Section I i.e. the present section gives importance of the environmental consciousness, green banking insights and objectives of the study. Section II gives the research and methodology used to conclude the objectives of the paper, Followed by an extensive review of literature in contained in Section III. Section IV gives the analysis and interpretations of the results .Section V concludes with suggestion and recommendations .References are entailed in the last section.

## 2. RESEARCH METHODOLOGY

The present study is based on Primary and Secondary data. Secondary data has been collected from the journals and websites for the latest happenings and green initiatives taken by the banking sector in India. For collecting primary data, structured questionnaire has been used to analyse various benefits and Green initiatives taken by the banks. Garrett's ranking technique has been used to find out the most significant initiative while going ahead with green banking.

Percentage Position =  $100(R_{ij}-0.5)/N_j$   
where

$R_{ij}$  = Rank given for ith item by the jth respondents

$N_j$  = Number of items ranked by jth respondents.

To add robustness in the result confirmatory factor analysis is used. Confirmatory Factor Analysis (CFA) is a statistical technique used to verify the factor structure of a set of observed variables. Confirmatory Factor Analysis (CFA) allows the researcher to test the hypothesis that a relationship between observed variable and the underlying latent construct is exists.. Confirmatory Factor Analysis could occur with the development of measurement instruments such as satisfaction scales, attitude or customer service questionnaires. In this research a blueprint is developed, questions written, appropriate scales were determined. The research instrument was used after conducting spade work and pilot survey, data collected and Confirmatory Factor Analysis completed.

### 3. REVIEW OF LITERATURE

The following section gives the detailed review of the Indian Banking Industry relating to pursuance of the green practices in India and overseas.

**Table 1**

<b>Author(s)</b>	<b>Title</b>	<b>Technique (s) Used</b>	<b>Variables</b>	<b>Main Findings</b>
Janakiraman, R. (2016)	A Study on Green Banking in India- An Overview	Source-Secondary Data (Theoretical Analysis)	In-house operational activities	Green banking, if implemented sincerely opens up new markets and avenues for product differentiation.
Barhate, G.H., & Tambol M. A. (2016)	Green Banking: An Overview	Source- Secondary Data (Theoretical Analysis)	Green Banking practices	Green banking is beneficial for banks, industries and the economy. Green Banking will ensure the greening of the industries and improving the asset quality of the banks. Government should play major role and formulate green policy guidelines and financial incentive for going green.
Singh, Y. (2015)	Environmental Management Through Green Banking: A study of Commercial Banks in India	Source- Secondary data Method - Theoretical analysis	Green Finance, Ethical Strategies	Green banks are at start-up mode in India. Even though they have started adopting green practices, but still a lot of channels are unutilized by Indian banks.
Gupta, J. (2015)	Role of Green Banking in	Source- Secondary data Method- SWOC	Paper less banking	Banks are taking new initiatives and promote

	Environment Sustainability- A study of Selected Commercial Banks in Himachal Pradesh	Analysis		different green banking products. Banks should also adopt environment friendly practices which ensure the efficient use of resources.
Narang, D. (2015)	Green Banking- A Study of Select Banks in India	Source-Secondary data used Sample size- Public Banks- State Bank of India & Punjab National Bank Private Banks-HDFC Bank & ICICI Bank	Environment management and reducing the damage to the natural resources and global warming	Banks have taken on the green initiatives in a big way. Banks have gone beyond just paperless banking to solar energy sources for ATM's and many more.
Deka, G. (2015)	Green banking practices: a study on Environmental Strategies of banks with Special reference to State Bank of India	Study based on Primary and Secondary sources. Sample Size- 486 customers of SBI (Assam) Method- Sevey (Structured questionnaire)	Reduction of carbon footprints	Green banking clearly has direct and positive impact on sustainability. Because doing these practices customers can save energy, fuel, paper, water, time as well as money.
Ramila, M. (2015)	Impact of Green Banking Initiatives on The Level of Carbon Foot Print - An Empirical Study	Source-Secondary source Methodology- Descriptive Analysis Multiple Regression, ANOVA	Reduction of Carbon footprints	The study concludes that green banking initiatives adopted by the banks by the way of retail electronic payment systems are effectively working in reduction of carbon footprint.
Campiglio, E. (2015)	Beyond carbon pricing: The role of banking and monetary policy in financing the transition to a low-carbon economy	Secondary sources	The paper discusses the potential role of monetary policies and macro prudential financial regulation.	The climate change challenge will require a transition to a low-carbon economic system, characterized by the production of energy from renewable resources, high efficiency and a smart use of ecological resources

Ramnarain,T.D., & Pillay,M.T. (2015)	Designing Sustainable Banking Services: The Case of Mauritian Banks	Based on Secondary data which was taken from audited provisional financial reports of the concerned bank for the year 2010-2013 Mauritian Banking Sector . Sample size- 2 Mauritian Banks namely Mauritius Commercial Bank Ltd and State Bank Ltd.	Client, Culture, Cost	This study concludes that sustainability can affect the decision - making on investment policies and/or launching of new banking products and services can be achieved by following green banking strategies.
Bimha, A. (2014)	The Internal Carbon Emissions Reduction Efficiency Of The South African Banking Sector: A Data Envelopment Analysis	Based on Primary and Secondary data. Sample size- 04 major banks in South Africa (ABSA, Standard Bank, First National Bank, and Nedbank ) Method- DEA Analysis	Reduction of carbon emission	Through various ethical banking strategies banking sector can be improved and hence carbon emission will be reduced.
Nath, V., Nayak, N., & Goel, A.(2014)	Green Banking Practices – A Review	Based on Secondary source (Theoretical Analysis) Sample Size- Public and Private Banks in India	Green Finance	Indian banks want to penetrate western markets or global economy, it is important for them to recognize their responsibilities as a global corporate citizen.
Scholtens, B., & Dam, L. (2013)	Banking on the Equator. Are Banks that Adopted the Equator Principles different from Non- Adopters	Secondary Data	Equator Principles Climate change	CSR is an important element for banks performance in International scenario.
Newel, R. G., William A, & Raimi, D. (2013)	Carbon Markets 15 Years after Kyoto: Lessons Learned, New Challenges	Secondary source Theoretical Analysis	Climate change	This study aims that carbon allowance trading can support emission reduction and send market signals for future investments.

Bahl, S.(2012)	The Role of Green Banking in Sustainable Growth	Source- Primary and Secondary data. For collecting Primary data structured questionnaire has been used. "Sample size- 100 Managers of Public banks Method of Analysis- Garrett's Ranking Technique"	Green Finance	India's growth account and obligation to cut its carbon intensity by 20-25 percent from 2005 levels by 2020 provides tremendous opportunities for Indian banks from funding <b>sustainable projects</b> to offering innovative products and services in the area of green banking.
Juwaheer, T.D., Pudaruth, S., & Ramdin, P. (2012)	Factors influencing the adoption of internet banking: a case study of commercial banks in Mauritius	Source- Primary and Secondary source "Sample size- 384 Respondents in various banking institutions Method- Descriptive and Inferential Analysis using SPSS"	Ease of use, Education level and Income level.	Level of education and income level of respondents may be a major determinant in influencing the adoption of internet banking
Prita D., & Mallya. (2012)	Sustainable Banking in India: The Road Less Travelled	Based on Secondary source (Theoretical Analysis)	Green Financial Products	This study states that banks not only need to make direct investments in sustainable development and also need to leverage their indirect control over investment and management decisions to influence business into fulfilling broader social and environmental goals.
Saxena, M., & Kohli, A.S. (2012)	Impact of Corporate Social Responsibility on Corporate Sustainability: A study of the Indian Banking Industry	Source- Primary and Secondary data Sample Size- 38 Indian banks Data Source- Karmayog Methodology- Descriptive Analysis Regression Analysis, CorrelationCoefficient	CSR Ratings, EPS	This study indicates the insignificant impact of CSR on Financial performance

Verma, M.K. (2012)	Green banking: a unique corporate social responsibility of indian banks	The study is based on primary sources. The study was conducted with sample of 275 different customers of 11 large banks operating at Jaipur. The 25 customers were selected on random basis from each bank. The names of banks are SBI, PNB, SBBJ, BOB, ICICI Bank, HDFC Bank, Axis Bank, Bank of Rajasthan, CitiBank, HSBC and Standard Chartered. This group includes 4 PSU, 4 Private and 3 Foreign banks.	Demographic profile of Japurites and green banking strategies followed by banks in Jaipur.	The study concluded that only few of Indian banks have adopted green banking and financed some of green banking based projects. There is negligible awareness of green banking among bank staff and banks have adopted green banking and financed some of green banking based projects. There is negligible awareness of green banking among bank staff and customers.
Bihari, S.C. (2011)	Green Banking towards socially responsible banking in India	Source- Secondary data Theoretical Analysis	Green loans	This study concludes that Sustainable and responsible investment (SRI) is an investment strategy that identifies investment targets that not only provide financial growth but also takes explicit account of environmental, social and governance issues in the investment process.
Rudawska, E., & Versita, S.R. (2011)	Sustainability as the Direction for the Long-term Success in Banking-Poland Vs. Croatia	Source- Primary and Secondary Sample Size- 33 Bank Managers of Banks in Poland and Croatia Methodology- Survey Technique Software used- SPSS	Sustainability	The findings of this paper suggest that banks in Poland express stronger need to take into account the environmental, social and economic concerns comparing to banks in Croatia.



Scholten, B. (2009)	Corporate Social Responsibility in the International Banking Industry	Based on both Primary and Secondary data Sample Size- 32 International Banks (North America, the Pacific and Europe from 2000-2005 Methodology : Analysis through comparison of Regional Performance, Individual bank analysis and Country Analysis	Corporate Social Responsibility	This study shows that CSR is an important element for banks performance in International scenario.
Sahoo, P., & Nayak, B.P. (2008)	Green Banking in India	Based on Secondary data (Theoretical analysis)	Paper less banking strategies	Study concluded that environmental impact might affect the quality of assets and also rate of return of banks in the long run. Thus banks should go green and play a pro-active role.
Brown, I., et al (2004)	The Impact of National Environment on the Adoption of Internet Banking : Comparing Singapore and South Africa	Based on Primary and Secondary data Methodology- Survey Technique Method- Descriptive Analysis	Ethical Bank Practices	This study shows the adoption of internet banking in Singapore identified attitudinal, social and perceived behavioural control factors as possible influences on adoption. But in a replicated study in South Africa only attitudinal and perceived behavioural control factors, but no social factors actually influenced adoption.
Pikkarainen, T., et al (2004)	Consumer Acceptance of Online Banking: An Extension of the Technology Acceptance Model	Based on Primary and Secondary data Sample Size- 268 Respondents in Finland Method- Survey	Attitude, Culture	The findings of the study indicate that perceived usefulness and information on online banking on the web site were the main factors influencing online banking acceptance.

#### 4. ANALYSIS OF GREEN BANKING PROGRESS IN INDIA AND OVERSEAS: A CRITIQUE

To analyse the green practices in Indian economy a survey was conducted in which 200 bank managers were interviewed and their important opinion was taken to address and analyse in depth the green practice scenario in India relating to awareness, pursuance and have a comparative analysis in light of international initiatives taken across globe.

##### A) Meaning and Importance of Green Banking

The idea of banks to encourage environment friendly investments, financing those enterprises that are already green or planning to go green and reducing carbon footprints from banking activities to save natural environment is called Green Banking. The benefit of such an initiative will be jointly shared by banks, industries and the economy. Green banking helps in cost optimisation, enhancing the assets quality of banks, lowering the risk, improving the reputation and helps in achieving the environment sustainability objective. All these objectives can be achieved through online banking. A formal declaration has been made by RBI to all the commercial banks to inculcate the environmental issues and sustainable development in their banking operations, but this has been implemented by only few Indian banks like SBI, ICICI, UNION BANK, YES BANK etc as India has promised to lower its carbon emission by 20-25% by 2020. Before funding any project, banks should consider that such projects do not produce green house gases and carbon emissions. Moreover, for efficient environmental risk management, banks should also examine the post deals performed throughout the project. CSR was adopted by most of the banks during 2005 and the main types of CSR practices are: Green Banking (Emerged in 2009), Rural Development, Women Empowerment, Poverty Eradication, Community Welfare, Vocational Training. There are two types of CSR programmes implemented by most of the banks to achieve their objectives under CSR i.e., Financial inclusion and Green Banking initiatives. Banks can develop innovative green based products or may offer green loans on low rate of interest. As housing and car loan system are the main portfolio of all banks so they adopt green loans facility. SME loans on the basis of national environmental policy and its certification ISO 14000. All banks are shifting on CBS or ATM platform, also providing electronic banking products and services. Banks have their resident houses, branches or ATMs, so bank may adopt green building to protect our environment. Green strategies taken by Indian banks can take the following forms see figure 2.

<b>Retail Banking</b>	<b>Corporate Lending</b>	<b>Asset Management</b>
<b>Green Channel Banking</b>	<b>Green Lending</b>	<b>Csr Initiatives</b>
	<b>Green Project Finance</b>	
A) Atm	A.) Rainwater Harvesting	A) Supporting Educational Initiatives
B) Funds Transfer	B.) Waste Heat Consumption Projects	B) Women Empowerment
C) Funds Deposit	C.) Solar Energy	C) Health Initiatives
	D.) Wind Energy	D) Water Treatment Schemes

	E.) Hydel Anergy F.) Bio-Fuels	E) Financial Inclusion Programmes In Rural Areas So That No Single Individual Is Left Unbanked
<b>Internet Banking</b>	<b>Carbon Finance And Emmissions Trading</b>	F) Sustainable Livelihoods
A) Mobile B) Online Bill Payment	A.)Carbon Credit Financing	G) Planting Trees
C) Online Interest Collection	B.) Carbon Credit Advisory Services	H) Mobile Vans
D) Electronic Clearing System	C.)Green Venture Capital	I) Energy Efficient Development
E) Online Share Trading	B.) Carbon Credit Advisory Services	J) Student Welfare
F) E-Welcome Packs	C.)Green Venture Capital	K) Ups With Environmental Org. And Ngo's
G) Booking Tickets Online		Investment In Green Funds
H) Online Tax Accounting System		
I) Reports In Electronic Form		
<b>Green Lending</b>		
A) Loans For Eco Friendly Residential Projects		
B) Green Vehicle Finance		
C) Micro Finance		
D)Green Home Equity Loans		
E) Green Credit Cards		

**Figure 2. Showing Indian Green Banking Strategies**

### **B) Green Initiatives taken by Indian Banks**

**State bank** is the first Indian bank which has incorporated green banking in its operations and also financing green projects. A revolutionary concept known as “Green Channel Counter” (GCC) has been initiated by State Bank on State Bank Day (1/7/2010) at 57 of its branches across India which would save both paper and time resources. In order to alter the conventional way of paper based banking, this pioneer step has been taken by the bank.

Within a year this facility is now available at more than 5000 branches of SBI across the country. **ICICI Bank**, In order to conserve national resources and explore clean technology, so many environment initiatives have been taken by ICICI bank. GO GREEN initiative of bank has helped in saving 30000 trees from being felled in 2009-2010 leading to saving of 1754 tonnes of paper or 7.36 crores for the company as of February, 2010. ICICI BANK is also funding and financing green technology projects according to CEO and MD Chanda Kochar. GO GREEN initiative helps in preserving environment by building awareness and financing eco-friendly projects. The bank is trying to reduce its carbon footprints through paper less banking such as e-branching-statement, online and mobile banking. GO GREEN initiative includes dateless diaries, visiting cards on recycled paper, sapling plantations, green walkathons etc. **Yes Bank** Yes bank is too incorporating green initiatives through its Yes Community program such as clean and green drives, energy efficiency practices, workplace health and safety etc. The bank has hosted so many programmes, events and workshops with the objective of creating awareness of preserving environment. It has also organised events like “My Green Earth”, “Water Experiment”, “Conservation Of Energy”, “Catch the Rained with the objective Of educating the public about conserving electricity”, efficient use of energy, conservation of planet earth, prevention of pollution and rain water harvesting for conservation of water.

Today all the leading banks of India are grabbing the opportunities in an emerging low carbon economy as they have acknowledged the significance of green banking. Like, **IndusInd bank's** campaign HUMAN & HARYALI, which has introduced solar ATMs with the aim of saving 1980 KWH of energy annually. **IDBI bank**, has also signed accord with multi-lateral agencies in order to provide clean development mechanism (CDM) services to its customers.

### C) Green Banking International Experiences

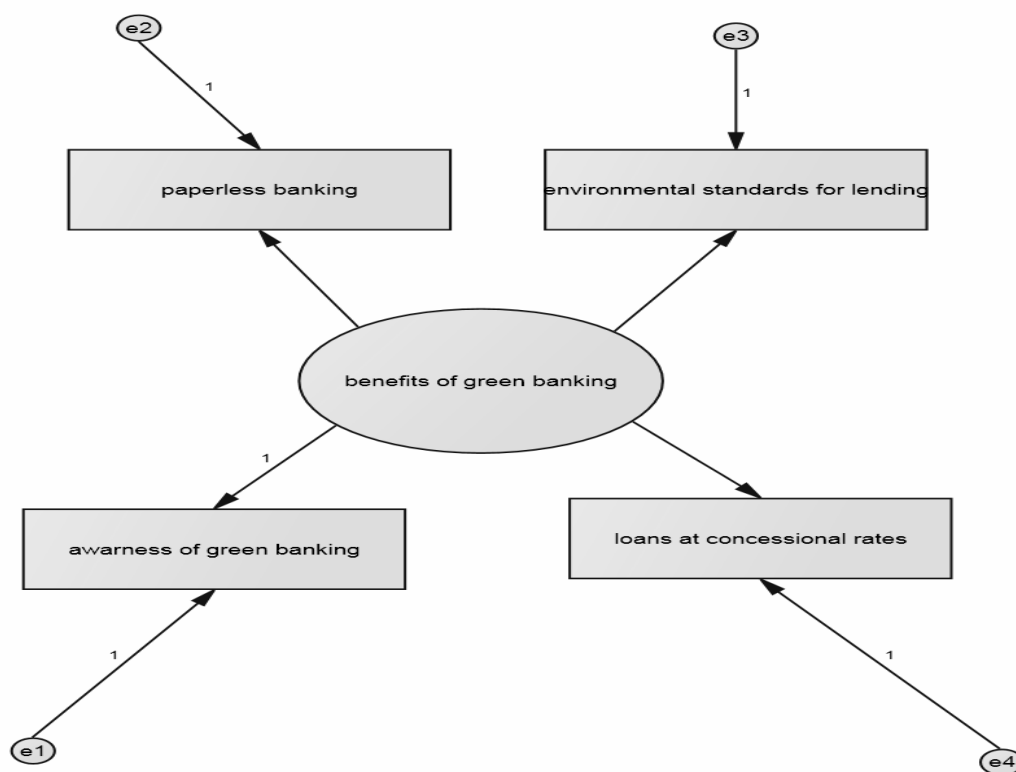
The devotion towards the environmental issues by the financial sector is credited to NGOs, some agencies and to its customers. To encourage sustainable development, UN environment program (UNEP) was started in 1990, now called UNEP finance initiative (UNEPFI), comprising 200 financial institutions around the world aiming to amalgamate the environmental and social element in the financial sector. Many international banks like ABN-AMRO (RBS), STANDARD CHARTERD, HSBC etc have implemented such initiatives. **EXIM bank** of US is also funding now eco-friendly exports. To promote sustainable finance, an association was formed by a worldwide alliance of NGOs called BANK TRACT, which follows 6 principles collectively known as Collevocchio Declaration. The 6 principles are Sustainability, No Harm, Responsibility, Accountability, Transparency and Sustainable Market and Governance. The banks were recommended to inculcate all these 6 principles into their operations. In 2002, another set of principles was formed named as **EQUATOR PRINCIPLES** by a group of banks which was modified in 2006, has now become very general criteria for financing sustainable projects. These set of principles is being currently followed by 46 financial institutions of 16 countries. The operations of the banks following these principles are being audited by NGOs. In 2007, 104 financial institutions were awarded the sustainable banking award which was started by financial times in 2006 out of 151 entries from 51 countries.

To promote green banking, government intervention is very essential to make banks liable in case any offense done by its customers.

## D) Green Banking Benefits

The major advantage which the green banking can offer is the reduction of significant cost from Rs 40 per transaction to about 18 Rs per transaction which is a major reduction. RBI has instructed all banks to compulsorily route their 50% transactions through internet. The managers were asked to seek opinion on the benefits of green banking and were asked to rank the statements relating to benefits of green banking on a likert scale from high to low and confirmatory Factor analysis statistical technique was applied on the ranking and preferences of the responses of the managers. Paperless banking can be adopted as almost all banks in India are computerized or operate on a core banking solution (CBS) creating awareness to bank people about environment by bank can help to brighten the image of the bank. Provision of loans with financial concession for environment friendly products and projects can be an excellent idea for green banking. Moreover, following certain environmental standards for lending will make business owners to change their business to environment friendly which is good for future generations. Major paybacks of green banking are listed below which form the part of the statements on which the respondents were asked to give respective ranks, see figure 3.

1. Paperless Banking
2. Environmental standards for green lending.
3. Awareness about green banking practices.
4. Loans at comparatively lesser rates.



**Figure 3. Benefits Of Green Banking**

**Table 1. BENEFITS OF GREEN BANKING**

BENEFITS OF GREEN BANKING		Benefits of green banking	Estimate	Regression estimates	Squared multiple correlation	P
Awareness of green banking			1	0.625	0.561	***
Environmental Standards for green lending	<---		3.183	0.765	0.786	***
Loans at concessional rates	<---		0.527	0.572	0.359	***
Paperless Banking	<---		0.841	0.634	0.682	***

**Table 2. Results Of Confirmatory Factor Analysis (Benefits Of Green Banking)**

Model Fit	Statistic
Chi-square	289.77
CFI	0.607
NFI	0.796
RFI	0.745
RMSEA	0.025

The standardized regression weights of each measured variable shown in the table 1 indicate comparative influence of the construct to its variables. The high value of the standardized weights indicates the higher influence of the construct to the variable. The results indicate that environmental standards for green lending shows more than 76 % of variation in the construct, followed by paperless banking with 63% variation in the construct and green banking leads to awareness of these issues gets more than 60% variation which is quiet significant and if they are not pursued it causes air pollution and depletion of natural resources hence not sustainable.

The squared multiple correlations indicate the percentage of variance of the measured variable that can be explained with the help of the variations in the construct. A similar picture is shown by squared multiple correlations. The statistics for goodness of fit of the model from AMOS output is shown in table 3.5 (B) the results indicate that the goodness of fit indices (CFI, RFI and NFI) is significantly high. Hence, the model is fit. The Chi-square

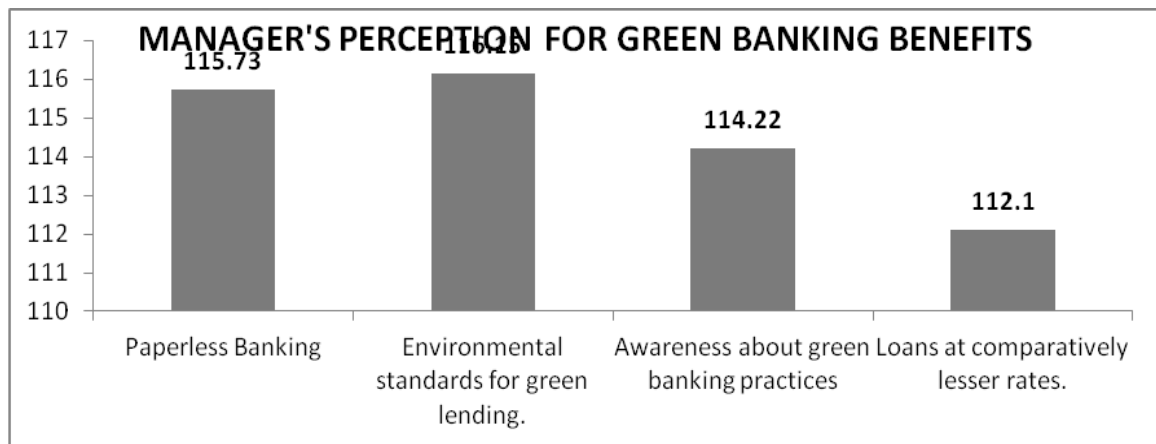
value is also presented in the table. The lower value of RMSEA also supports that the model is fit.

To add robustness in the results the perception of the managers are given scores taking the garret table in view. The results of which are shown in the table 2 and 3.

**Table:3 : Manager's Perception For Green Banking Benefits**

S.No	Green Banking Benefits	1	2	3	4	Total	1	2	3	4	Total Garret Score	Avg Garret Score	Rank
1	Paperless Banking	82	55	43	20	200	5986	3135	1892	560	11573	115.73	II
2	Environmental standards for green lending.	87	52	37	24	200	6351	2964	1628	672	11615	116.15	I
3	Awareness about green banking practices	84	50	37	29	200	6132	2850	1628	812	11422	114.22	III
4	Loans at comparatively lesser rates.	75	55	40	30	200	5475	3135	1760	840	11210	112.1	IV
	Garret Table Score	73	57	44	28								

Source: Primary Data



**Figure 4. Manager's Perception For Green Banking Benefits**

**Table 4: Manager's Perception Regarding Green Banking Initiatives**

S.NO	Green Banking Initiatives	1	2	3	4	Total	1	2	3	4	Total Garret Score	Avg Garret Score	Rank
1	Innovative Green Products	65	41	38	56	200	4745	2337	1672	1568	10322	103.22	V
2	Reduced Carbon footprints by Green Projects which are renewable and using alternative sources like wind and hydel	71	42	54	33	200	5183	2394	2376	924	10877	108.77	I
3	Use of Mass Transportation System	65	26	49	60	200	4745	1482	2156	1680	10063	100.63	V I
4	Paperless banking	65	38	74	23	200	4745	2166	3256	644	10811	108.11	I I
5	Social Responsibility initiatives	81	30	41	48	200	5913	1710	1804	1344	10771	107.71	I I I
6	Reduced Carbon footprints by energy conservation	53	62	40	45	200	3869	3534	1760	1260	10423	104.23	I V
	<b>Garret Table Score</b>	73	57	44	28								

**Source: Primary Data**

The results just correspond to the results as revealed by confirmatory factor analysis and the order and importance of rankings are also the similar. Maximum ranking was given to environmental standards, followed by paperless banking and awareness of green banking practices which is down the ladder and least ranking is given to the loans given at lesser rates.



### **E) Managers Perceptions regarding Green Initiatives by the banks**

Managers perception were asked regarding green initiatives taken by the banks and were asked to rank these. The following table narrates the results of these ranking in order of their preferences that these techniques are going to make a significant difference in preserving and conserving the environment on the road of sustainable development. The results reveal that the best initiative in the direction of sustainable development is the Reduction of carbon foot prints by introduction and initiation of green projects using alternative sources of energy, followed by Paperless banking which will help in less cutting of trees, social responsibility initiatives which envelopes the obligation of the banking sector towards different stakeholders. Fourth ranking is given by the managers to the energy conservation using a sustainable model of internal operations using less energy and changing the choice of equipment and internal infrastructure which will help in using of energy. Introduction of innovative products takes fifth rank and use of mass transportation was given sixth rank. This is the need of today and the banks which are on the path of social responsibility and a road of sustainable model will be benefitted the most see Table III.

### **F) Perception Of Managers Regarding Awareness Of Green Practices Through Internal Operations**

In this study Managers views regarding means used to create awareness among the managers and Personnel of the organization from internal activities to attain environmental up gradation and sustainable development through green banking has been taken. Confirmatory Factor Analysis (CFA) technique has been used in which the opinion of the managers is sought. The results reveal that the best method in this direction of creating awareness is Persuade the clients to use Debit cards. After this Green News Published weekly is found to be the second best method followed by green publications to achieve sustainable development. Thereby followed by issuance of newsletters by banks, But the meetings conducted at higher levels and E-learning programs were not considered as methods. See figure IV

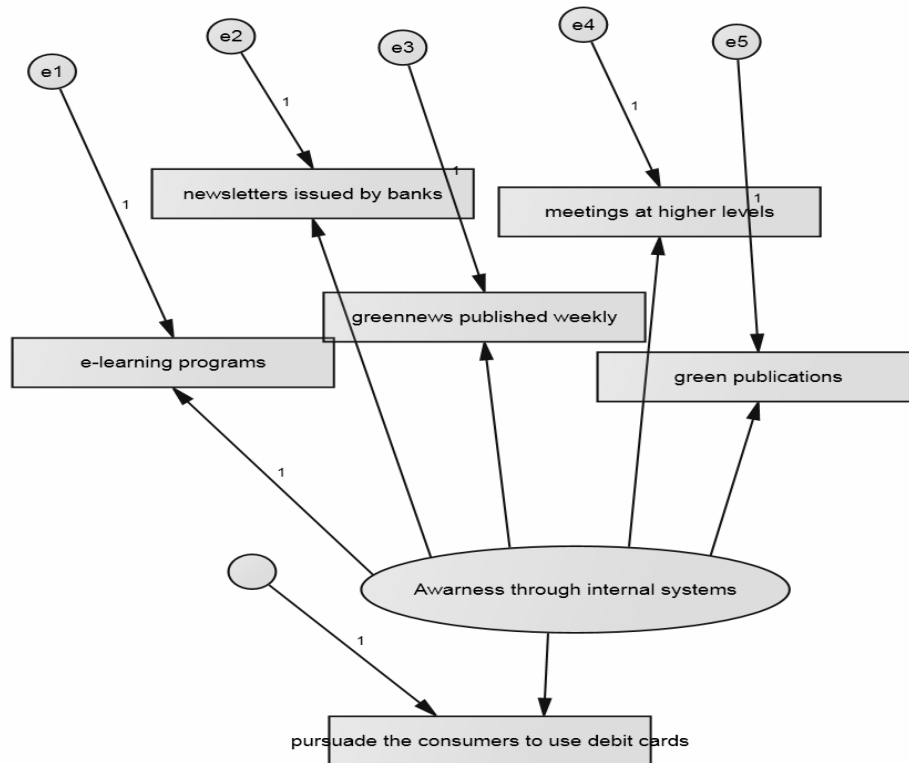


Figure 5. Awareness Through Internal Systems

Table 5: Results of Confirmatory Factor Analysis: Awareness programmes through internal systems

BENEFITS OF GREEN BANKING			Estimate	regression estimates	squared multiple correlation	P
Weekly green news			Awareness of green banking	1	0.655	0.561
Green publications		Awareness of green banking	0.841	0.634	0.682	***
News letters issued by banks	<---	Awareness of green banking	0.527	0.572	0.359	***
Meetings at higher levels	<---	Awareness of green banking	0.527	0.502	0.299	***
Persuade		Awareness of green banking	3.183	0.765	0.786	***

customers to use debit cards						
E-learning Programmes	<---		0.527	0.562	0.349	***

Results of Confirmatory Factor Analysis (benefits of green banking)

Model Fit	Statistic
Chi-square	312.77
CFI	0.627
NFI	0.799
RFI	0.738
RMSEA	0.035

**5. CONCLUSION**

Indian banks need to be made fully aware of the environmental and social guidelines to which banks worldwide are assenting to. If we compare the green initiatives taken by the banks of the developing countries we are behind developed countries which have understood the importance of regarding environment and social responsibility as the main streaming in banking operations and have started to be taking a lead on the road of sustainable banking. In addition to this mitigating risk, green banking opens up new markets and avenues for product differentiation. India’s growth story and commitments to cut its carbon intensity by 20-25 percent from 2005 levels by the year 2020 provides tremendous opportunities for Indian banks- from funding sustainable projects to offering innovative products and services in the areas of green banking. Banking sector is one of the major sources of financing investment for commercial projects which is one of the most important economic activities for economic growth. Therefore, banking sector can play a very critical role in supporting environmentally sustainable and socially responsible investment (SRI).

Environmental impact of banks is not actually related to their core banking activities but is closely related to the customer’s activities. Therefore, environmental impact of bank’s external activity is huge though difficult to estimate which makes the operations of the bankers more challenging in nature. Thus, encouraging environmentally responsible investments and prudent lending should be one of the responsibilities of the banking sector. We should go green in all aspects of life which will bring a significant difference in growth with sustainable features which is the need of today.

## 6. RECOMMENDATIONS

- Indian banks are far behind their counterparts from developed countries which is a clear indication that Indian bankers and consumers are less aware of the sustainable green banking initiatives and the corresponding benefits which can be derived from this.
- India's growth story and commitment to cut its carbon intensity by 20-25% from 2005 levels by 2020 provides tremendous opportunities for Indian banks – from funding sustainable projects to offering innovative products and services in the areas of green banking. This should be given a due recognition and a deep commitment to see this tremendous opportunity of carbon trading in India.
- Although RBI is taking initiatives in light of the climate change and sustainable development but somewhere down the line these efforts and initiatives are inadequate for effective green banking, the RBI and the Indian government together can play a proactive role and formulate green policy guidelines and financial incentives. No law and rule in India that can hold banks responsible for scrutinizing investment projects before financing and for the environmental damage created by its client.
- Indian banks should adopt green banking as a business model embedding climate change and green initiatives in main streaming of banking without much further delay.
- The adaption of reporting CSR practices though quite slow in India, still it would definitely get a great pace in the near future
- Role of regulatory authorities should be made more stringent especially RBI, pollution control board etc so that they can give their best role in achieving the sustainable development.
- The banks should play a pro-active role to take environmental and ecological aspects as a part of their lending principle which would force industries for mandated investment for environmental management, use of appropriate technologies and management systems else there funding will be denied .Before funding any project, banks should consider following points:-
  - a) Assessing the project in light of areas like wetland, natural habitat, forests, grasslands etc and also evaluating the responsive issues like susceptible groups, unintentional dislocation.
  - b) Valuation and inspection of the property concerned and also performing the environmental audit by the banks in order to assess the environmental accountability.
  - c) For efficient environmental risk management program, banks should also examine the post deals performed throughout the project.
  - d) Structuring of loans, credit approval, yearly audits, obtaining environmental conformity certificate from third party and government are some of the other functions to be performed by banks.

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