

Paper presented in

Seventh Biennial Conference

**Indian Society for Ecological Economics
(INSEE)**

***Global Change, Ecosystems,
Sustainability***

December 4-8, 2013



Host:
Tezpur
University



Cohost:
OKD Institute
of Social
Change and
Development

An empirical assessment of the role of corporate towards managing ecosystem: An Indian context

Mousami Prasad^{a*}, Trupti Mishra^b, Varadraj Bapat^c

^a Research Scholar, Shailesh J Mehta School of Management, Indian Institute of Technology Bombay Mumbai 400 076, India

^b Assistant Professor, Shailesh J Mehta School of Management, Indian Institute of Technology Bombay Mumbai 400 076, India

^c Professor, Shailesh J Mehta School of Management, Indian Institute of Technology Bombay Mumbai 400 076, India

ABSTRACT

The study attempts to understand the role of institution, specifically corporate, in managing environment –one of the key aspects of ecosystem, examining the quality and extent of environmental disclosures. Primary survey and content analysis has been used. The annual reports for year 2011-2012 are examined for companies based on BSE sectoral classification. According to findings, environmental information disclosures by companies are low. Most of the information disclosed is descriptive. The extent and quality of disclosure varies between sectors as well as within sectors. The ‘industry structure’ and ‘regulatory status’ are found to be major influencers on environmental information disclosures. However ‘industry structure’ impacts the extent of information but has no substantial impact on the quality of the disclosure while ‘regulatory status’ impacts both the extent and quality significantly.

1. Introduction

Businesses depend on ecosystem for production of goods and services. At present, the biodiversity of the ecosystem is under threat due to exploitation of the resources. Unrelated news from different segments just reaffirms the state of affairs : “Talking of the extensive deforestation, in the Himalayas, Rajya Sabha member Karan Singh demands urgent review of Uttarakhand's environment policy¹”, “Coal production growth rate has reduced to 0.5% from 6% over last two years due to delays in forestry & environmental clearances-Coal India Annual Report 2012, “HCC’s project Lavasa is issued stop-work notice for violation of Environment Impact Assessment –stalling its operations for almost a year from November 2010 to November 2011”.

¹ <http://timesofindia.indiatimes.com/home/environment/flora-fauna/Urgently-review-Uttarakhand-environment-policy-Karan-Singh/articleshow/20820087.cms> date of access 28 June 2013

* Corresponding author- Mousami Prasad

E-mail address: 124273001@iitb.ac.in/mousamiprasad@gmail.com

Corporate along with other institutions like government have a major responsibility of containing and restoring the degradation of ecosystem. Last year Eco-Summit, noted the 'Role of Business Community in Restoring our Ecosystem'. It drew attention to 50 year journey from 'Silent Spring' written by Rachel Carson, holding corporate responsible in harming our ecosystem to present times, where big corporations, claim their consciousness towards ecosystem restoration in terms of their strategies. However the accountability of their claims, remain a debatable area. In India too, companies claim to be making efforts to integrate their strategies in consideration to management of ecosystem. The study attempts to understand these efforts in respect of one of the integral aspect of ecosystem i.e. - environment. The environment concerns are becoming key issues, influencing the companies' investment decisions, impacting their growth prospects and affecting their reputation.

On 8 August 2013, Rajya Sabha passed the companies bill, 2012, making CSR expenditure a mandate² and India as the first nation for doing so³. It establishes 'environment' as one of the core elements of corporate social responsibility, towards which the companies are required to make expenditure of at least 2% of their average net profits. Although the bill considers the size and profitability of the company as the criteria for mandating CSR expenditure, it is a big move in terms of corporate legislation.⁴ Corporate social responsibility, voluntary guidelines 2009- published by ministry of corporate affairs and later modified in 2011, has identified 'environment' as one of the key element which should become an integral part of business policy of the companies, in alignment with their business goals. Further SEBI in its circular dated August 13, 2012 has made it mandatory for top 100 companies (based on market capitalisation) to submit a Business Responsibility Reports as part of their annual report. The report requires the companies to disclose specific information in respect of all the principles identified in national voluntary guidelines on social environmental and economic responsibilities of business (NVG).

This shows the increasing importance of the role of institutions towards maintaining the delicate balance of ecosystem while continuing to run their business. Milton Friedman,

² http://www.business-standard.com/article/current-affairs/companies-bill-passed-113080800881_1.html date of access 11 August 2013

³ http://www.moneycontrol.com/news/business/new-law-allows-easeopening-co-csr-not-cess-pilot_932727.html date of access 11 August 2013

⁴ The companies having atleast net worth of rupees five hundred crore, turnover of rupees one thousand crore or net profit of Rs five crore are required to constitute a corporate social responsibility committee and spend the specified amount- Companies Bill 2012

however, claimed in 1970, that, the sole purpose of business is to make profit and if corporate executives are indulging in ‘social responsibility’ they are spending shareholder’s money and in turn, losing their competitiveness.⁵ Those old days, had just a billion of world population, earth appeared to have bountiful of resources, the participation in business was less with lesser consumption, and the companies could proclaim “business of business was business” (Sekharan, 2012). We now know how imperative it is for companies to not only value financial assets but also the materials employed, land, air and water employed for their survival.⁶

1.1 Why this study is important?

The two strong statements made in November 2006, in the report titled “Business and Ecosystems Issue Brief: Ecosystem Challenges and Business Implications” captures the moment of the truth.

“The awareness that your business is fundamentally dependent on the ecosystems around it for its livelihood is crucial for starting to address these issues.” *Edmund Blamey, Interface Europe.*

“Business simply cannot function if ecosystems and the services they deliver – like water, biodiversity, food, fibre and climate regulation – are degraded or out of balance.” *Björn Stigson, President, World Business Council for Sustainable Development.*

These two statements indicate the dependency and accountability that the corporate must have towards ecosystems in present time. The report identifies six challenges that affect the integrity of ecosystems and their capacity to provide services namely water scarcity, climate change, habitat change, biodiversity loss and invasive species, overexploitation of oceans and nutrient overloading. Given this glaring scenario as a reality, it is imperative to understand what are our corporate doing in this regard? How much are they disclosing on their efforts? What is the quality of such disclosures?

The answers to these questions will help us to (a) understand our companies preparedness to meet these challenges while continuing to deliver value (b) serve as contribution to

⁵ <http://www.worldchanging.com/archives/005373.html> date of access 15 July 2013

⁶ <http://www.worldchanging.com/archives/005373.html> date of access 15 July 2013.

policymakers in understanding the present level of disclosures while framing regulations (c) determine the areas where disclosure is minimum in order to suggest measures and (d) identify the companies that have best disclosure practices and understand the financial attributes that influenced those disclosures. For the purpose of this study are studying the role of corporate towards restoration of ecosystem. We are looking at the environmental information disclosure made by the companies that encompasses various elements of ecosystem as environment has gained prominence amongst regulatory bodies and it can be empirically studied to draw conclusion as to where the companies are standing in terms of their efforts towards ecosystem restoration.

Research Question: To understand and assess the quality and extent of disclosure of environmental information in corporate annual reports of Indian companies.

The remaining sections of the study has been organised as follows. The next section presents literature review and hypothesis development followed by the methodology describing the content analysis. We then present our findings followed by the conclusions and future scope of the study.

2. Literature Review and Conceptual Understanding

2.1 Ecosystem, Environment and Business

Ecosystem has been defined as “a complex set of relationship among the living resources, habitats and residents of an area. It includes plants, trees, animals, fish, birds, micro-organism, water, soil and people” (Bihar Envis Centre).

As per the Environment (Protection) Act, 1986, India “environment” includes “water, air and land and the interrelationship which exists among and between water, air and land, and human beings, other living creatures, plants, microorganisms and property”. In other words it encompasses land, air, water, biodiversity (State of the Environment Report for India, 2009). National voluntary guidelines on social, environmental & economic responsibilities of business released in 2011 also defines environment on the similar lines “Natural surroundings in which an organization operates, including air, water, land, natural resources, flora, fauna, people, outer space and their interrelationships.” Further the key issues in environment has been identified as (1) climate change (2) food security (3) water security (4) energy security and (5) managing urbanization.

Environmental Information Regulations 2004 (EIR), UK, Regulation 2, defines environmental information as any information in written, visual, aural, electronic or any other material form on the state of the elements of the environment, factors affecting or likely to affect the elements of the environment, measures (including administrative measures) affecting the elements and factors, reports on the implementation of environmental legislation, cost-benefit and other economic analyses, the state of human health and safety.

2.2 Disclosure Standards in India for Environmental Information

In 1991, Government of India asked the companies to disclose environment related information on a periodic basis. The ministry of environment and finance proposed that “every company shall, in the report of its Board of Directors, disclose briefly the particulars of compliance with environmental laws, steps taken or proposed to be taken towards adoption of clean technologies for prevention of pollution, waste minimization, waste re-cycling and utilization pollution control measures, investment on environmental protection and impact of these measures on waste reduction, water and other resource conservation.” The various guidelines and regulations in terms of ecosystem management and environmental information disclosure have been attached in Appendix I.

2.3 Previous Studies

The earlier studies in India have focused on status of environmental regulations and their implementation (Vyas & Reddy, 1998) (Mahwar, Verma, Chakrabarti & Biswas, 1997) (Dasgupta, 2000) and environmental accounting (Pramanik, Shil & Das, 2007) and its framework. The state of environmental regulation in India has been assessed (Vyas & Reddy, 1998) and the mandatory environmental disclosure as laid down by ministry of environment and forests in 1992 through its environmental statement has been studied on industries (Mahwar et al., 1997). Some studies have looked at impact of ‘specific event’, like pollution and measuring the environmental performance disclosure as ranked by Centre for Science and Environment on financial performance (proxied by stock price returns) (Gupta & Goldar, 2005), Bhopal chemical leak (Blacconiere & Patten, 1994), nuclear accident at Three Mile Island and Tylenol tampering of 1982 on intra-industry and inter-industry disclosure practices and impact on stock prices. Few studies in Indian context have examined the extent of

environmental disclosure in region based companies (Assam), public limited companies and randomly selected companies.⁷

While numerous researches have studied this phenomenon outside India, mostly in developed nations, the findings of similar research cannot be implied in Indian context for two reasons. Firstly, developed nations particularly US has stringent environmental information disclosure standards in the world (Richardson & Welker, 2001) making their reports relatively superior in quality and coverage. For example, in 1970 Environmental Protection Agency (EPA) was created consolidating environmental impact statement (EIS) establishing environmental protection standards, and conducting research on pollution (Denning & Shastri, 2000). In India, however, the less comprehensive mandatory requirement, makes an environment where variations in voluntary disclosures becomes very important (Richardson & Welker, 2001) and therefore independent study is required to assess the extent and quality. Secondly, country of origin is an important determinant in deciding the level and type of social disclosure (Al-Tuwaijria, Christensen & Hughes, 2004) as culture and governance impacts corporate social reporting (Haniffa & Cooke, 2005). Freedman, Martin & Stagliano (1992), Meek et al. (1995) (Gamble et al., 1996) studies all suggest that country of origin leads to variation in social disclosure practices.

Studies on environmental information disclosure gained focus through corporate social responsibility disclosure (CSR) (Neu, Warsame & Pedwell, 1998). CSR disclosures have been theorized using stakeholder, legitimacy and political economic perspectives, each providing different perspectives on the issue (Neu et al., 1998). The present study has relied upon legitimacy theory, as it best explains and suits the Indian context (a) Sharma (2012) contends that as a result of foreign companies gaining grounds on domestic soils, and increased disclosures apart from financials, Indian companies are likely to follow suit in order to build “corporate image concerning socially responsible behavior”(b) Tyler, Degoey & Smith (1996) claim that re-investing in communities can build reputational legitimacy, and reciprocity that can benefit the companies (Van Zile, 2012) (c) this theory recognizes the fact that organizations are evolving within the society (Deegan 2002) and that organizations seek to establish congruence between society expectation and organization’s value system. The information can be categorized into required disclosure and voluntary disclosure. The former

⁷Pramanik, A. K., Shil, N. C., & Das, B. (2007). Environmental accounting and reporting with special reference to India

is laid down by government, professional and other regulatory bodies and the extent of disclosure depends upon strictness or laxity of these bodies (Marston & Shrivies, 1991). Voluntary disclosure are in excess of minimum disclosure and arise where corporate perceive that the benefits arising outweighs the costs (Marston & Shrivies, 1991) (Gray & Roberts, 1989).

For the present study, we have included the entire environmental information disclosed by firm in sectors as classified by BSE without making distinction between mandatory and voluntary in order to provide an exhaustive overview of the practices followed by Indian companies. Previous studies in India have also included both the voluntary and mandatory items (Marston & Paul Robson, 1997) and it makes sense when the country is in a transition phase in terms of disclosure requirements. However, it can be assumed that majority of the information will lie in the voluntary category as developing nations have very little mandatory environmental information disclosure (Jairaj 2010).

2.4 Understanding 'Quality' and 'Extent' in Information Disclosure and Hypotheses formulation

Quality has been defined as 'completeness', 'accuracy' and 'reliability' (Singhvi and Desai, 1971) in relation to financial disclosure. It describes the kind of information disclosed by corporations (Halme & Huse, 1997). Beattie et al (2004) identified dimensions of disclosure quality as (a) the relative disclosure and (b) spread of disclosures across topics.

Extent has been defined as the length of the environmental disclosure (Wiseman 1982). It is the quantity of information disclosed (Halme & Huse, 1997) (Copeland & Fredericks, 1968).

The studies have revealed that the extent or quantity of information disclosed is not representative of its quality (Halme & Huse 1997) (Wiseman 1982) (Guthrie & Abeysekera, 2006) (Hossain, 2008) (Copeland & Fredericks, 1968). Thus, it can be implied that while extent of information pertains to the question 'how much information' has been disclosed, the quality of information pertains to the question 'what information' has been disclosed.

In order determine the relationship between quality and extent in this study, we posit following hypotheses:

H1a: There is a significant difference in the quality of environmental information disclosure between industries (Auto, Banking, Capital Goods, Consumer Durables, Healthcare, IT, Metals, Oil& Gas and Power).

H1b: There is a significant difference in the extent of environmental information disclosure between industries (Auto, Banking, Capital Goods, Consumer Durables, Healthcare, IT, Metals, Oil& Gas and Power).

3. Methodology

3.1 Research Design

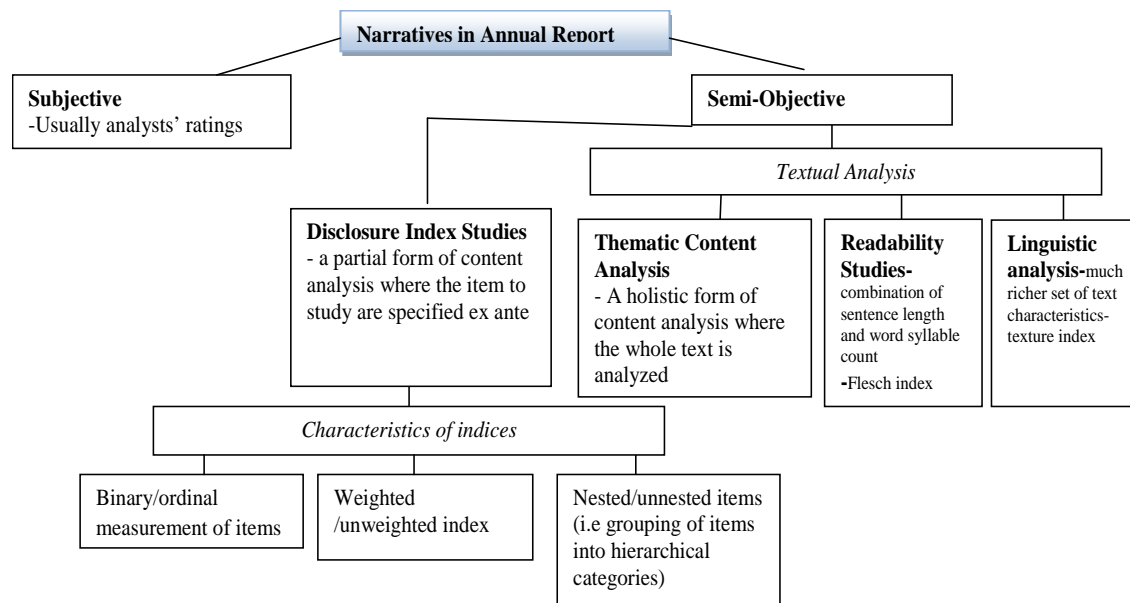
This is an exploratory and descriptive research studying the quality and extent of environmental information disclosed by Indian companies. The unit of analysis is 'company'. It answers question pertaining to 'what' is the content of information disclosed and 'how' much is disclosed. The paper has used primary survey using online questionnaire to conduct exploratory study and secondary research using annual reports of companies for the descriptive study. The annual reports for year 2011-2012 have been examined for companies belonging to various sectors as per BSE classification. This is an empirical study assessing the quality and extent of information disclosure in respect of Indian companies. Primary survey has been done using questionnaire to understand the "why" and "what" questions related to environmental information disclosure. "Why" questions pertain to the need and requirement of environmental information while "What" questions cater to the applicability of the information and the extent of information desired. This was followed by content analysis of disclosures in the annual reports of the companies included in the selected industries. The analysis was done using disclosure index technique.

3.2 Content Analysis:

Environmental information analysis is majorly subjective, though efforts have been taken towards increasing objectivity. The various approaches that can be used are illustrated below.

Figure 1.

Approaches to the analysis of narratives in annual reports



Source: Adapted from Beattie et al.(2004)

In order to assess quality and extent of information disclosure, content analysis has been used. Content analysis is the most frequently used method for assessing the environmental information disclosure. It involves systematic procedures for studying the content (Halme & Huse, 1997) and codifying text or content into categories based on chosen criteria (Weber, 1988). It goes beyond mere count of words to intense examination of language in order to classify the text into categories representing similar meanings (Halme & Huse, 1997). This method provides an objective quantifiable value for measuring the extent of disclosure (Aerts & Cormier, 2009). Recent studies have used the unweighted disclosure index to assess the extent of information disclosure (Mak, 1991) (Hossain, 2008) (Al-Tuwaijria et al., 2004).

This content analysis adopted for this study involves following process:

- (a) Identifying certain environmental issues
- (b) Assigning score
- (c) Determining aggregate score for each firm.

Identifying issues- It involves classifying environmental issues under broad groups or themes to form the disclosure grid. The disclosure index usually comprises of the items selected on the basis of target user group (Marston & Shrives, 1991). As such, a comprehensive disclosure index has been adapted from Aerts & Cormier (2009), totalling 39 items (attached in Appendix II). The items by Aerts & Cormier (2009) has been drawn from

previous research spanning over more than two decades from Wiseman (1982) to (Tuwaijria et.al., 2004) and items assess the companies disclosure towards environment classified under six categories: expenditure and risks, compliance with laws and regulations, pollution abatement, sustainable development, land remediation and contamination and environmental management.

Assign score - The rating technique has been adapted from Aerts & Cormier (2009) and Singhvi & Desai, (1971) using scores from one to three. However, we have not assigned any weights as it has been shown that in case of broad user group, subjective weights of the different user group would average each other out (Makinson and Shrivies, 1991) and the companies that disclose more information on important items are also the ones to disclose more information on less important items (Spero, 1979).

Score 3- The information disclosed is both quantitative as well as qualitative.

Score 2- The information disclosed is qualitative.

Score 1- The item has just been mentioned but no detailed description is provided.

A study of the literature is done to understand how the decisions are made. Then ten annual reports are selected randomly and studied to identify the common sections and subsections in which the environmental topics have been discussed (Malarvizhi and Yadav, 2009). This study includes both the key word search and a detailed reading of the entire annual report to search for similar contexts. Following this, the annual reports of individual companies are assessed and scores are assigned. As the coding, involved subjective judgment, it was independently reviewed by another coder and inter-coder reliability was checked. Inter-coder reliability has been found to be most frequently reported (Beattie et al., 2004). Any discrepancies of the remaining items were resolved (Halme & Huse, 1997) (Patten, 2002).

Determining aggregate score for each firm and sector

As the scores are categorical / nominal in nature, the mean and other parametric statistics is not calculated (Gerald Keller, 2011). For the firm level analysis, a disclosure score is calculated which is given by the number of items for which information was disclosed divided by the total number of items. For example in the thirty- nine item grid, Mahindra discloses information on seventeen items, the disclosure score is seventeen divided by thirty- nine. This comes to a score of forty four. The disclosure index gives an assessment of the

extent of the disclosure. The scoring method using disclosure index has been used earlier (Blacconiere and Patten, 1994). For assessing the quality, the frequency of Score 1, Score 2 and Score 3 are analysed. So for Mahindra which is rated with one Score 3, five Score 2 and eleven Score 1 gets a final rating of Score 1 in terms of quality. Similar procedure has been adopted for the sector level analysis. An aggregate score is assigned for each category by summing up the number of companies disclosing the items to arrive at sectoral scores for the category. For example 'expenditures and risks' is one category that includes nine items for which the companies have to make disclosure. For each item of disclosure the companies would be assigned a score. On the sectoral level, the individual companies are aggregated to assess the number of companies that made disclosure for the item and under which score- 1, 2 or 3.

3.3 Data Collection

For the primary survey, sample of 19 respondents were chosen based on purposive sampling. This is done in order to gain deeper understanding about the company disclosures and the sample units are 'purposively' chosen to provide detailed knowledge (Ritchie (2003). They participants selected ranged from analyst to company executives and are expected to have rich and relevant knowledge of environmental disclosures that the companies were making in annual reports. This enabled in obtaining the broadest perspective on the subject (Yin, 2011). The online questionnaire was created and sent to the selected group of people (Appendix III). For the secondary research, we are selecting the companies included in BSE Sectoral Indices based on free-float market capitalization. BSE Sensex is considered as barometer of Indian economy by companies and regulators (Coal India annual report-2012, Page 42). They are representative of Indian corporate sector. As per the classification, there are thirteen sectoral indices including 143 companies.

Annual reports of 2011-12 are studied as they are considered as the prime vehicle of disclosures (Marston & Shrides, 1991). Information disclosed in corporate annual reports are issued on regular basis (Mak, 1991), most publicized and visible (Halme & Huse, 1997), an effective way of managing external impressions, are credible, and are primary information source for investors, creditors, employees, environmental groups and government. Annual reports also help in maintaining legitimacy (Neu et al., 1998). In addition, there could be interim and quarterly reports, prospectus, employee reports, announcements to stock exchanges and other printed material (Marston & Shrides, 1991). However, earlier studies

have shown that 82% of the investors preferred to see environmental disclosures in the annual report (Epstein & Freedman, 1994). Further as the disclosure policies are relatively stable, the specific time period data is unlikely to impact the generality of results (Richardson & Welker, 2001).

4. Findings and Discussion

4.1 Primary survey findings

The primary survey done, using online questionnaire showed that around 79% of the respondents said that companies disclosed environment information for managing reputation. Further the disclosure is not same across different sectors. Banks and service sector did not disclose the environmental information when compared to auto and tyre sector. This shows that environment information disclosure is influenced by the industry structure. This finding is in line with that of Cowen et al. (1987), Halme & Huse (1997). The environmental information disclosure is also influenced by peer company's efforts to disclose information as 47% of the respondents 'somewhat agreed' and another 12% 'agreed' to the question. More than half of the respondents (39%- somewhat agree and 28%- agree) said that the investment decision is influenced by environment information disclosure. The summary of selected questions has been given below:

Table 1
Summary of Selected Online Questionnaire

	Strongly Disagree	Disagree	Somewhat disagree	Neutral	Somewhat Agree	Agree	Strongly Agree
Do you think there is a change in demand for environmental information by various stakeholders?	-	11% (2)	17% (3)	28% (5)	17% (3)	17% (3)	11% (2)
Do you think, the investment decision get impacted by environmental information?	6% (1)	6% (1)	11% (2)	11% (2)	39% (7)	28% (5)	-
In your opinion, the environmental disclosures made by the company are influenced by the practices of peer companies in same	6% (1)	-	12% (2)	24% (4)	47% (8)	12% (2)	-

area.

Do you think there has been							
a change in firm's processes	6%	6%	18%	18%	29%	18%	6%
in order to manage	(1)	(1)	(3)	(3)	(5)	(3)	(1)
environmental degradation?							

Source: Online Questionnaire

Figures in % represent the proportion of the response amongst total responses. Figures in parentheses () indicate the number of respondents.

4.2 Secondary research findings

For the auto sector, all the companies have made disclosures mostly under pollution abatement and environmental management followed by sustainable development. Few companies have made disclosure on expenditure and risks and compliance with laws and regulations. Further for some item no information has been disclosed like financing for investments, environmental debts, risk litigation, fines and corrective action. Within the sector, Bosch Ltd and Tata Motors have nearly same extent of information disclosed, yet the quality of information disclosed is not same. While for Bosch, most of the information disclosed is 3 and 2, for Tata Motors it is 2 and. The same pattern can be found in other companies as well. Banking companies' disclosure levels are very low with disclosures made on less than 20% of the thirty-nine item grid. For the capital goods sector, most of the companies have disclosed information on pollution abatement and environmental management. In consumer durable sector, Videocon has the highest extent of disclosure covering fourteen items of the thirty-nine item grid. Most of the information disclosed by the companies in the sector is vague and non detail scoring 1. In the *healthcare sector*, most of the information has been disclosed on environmental management, pollution abatement and sustainable development. *Aurobindo Pharma* has disclosed information on sixteen items of the thirty-nine item grid, followed by *Cadilla* that has disclosed information on fourteen of the thirty-nine item grid. However, in terms of quality, Cadilla scores better with more majority of the information disclosed scoring 2 and 3. In the *information technology sector*, of the ten companies included, five of them have disclosed information on less than five items and that also the information has been just vaguely mentioned. Wipro has the most

extensively disclosed information on ten of the thirty-nine item grid. In terms of quality also, it is far superior as compared to its peers with most of the information disclosed scoring 2 and 3. In the **realty sector**, out of the eleven companies, six companies namely *Anant Raj, HDFC Ltd, Indiabulls Oberoi, Parasyanath and Phoenix Mills Ltd* have disclosed information on 1 or 2 items only. They have generally mentioned information on environment. In terms of quality, the information scores 1. In **Power sector**, the information has been disclosed on more than thirteen items on average. In terms of quality, the information disclosure is fairly elaborate with detailed description.

The extent of disclosure and quality of disclosure has been calculated for each sector industry and has been tabulated below to provide better understanding.

Table 2
Summary of Secondary Research

		Expenditures and risks	Compliance with laws and regulations	Pollution abatement	Sustainable development	Land remediation and contamination	Environmental management	Overall
Auto	<i>Extent</i>	13%	17%	70%	60%	20%	53%	37%
	<i>Quality</i>	Score 2	Score1	Score 2	Score 3	Score 2	Score 2	Score 2
Banking	<i>Extent</i>	2%	0%	7%	14%	1%	25%	9%
	<i>Quality</i>	Score 2	Score 0	Score 2	Score 2	Score 2	Score 2	Score 2
Capital Goods	<i>Extent</i>	12%	7%	53%	33%	6%	39%	25%
	<i>Quality</i>	Score 2	Score1	Score 2	Score1	Score 2	Score 2	Score 2
Consumer Durables	<i>Extent</i>	7%	3%	22%	20%	4%	20%	13%
	<i>Quality</i>	Score 3	Score1	Score 2	Score1	Score1	Score1	Score1
FMCG	<i>Extent</i>	6%	5%	43%	33%	12%	34%	22%
	<i>Quality</i>	Score 3	Score1	Score 2	Score1	Score1	Score1	Score1
Healthcare	<i>Extent</i>	7%	1%	45%	40%	1%	26%	19%
	<i>Quality</i>	Score 2	Score 2	Score 2	Score1	Score 2	Score 2	Score 2
Information Technology	<i>Extent</i>	1%	0%	18%	30%	4%	32%	14%
	<i>Quality</i>	Score 2	Score1	Score 2	Score 3	Score 2	Score 2	Score 2
Metal	<i>Extent</i>	18%	41%	88%	70%	36%	75%	53%
	<i>Quality</i>	Score 2	Score1	Score 2	Score 2	Score1	Score1	Score 2

Oil and Gas	<i>Extent</i>	41%	38%	68%	63%	36%	75%	55%
	<i>Quality</i>	Score1	Score1	Score 2	Score 2	Score1	Score 2	Score1
Power	<i>Extent</i>	16%	16%	53%	44%	12%	54%	33%
	<i>Quality</i>	Score 2	Score1	Score 2	Score 2	Score 3	Score 2	Score 2
Realty	<i>Extent</i>	3%	0%	17%	12%	4%	19%	10%
	<i>Quality</i>	Score1	Score 0	Score 2	Score1	Score 3	Score 2	Score 2

As per the results, around 30% of the companies in India are disclosing the information. Highest disclosure is done in oil and gas sector with 55% companies disclosing the information followed by metal sector at 53%. This compares very low to the findings of a similar study showing around 63% US companies (of fortune 500) disclose information towards environment (Cowen, Ferreri & Parker, 1987). The low level of disclosure has also been reported in previous works, like Sharma (2012), Vyas & Reddy(1998) and Baxi & Ray(2009). Although overall the level of disclosure is low, yet the inter- industry analysis shows that variations in disclosures are quite large between the sectors. While oil & gas and metal sectors have disclosures above 50%, the sectors like banking, consumer durables and information technology have the least level of disclosure with 9%, 13% and 14% of the companies disclosing the environmental information. This indicates that the ‘*industry structure*’ influences the extent of disclosure with manufacturing sectors, making more disclosures as compared to services sector. In terms of quality, however the ‘*industry structure*’ is not found to be an influencer as the banking sector with least level of disclosure makes most of its disclosures, rates Score 2 – descriptive. This is similar to the quality of the information disclosed by the leading sector – oil and gas. This finding is consistent with Markson and Srives, 1991 who states “Calculating an index score for a particular company can give a measure of the extent of disclosure but not necessarily the quality of the disclosure”. Therefore, it can be concluded that the industry impacts the extent of information disclosure but has no impact on quality of information disclosure.

Majority of the information disclosed is contained under director’s report, health and safety and environment section and energy disclosure section. Depending upon the nature of the industry wherein, a company operates, there are regulations that make the disclosures mandatory. For instance manufacturing companies have disclosed information on energy conservation as Section 217(1)(e) requires all the companies to, disclose information with respect to : A conservation of energy, B-Technology absorption and C- Foreign exchange

earnings and outgo. While information pertaining to A forms part of company's efforts to conserve energy that can be considered for environmental information disclosure, the information released in respect of technology absorption need not necessarily be environment friendly or related. Another example is, NHPC in its annual report states that it conducts environment impact assessment. However, the act is not voluntary, but rather a mandatory requirement as the projects requires environmental clearance from the Central government. In addition the company has disclosed information on water cess and environment protection cess in quantitative terms included under 'environmental debt' of the disclosure grid. The disclosure of this information too, is driven by the change in state laws. "In October 2010- Jammu and Kashmir government passed the Jammu & Kashmir Water Resources (Regulation & Management) Act, 2010" NHPC annual report FY2011-2012. Further "from year 2010-2011, the Department of Public Enterprises has included sustainable development as a compulsory element for CPSEs under 'non financial parameters' having a 5% weightage (5 marks) in MoU for CPSEs" NTPC Annual report FY2011-2012. This explains the relatively higher extent of information disclosure observed in case of public sector companies like BHEL, NTPC, NHPC etc. Most of the information included under head pollution abatement can be found in the annexure to the directors' report in the section energy, technology & foreign exchange in accordance with the provisions of Section 217(1) (e) of the Companies Act, 1956 which is mandatory for all manufacturing industries. Thus, the section 'conservation of energy' in the annual report gives details about the company's initiatives for energy conservation during the year which is used for inclusion in 'installation and process controls' in the disclosure grid. For example, the information disclosed by Hero Honda under 'conservation of energy' includes initiatives like 'Installed three gas generators, now 42% power generated on liquefied natural gas (LNG) instead of furnace oil. Installed 100 KW solar plant' which has been used in 'installation and process controls' information. Further the information on environment and sustainable development is either covered in corporate social responsibility or a separate section on environment. This could also be due to the fact that companies have to compulsorily disclose a report on business responsibility starting from 2013, embracing the six principles laid down by national voluntary guidelines 2009. Maruti Suzuki contains a separate section on Sustainability giving information on environment while Cummins includes the environment information as a part of management discussion and analysis under the sub-heading 'responsible citizenship – on a sustained basis'. The information disclosed under involvement of environmental organization has primarily been taken from the disclosure where the companies have adopted and took measures in support of

the “green initiative” undertaken by ministry of corporate affairs. However, as these norms are not very punitive and stringent, the quality of information differs widely. This indicates that in contrast to the studies claiming India has a largely voluntary disclosure in respect of environmental information, this study finds that the information disclosed is largely driven by the mandatory requirements.

Most of the environmental information disclosure made by the companies is actually to comply with the mandatory norms. This is contrast to the findings of Jairaj 2010 which claims the information disclosed in developing nations are usually voluntary. Thus ‘regulatory status’ is another influencing element determining both the quality and extent of information disclosure.

The result also identifies the companies that are following the best practices amongst each industry and we are listing it below along with their practices. This gives us a glimpse into the measures followed by corporate in order to restore ecosystem.

Table 3

Companies following best practices

Sector	Companies	Practices
Auto	<i>Bosch Ltd</i>	More than 50% of Bosch’s research and development is directed towards products that conserve natural resources and protect the environment. An investment of around Rs 4.8 million, the manufacturing plant in Bangalore has achieved CO savings of 1,364 tons per year and 1,886 MegaWatt-hours (MWh) of energy, Naganathapura plant- replaced ISO cardboard boxes with reusable plastic eliminating the use of 7,500 wooden pallets a year and resulted in an immediate saving of 1,500 trees. Further through effective implementation of the 3R’s – Reduce, Reuse and Recycle, fresh water consumption was reduced by 22% against 2011 consumption. <u>Verna Plant- rainwater harvesting.</u>
	<i>Tata Motors</i>	In last three years, Green House Gas emissions by 22,581.62 tonnes of CO2. Introduced centralised car parking to restrict vehicle traffic inside plant, to reduce fuel consumption and air pollution, Jaguar Land Rover invests in new technologies, including developing sustainable technologies to improve fuel economy and reduce CO2 emissions.
	<i>ICICI Bank</i>	By urging customers to opt for e-statements the bank has saved an equivalent of 100,000 trees.
Banking	<i>Yes Bank</i>	Environmental and Social Policy based on international best practices is a crucial part of the credit risk appraisal process wherein due diligence is done to ensure that the bank does not support businesses that are engaged in illegal, unethical or environmentally unsustainable practices.

<p style="text-align: center;">Capital Goods</p>	<p style="text-align: center;"><i>ABB</i></p>	<p>The company uses the Gate Model for developing environmentally sustainable products and Environmental Product Declarations (EPDs) are developed based on Life Cycle Assessments (LCAs). These EPDs provide quantitative information in comparable terms; for example, the global warming effects and the use of non-renewable resources, in each phase of the life cycle. Substation automation products, solar inverters, drives, and breakers are some of the products among the 80 or so products for which LCA information is made available. The safe link Circuit Breaker is an example of the company’s LCA approach to assessing and addressing environmental impacts of products. Periodical environmental audits are conducted to identify new risks.</p>
<p style="text-align: center;">Consumer Durables</p>	<p style="text-align: center;"><i>Videocon</i></p>	<p>All manufacturing units have achieved near 100% solid waste recycling by its usage for making products like lime, fly ash bricks, grey boards, egg trays etc., and all units are mandated to achieve total recycling of waste generated by their operations enabling the company to recycle over 99.9% of waste generated by its operations during the year.</p>
<p style="text-align: center;">FMCG</p>	<p style="text-align: center;"><i>ITC</i></p>	<p>The Paperboards and Specialty Papers business, which accounts for nearly 91% of the total waste generated, recycled 99.9% of the total waste generated by its operations and an additional 1,15,414 tonnes of externally sourced post-consumer waste paper under the initiative Wealth out of Waste. Enhanced packaging through increased use of eco-friendly materials. Collaborative initiative called ‘Wealth out of Waste’ (WOW) continues to promote and facilitate waste paper recycling, with a view to conserving scarce natural resources. Investments in wind energy were made in Tamil Nadu to cater to the needs of the newly built ITC Grand Chola at Chennai as a result; the company will meet nearly two-thirds of its energy requirements from clean and renewable sources.</p>
<p style="text-align: center;">Healthcare</p>	<p style="text-align: center;"><i>Cadila</i></p>	<p>The company has devised the Enviormmnet , Health and Safety Index system defining 50 aspects and 600 criteria to quantify the compliance level and it is monitored on a monthly basis. Recycling wastewater at Zydus Research Centre (ZRC)- capacity of 30,000 litres per day. The quantity of water recycled daily is approx. 25000 litres on an average basis. Company treats and utilizes treated effluent as a boiler feed and has installed gas based power plants to reduce the consumption of petroleum products thereby reducing the air emission. Ceramic Ultrafiltration System - the first-of-its-kind effluent treatment in India with total effluent treatment capacity of 200 kl/day has been put. The UF system works on 90% recovery and the reject of 10% is taken back into the secondary treatment.</p>
	<p style="text-align: center;"><i>Biocon</i></p>	<p>Implemented environmental and OHS management systems certified by TÜV Nord at all our manufacturing sites. Started using Biogas generated from the anaerobic waste treatment plant as co-fuel for the boiler, which saved 30 KL of furnace oil per month per unit. As a part of wastewater treatment initiative, Zero Liquid Discharge system has been implemented at all manufacturing units.</p>

Information Technology	<i>Wipro</i>	The company recycles 1,032,050 m3 of water in 23 of major locations, (872,880 for 21 locations in 2010-11) using Sewage Treatment Plants (STPs), which represents % of the total water consumed. The percentage of this recycled water as a percentage of freshwater extracted is around 50%. Reduce the Scope 1 and Scope 2 GHG intensity of Wipro's operations by 50% over a 4 year period from 2.6 MT per employee in 2010-11 to 1.3 MT per employee by 2014-15, translating into a net reduction of nearly 60,600 tons at the Wipro Ltd level. This target applies to all campus facilities and offices. Further the company has set Goal(s): To ensure 95% of total waste is recycled/ reused by 2013 - i.e. Less than 5% is disposed through landfills. To improve water efficiency (Fresh water use per employee) by 5% year on year.
	<i>Sesa Goa</i>	The Company has set energy conservation targets are 3% to 5% at all locations. Further the plants are registered with the UNFCCC generating CERs and about 101,129 CERs has been accrued during 2011-12. The Company's Amona plants utilise waste heat recovery based power plants to generate 60 MW of electricity. The company follows the concept of zero discharge, with a robust system to undertake and monitor water conservation targets every quarter.
Metal	<i>Tata Steel</i>	Investment, earmarked for the plant's Basic Oxygen Steelmaking facility, is expected to improve the energy balance on the site by increasing captive power generation and an investment in IJmuiden's Sinter Plant is expected to deliver a step-change in environmental performance in coming years. A virtual switch from coal to gas as the energy source for power generation is being implemented leading to a drop in CO2 gas emission, besides more than 90% utilisation of Blast Furnace slag. The environmental impact of the movement of goods and products is mitigated by complying with procedures laid down under the ISO 14001 standards for vendor registration and contractors. This is being done to reduce air pollution and vehicular emissions at operating sites. Further the main raw material used across all three locations in Tata Steel Thailand is ferrous scrap, which is fully recyclable. At NatSteel, scrap metal generated within the plant is mostly recycled internally. In 2011-12, the percentage of recycled input materials accounted for 2.36% of the total billet production at NatSteel.
	<i>Cairn</i>	Waste heat recovery system for produced water was installed in the oil handling train at Suvali plant. Re-injection of produced water, separated at the Ravva terminal, back into the reservoir helped reduce discharge of waste water to sea. The Produced Water Re-Injection (PWRI) unit's capacity was enhanced to handle a maximum of 90,000 barrels of water per day. The PWRI at present re-injects 90% of the produced water.
Oil and Gas	<i>BPCL</i>	Not flaring the additional vent gas and instead, using compressors to pressurise this gas as combustible fuel in the boilers for steam generation. GL has commissioned over 241 CNG stations which supply the environment friendly fuel to more than 4,30,000 vehicles. Bharat Renewable Energy Limited (BREL) has entered into 15 year buyback agreement with farmers / Gram Panchayats for purchase of Jatropha seeds, to be planted in 28,856 acres (approx.) (previous year 28,856 acres) of wasteland under 'Jeevan Jyoti Paryojana Scheme' of UP State Government. Aiming for sustainable development, huge tracts of unproductive, barren and non-cultivable land are proposed to be used for the growth of Jatropha and Karanj plants. The company has identified waste / arid land of 1,34,722 acres 54,520 hectares) in the State for bio-fuel plantation.

These companies owing to their efforts can be assumed to be playing an active role towards ecosystem restoration and act as an inspiration for others to follow suit.

5. Conclusion

The study is an empirical assessment of the environmental information disclosure by Indian corporate to understand the role of corporate in ecosystems. The study examined how sensitive, the companies are towards the ecosystem, of which they constitute an integral part and used the 'extent' and 'quality' of environmental information disclosure as lens to understand their practices. Primary survey was done using questionnaire, followed by content analysis of disclosures in the annual reports of the companies included in the selected industries.

The study finds the level of disclosure is low even as compared to more than few decades old findings on US companies. The 'industry structure' and 'regulatory status' are found to be major influencers for environmental disclosures in Indian context. Industry structure impacts the extent of information but has no substantial impact on the quality of the disclosure while regulatory status impacts both the extent and quality significantly. Further the extent of information varies significantly between the industries as well as within the industry. The quality of disclosure varies significantly within the industry as compared to between the industries as most of the sectors have disclosed qualitative information scoring 2. This can be due to the nature of regulatory requirements as most of the requirements are for disclosure without specifying whether it should be qualitative or quantitative. There are some companies in every sector that stand out in terms of their efforts towards ecosystem. These firms have adopted the best practices and serve as benchmarks for others.

This paper is useful for various stakeholder groups like investors, regulators and society. Investors can identify the sectors and the companies that are responding to the changing environment and taking necessary steps towards mitigation or adaptation as these companies would be the likely ones to deliver superior returns. Further as we move towards a more regulated regime where the companies are directed to undertake measures towards ecological sustainability and report the same, this study shall benefit the regulators to understand the current practices and facilitate in planning and monitoring policies. Society including media and non government organisations will also benefit by knowing what the companies are

doing towards ecosystem and how are they responding. Additionally corporate can use this information to make a comparative study between theirs and the best practices followed in the industry, and adopt measures towards restoration of ecosystem. The paper provides a ground for further research, by studying the impact of the ‘influencers’ on the company’s profitability, share prices etc.

This study has looked at the annual reports as source for information that can be expanded to include media releases, corporate releases and corporate websites. The role of influencing variable has not been studied and that might result in different explanation to this question.

Appendix-I

1989	Energy Conservation under the companies Act, 1956 – 1988 amendment. Requires to include in Director’s environment related policies/ problems and annexure details of energy consumption/energy conservation. First disclosure based regulation.
1994	Environmental Impact Assessment (EIA) notified by Ministry of Environment and Forest, Govt. of India for 32 sectors
2000	SEBI specifies principles of Corporate Governance as listing requirement under Clause 49
2001	PAT (Perform, Achieve, Trade) introduced under the Energy Conservation Act. Across eight manufacturing sectors to minimize energy wastage and incentivize those who are energy efficient. Information to be reported to Bureau of Energy Efficiency.
2002	Carbon Disclosure Project –voluntary disclosure model began in 2002 and first Indian companies were included in 2006.
2003	Charter on Corporate Responsibility for Environment Protection (CREP) by MOEF. SEBI modifies clause 49 to incorporate of its Committee on Corporate Governance and public feedback
2006	Revised EIA notified to include 7 more sectors taking it to 39
June, 2008	Release of National Action Plan on Climate Change (CC) by Prime Minister’s Council on Climate Change
Dec, 2008	Release of Voluntary Corporate Social Responsibility Guidelines by Ministry of Corporate Affairs
April, 2010	Guidelines on Corporate Social Responsibility for Central Public Sector Enterprises released By Department of Public Enterprises, Govt. Of India
July-2011	Release of National Voluntary Guidelines on Social, Environmental and Economic Responsibilities of Business By Ministry of Corporate Affairs
Nov, 2011*	SEBI Board decides to mandate submission of Business Responsibility Report by top 100 listed companies as per NVGs.
Dec, 2011	New Company’s Bill tabled in Parliament for Discussion
August,2013	New Company’s Bill passed and CSR expenditure made into a mandate

Source: Adapted from India Sustainability Report 2012, (Jairaj, 2010)

**Subsequently, vide Press Release dated November 24, 2011 SEBI had made it mandatory for top 500 companies (in market cap) to submit its Business Responsibility Report (Hindalco Annual Report 2012)*

- Wildlife Protection Act, 1972
- Water (Prevention and Control of Pollution) Act, 1974
- Water (Prevention and Control of Pollution) Cess Act, 1977
- Air (Prevention and Control of Pollution) Act, 1981
- Forest (Conservation) Act, 1980 – Amendments in 1988
- Public Liability Insurance Act, 1991
- National Environment Tribunal Act, 1995
- National Environmental Appellate Authority Act, 1997
- Energy Conservation Act, 2001
- Coastal Aquaculture Authority Act, 2005
- Special Economic Zones Act, 2005
- Rehabilitation and Resettlement Bill, 2007
- Land Acquisition (Amendment) Bill, 2007
- Hazardous Waste (Management, Handling and Transboundary Movement) Rules, 2008

Appendix II

Expenditures and risks	Sustainable development
Investments	Natural resource conservation
Operation costs	Recycling
Future investments	Life cycle information
Future operating costs	Land remediation and contamination
Financing for investments	Sites
Environmental debts	Remediation efforts
Risk provisions	Potential liability-remediation
Risk litigation	Implicit liability
Provision for future expenditures	Spills (number, nature, reduction efforts)
Compliance with laws and regulations	Environmental management
Litigation, actual and potential	Environmental policies or company concern for the environment
Fines	Environmental management system
Orders to comply	Environmental auditing
Corrective action	Goals and targets
Incidents	Awards
Future legislation and regulations	Department, group, service assigned to the environment
Pollution abatement	ISO 14000
Emission of pollutants	Involvement of the firm to develop environmental standards
Discharges	Involvement of environmental organizations (industry committees, etc.)
Waste management	Joint environmental management projects with other firms
Installation and process controls	
Compliance status of facilities	
Noise and odours	

Appendix III

Questionnaire

Environmental Information Disclosure

1. Does your company make disclosures about environment information in annual report?

Check all that apply.

Yes

No

2. How is the environmental information disclosed?

Qualitative (Descriptive Text)

Quantitative (Numbers)

Both Qualitative and Quantitative

3. In your opinion, environmental disclosure in India should be

Mandatory

Voluntary

4. If mandatory was your answer to question 3, what should be included in mandatory

5. In your opinion, environmental disclosure regulations in India are:

Adequate

Need More Laws

Inadequate

Other:

6. Why is there a need for environmental information disclosure in annual reports?

Managing Reputation

Meeting Stakeholder Pressure

Other:

7. Do you think there is a change in demand for environmental information by various stakeholders?

1 2 3 4 5 6 7

Strongly Disagree	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Strongly Agree
-------------------	--------------------------	--------------------------	--------------------------	--------------------------	--------------------------	--------------------------	--------------------------	----------------

8. Do you think, the investment decision get impacted by environmental information?

1 2 3 4 5 6 7

Strongly Disagree	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Strongly Agree
-------------------	--------------------------	--------------------------	--------------------------	--------------------------	--------------------------	--------------------------	--------------------------	----------------

9. In your opinion, the environmental disclosures made by the company are influenced by the practices of peer companies in same area.

1 2 3 4 5 6 7

Strongly Disagree	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Strongly Agree
-------------------	--------------------------	--------------------------	--------------------------	--------------------------	--------------------------	--------------------------	--------------------------	----------------

10. Do you think there has been a change in firm's processes in order to manage environmental degradation?

1 2 3 4 5 6 7

Strongly Disagree	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Strongly Agree
-------------------	--------------------------	--------------------------	--------------------------	--------------------------	--------------------------	--------------------------	--------------------------	----------------

Name

Company Name

Designation

References

- Aerts, W., & Cormier, D. (2009). Media legitimacy and corporate environmental communication. *Accounting, Organizations and Society*, 34(1), 1-27.
- Al-Tuwaijri, S. A., Christensen, T. E., & Hughes Ii, K. E. (2004). The relations among environmental disclosure, environmental performance, and economic performance: a simultaneous equations approach. *Accounting, Organizations and Society*, 29(5), 447-471.
- Baxi, C. V., & Ray, R. S. (2009). Corporate Social & Environmental Disclosures & Reporting. *Indian Journal of Industrial Relations*, 355-375.
- Beattie, V., McInnes, B., & Fearnley, S. (2004, September). A methodology for analysing and evaluating narratives in annual reports: a comprehensive descriptive profile and metrics for disclosure quality attributes. In *Accounting Forum* (Vol. 28, No. 3, pp. 205-236). Elsevier.
- Blaconiere, W. G., & Patten, D. M. (1994). Environmental disclosures, regulatory costs, and changes in firm value. *Journal of accounting and economics*, 18(3), 357-377.
- Cho, C. H., & Patten, D. M. (2007). The role of environmental disclosures as tools of legitimacy: A research note. *Accounting, Organizations and Society*, 32(7), 639-647.

- Clarkson, P. M., Li, Y., Richardson, G. D., & Vasvari, F. P. (2008). Revisiting the relation between environmental performance and environmental disclosure: An empirical analysis. *Accounting, Organizations and Society*, 33(4), 303-327.
- Copeland, R. M., & Fredericks, W. (1968). Extent of disclosure. *Journal of Accounting Research*, 106-113.
- Cormier, D., & Magnan, M. (2007). The revisited contribution of environmental reporting to investors' valuation of a firm's earnings: An international perspective. *Ecological Economics*, 62(3), 613-626.
- Cowen, S. S., Ferreri, L. B., & Parker, L. D. (1987). The impact of corporate characteristics on social responsibility disclosure: a typology and frequency-based analysis. *Accounting, Organizations and Society*, 12(2), 111-122.
- Dasgupta, N. (2000). Environmental enforcement and small industries in India: Reworking the problem in the poverty context. *World Development*, 28(5), 945-967.
- Deegan, C. (2004). Environmental disclosures and share prices-a discussion about efforts to study this relationship. In *Accounting Forum* (Vol. 28, No. 1, pp. 87-97). University of South Australia, School of Accounting and Information Systems.
- Denning, K., & Shastri, K. (2000). Environmental performance and corporate behavior. *Journal of Economic and Social Research*, 2(1), 13-38.
- Epstein, M. J., & Freedman, M. (1994). Social disclosure and the individual investor. *Accounting, Auditing & Accountability Journal*, 7(4), 94-109.
- Firth, M. (1980). Raising finance and firms' corporate reporting policies. *Abacus*, 16(2), 100-115.
- Freedman, M., & Stagliano, A. J. (1992). European unification, accounting harmonization, and social disclosures. *The International Journal of Accounting*, 27(2), 112-122.
- Gamble, G. O., Hsu, K., Jackson, C., & Tollerson, C. D. (1996). Environmental disclosures in annual reports: An international perspective. *The International Journal of Accounting*, 31(3), 293-331.
- Gray, S. J., & Roberts, C. B. (1989). Voluntary information disclosure and the British multinationals: corporate perceptions of costs and benefits. *International pressures for accounting change*, 116-39.
- Gupta, S., & Goldar, B. (2005). Do stock markets penalize environment-unfriendly behaviour? Evidence from India. *Ecological Economics*, 52(1), 81-95.
- Gupta, V. K. Environmental Accounting and Reporting-An Analysis of Indian Corporate Sector.
- Guthrie, J., & Abeysekera, I. (2006). Content analysis of social, environmental reporting: what is new?. *Journal of Human Resource Costing & Accounting*, 10(2), 114-126
- Halme, M., & Huse, M. (1997). The influence of corporate governance, industry and country factors on environmental reporting. *Scandinavian Journal of Management*, 13(2), 137-157
- Haniffa, R. M., & Cooke, T. E. (2005). The impact of culture and governance on corporate social reporting. *Journal of Accounting and Public Policy*, 24(5), 391-430.
- Hossain, M. (2008). The Extent of Disclosure in Annual Reports of Banking Companies: The Case of India. *European Journal of Scientific Research*, 659-680.
- Hughes, S. B., Anderson, A., & Golden, S. (2001). Corporate environmental disclosures: are they useful in determining environmental performance?. *Journal of Accounting and Public Policy*, 20(3), 217-240.
- Jairaj, B. (2010). *A Disclosure-based approach to climate change in India? Early lessons from Business Regulation*. Centre For Policy Research Climate Initiative.

- Joshi, P. L., Suwaidan, M. S., & Kumar, R. (2011). Determinants of environmental disclosures by Indian industrial listed companies: empirical study. *International Journal of Accounting and Finance*, 3(2), 109-130.
- Mahwar, R. S., Verma, N. K., Chakrabarti, S. P., & Biswas, D. K. (1997). Environmental auditing programme in India. *Science of the total environment*, 204(1), 11-26.
- Mak, Y. T. (1991). Corporate characteristics and the voluntary disclosure of forecast information: a study of New Zealand prospectuses. *The British Accounting Review*, 23(4), 305-327.
- Marston, C., & Robson, P. (1997). Financial reporting in India: Changes in disclosure over the period 1982 to 1990. *Asia-Pacific Journal of Accounting*, 4(1), 109-140
- Marston, C. L., & Shrivs, P. J. (1991). The use of disclosure indices in accounting research: a review article. *The British Accounting Review*, 23(3), 195-210.
- Meek, G. K., Roberts, C. B., & Gray, S. J. (1995). Factors influencing voluntary annual report disclosures by US, UK and continental European multinational corporations. *Journal of international business studies*, 555-572.
- Neu, D., Warsame, H., & Pedwell, K. (1998). Managing public impressions: environmental disclosures in annual reports. *Accounting, Organizations and Society*, 23(3), 265-282.
- Patten, D. M. (2002). The relation between environmental performance and environmental disclosure: a research note. *Accounting, Organizations and Society*, 27(8), 763-773.
- Pramanik, A. K., Shil, N. C., & Das, B. (2007). Environmental accounting and reporting with special reference to India.
- Richardson, A. J., & Welker, M. (2001). Social disclosure, financial disclosure and the cost of equity capital. *Accounting, Organizations and Society*, 26(7), 597-616.
- Ritchie, J., & Lewis, J. (2003). *Qualitative research practice: A guide for social science students and researchers*. SAGE Publications Limited.
- Sekharan, N. (2012). *Trends in Sustainability Reporting in India*,. Emergent Ventures India Pvt. Ltd.
- Sharma, V. K. (2012). Environmental Accounting and Reporting In India: An Appraisal. *Advances In Management Vol, 5, 9*.
- Singhvi, S. S., & Desai, H. B. (1971). An empirical analysis of the quality of corporate financial disclosure. *The Accounting Review*, 46(1), 129-138.
- Spero, L. L. (1979). *The Extent and Causes of Voluntary Disclosure of Financial Information in Three European Capital Markets: An Exploratory Study: a Thesis Presented in Partial Fulfillment of the Requirements for the Degree of Doctor of Business Administration, Harvard University, Graduate School of Business Administration, George F. Baker Foundation* (Doctoral dissertation).
- Gerald Keller and Warrack (2011). Statistics for Management and Economics. *Paperback*
- Tyler, T., Degoey, P., & Smith, H. (1996). Understanding why the justice of group procedures matters: A test of the psychological dynamics of the group-value model. *Journal of Personality and Social Psychology*, 70(5), 913.
- Van Zile, C. (2012). India's Mandatory Corporate Social Responsibility Proposal: Creative Capitalism Meets Creative Regulation in the Global Market. *Asian-Pacific L. & Pol'y J.*, 13, 270-304.
- Vyas, V. S., & Reddy, V. R. (1998). Assessment of environmental policies and policy implementation in India. *Economic and Political weekly*, 48-54.
- Weber, R. (1988). Basic Content Analysis. *Sage University Paper Series on Quantitative Applications in the Social Sciences*, Series No.07-049.
- Wiseman, J. (1982). An evaluation of environmental disclosures made in corporate annual reports. *Accounting, Organizations and Society*, 7(1), 53-63.