12. PRELIMINARY SURVEY ON ENVIROMENTAL INFORMATION DISCLOSURE IN INDIA

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To counter the growing environmental concerns and to supplement traditional environmental regulations, a multi-stakeholder approach, which involves various channels such as the reactions of community, has recently been recognized as an effective strategy. This highlights the significance of environmental information disclosure (EID) as a tool in achieving environmental goals, especially in the developing countries with weak enforcement capacities, including India.

In order to better understand the EID background in India, this paper depicts the level of EID of Indian companies in different sectors. A preliminary survey was conducted by monitoring the environmental information on the websites and in annual reports of 147 companies in 23 different fields. Types of corporate environmental management (CEM) initiatives mentioned in theses sources were analyzed to summarize their occurrence frequencies. The result shows that there exists a substantial difference in EID level between: (i) private and public companies; and, (ii) manufacturing and service/others sectors. These differences seem to be also determined by the types of CEM initiatives. Nevertheless, further research is necessary to clarify the above findings.

Key Words : *environmental management, environmental information disclosure, India, company*

1. INTRODUCTION

To counter the growing environmental concerns and pertaining risks, and to supplement traditional environmental regulations, such as command and control which tends to look solely the relationship between regulators and regulated entities, a multi-stakeholder approach which also involves other entities, have recently gained its importance[1)]. Other entities, such as customer, shareholder, neighborhood and community are known to put substantial pressure on the companies through various means; for instance, buying patterns and citizen suits[2)3)4)]. In this context, the significance of environmental information disclosure (EID) was highlighted as a tool in achieving environmental goals through enhancing pressures from the aforementioned entities. Actually, disclosed environmental information has not only the potential to exert pressure on companies from wider entities when compared to traditional regulations, but it also has potential to create positive impacts to companies; for example, increased social reputation and employee loyalty.

EID becomes especially important in India, where in addition to environmental degradation which is occurring at a significant speed in line with a high economic growth[5)], there are also difficulties in weak enforcement capacity[6)]. Since EID has the potential to involve various entities, and effectively saves both time and cost to pressure the companies, EID approach is considered suitable in countries such as India.

Regarding the above, the aim of this paper is to contribute to a better understanding of the EID background of India. In order to achieve this aim, a preliminary survey was conducted.

2. METHODS

Types of corporate environmental management (CEM) initiatives mentioned in companies' web-site and annual reports such as sustainability reports, were monitored. Table 1 summarizes four corporate environmental initiatives which have been covered in the survey. These are: (i) Greening Supply Chain; (ii) Greening Operation; (iii) Climate Change; and, (iv) Renewable Energy Utilization. These initiatives can further be divided into 18 sub-initiatives. Details for each initiative are summarized in Appendix A.

Table 1 Corporate environmental initiatives and sub-initiatives analyzed in this research

Initiative	Sub-Initiative
Greening Supply Chain	End of life
	Supply initiative
	Vendor management
Greening Operation	Energy conservation
	Air pollution control
	Resource conservation
	Solid waste management
	Hazardous waste management
	Recycling
	Water conservation
	Other pollution prevention measures
Climate Change	Carbon trading
	CDM
	GHG reduction
	Carbon sequestration
Renewable Energy Utilization	Alternate fuels
	Solar energy
	Wind energy

The survey was carried out on a focus group of 100 most valuable private sector companies and 50 most valuable public sector companies as rated by Business Today (BT) 500. However, data was available for 98 private sector companies and 49 public sector companies; thus, a total of 147 companies comprised the data set. These 147 companies were classified into 23 different sub-sectors with their distribution being indicated in Table 2. These sub-sectors were further grouped into two large sectors: (i) Manufacturing (including automobile, automobile ancillaries, cement, chemicals, cosmetics and toiletries, food and beverages, machinery, metal and metal products, refinery and textile); and, (ii) Service/Others (including computer software, hotel and tourism, securities and stocks, telecommunication, construction, electricity generation, media, storage and distribution, trading, transport services, mining and diversified). There were a total of 77 companies comprised of 60 public and 17 private from manufacturing sector. On the other hand, Service/Others had 70 companies in total composed of 38 private and 32 public companies.

Table 2 Distribution of targeted companies

	No. of Firms		
	Private	**Public**	**Total**
Manufacturing	60	17	77
Automobile	6	0	6
Automobile ancillaries	3	0	3
Cement	7	0	7
Chemicals	18	2	20
Cosmetics and toiletries	5	0	5
Food and beverages	4	0	4
Machinery	8	5	13
Metal and metal products	6	3	9
Refinery	2	7	9
Textiles	1	0	1
Service/Others	38	32	70
Banking and other financial services	6	20	26
Computer software	8	0	8
Hotel and tourism	2	0	2
Securities and stocks	2	0	2
Telecommunication	3	1	4
Construction	7	1	8
Electricity generation	3	2	5
Media	2	0	2
Storage and distribution	0	3	3
Trading	1	0	1
Transport services	1	3	4
Mining	2	2	4
Diversified	1	0	1

3. RESULTS

The results of the survey are summarized in Table 3.

The survey depicted considerable difference in the level of EID depending on the sector belonging (manufactures or service/others) and ownership (private or public). The results have implied the following general trends:

(i) The level of EID is relatively higher in manufacturing sector compared to service/others sector; especially regarding greening operation initiative; and,

(ii) Private companies are more aggressive in EID compared to public companies in most of the CEM initiatives, except in the renewable energy initiative.

Table 3 Ratios (%) of Indian companies reporting different initiatives

Manufacturing			
	Private	**Public**	**Total**
Green supply chain (%)	11.7	0	9.1
Greening operation (%)	86.7	76.5	84.4
Climate change (%)	11.7	5.9	10.4
Renewable energy (%)	21.7	41.2	26.0
Service / Others			
	Private	**Public**	**Total**
Green supply chain (%)	10.5	0	5.7
Greening operation (%)	55.3	25.0	41.4
Climate change (%)	10.5	6.3	8.6
Renewable energy (%)	7.9	34.4	20.0
Total			
	Private	**Public**	**Total**
Green supply chain (%)	11.2	0	7.5
Greening operation (%)	74.5	42.9	64.0
Climate change (%)	11.2	6.1	9.5
Renewable energy (%)	16.3	36.7	23.1

To further confirm the above implications, a one-tailed t-test was applied for comparison between: (i) manufacturing and service/others sectors; and, (ii) private and public companies. Disclosing ratios for the 23 sub-sectors, which were calculated independently, were used for this test. P values showed a considerable difference ($P < 0.05$) between manufacturing sector and service/others sector in the EID levels of greening operation and renewable energy initiatives. In addition, a substantial difference ($P < 0.1$) was found between private and public companies in greening supply chain initiative.

4. Discussions and Suggestions for Future Work

There were several interesting findings and implications from the survey results.

Firstly, the manufacturing sector was found overall to have a higher EID level compared to service/others sector in India. In particular, the EID level of greening operation and renewable energy initiatives of the service companies appeared considerably lower than that of the manufacturing sector. This finding was in line with a survey targeting companies in Canada conducted by Henriques and Sadorsky (1996)[2], to an extent, which concluded that the service sector is less likely to have environmental plans compared to the manufacturing sector. This could be simply due to the nature of the two sectors. In general, the manufacturing sector consumes more energy and emits more pollutants, and is thus relatively more sensitive to environmental issues. However, further research is needed to confirm the reasons behind this trend and the similarities between different countries.

Secondly, public companies seem to be relatively reluctant to practice EID compared to private companies, except for renewable energy initiatives. The EID level for green supply chain initiative of private companies was substantially higher than that of public companies. Green supply chain is known to have potential to improve not just the environmental performance of the related companies, but also other performances including product/service quality and delivery of companies both upstream and downstream through cross-fertilization of knowledge and know-how[7]. Further observation on this aspect is also suggested, especially for developing countries whose priority is generally given to economic development rather than environmental issues.

Furthermore, the reasons behind the differences in the EID level between the companies with different sectors and ownerships need to be clarified. The EID level seem to be influenced by the nature of the sectors and ownerships; for example, the differences in the level of direct impacts on environment resulting from company activities and susceptibility to market and community. Further study is needed to confirm this hypothesis.

Lastly, limitations pertaining to the above findings and implications must be noted. First, the above implications and suggestions are based on a limited number of samples; thus, detailed comparison cannot be done in this study. For instance, more detailed comparison between different industrial sub-sectors (e.g., refinery and textile) might reveal additional interesting results. Second, the quality and accuracy of the monitored documents have not been verified in this analysis. Third, the companies were classified only according to their sector and ownership. In addition to these, there are other known parameters having a potential to influence companies' environmental behaviors, such as asset size and perceived risks[4] [8]. Moreover, it should be noted that it is not always the companies facing more risks and disclosing more environmental information that are actually high in environmental performance[9] [10].

Even taking into account the above mentioned limitations and constraints, several interesting findings and implications from this preliminary study

justify further research in the aforementioned perspectives.

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APPENDIX A

Description of Various CEM Issues

End of life: Taking back or recycling of products at the end of their life cycle

Supply initiative: Initiatives such as sourcing raw materials in a sustainable manner

Vendor management: Initiatives taken by the company to manage vendors and dealers to follow green supply chain practices

Energy conservation: Increasing efficiency of equipments and other measures leading to energy efficiency

Air pollution control: Measures to control emissions of polluting gases such as SO_x, NO_x and CFCs

Resource conservation: Conserving the resources by replacing the existing raw material with a more efficient source or implementing better technologies

Solid waste management: Efforts such as to generate zero or minimum waste, or using composting

Hazardous waste management: Managing and handling the hazardous wastes generated as a result of the operations.

Recycling: Recycling of raw materials or any process implemented that leads to recycling of resources

Water conservation: Technologies used to treat the effluents generated from the business operations etc.

Other pollution prevention measures: Any other special methods adopted to keep the pollution levels within the required standards

Carbon trading: Trading carbon credits with other companies or any other entities

CDM: Projects taken up by companies in adopting Clean Development Mechanism

GHG reduction: Practices to reduce GHGs

Carbon sequestration: Measures taken by the company to sequester carbon dioxide by promoting forestry, afforestation, tree plantation or any kind of vegetation

Alternate fuels: Utilization of alternate fuels

Solar energy: Utilization of solar energy

Wind energy: Utilization of wind energy

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