

An Empirical Analysis of Sustainability Disclosure Practices: Evidence from India and China

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Abstract

The present study seeks to access and compare the sustainability reporting practices in two major economies, that is, India and China. Index developed under global reporting initiative (GRI) guidelines is used. Content analysis is employed as a data collection tool. A total of 17 companies from BSE-30 (India) and 19 companies from SSE 50 (China), producing sustainability reports within the time period 2006–2007 to 2010–2011, comprise the sample set. Independent sample t test is used to compare the disclosure practices of India and China. Also, Kruskal–Wallis H test is applied for inter-category and inter-industry comparison of both countries. The results reveal that the sustainability disclosure scores are higher with respect to Indian companies as compared to Chinese companies. The results of independent sample t test are also significant at 1 per cent level of significance. However, Kruskal–Wallis H test suggests insignificant differences in the category-wise and industry-wise disclosure scores of both countries, that is, India and China. It is strongly recommended that China should strive more for sustainability practices in order to keep pace with its counterpart, that is, India.

Keywords

Sustainability reporting, global reporting initiative (GRI), BSE-30, SSE 50, content analysis

Introduction

Sustainable development is defined as the development which meets the needs of the present without compromising the ability of future generations to meet their own needs (Madsen et al., 1997; Sahay, 2004). It is based upon the ‘triple bottom line’ concept given by Elkington (2004), which covers three aspects, namely, environmental performance, societal responsibility and economic contribution. This concept when presented on a piece of paper takes the shape of sustainability reporting. The global reporting initiative (GRI), the best known framework for Sustainability Reporting defines sustainability reporting as ‘... the practice of measuring, disclosing and being accountable to internal and external stakeholders for organizational performance towards the goal of sustainable development’. Further, Dow Jones Sustainability Index defines sustainability reporting as ‘a business approach that creates long

term shareholder value by embracing opportunities and managing risks deriving from economic, environmental and social developments’ (Knoepfel, 2001). It is a voluntary reporting practice which demonstrates the inclusion of social and environmental concerns in business operations as well as in the interactions with stakeholders (Marrewijk & Were, 2003). In short, sustainability reporting has emerged as a new trend in corporate reporting and embeds financial, environmental and social performance of the company into one report (KPMG, 2008; Quick, 2008; Zwetsloot & Marrewizk, 2004).

In the present world when consumption units are more than the accessible resources of a company, sustainability reporting is one of the most contemporary issues emerging in the corporate reporting practices. An increasing number of firms have become active on this issue. The sustainability reporting generates many benefits for companies. It enhances transparency which makes corporation appear

as ethical and legitimate (Erlandsson & Olinder, 2009; SIRAN et al., 2008). Also, it creates a positive image of a company amongst the customers as well as investors (Morsing & Schultz, 2006). Companies with better disclosures get better credit ratings which contribute to their financial success and help them in attracting long term capital (KPMG, 2008). All these benefits lead to higher profits (Dilling, 2010), thereby increasing revenue and share prices (Khavesh et al., 2012). However, it seems that some companies are reluctant to adopt this practice. They consider it as an unnecessary burden that increases their operational cost (McWilliams & Siegel, 2001). Also, the cost incurred on such reporting is immediate but its benefits emerge gradually and are primarily intangible in nature (Evans, 2003).

Still sustainability reporting is the need of the hour. The Nature's knock is warning the corporate world against obstacles of sustainability in future. And a lack of concern for the Nature would be at the company's own peril in the long run (Shah & Bhaskar, 2010). However, the uptake of sustainability reporting among emerging economy firms is largely a very recent phenomenon. A vast majority of literature on sustainability reporting has exclusively focused on reporting amongst developed economies (Daub, 2007 [Switzerland]; Roberts & Koeplin, 2007 [Portugal]; Quick, 2008 [Germany]; Guthrie & Farneti, 2008 [Australia]); and only a few studies exist on developing countries (Baskin, 2006 [Brazil, China, India, Russia and South Africa]; SIRAN et al., 2008 [Brazil, China,

India, Russia, South Africa, South Korea and Taiwan]; Huang & Wang, 2010 [China]; Preuss & Barkemeyer, 2011 [Russia and nine other countries]). As sustainability is an equally important issue for developing nations as well, the present article studies sustainability reporting practices in two emerging economies, India and China and makes a comparative analysis of the same. Both these economies have some common problems like massive population, scarcity of resources, economic inequality, poverty etc. Hence, there is a need to assess their sustainability practices.

Literature Review

Corporate reporting, after various developments, is expanded from traditional financial accounts to non-financial disclosure (environmental, social and economic metrics) and sustainability reporting covers all these three metrics. Sustainability reporting is a way for companies to report on their impact on society. Enough work has been done on 'social and environmental' reporting in developing economies; but only meagre research has been found specifically on 'sustainability' reporting in developing countries. So, in the light of the same, the empirical literature reviewed has been categorized into two parts: (i) Studies on Social and Environmental reporting and (ii) Studies on Sustainability reporting. The review of these studies is summarized in Table 1.

Table 1. Empirical Studies on Social, Environmental and Sustainability Reporting

(i) Studies on Social and Environmental Reporting				
Authors (Year)	Sample, Year	Country	Statistical Tools Used	Findings
Belal (2001)	30 companies, 1997	Bangladesh	Content analysis	All companies had made some social disclosure. 97% companies had made some voluntary disclosure which was mainly descriptive. However, the quantity of information disclosed was very less.
Raar (2002)	425 annual reports and 60 environmental reports over a two year period, that is, 1998 and 1999	Australia	Content analysis	Majority of the information given was either equal to or greater than half page and qualitative discussion was mainly used by firms to communicate environmental information to external parties.
Sahay (2004)	250 leading companies (ranked by sales), 2003	India	Questionnaire and Telephone	Six out of top 10 companies belong to oil and gas sector. Environmental reporting was low in India with certain exceptions, for example, TISCO.
Ratanajongkol et al. (2006)	40 largest companies over the years 1997, 1999 and 2001	Thailand	Content analysis and Spearman Rank Correlation	CSR disclosures increased from 72.5 in 1997 to 75% in 2001. Further, finance and manufacturing sector contributed significantly to this increasing trend.

Authors (Year)	Sample, Year	Country	Statistical Tools Used	Findings
Mak & Chan (2007)	3 airlines	Japan	Content analysis	JAS had uncovered only 60% of features of Adams's analytical framework whereas JAL and ANA had disclosed approximately 81% of those features.
Jose & Lee (2007)	200 largest companies for the year 2002, retrieved from Fortune Global	Fortune Global	Content analysis	The UK (83.33%) stood first, Japan (75%) was second and Germany (73.68%) was third and the US (63.22%) ranked behind them in terms of environmental management practices disclosure on company's websites.
Chatterjee & Mir (2008)	39 companies, 2003–2004	India	Content analysis	Majority of the companies had disclosed 1–20 sentences in both their annual reports (14 companies) and on their websites (17 companies).
Murthy (2008)	Top 16 (by total revenue) software firms/2003–2004	India	Content analysis	Human resource was the most reported corporate social category followed by community development and service contribution, while environmental activities category was least reported.
Lattemann et al. (2009)	68 large firms/2007	India and China	Descriptives	Indian firms communicated more social information as compared to Chinese firms. 82% of companies in India had discussed at least one CSR motive as against 31% companies in China. Also, firms in manufacturing sector were more active in social disclosure.
Alon et al. (2010)	105 companies/2007	Brazil, China, India, Russia	Cross tabulation, ANOVA and Chi ² -tests	75% of non-reporting companies were from China, suggesting that these companies had not realized advantages of such communications. Brazilians were most communicative about their social activities with a mean of 14.5 followed by Russia (11.53) and then India (9.91).
Kolk et al. (2010)	4 largest Chinese and 4 largest international retailers	China	Descriptives	Chinese retailers report more on economic dimensions including philanthropy while international retailers stress more on product responsibility. Environment is stressed less in both groups.
(ii) Studies on Sustainability Reporting				
Baskin (2006)	127 companies, 2004	Brazil, China, India, Russia, South Africa	Descriptive analysis	South Africa was the leading country with the overall score of 7.2 followed by Brazil (5.8) and then India (5.6). While, China (1.1) and Russia (2.1) were lagging behind.
Roberts & Koeplin (2007)	5 companies, 2005	Portugal	Content analysis	Portuguese companies emphasized more on social disclosure followed by economic aspects, while environmental reporting was less stressed. Also, GRI reporting was in the initial stage in Portugal.
SIRAN et al. (2008)	7 countries, 2007	Brazil, China, India, Russia, South Africa, South Korea and Taiwan	Descriptive analysis	South Africa was the leading country for all five parameters, that is, Some Sustainability Disclosure (100%), Separate Sustainability Section (100%), Sustainability Report (100%), GRI Reference (88%) and Goals and Benchmarks (100%). While China was lowest in, Some Sustainability Disclosure (75%) and India in Goals and Benchmarks (17%). Further, Energy was the best sector in all parameters except GRI Reference, where leader was Materials sector.
Quick (2008)	26 companies, 2000 to 2003	Germany	Content analysis	Quality of reporting practice as per GRI guidelines was moderate for social and environmental performance (about 40%) but for economic performance it was just 13.83%.

(Table I continued)

(Table I continued)

Authors (Year)	Sample, Year	Country	Statistical Tools Used	Findings
Guthrie & Farneti (2008)	7 public sector organizations, 2005–2006	Australia	Content analysis	Only 32% of the GRI's elements were used by the selected organizations and the Labour Practices category showed the highest disclosure, that is, 54%.
Huang & Wang (2010)	162 sustainability reports disclosed by 116 enterprises till the end of 2008	China	Content analysis	In Chinese sustainability reports, social topics were most common in more than 96% sustainability reports and economic information in more than 92% reports. While the reports on environmental topics increased from 75% till 2006 to 98% in 2008.
Kolk (2010)	Fortune Global 213 firms, 1999, 2002 and 2005	Fortune Global	Descriptive analysis	Sustainability reporting was following an increasing trend, that is, 39% in 1999 to 52% in 2002 and 69% in 2005, in all the countries, while the share of environmental reports had decreased.
Li et al. (2011)	66 largest forest companies, 2006	Worldwide	Content analysis	As per GRI framework, most emphasized area was environmental responsibility followed by labour and employment responsibility and economic responsibility. While, human rights and social responsibility were laggards followed by product and service responsibility.
Preuss & Barkemeyer (2011)	310 GRI G3 reports from ten countries	Russia and 9 other countries	Descriptive Statistics, Mann–Whitney Test and Spearman's Rank Order Correlation	Indian companies had highest coverage of 75.2% followed by South Korea with 73.9% coverage. While, lowest coverage was of the US (43.8%) and the UK (46%). Also, Russia occupied a middle position with 50.3% score. Moreover, Labour (66.4%), Economic (63.9%) and Environmental (58.3%) indicators were addressed more than Society (54.7%), Human Rights (46.2%) and Product Responsibility (38.2%) indicators.

As depicted by the review of literature social and environmental reporting has been analyzed by many researchers among developing countries (Belal, 2001; Chatterjee & Mir, 2008; Kolk et al., 2010; Lattemann et al., 2009; Murthy, 2008; Sahay, 2004). However, empirical analysis of the 'sustainability disclosure' seems to be more popular in developed countries (Guthrie & Farneti, 2008; Kolk, 2010; Li et al., 2011; Quick, 2008; Roberts & Koeplin, 2007). But, the extent of this disclosure is rather low in developed countries as Roberts and Koeplin (2007) stressed that GRI reporting was in the initial stage in Portugal; Guthrie and Farneti (2008) found only 32 per cent sustainability disclosure among Australian public sector organizations; Quick (2008) reported only 40 per cent disclosure in social and environmental performance with respect to Germany; Also, Preuss and Barkemeyer (2011) found 43.8 per cent sustainability disclosure coverage in the US and 46 per cent in the UK. Further, developing countries have rather better sustainability disclosure score as Preuss and Barkemeyer

(2011) reported 75.2 per cent sustainability disclosure in India, 73.9 per cent in South Africa and 50.3 per cent in Russia. However, the literature available also suggested a poor sustainability disclosure score for China (Baskin, 2006; SIRAN et al., 2008). Overall, there seems to be a little hope as Kolk (2010) found an increasing trend in the sustainability reporting practices among Fortune Global firms.

Need and Objectives of the Study

Review of literature reveals that developing countries have focused on 'social and environmental' aspects in their reporting practices. However, the issue of sustainability has not been of prime importance for these nations as only a handful of studies are available that study sustainability reporting practices exclusively. Hence, the present article is a modest attempt to study the sustainability reporting practices of the two most emerging economies of the

world, that is, India and China. The specific objectives of the article include:

1. To analyze the extent of sustainability reporting practices of BSE 30 companies (India).
2. To analyze the extent of sustainability reporting practices of SSE 50 companies (China).
3. To compare the sustainability reporting practices of India and China.

Database and Research Methodology

BSE 30 and SSE 50 comprising 30 and 50 leading companies of India and China respectively; both ranked on the basis of market capitalization, constitute the universe of this study. Since, sustainability reports are not published by the companies on annual basis, so the time frame of five years ending on 31 March 2011, that is, 2006–2007 to 2010–2011 is taken. The companies which have not produced sustainability reports within a period of these five years are eliminated. The latest sustainability report published by the selected companies during this period is considered for analysis. As a result, an effective sample of 17 Indian and 19 Chinese companies is selected. These companies of both countries are divided into industry groups. Six industry groups are formed in India and five in case of China.

A structured index developed through GRI guidelines (2006) is taken. The GRI frame work for sustainability reporting addresses three components, namely, Economic, Environmental and Social aspects of an entity's operations. Index constituting 79 items is divided into these three categories as—Economic, Environmental and Social (Table A1). Content analysis is used as a data collection tool. Scoring is done by assigning weights of 2 for indicators fully reported; 1 for indicators partially reported and 0 for indicators not reported. Cases where companies have stated that a specific indicator is 'not material' is taken as 0, while 'not applicable' is considered NA and is excluded. Hence, company-wise, category-wise and industry-wise analysis of sustainability reporting practices is done for India and China.

Descriptives have been applied to judge the extent of sustainability reporting among Indian and Chinese companies. Initially, one way ANOVA is used for inter-category and inter-industry comparisons and assumptions of normality and homogeneity of variance are checked. Since, assumptions are not satisfied, we resorted to non-parametric test, namely, Kruskal–Wallis H test. Finally, Independent sample t test is applied after satisfying the assumptions of normality and equality of variance in

order to judge the significant difference between means of sustainability reporting disclosure scores of two countries, that is, India and China.

Hypotheses of the Study

Keeping into consideration the objectives of the study, the following null hypotheses are framed and tested:

- H₀₁:** There is no significant difference in the sustainability disclosure scores of economic, environmental and social indicators of Indian companies.
- H₀₂:** There is no significant difference in the sustainability disclosure scores of Indian industry groups.
- H₀₃:** There is no significant difference in the sustainability disclosure scores of economic, environmental and social indicators of Chinese companies.
- H₀₄:** There is no significant difference in the sustainability disclosure scores of Chinese industry groups.
- H₀₅:** There is no significant difference between disclosure score of BSE 30 (India) and SSE 50 (China) companies.

Results and Discussions

Extent of Sustainability Disclosure of the Companies in India and China

India

The results of extent of sustainability disclosure of companies in India are presented in Table 2.

It can be seen from Table 2, that the total mean percentage sustainability disclosure score of leading Indian companies is 81.34 per cent. Also, their percentage disclosure score varies from 43.67 per cent to 100 per cent. Company-wise analysis suggests that Tata Consultancy Services has the highest disclosure score of 100 per cent followed by Infosys at 98.53 per cent and then by Tata Steel with 96.20 per cent score. Amongst these 17 companies, the lowest score is of Hindalco industries 43.67 per cent followed by Hindustan Unilever with 60.76 per cent and ITC at 62.03 per cent.

The Category-wise analysis shows that the 'Economic Category' has the highest mean disclosure score of 87.26 followed by Social and Environmental category with 82.86 and 78.16 score respectively. The company-wise maximum disclosure is 100 per cent for all three categories, that is, Economic, Environmental and Social. However, the minimum disclosure score is 44.44 per cent for Economic

Table 2. Sustainability Disclosure by Indian Companies

Industry Group	Company	Industry	GRI	Eco	Meco	Env	MenV	Soc	Msoc	Score Obtained	Applicable Score	Percentage	Rank	MIG
Automobiles & transport	M&M	Automotive	G3	88.89	277.78/3 = 92.59	71.67	261.12/3 = 87.04	72.5	263.39/3 = 87.8	117	158	74.05	13	264.37/3 = 88.12
	Tata Motors	Commercial Vehicles	G3.1	88.89		98.15		93.59		142	150	94.67	6	
	Maruti	Passenger Cars and Multi Utility Vehicles	G3	100		91.30		97.3		132	138	95.65	4	
Consumer Goods	ITC	Conglomerate	G3	88.89	166.69/2 = 83.35	61.67	118.34/2 = 59.17	56.25	116.25/2 = 58.13	98	158	62.03	15	122.79/2 = 61.4
	Hul	Consumer Goods	G3	77.8		56.67		60		96	158	60.76	16	
Oil & Gas	ONGC	Crude Oil and Natural Gas	G3	100	266.66/3 = 88.89	64.23	225.89/3 = 75.3	85	266.25/3 = 88.75	122	154	79.22	11	251.37/3 = 83.79
	GAIL	LNG Storage and Distribution	G3	72.22		68.33		83.75		121	158	76.58	12	
Other	RIL	Refinery	G3	94.44		93.33		97.5		151	158	95.57	5	
	L&T	Industrial Construction	G3	100	250/3 = 83.33	61.67	200/3 = 66.67	91.25	276.67/3 = 92.22	128	158	81.01	10	244.22/3 = 81.41
	HDFC Bank	Finance	G3	77.78		50		91.67		108	146	73.97	14	
	Tata Power	Electricity Generation	G3	72.22		88.33		93.75		141	158	89.24	7	
Metals & Mining	Sterilite	Metal, Mining	G3	77.78	222.22/3 = 74.07	98.33	246.66/3 = 82.22	71.25	203.75/3 = 67.92	130	158	82.28	9	222.15/3 = 74.05
	Hindalco	Metals	G3.1	44.44		55		35		69	158	43.67	17	
Computer hardware and software	Tata Steel	Steel	G3	100		93.33		97.5		152	158	96.20	3	
	Infosys	Computer Software	G3	100	300/3 = 100	100	276.67/3 = 92.22	97.37	282.37/3 = 94.12	134	136	98.53	2	282.07/3 = 94.02
	TCS	Computer Software	G3.1	100		100		100		158	158	100	1	
TOTAL	Wipro	Computer Software	G3.1	100		76.67		85		132	158	83.54	8	
				1483.35	87.26	1328.68	78.16	1408.68	82.86	2131	2620	81.34		

Notes: GRI = Global reporting initiative guidelines, Eco = Economic score, Meco = Mean of Economic score, Env = Environmental score, MenV = Mean of Environmental score, Soc = Social score, Msoc = Mean of Social score, MIG = mean of industry group.

and 50 per cent for Environmental category while it is 35 per cent with respect to Social category. In order to check if the difference in the mean disclosure scores of these categories is statistically significant, Kruskal–Wallis H Test has been applied. The results of Kruskal–Wallis H Test are shown in Table 3.

Table 3. Results of Kruskal–Wallis test (Category-wise comparison)

Test Statistics ^{a,b}	
	Disclosure Score
Chi-square statistic	3.317
df	2
Asymp. Significance	0.190

Notes: ^aKruskal–Wallis Test.
^bGrouping Variable: Category.

It can be observed from the Table 3 that the value of $H(2) = 3.317$ is not significant at 5 per cent level. Thus, no statistically significant variation is found and the null hypothesis H_{01} is accepted that there is no significant difference in the sustainability disclosure scores of Economic, Environmental and Social indicators of Indian companies.

In order to further analyze the sustainable disclosure practices in India, all 17 companies are divided into six industry groups, namely, (i) Automobiles & Transport, (ii) Consumer Goods, (iii) Oil & Gas, (iv) Metals & Mining, (v) Computer Hardware & Software and (vi) Others. When comparing the percentage mean scores of these groups it is found find that ‘Computer Hardware & Software’ has the highest disclosure score of 94.02 per cent followed by Automobiles & Transport at 88.12 per cent and then Oil & Gas at 83.79 per cent. However, Consumer goods group has the least disclosure score of just 61.4 per cent followed by Metals & Mining at 74.05 per cent and Others at 81.41 per cent. Further, in order to see whether the difference in disclosure scores of various industry groups is significant or not Kruskal–Wallis H Test is applied on these industries. The results are presented in Table 4.

Table 4. Results of Kruskal–Wallis Test (Industry-wise comparison)

Test Statistics ^{a,b}	
	Disclosure Score
Chi-square	7.144
df	5
Asymp. Significance	0.210

Notes: ^aKruskal–Wallis Test.
^bGrouping Variable: Industry.

It can be observed from earlier table that the value of H is not significant at the 5 per cent level. Thus, no statistically significant variation is found in the mean disclosure scores of various industry groups and therefore, the null hypothesis H_{02} is accepted. Hence, in India sustainability disclosure does not seem to be industry specific either.

So we see that Indian companies have a very high mean disclosure score of 81.34 per cent. However, there is a wide gap between the minimum and maximum disclosure score as this varies from 43.67 per cent to 100 per cent. This is perhaps because, with reporting on sustainability still voluntary in India, companies have a choice of disclosure mechanisms. Further, Category-wise analysis reveals that Economic category has the highest score which suggests the point that in India economic parameter is considered to be the most vital even in sustainability reporting issues. Although category-wise variances also exists among different companies, but no specific reason can be attributed to this practice as sustainability reporting is entirely voluntary in nature. From Industry-wise analysis it is apparent that leading Indian industry groups in terms of sustainability reporting disclosure score includes Computer Hardware & Software, Automobiles & Transport and Oil & Gas while sectors like Consumer Goods have low score. A major harm to the environment results from loss of energy during energy transformation is generally as heat, for example, heat from computer (Pearson Science, 2012). Also, Automobiles & Transport and Oil & Gas have a heavy environmental footprint as issue of fuel and gases are a global issue which in turn involves all sectors and industries. It seems that companies in these sectors are more active in sustainability disclosure.

China

The results of extent of sustainability disclosure of companies in China are presented in Table 5.

It can be seen from Table 5, that the total percentage sustainability disclosure score of leading Chinese companies is 31.25 per cent. Also, their percentage disclosure score varies from 2.53 to 66.46 per cent. Company-wise analysis suggests that Baosteel has the highest disclosure score of 66.46 per cent followed by China Shenhua Energy at 65.82 per cent and then by Air China with 63.29 per cent score. Amongst these 19 companies the lowest score of 2.53 per cent is shared by Bank of China and Citic Securities followed by China Merchants Bank with 5.06 per cent.

The Category-wise analysis shows that the Economic Category has the highest mean disclosure score of 49.14

Table 5. Sustainability Disclosure by Chinese Companies

Industry Group	Company	Industry	GRI	Eco	Meco	Env	Menv	Soc	Msoc	Score Obtained	Score Applicable	Percentage	Rank	MIG
Oil & Gas	Sinopec	Oil & Gas	G3	11.11	88.89/2 = 44.45	60	95/2 = 47.5	10	43.75/2 = 21.88	46	158	29.11	13	68.35/2 = 34.18
	Petro China	Oil & Gas	G3.1	77.78		35		33.75		62	158	39.24	6	
Finance	Industrial and Commercial Bank of China	Finance	G3.1	77.78	400.02/11 = 36.36	30	196.15/11 = 17.83	45	246.29/11 = 22.39	68	158	43.04	4	244.87/11 = 22.26
	China Citic Bank	Finance	G3	66.67		40.91		38.46		60	140	42.86	5	
	Agricultural Bank of China	Finance	G3.1	66.67		40		32.5		62	158	39.24	6	
	China Construction Bank	Finance	G3	66.67		28.57		31.58		48	140	34.29	10	
	Spd Bank	Finance	G3	66.67		20		35		52	158	32.91	11	
	Industrial Bank	Finance	G3.1	55.56		20		32.5		48	158	30.38	12	
	Bank of Beijing	Finance	Non-GRI	0		5		8.75		10	158	6.33	15	
	China Minisheng Bank	Finance	Non-GRI	0		5		7.5		9	158	5.7	16	
	China Merchants Bank	Finance	Non-GRI	0		6.67		5		8	158	5.06	17	
	Bank of China	Finance	GRI-ref	0		0		5		4	158	2.53	18	
	Citic Securities	Finance	Non-Gri	0		0		5		4	158	2.53	18	
Metals & Mining	Zijin Mining	Gold Mining	Non-GRI	11.11	200/3 = 66.67	16.67	170/3 = 56.67	13.75	117.5/3 = 39.17	23	158	14.56	14	146.84/3 = 48.95
	China Shenhua Energy	Metals & Mining	G3.1	100		80		47.5		104	158	65.82	2	
	Baosteel	Steel	G3	88.89		73.33		56.25		105	158	66.46	1	
Transport	Air China	Flight Operations	G3	77.78	155.78/2	40	55/2	77.5	121.5/2	100	158	63.29	3	100/2
	China Cosco	Shipping & Logistics	G3	78	77.89	15	27.5	44	60.75	58	158	36.71	8	= 50
Others	China Unicom	Telecomm	G3	88.89	88.89	16.67	16.67	37.5	37.5	56	158	35.44	9	35.54
		Unications												
Total				933.58/19	49.14	532.82/19	28.04	566.54/19	29.82	927	2966	31.25		

Notes: GRI = Global reporting initiative guidelines, Eco = Economic score, Meco = Mean of Economic score, Env = Environmental score, Menv = Mean of Environmental score, Soc = Social score, Msoc = Mean of Social score, MIG = mean of industry group.

Table 6. Results of Kruskal–Wallis Test (Category-wise comparison)

Test Statistics ^{a,b}	
	Disclosure Score
Chi-square statistic	3.008
df	2
Asymp. Significance	0.222

Notes: ^aKruskal–Wallis Test.

^bGrouping Variable: Category.

followed by Social and Environmental Category with 29.82 and 28.04 score, respectively. The Company-wise maximum disclosure is 100 per cent, 80 per cent and 77.5 per cent for all three categories, that is, Economic, Environmental and Social respectively. However, the minimum disclosure score is 0 per cent for Economic and 0 per cent for Environmental category while it is 5 per cent with respect to Social category. In order to check if the difference in the mean disclosure scores of these categories is statistically significant, Kruskal–Wallis H Test is applied. The results of Kruskal–Wallis H Test are shown in Table 6.

It can be observed from Table 6 that the value of $H(2) = 3.008$, is not significant at the 5 per cent level. Thus, no statistically significant variation is found in the mean disclosure scores of Economic, Environmental and Social categories of information. Therefore, the null hypothesis H_{03} is accepted that there is no significant difference in the sustainability disclosure scores of Economic, Environmental and Social indicators of Chinese companies. Chinese companies do not give much consideration to these categories while disclosing these in their sustainability reports.

In order to further analyze the sustainable disclosure practices in China all 19 companies are divided into five industry groups, namely, (i) Automobiles & Transport, (ii) Oil & Gas, (iii) Metals & Mining, (iv) Finance and (v) Others. When comparing the percentage mean scores of these groups we find that Automobiles & Transport has the highest disclosure score of 50 per cent followed by Metals & Mining at 48.95 per cent and Others at 35.54 per cent. However, Finance group has the least disclosure score of just 22.26 per cent. Further, in order to see whether the difference in disclosure scores of various industry groups is significant or not, Kruskal–Wallis is applied on these industries. The results are presented in Table 8.

It can be observed from Table 7 that there was no statistically significant difference between the different categories ($H = 4.687, p = .321$). Thus, no statistically significant variation is found in the mean disclosure scores

Table 7. Results of Kruskal–Wallis Test (Industry-wise comparison)

Test Statistics ^{a,b}	
	Disclosure Score
Chi-Square Statistic	4.687
df	4
Asymp. Significance	0.321

Notes: ^aKruskal–Wallis Test.

^bGrouping Variable: Industry.

of various industry groups. Therefore, the null hypothesis H_{04} is accepted. Chinese companies do not give much consideration to these industries while disclosing these in their sustainability reports.

It is seen that only 19 companies out of SSE 50, that is, 38 per cent ($19/50 \times 100 = 38$ per cent) are going for sustainability practices and disclosing information in separate sustainability reports. Also, only 3 out of 19 corporate reports achieve a quality score of more than 50 per cent (Baosteel [66.46 per cent], China Shenhua Energy [65.82 per cent] and Air China [63.29 per cent]), indicating the preliminary stage of sustainability reporting practice in China. Moreover, the total mean disclosure of 31.25 per cent is a quite low percentage. Further, the percentage disclosure score ranges from just 2.53 to 66.46 per cent. As sustainability reporting is a voluntary practice, Chinese companies' low score gives impression that they do not seem to have realized the importance of sustenance in future. Moreover, the category-wise analysis reveals that, Economic category has the highest score which supports the fact that in China as similar to India; economic parameter is reported the most. Further, Industry-wise analysis reveals that industry groups that lead the sustainability reporting disclosure score include Automobiles & Transport, Metals & Mining. While Finance sector, has the lowest sustainability score. Automobiles & Transport and Metals & Mining group both are environmentally sensitive and have a heavy environmental footprint (TD, Corporate responsibility report 2011). Yet, it is evident from these arguments that heavily polluting enterprises (Manufacturing, for example, Automobiles & Transport Sector and Metals & Mining) perform better than non-polluting enterprises (Service, for example, Finance; Lattemann et al., 2009).

Comparison of Sustainability Reporting Practices India and China

As seen from the earlier discussion, there is evidently a wide gap between the sustainability reporting practices of

Table 8. Comparison of Sustainability Reporting Practices in India and China

Country	India (BSE 30)	China (SSE 50)
Sample	17	19
Total mean disclosure score	81.34%	31.25%
Range of total disclosure (lowest to highest)	43.67–100%	2.53–66.46%
Economic disclosure mean score	87.26%	49.14%
Environmental disclosure mean score	78.16%	28.04%
Social disclosure mean score	82.86%	29.82%
Highest category disclosed	Economic	Economic
Highest industry	Computer Hardware & Software	Automobiles & Transport
Lowest industry	Consumer goods	Finance

India and China. A comparative analysis of two emerging economies is presented in Table 8.

All the parameters of sustainability disclosure as total mean disclosure, range of disclosure, means of economic, environmental and social categories suggests that Indian companies lead Chinese companies by leaps and bounds. In order to minutely analyze and compare the companies sustainability disclosure practices the companies are divided on the basis of disclosure percentages. The same is shown in Table 10.

Table 9 shows that 84.21 per cent Chinese companies fall in first three ranges, that is, 0–20, 20–40 and 40–60. While only 5.88 per cent Indian companies belong to these lower ranges and the majority of Indian companies (94.12 per cent fall in higher ranges, that is, 60–80 and 80–100. It is evident from earlier that there are differences in sustainability disclosure pattern of India and China. So, in order to judge the significant difference between means of two groups' (Group 1—SENSEX [India] and Group 2—SSE 50 [China]), independent sample t test is applied. The results of independent sample t test are presented in Table 10.

Table 10 shows that the alternate hypothesis, which says that there is significant difference between means of two groups, with t value 8.119 ($p < 0.01$) is accepted at

Table 9. Classification of Companies According to Sustainability Disclosure Percentages

Sustainability Disclosure Percentages	Number of Companies (percentage)	
	India	China
0–20	–	6 (31.58)
20–40	–	8 (42.11)
40–60	1 (5.88)	2 (10.52)
60–80	6 (35.29)	3 (15.79)
80–100	10 (58.83)	–
Total	17 (100)	19 (100)

Table 10. Results of Independent Samples t-Test

Variables	N	Mean	t	p value
India (SENSEX)	17	81.34	8.119	0.000*
China (SSE 50)	19	31.25		

Note: * $p < 0.01$, significant at 1% level of significance.

1 per cent level of significance. From the above mentioned analysis it is clear that mean disclosure of Indian companies, that is, 81.34 is significantly more than Chinese companies, that is, 31.25. It signifies that sustainability disclosure by Indian companies is more than that of China.

India is a leader in sustainability reporting and China is significantly lagging behind. For Indian companies to be listed abroad sustainability reporting is a must for them (BSR, Going local, increasing the value of local sustainability, 2010). So, the companies with global aspirations consider sustainability reporting necessary. Also Indian NGOs are strongly hostile to business in general and multinational corporations in particular, prompting them to build their positive image by adopting sustainability practices (Baskin, 2006). The probable reason for low disclosure in China seems to be company's perception that sustainability reporting is an unnecessary cost on its wealth (Kolk et al., 2010). Also, they seem to consider that such information hampers confidentiality. It seems that managers of these companies have yet not realized the advantages of such communications (Alon et al., 2010).

Overall, our results are similar to Baskin (2006) who demonstrated that India is among the leaders and China is lagging behind with respect to sustainability disclosure. Even Alon et al. (2010) had revealed that Indian companies disclose better than Chinese companies. Our results also corroborates with Preuss and Barkemeyer (2011) who concluded that India is having the highest sustainability disclosure as per GRI. Further, Economic parameters are among the most reported categories. Also Huang and Wang (2010) had revealed that majority of Chinese reports

needed improvement in sustainability disclosure. However, our results are contradictory to Roberts and Koeplin (2007) and Quick (2008) who found that companies emphasized more on social parameters followed by economic aspects. But, the reason for these contradictory finding is perhaps because these studies are of Portugal and Germany respectively. These are developed countries in comparison to developing nations as India and China where perhaps social and environmental parameters dominate the economic parameter. Also Li et al. (2011) found that environmental parameters are reported the most. Moreover, SIRAN (Social Investment Research Analysis Network), KLD and Social Investment Forum (2008) held a contradictory view as in case of industry-wise analysis they revealed that sustainability reporting is better among companies that belong to Energy sector rather than IT sector or Consumer Goods sector. The reason seems to be that this study was with reference to seven different countries.

Conclusion

Sustainability reporting is a voluntary practice, for both Indian and Chinese companies. Even then Indian companies

are superior in sustainability disclosure as compared to their Chinese counterparts. The study reveals that the number of sustainability reports is not so less in China but as far as content, quality and quantity is concerned Indian reports are more educational as per GRI framework. From the earlier discussion we can state that sustenance is need of the hour as without it the future is dark, dim and scary. Corporate managers being the stewards of economy need to wake up and accept the change. They need to form rational policies and strategies with respect to sustenance. Chinese government specifically, should formulate more precise and defined guidance and implement rules for sustainability reporting, which should be in accordance with the type, size and development stage of Chinese enterprises. However, emerging economies like India and China must learn to capitalize their strengths which include cheap labour and huge customer base; rather than treating these as threats alone, in terms of population explosion. Future belong to such economies; otherwise the global world is like a spring board which would bounce out the misfits from the global competition and only the competitive, adaptive and the fittest would survive and win.

Appendix

Table A1. Sustainability Disclosure Index

INDEX	
I Economic Performance Indicators	III Social Performance Indicators
1 EC1 Direct economic value generated and distributed.	(i) Labour Practices and Decent Work
2 EC2 Financial implications and other risks and opportunities due to climate change.	40 LA1 Total workforce.
3 EC3 Coverage of organization defined benefit plan obligations.	41 LA2 Total number and rate of employee turnover.
4 EC4 Significant financial assistance received from government.	42 LA3 Benefits provided exclusively to full-time employees.
5 EC5 Range of ratios of standard entry level wage compared to local minimum wage.	43 LA4 Percentage of employees covered by collective bargaining agreements.
6 EC6 Policy, practices and proportion of spending on locally based suppliers.	44 LA5 Minimum notice period(s) regarding operational changes.
7 EC7 Procedures for local hiring and proportion of senior mgt. hired from local community.	45 LA6 Percentage of Workforce presented in formal joint management-worker health and safety committees.
8 EC8 Development and impact of infrastructure investments and services (for public benefit).	46 LA7 Rates of injury, occupational diseases etc.
9 EC9 Understanding and describing significant indirect economic impacts.	47 LA8 Education, training, etc. to assist workforce.
II Environmental Performance Indicators	48 LA9 Health and safety topics.
10 EN1 Materials used by weight or volume.	49 LA10 Average hours of training per year per employee by employee by category.

(Table A1 continued)

(Table A1 continued)

INDEX

11	EN2 Percentage of materials used that are recycled input materials.	50	LA11 Programmes for skills management and lifelong learning.
12	EN3 Direct energy consumption by primary energy source.	51	LA12 Percentage of employees receiving regular performance and career development review.
13	EN4 Indirect energy consumption by primary energy source.	52	LA13 Composition of governance bodies and breakdown of employees per category.
14	EN5 Energy saved due to conservation and efficiency improvements.	53	LA14 C Ratio of basic salary of men to women by employee category.
15	EN6 Initiatives to provide energy efficient products and services.		(ii) Human Rights
16	EN7 Initiatives to reduce indirect energy consumption.	54	HR1 Investment agreements that include human rights clauses.
17	EN8 Total water withdrawal by source.	55	HR2 Percentage of significant suppliers and contractors (have undergone screening on human rights).
18	EN9 Water sources significantly affected by withdrawal of water.	56	HR3 Total hours of employee training on human rights aspects.
19	EN10 Percentage and total volume of water recycled and reused.	57	HR4 Total number of incidents of discrimination and actions taken.
20	EN11 Location and size of land (in protected areas and areas of high biodiversity).	58	HR5 Operations identified (in freedom of association and collective bargaining).
21	EN12 Description of significant impacts of activities on biodiversity.	59	HR6 Operations identified of having risk (child labour).
22	EN13 Habitats protected or restored.	60	HR7 Operations identified of having risk (compulsory labour).
23	EN14 Strategies, current actions, and future plans for managing impacts on biodiversity.	61	HR8 Percentage of security personnel trained.
24	EN15 Number of IUCN Red List species and national conservation list species affected by operations.	62	HR9 Total number of incidents of violations involving rights of indigenous people and actions taken.
25	EN16 Total direct and indirect greenhouse gas emissions by weight.		(iii) Society
26	EN17 Other relevant indirect greenhouse gas emissions by weight.	63	SO1 Nature, scope, and effectiveness of any programmes.
27	EN18 Initiatives to reduce greenhouse gas emissions and reductions achieved.	64	SO2 Percentage and total number of business units analyzed for corruption.
28	EN19 Emissions of ozone depleting substances by weight.	65	SO3 Percentage of employees trained in anticorruption.
29	EN20 C NO, SO, and other significant emissions by type and weight.	66	SO4 Actions taken in response to incidents of corruption.
30	EN21 Total water discharge by quality and destination.	67	SO5 Public policy positions and participation in public policy development and lobbying.
31	EN22 Total weight of waste by type and disposal method.	68	SO6 Total value of financial and in-kind contributions (political).
32	EN23 Total number and volume of significant spills.	69	SO7 Total number of legal actions for anti-competitive behaviour.
33	EN24 Weight of transported waste deemed hazardous.	70	SO8 Monetary fines and non-monetary sanctions for non-compliance with laws etc.
34	EN25 Identity, size, protected status, and biodiversity value of water bodies and related habitats affected by organization.		(iv) Product Responsibility
35	EN26 Initiatives to mitigate environmental impacts.	71	PR1 Life cycle stages in which health and safety impacts of products and services are assessed for improvement

INDEX

36	EN27 Percentage of products sold and their packaging materials that are reclaimed by category.	72	PR2 Total number of incidents of non-compliance, health and safety impacts.
37	EN28 Monetary fines and non-monetary sanctions for non-compliance with environmental laws and regulations.	73	PR3 Product and service information required by procedures.
38	EN29 Environmental impacts of transporting.	74	PR4 Total number of incidents of non-compliance with laws (products and services).
39	EN30 Total environmental protection expenditures and investments by type.	75	PR5 Practices related to customer satisfaction.
		76	PR6 Programmes for adherence to laws, standards etc. related to marketing communications.
		77	PR7 Incidents of non-compliance with regulations (marketing communications).
		78	PR 8 Substantiated complaints regarding breaches of customer privacy and losses of customer data).
		79	PR9 Fines for non-compliance with laws (products and services).

References

- Alon, I., Latteman, C., Fetscherin, M., Li, S., & Schneider, A.-M. (2010). Usage of public corporate communications of social responsibility in Brazil, Russia, India and China (BRIC). *International Journal of Emerging Markets*, 5(1), 6–22.
- Baskin, J. (2006). Value, values and sustainability: Corporate responsibility in emerging market companies. Retrieved from SSRN: <http://ssrn.com/abstract=1094573> or <http://dx.doi.org/10.2139/ssrn.1094573>
- Belal, A. R. (2001). A study of corporate social disclosures in Bangladesh. *Managerial Auditing Journal*, 16(5), 274–289.
- BSR, Going local, increasing the value of local sustainability. (October 2010). Retrieved from http://www.bsr.org/reports/BSR_Going_Local.final.pdf
- Chatterjee, B. & Mir, M. Z. (2008). The current status of environmental reporting by Indian companies. *Managerial Auditing Journal*, 23(6), 609–629.
- Daub, C.-H. (2007). Assessing the quality of sustainability reporting: An alternative methodological approach, *Journal of Cleaner Production*, 15, 75–85.
- Dilling, P. F. A. (2010). Sustainability reporting in a global context: What are the characteristics of corporations that provide high quality sustainability reports—An empirical analysis. *International Business & Economics Research Journal*, 9(1), 19–30.
- Elkington, J. (2004). Enter the triple bottom line. 1–16. Retrieved from <http://kmhassociates.ca/resources/1/Triple%20Bottom%20Line%20a%20history%201961-2001.pdf>
- Erlandsson, M. & Olinder, M. (2009). Environmental sustainability reporting—Development in Sweden 1998–2008, Bachelor Thesis, University of Gothenburg, 1–75, Retrieved from http://gupea.ub.gu.se/bitstream/2077/20810/1/gupea_2077_20810_1.pdf
- Evans, C. (2003). Corporate social responsibility—sustainability: The bottom line, *Accountancy*, 131, 6.
- Guthrie, J. & Farneti, F. (2008). GRI sustainability reporting by Australian public sector organizations. *Public Money and Management*, 28(6), 361–366.
- Huang, T. & Wang, A. (2010). Sustainability reports in China: Content analysis. *International Conference on Future Information Technology and Management Engineering*, 154–158. Retrieved from <http://ieeexplore.ieee.org/stamp/stamp.jsp?arnumber=05654711>
- Jose, A. & Lee, S.-M. (2007). Environmental reporting of global corporations: A content analysis based on website disclosures. *Journal of Business Ethics*, 72(4), 307–321.
- Khavesh, A., Nikhasemi, S. R., Haque, A., & Yousefi, A. (2012). Voluntary sustainability disclosure, revenue, and shareholders wealth—A perspective from Singaporean companies. *Business Management Dynamics*, 1(9), 6–12.
- Knoepfel, I. (2001). Dow Jones sustainability group index: A global benchmark for corporate sustainability. *Corporate Environmental Strategy*, 8(1), 6–15.
- Kolk, A. (2010). Trajectories of sustainability reporting by MNC's. *Journal of World Business*, 45(4), 367–374.
- Kolk, A., Hong P., & Van Dolen W. (2010). Corporate social responsibility in China: An analysis of domestic and foreign retailers' sustainability dimension. *Business Strategy and Environment*, 19(5), 289–303.
- KPMG. (2008). Sustainability reporting a guide, 1–32. Retrieved from <http://www.kpmg.com/AU/en/IssuesAndInsights/ArticlesPublications/Documents/Sustainability-Reporting-A-guide.pdf>
- Lattemann, C., Fetscherin, M., Alon, I., Li, S., & Schneider, A.-M. (2009). CSR communication intensity in Chinese and Indian multinational companies. *Corporate Governance: An International Review*, 17(4), 426–442.
- Li, N., Toppinen, A., Tuppura, A., Puumalainen, K., & Hujala, M. (2011). Determinants of sustainability disclosure in the Global Forest Industry. *Electronic Journal of Business Ethics and Organization Studies*, 16(1), 33–40.

- Madsen, H., Sinding, K., & Ulhøi, J. P. (1997). Sustainability and corporate environmental focus: An analysis of Danish small and medium sized companies. *Managerial and Decision Economics*, 18(6), 443–453.
- Mak, B. L. M., & Chan, W. W. (2007). A study of environmental reporting: International Japanese airlines. *Asia Pacific Journal of Tourism Research*, 12(4), 303–312.
- Marrewijk, M. Van, & Were, M. (2003). Multiple levels of corporate sustainability. *Journal of Business Ethics*, 44(2–3), 107–119.
- McWilliams, A., & Siegel, D. (2001). Corporate social responsibility: A theory of the firm perspective. *Academy of Management Review*, 26(1), 117–127.
- Morsing, M., & Schultz, M. (2006). Corporate social responsibility communication: stakeholder information, response and involvement strategies. *Business Ethics: A European View*, 15(4), 323–338.
- Murthy, V. (2008). Corporate social disclosure practices of top software firms in India. *Global Business Review*, 9(2), 173–188.
- Pearson Science 8: 5.2 Energy changes—Future Sparks (2012). Retrieved from futuresparks.org.au/.../pearson_science_8_sb_chapter_5_unit_5.2.pdf
- Preuss, L., & Barkemeyer, R. (2011). CSR priorities of emerging economy firms: Is Russia a different shape of BRIC? *Corporate Governance*, 11(4), 371–385.
- Quick, R. (2008–2006). Voluntary sustainability reporting practices in Germany: A study on reporting quality. *Portuguese Journal of Accounting and Management*, 5, 7–35.
- Raar, J. (2002). Environmental initiatives: Towards triple bottom line reporting. *Corporate Communications: An International Journal*, 7(3), 169–183.
- Ratanajongkol, S., Davey H., & Low, M. (2006). Corporate social reporting in Thailand. *Qualitative Research in Accounting and Management*, 3(1), 67–83.
- Roberts, D. H., & Koeplin, J. P. (2007). Sustainability reporting practices in Portugal: Greenwashing or triple bottom line. *International Business & Economics Research Journal*, 6(9), 29–40.
- Sahay, A. (2004). Environmental reporting by Indian corporations. *Corporate Social Responsibility and Environmental Management*, 11(1), 12–22.
- Shah, S., & Bhaskar, A. S. (2010). Natural environment management at Larsen & Toubro's ECC division—a case study. *Asia-Pacific Business Review*, VI(1), 115–121.
- SIRAN, KLD, & Social Investment Forum (2008). Sustainability reporting in emerging markets, 1–23. Retrieved from <http://www.unpri.org/files/EMDP/2008%20SIRAN%20sustainability%20reporting%20in%20Emerging%20Markets.pdf>
- TD Corporate Responsibility Report (2011). Retrieved from http://www.tdcanadatrust.com/easyweb5/crr-2011/environment/financing/risk_profile.jsp
- Zwetsloot, G. I. J. M. & Marrewijk M. N. A. van (2004). From quality to sustainability. *Journal of Business Ethics*, 55(2), 79–82.