Value Quotient of Environmental Sustainability (VQES)

Measuring Economic Value Distribution vis-a-vis Corporate Environmental Sustainability Practices.

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Abstract

The purpose of the paper is to address the issues in measuring economic sustainability through distributed economic value among its stakeholders and compare the same with environmental sustainability practices.The theoretical framework of the paper is based on measuring economic sustainability, environmental performance and disclosure of the same using the third generation (G3) guidelines of GRI. The study compares the economic sustainability of the firm vis-a-vis the environmental sustainability. The study shows a framework to measure the Value Quotient of Environmental Sustainability (VQES). It is an index which helps to compare the environmental-economic sustainability of firms within a sector. The research provides a framework for comparing corporate environmental sustainability practices with economic performance of the firm, measured through distributed economic value. The empirical test of the framework is beyond the scope of this research. Further, the measurement framework of VQES limits its comparability among firms within a sector. This may help investors in comparing the value relevance of environmental sustainabilityof firms within a sector. Business managers mayobjectively identify the sustainability gap and thus may improve corporate sustainability practices to climb to the higher value.

Key words: *Economic sustainability, Environmental sustainability, GRI, Measuring Sustainability*

1. Introduction

Research in corporate sustainability mostly revolves around the concept of economic contribution of sustainability practices may it be social or environmental. Various attempts have been made to assess how sustainability practices of an organization are adding value to its financial bottom line without considering the essence of economic sustainability which is not merely confined with the financial returns but more inclusive in its very nature. Many of the earlier researches have tried to establish a functional relationship between environmental sustainability practices and economic performance, measured through financial value creation of the organization. In spite of various attempts, the direction of the association could not be established because of the mixed responses. These mixed responses may again be due to the different measures of economic performances of the organization. Some authors have taken accounting based measures (Curcio and Wolf, 1996; Cormier and Magnan, 2007; Moneva and Cuellar, 2009; Clarkson et al., 2006;Plumlee et al., 2008)and some have taken stock market based measures (Feldman et al., 1997; Cohen et al., 1997;Sulaiman et al., 2004; Halkos and Sepetis, 2007; Lanoie et al., 1998; Blacconiere and Patten, 1994; Hassel et al., 2005).The outcomes on the relationship between environmental sustainability practices and accounting measures of performances are quite diverse and failed to draw a single conclusion. It seems obvious as the sustainable environmental practices may or may not add to the profitability, but it is very difficult to separately identify that contribution observing accounting measures. The financial benefits derived through environmental sustainability practices often forms a negligible portion in compared to the total value of financial transactions. On the other hand market based measures reported more consistent results worldwide.

1.1Generalization:

The potential of different companies to get financial benefit from responsible environmental practices differs but the central idea of sustainability in the perspective of sustainable environmental management is not to maximise financial benefit but to move

closer towardsenvironmental-economic sustainability (Marcus Wagner, 2006). The earlier studies could not address this issue as the financial performance of the firm is taken synonymous to the economic performance. There is a cost concerned school of thought, where improvement of environmental performance increases costs and thus reduces profits. The second school of thought is a strategic management approach. The strategic environmental management approach can be best explained inverted U-shaped curve. It points to an optimum level of environmental performance for which the economic performance of the firm, as measured in earlier studies, is maximum; below that level there is a positive relation and above that level there is a negative relation. So the relation exists, but earlier studies could not come into one single conclusion, because, it is really difficult or may be impossible to isolate the contribution of sustainable environmental practices on the financial performance of the firm. The studies mainly focused on the financial value addition ignoring the issue of economic sustainability through 'value distribution'.

The present study is *not* an attempt to test the association between financialand environmental performances of the firm but to conceptualise 'sustainability', through sustainable economic value distribution (and *not* value acquisition) along with the environmental sustainability practices. The study can better be explained as an attempt to compare, not relate, sustainable economic value distribution along with corporate environmental responsibility.

2. Conceptual Background of Sustainable Economic Value distribution

The economic dimension of sustainability is linked to the other two pillars, environmental and social performances. Fortune Global 250 companies are rapidly catching up the financial benefits of sustainability and reporting the same in their sustainability reports (Kolk, 2003). This trend is very encouraging, but the essence of economic sustainability is not merely confined within financial returns, but it extends far beyond in terms of its scope and purpose. According to Zadek and Tuppen (2000), "the economic and the financial are simply not equivalent. The financial concerns themarket valuation of transactions that pass through a company's books. The economic, on the other hand, extends beyond the boundaries of the single organisation and takes into account activities in, and outcomes for, societies at large." The authors explained three pillars of sustainability as overlapping universes instead of distinct sets with a common intersection.

The economic dimension of sustainability is all about an organization's impacts on the economic systems and circumstances of its stakeholders at the local, national and global levels (Slater, 2004).This stakeholder relation of business is formally considered by Freeman (1984). He explains stakeholders as "any group or individual who can affect or is affected by the achievement of the organization's objective". They are the individuals and constituencies that contribute in organizations' capacity and activities and therefore potential beneficiaries and/or risk bearers (Post, Preston, and Sachs, 2002). Measuring economic sustainability focuses mainly on the changes in the economic status of its stakeholders as a result of the organisation's activities and not on the financial gain or loss of the firm in isolation. Third generation guidelines (G3) of Global Reporting Initiative (GRI) has captured this stakeholder based approach of measuring economic sustainability.

Financial measures of firms' performances that are used in the previous literatures are simply not equivalent to the economic performance of the firm (Zadek and Tuppen; 2000). Most of the accounting measures used in earlier studies like, return on assets, return on equity, earnings per share and free cash flow to firm are concerned with profitability of the firm. Stock market based measures are also mainly influenced by the profitability. The main problem of these measures are, any social investment by the company in the form of community development or towards better labour practice and decent work or even for improvement of environmental efficiency, immediately treated as a charge against profit. Instantly such investments are seen as a misappropriation of resources by managers by the

way of diversion from their actual claimants (Margolis and Walsh, 2003). The stakeholder perspective of economic performance deals with the broaderconcept of the generation and distribution of the economic values among its stakeholders and thus does not suffer from the perceived misappropriation of resources by the managers. Primarily five stakeholder groups of any business entity have been identified, such as, customers, employees, suppliers, provider of capital and government. The basic measuring unit of economic sustainability indicator is the monetary flow between the organization and it's identified stakeholders. Among these, not really exhaustive, list of stakeholders, customers are the only who generates economic value which is again distributed among rest of the stakeholder groups. Thus the distributed economic valuecan be taken as an improved measure of economic sustainability of the firm.

Distributed Economic Values (DEV) = Cost of all materials, goods and services purchased (Suppliers) + Total payroll and benefits (Employees) + Interest on debt and dividend on all classes of shares (Provider of capital) + Sum of all types of taxes (Government)

In the above equation the concerned stakeholder groups are mentioned in the parentheses. Taking the above calculation of DEV, if we compare it with total value generated, we will get a gap which represents the retained earnings of the firm. The entire profit of the firm does not get distributed as dividend, a part of which is kept as retained earnings. Following Miller and Modigliani (1961) proposition, retained earnings is used to fully or partly finance the new investment requirements and thus decides the requirement of the fresh capital which ultimately gets reflected in the valuation of the equities. So, addressing this issue of retained earnings the measurement of DEV can further be refined as follows:

Distributed Economic Values (DEV) = Cost of all materials, goods and services purchased (Suppliers) + Total payroll and benefits (Employees) + Interest on debt and dividend on all classes of shares (Provider of capital) + Sum of all types of taxes (Government) + Capital gain (Provider of equity share capital)

Providers of equity share capital assume economic benefit in two ways, through dividend and capital gain, which is distinctly shown in the equation. As the above measurement includes distributed economic values among all major stakeholders, so stakeholders' value maximisation can be achieved through maximising DEV.

The model has not tried to isolate how much value is generated and in turn distributed which accrued due to responsible environmental practices. The next section will attempt to compare, not relate, the sustainable environmental performances with the distributed economic value using a simple quotient.

3. Value Quotient of Environmental Sustainability:

Economic activity and the environmental aspect of sustainability are inextricably linked to each other but measuring the extent of association has been witnessed varying outcomes. This has led us to study methodological issues to compare the distributed economic value vis-a-vis environmental sustainability practices through quotients. The major methodological issue here is to construct a reliable proxy of environmental sustainability. In the related literatures, both environmental performances and disclosures are suitably used as a measure of environmental sustainability, for example, in measuring association with stock market based economic performance, measure of environmental disclosures were preferred over the other simply because investors are perceived to value this information positively. But, this includes only one facet of measuring environmental sustainability. There are studies, though with varying outcomes, establishes definite association between environmental performance and disclosure. So the causality between these two must be taken into account while considering the measurement of sustainable environmental practices.

3.1 Causality:

A positive association between environmental performance and disclosure is supposed to validate the credibility of disclosure (Sulaiman et al, 2004). However, majority of empirical studies on this relationship found no significant association between them (Ingram and Frazier, 1980; Freedman and Jaggi, 1982; Wiseman, 1982; Freedman and Wasley, 1990).The problems might be in the measurement of environmental disclosures. Most of the cases these measurements are susceptible to 'greenwashing'. An objective based measurement covering the depth of the disclosure and backed by defined objective guidelines must be in line with the environmental performances as these disclosures are nothing but the hard facts and figures of environmental performances. But as the environmental disclosures are mostly discretionary in nature so, it can be inferred that any disclosure over and above the level of mandatory or minimum industry specific disclosure practices actually depends on management philosophy about objective disclosure. Thus, assuming a linear relationship between environmental performance and disclosure, we can theoretically streamline these relational aspects in the following way.

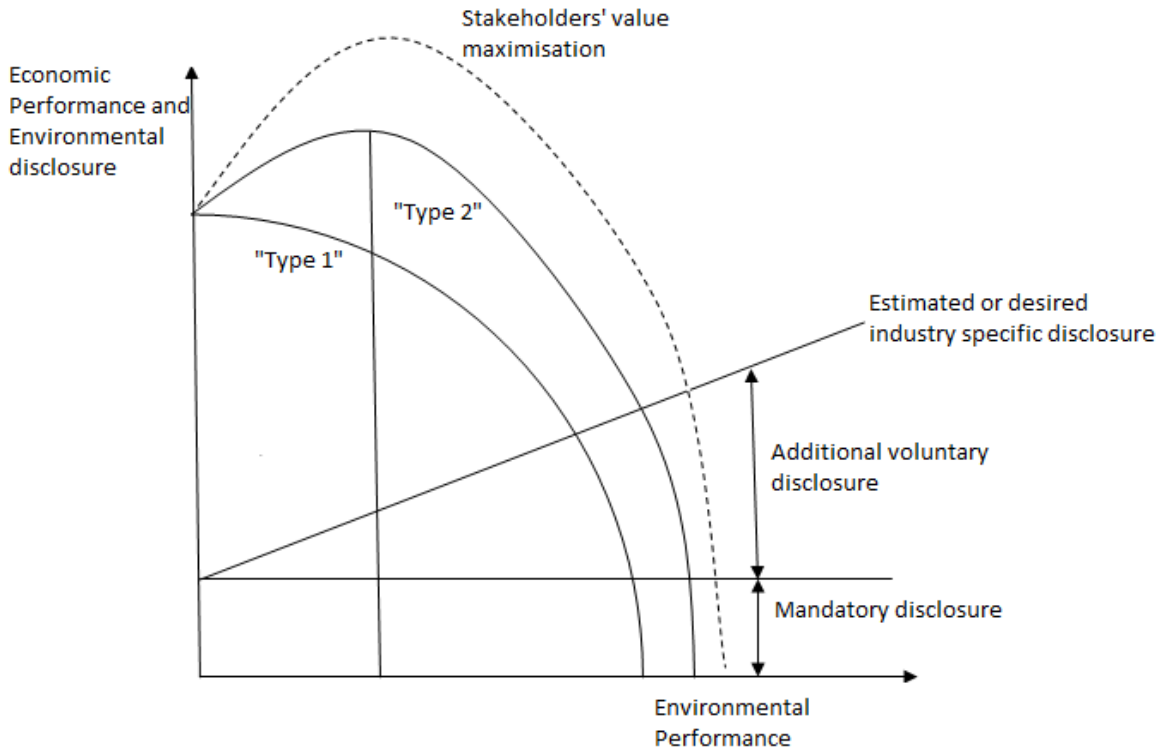
$$EDI_{ij} = a + \beta\ EPI_{ij} + e_i \ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ (1)$$

Where EDI_{ij} = Environmental disclosure index of 'j'th firm in 'i'th sector

EPI_{ij} = Environmental performance index of 'j'th firm in 'i'th sector

The vertical intercept 'a' represents the level of mandatory disclosures or minimum industry specific disclosure practices. A positive management philosophy towards objective environmental disclosures will be reflected in the value of the coefficient of EPI.

Taking these understandings, the concept of stakeholders' value maximisation and environmental performance-disclosure causality can be superimposed in the following figure.



Insert Figure – III: Environmental Performance-disclosure Causality and Stakeholders Value Maximisation

The causality is mainly dependent on two most important issues, that is, objective measurement of environmental disclosure and performance. The attempts are as follows.

3.1.1Environmental Disclosure Index (EDI):

The reliability of the environmental disclosure index depends on the objective parameters based on which the index is constructed. The measurement of disclosure scores using objective-criterion based content analysis methodology proves to be most acceptable and not susceptible to 'greenwashing' (Clarkson et al, 2006; Cormier, Magnan, 2003, 2007). In this methodology, first certain environmental disclosure points are identified and scores are assigned using 0, 1 criterion. The aggregate score of individual disclosure points represents the index of corporate environmental disclosure. As the pre identified disclosure points represent the quality of the objective based environmental performances so the index automatically reflects the quality of objective environmental disclosures of the same. Now, for the sake of comparability of the quality of environmental disclosures between companies, a common benchmark was required. In this respect the guidelines of Global Reporting Initiatives (GRI) are adopted as it is the most objective based and applicable to all types of companies throughout the world.

In the year 1997-98, CERES, a Boston based non-profit organisation initiated 'Global Reporting Initiative' project division conceiving the idea of common framework for the disclosure of sustainability practices. In the year 1999 United Nations Environment Program (UNEP) join hands with CERES to secure a global platform for GRI. In the year 2000 GRI first released its disclosure guidelines. The present study used third generation (G3, 2006) of guidelines as the benchmark in constructing environmental disclosure index. The scoring methodology closely follows the method of Clarkson et al (2006) with necessary adjustments for up-gradation of reporting guidelines. The measurement of the index consists of 100 equally weighted disclosure points covering the broad areas of strategy and analysis, governance, assurance, engagements, commitments and environmental performance indicators. The details of scoring methodology along with its mapping to GRI guidelines are given in Appendix – 1.

3.1.2Environmental Performance Index:

Environmental performances are measured in terms of reduction in environmental footprints by a firm in a specific sector. Following GRI (G3) guidelines, the index covers six components - energy, water, materials, emissions (GHG), effluents and wastes. The main focus area has been the efficient use of these components. The efficiency is measured in terms of the percentage savings in energy consumption, reduction in water usage, green house gas emission, effluents discharges and wastes generation, recycling of water, materials, effluents and wastes and alternative use of renewable energy sources. The index represents the average of these components' efficiency in terms of reduced environmental footprints (Appendix – 2).

3.1.3 Comparing Distributed Economic Value vis-a-vis Environmental Sustainability:

The value quotient of environmental sustainability can simply be measured dividing Distributed Economic Value (DEB) with environmental sustainability measure but the issueis which measure to apply in the denominator, environmental performance or disclosure. Strictly, an objective criterion based disclosure fully replicates the environmental performance in its information content which in turn impacts the market based fundamentals. Moreover sustainability practices and disclosures are voluntary issues, and thus it is more logical to use objective based environmental disclosures as a measure of environmental sustainability which in turn helps to compare companies in the same sector, collectively taking DEV and disclosure practices together. So, the Value Quotient of Environmental Sustainability (VQES) can simply be measured as,

$$VQES = \frac{DEV_{ij}}{EDI_{ij}} \quad \text{..... (2)}$$

DEV_{ij} represents Distributed Economic Value of 'i'th firm in 'j'th sector. The higher value of VQES indicates greater sustainability of the firm. But, this way of measurement of VQES suffers from a serious limitation, that is, lower disclosures will end up with a higher value of VQES. As the environmental disclosure is mostly discretionary in nature so the level of disclosure differs between firms. In the earlier equation the higher level of disclosure will lead to lower value of VQES which should not be the case. So, a correction factor should be incorporated in the model. Suppose $E(EDI_{ij})$ represents the expected level of environmental disclosure for 'i'th firm in 'j'th sector and $A(EDI_{ij})$ represents the actual level of disclosure for the same firm in same sector. $E(EDI_{ij})$ can be estimated putting the value of $A(EDI_{ij})$ in equation (1). The correction factor is simply to be measured through the average of deviation of estimated environmental disclosure and actual environmental disclosure of all the firms in 'j'th sector. The following expression estimates the correction factor.

$$\text{Correction Factor} = \frac{1}{n}\sum_{i=1}^{n}\left|E\left(EDI_{ij}\right) - A\left(EDI_{ij}\right)\right| \quad \text{.....(3)}$$

Here 'n' denotes the number of companies present in the 'i'th sector. Incorporating this correction factor the value quotient of environmental sustainability can be expressed as

$$VQES = \frac{DEV_{ij}}{EDI_{ij}}\left[1 \pm \left(\frac{1}{EDI_{ij}}\right) \times Correction\ Factor\right]$$

The expression within bracket will be an addition if the actual level of disclosure is above the estimated and vice versa. Firms within a sector carrying a higher value of quotient indicates a higher level of sustainability in compared to the firms carrying a comparatively lower value of VQES in the same sector.

4. Conclusion:

The mixed responses of the earlier studies on association between economic and environmental performances have been the main motivation behind this study. In spite of the logical existence of the contribution of sustainability practices on the financial bottom line, a single conclusion could not be drawn from a wide coverage of earlier studies. The reason may be the difficulty in isolating environmental sustainability practices within the spectrum of financial performance or the approach of attempting to relate responsible environmental practices with the financial or accounting returns of the firm which merely forms a part of economic sustainability. So, it was a need to re-address the conceptualization of the environmental-economic sustainability along with the methodological issues for measuring them. Keeping this in mind, first we dropped the idea of associating the environmental and economic performance and in place of that tried to measure and compare these two. VQES is the result of this attempt.

The key issue in the research design has been the measurement of economic and environmental sustainability. Third generation guidelines of GRI have been followed closely in the entire process of measurement of distributed economic value, environmental performance and the disclosure of the same. The acceptability of the value quotient depends on the degree of objectivity in measuring these pillars of sustainability.

VQES at its core is nothing but a simple ratio with adjustments. The objective of measuring VQES is not to generate a sustainable value of the firm but to create an index which helps to compare the environmental-economic sustainability of firms within a sector. This may help investors in identifying the sustainable players within the sector, as well as the business managers to improve their sustainability practices to climb to the higher value.

The study can be further extended in two ways. Firstly, the adjustments should be made to extend the comparability VQES of firms from different sectors. Secondly, there is scope to

measure the value quotient of social sustainability also. The value quotient of environmental and social sustainability together can present a firm's complete picture of sustainability.

References:

Al-TuwaijriSulaiman, A., Christensen, T.E. and Hughes II, K.E. (2004), "The relations among environmental disclosure, environmental performance, and economic performance: a simultaneous equations approach", *Accounting, Organizations and Society*, Vol.29, pp. 447–471.

Blacconiere, W. G. and Patten, D. M. (1994), "Environmental disclosures, regulatory costs, and changes in firm value", *Journal of Accounting and Economics*, Vol. 18 No. 3, pp. 357-377.

Clarkson, P., Li Y., Richardson, G. D. And Vasvari, F. P. (2006), "Revisiting the Relation Between Environmental Performance and Environmental Disclosure: An Empirical Analysis", Working Paper No. 07-07, Rotman School of Management, Canada.

Cohen, M. A., Fenn, S. A., and Konar, S. (1997), "Environmental and Financial Performance: Are They Related", Working paper, Vanderbilt University.

Cormier, D. and Magnan, M. (2003), "Environmental reporting management: a European perspective", *Journal of Accounting and Public Policy*, Vol. 22 No. 1,pp. 43–62.

Cormier, D., Magnan, M., Velthoven and Barbara V. (2005), "Environmental Disclosure Quality in Large German Companies: Economic Incentives, Public Pressures or Institutional Conditions?",*European Accounting Review*, Vol. 14 No. 1, pp. 3–39.

Cormier, D. And Magnan, M. (2007), "The revisited contribution of environmental reporting to investors' valuation of a firm's earnings: An international perspective", *Ecological Economics,* Vol. 62, pp. 613 – 626.

Curcio, R.J. and Wolf, F.M. (1996), "Corporate Environmental Strategy: Impact upon Firm Value", *Journal of Financial and Strategic Decisions*, Vol. 9 No. 2, pp. 21-31.

Feldman, S. J., Soyka, P. A. and Ameer, P. G. (1997), "Does Improving A Firm's Environmental Management System and Environmental Performance Result in a Higher Stock Price?", *Journal of Investing*, Vol. 6 No. 4, pp. 87-97.

Freedman, M and Jaggi, B. (1982), "Pollution disclosures, pollution performance and economic performance", *Omega*, Vol. 10 No. 2, pp. 167-176.

Halkos, G. and Sepetis, A. (2007), "Can Capital Markets Respond to Environmental Policy of Firms? Evidence from Greece", *Ecological Economics*, Vol. 63, pp. 578-587.

Hart, S. L. and Ahuja, G. (1996), "Does it pay to be green?An empirical examination of the relationship between emission reduction and firm performance", *Business Strategy and the Environment*, Vol. 5, pp. 30-37.

Hassel, L., Nilsson, H. And Nyquist, S. (2005), "The value relevance of environmental performance",*European Accounting Review*, Vol. 14 No. 1, pp. 41-61.

Kolk, A. (2003), "Trends in Sustainability Reporting by the Fortune Global 250", *Business Strategy and the Environment*, Vol12, pp. 279-291.

Lanoie, P., Laplante, B. and Roy, M. (1998), "Can capital markets create incentives for pollutioncontrol?",*Ecological Economics*, Vol. 26, pp. 31-41.

Margolis, J. D. and Walsh, J. P. (2003), "Misery loves companies: Rethinking social initiatives by business", *Administrative Science Quarterly*, Vol. 48 No. 2, pp. 268 – 305.

Miller, M. H. and Modigliani, F. (1961), "dividend policy, growth and the valuation of shares", *Journal of Business*, Vol. 34, pp. 411 – 433.

Moneva, J. M.and Cuellar, B. (2009), "The Value Relevance of Financial and Non-Financial Environmental Reporting", *Environmental and Resource Economics*, Vol. 44 No.3, pp. 441–456.

Plumlee, M., Brown, D., and Marshall, R. S. (2008), "The impact of voluntary environmental disclosure quality on firm value", SSRN working paper, URL: http://papers.ssrn.com/sol3/papers.cfm?abstract_id=1140221

Post, J. E., Preston, L. E., & Sachs, S. (2002),*Redefining the Corporation: Stakeholder Management and Organizational Wealth,*CA: Stanford University Press, Stanford.

Shane, P. and Spicer, B. (1983), "Market response to environmental information produced outside the firm", *The Accounting Review*, Vol. 58 No. 3, pp. 521-538.

Slater, A. (2004), "The Global Reporting Initiative (GRI)'s Economic Performance Indicators: Measuring Impacts One Stakeholder at a Time", *AccountAbility Forum,* No. 1, pp. 23 – 29.

Tinker, T., Lehman, C. and Neimark, M. (1991), "Corporate social reporting: Falling down the hole in the middle of the road", *Accounting, Auditing and Accountability Journal*, Vol. 4 No. 2, pp. 28–54.

Wagner, M. (2005), "Consistency and Credibility?",Environmental Reporting, Environmental Performance Indicators and Economic Performance, Marburg, Tectum.

Zadek, S. And Tuppen, C. (2004), "Adding Values: The Economics of Sustainable Business", British Telecommunication Report, London.

Appendix - 1: Scoring Methodology of Discretionary Environmental Disclosure Quality

Sl No.	Items	Scale of Scoring	Map to GRI
A)	**Strategy and Analysis (Maximum Score 6)**		
1	Statement of senior decision maker on environmental policy	0-1	GN 1.1
2	Management views on environmental performance with respect to targets	0-1	GN 1.1
3	A statement on formal management system regarding key environmental risk and impacts.	0-1	GN 1.2
4	Mention about key events, achievements and failures during reporting period.	0-1	GN 1.1
5	A statement on organization's main environmental challenges and goals in coming 3 – 5 years.	0-1	GN 1.1
6	A statement on governance mechanism in place to specifically identify and manage environmental risks and opportunities.	0-1	GN 1.2
B)	**Assurance(Max score 1)**		
1	Independent verification or assurance on company's environmental performance	0-1	GN 3.13
C)	**Governance, commitments and engagements (Max score 11)**		
1	Existence of an environmental committee in the board	0-1	GN 4.1
2	If the chair of the highest environmental governance body is also an executive officer	0-1	GN 4.2
3	Stakeholders' involvement in setting corporate environmental policies	0-1	GN 4.4, 4.14
4	Existence of linkage between executive compensation and environmental performance	0-1	GN 4.5
5	Existence of the process of determining qualifications and expertise of the members of the environmental committee	0-1	GN 4.7
6	Internally developed statement of missions or values, code of conduct and principles relevant to environmental performance	0-1	GN 4.8
7	Periodic verifications or audits on environmental performance and/or systems	0-1	GN 4.9
8	Process for evaluating committee's/governance body's own performance with respect to environmental performance	0-1	GN 4.10

9	Adoption of externally developed environmental charters or principles or other initiatives	0-1	GN 4.12
10	If the organization is the member of any association/ initiative to improve environmental practices	0-1	GN 4.13
11	Stakeholders' engagement in preparing sustainability report	0-1	GN 4.14
D)	**Environmental Performance Indicators* (Maximum Score 82)**		
1	Direct and indirect energy consumption by primary energy source	0-6	EN 3,4
2	Materials used and percentage of recycled input materials	0-6	EN 1,2
3	Energy saved due to conservation, efficiency improvement and initiatives towards renewable energy based products and services	0-6	EN 5,6
4	Water usage and water usage efficiency	0-6	EN 8,9,10
5	Total direct and indirect greenhouse gas emissions by weight	0-6	EN 16,17
6	Initiatives to reduce greenhouse gas emissions and reduction achieved	0-6	EN 18
7	NOx, SOx and other significant air emissions and ozone depleting substances by type and weight	0-6	EN 19,20
8	Volume of significant land, water and air discharges, releases and spills	0-6	EN 21,23
9	Waste generation and its disposal and treatment	0-6	EN 22, 24, 25
10	Initiatives to reduce/mitigate environmental impacts of products and services	0-6	EN 26,27
11	Environmental compliance performances	0-6	EN 28
12	Significant environmental impacts of transporting products and materials used for the organization's operations	0-6	EN 29
13	Investment on technologies, researches and/or innovations to enhance environmental performance and efficiency	0-6	EN 30
14	Land and resources use and description of significant impacts of products and services on biodiversity and conservation**	0-4	EN 11,12,13,14,15
Total Maximum Possible Score is 100			

*Environmental performance score for items 1 to 13 is measured on a six point scale (0 – 6). A single point is awarded for covering each of the following items:

i) Performance data is presented.

ii) Performance data is presented relative to the industry/peers.

iii) Trend analysis on the relevant performance data is done.

iv) Performance data is presented relative to targets.

v) Performance data is presented both in absolute and percentage form.

vi) Performance data is presented for different segments.

**Environmental performance score on biodiversity (item number 14) is measured on a four point scale (0 – 4). A single point is awarded for the disclosure on each of the following items:

i) Location and size of land used or own in or adjacent to the protected or high value biodiversity areas.

ii) Description of significant impacts of activities, products or services on biodiversity.

iii) Habitats, including IUCN Red List species (if applicable in operation affected areas) protected or restored.

iv) Strategies, current actions and future plans for managing impacts on biodiversity.

Appendix – 2: Scoring Methodology for Firms' Environmental Performance

Sl . No	Components	Scale of Scoring
A)	**Energy**	
1.	Consumption of renewable energy	Consumption of renewable energy as % of total energy consumption
2.	Energy saved	Energy saved as % of total energy consumption
B)	**Water**	
1.	Water Recycled	Water Recycled as % of total water consumption
2.	Reduction (saving)in water usage	Reduction (saving)in water usage as % of total water consumption
C)	**Materials**	
1.	Materials recycled	Materials recycled as % of total materials consumption
D)	**Emissions (GHG)**	
1.	Reduction of GHG emission	Reduction of GHG emission as % of total emission
E)	**Effluents**	
1.	Reduction in effluents discharges	Reduction in effluents discharges as % of total effluents discharges
2.	Effluents recycled	Effluents recycled as % of total effluents discharges
F)	**Wastes**	
1.	Reduction of wastes generation	Reduction of wastes generation as % of total wastes generated
2.	Wastes recycled	Wastes recycled as % of total wastes generated
Total Score		Sum of all percentage points
Environmental Performance Index		Total Score/(Number of components) = Total Score/10