

Introduction

‘Sustainable Development’ is the key for all economic growth initiatives, in view of the increasing awareness about ‘Global warming’ and ‘Climate change’ risks being recognized world over.

Carbon dioxide is the most prominent Green House Gas (GHG) which is considered to be a major contributor to ‘Global warming’. Hence emissions of carbon dioxide from various economic activities is being viewed as a major environmental risk and global investors want to understand such risks before they decide to invest in any company. Estimation of carbon emissions from various activities is done as per agreed international norms in this regard and emissions, thus estimated, are generally known as ‘CARBON FOOTPRINT’ of the company.

UK Govt. has made it mandatory for all LSE listed companies (main group) to report their carbon footprint irrespective of location of their operations. Similar Regulatory initiatives are expected from all major economies of the world in near future.

India and China are world’s fastest growing, large economies which have fairly large carbon footprints and these countries are under tremendous international pressure to reduce their carbon emissions. Hon’ble Prime Minister of India, during one of the international negotiations in 2015, made a voluntary commitment to reduce the emission intensity of India’s economy by 35% (as compared to 2005) by year 2030.

Initiative on BSE has been taken to report ‘Greenex’ and ‘Carbonex’ which are trying to reflect carbon related performance of some select scripts. In our opinion, the coverage of ‘Carbonex’ is based on highly qualitative, subjective parameters and restricted to CDP reporting companies. ‘Greenex’ tries to bring out 25 high ranking carbon performers based on half yearly results.

These indices in Indian stock market do not give adequate coverage and are not based on unambiguous quantifiable parameters to reflect ‘Carbon risk’ of the group of companies.

In order to give true reflection of relationship between the stock market performance and ‘Carbon risk’ there is room for developing an index which reflects ‘Carbon risk’ and can be directly correlated to conventional sense of group of companies listed.



OUR APPROACH:

Data base

We looked at various alternatives to achieve this and found that; as per existing

Company Law requirements under Companies (Disclosure of the particulars in the

Report of the Board of Directors) Rules,1988; Indian companies, in 21 identified sectors,

are required to report considerable details of their energy consumption as part of the Directors' Report included in the Annual Report. We decided to use this published information as the basis of our exercise to estimate GHG emissions of the companies.

The emissions estimated in this manner do not include process emissions (generally reported under Scope-1 emissions) and emissions under Scope-3 of GHG Protocol.

All other Scope-1 & 2 emissions are related to energy use and can be estimated from such database.

It may be noted that emissions from energy use, on global average basis, account for almost 75% of total GHG emissions and thus, carbon emissions estimated on the basis of such published information of the companies would be truly representative of their absolute emissions and 'Risk' related to that.

Emission calculation

Based on in-depth understanding of various energy sources, their usage and related emissions, we at Ethical Energy have been working relentlessly in devising a model which will help in estimating GHG emissions of the company based on above mentioned published information. We have now completed this exercise and are in a position to calculate energy related emissions of such companies based internationally accepted emission factor norms under 'GHG Protocol'.

The model developed by us, helps in thoroughly analyzing the energy sources and usage pattern and establish clear trend in such energy usage and emissions. Apart from various other parameters that we can analyze in our model, following parameters are of relevance, in our opinion, to develop an index which truly reflects 'Carbon emission related risk' of a company:

1. Total GHG emissions in the year of reporting
2. Emission intensity of fossil fuels used (T CO2(eq.) per TOE of fuel used)(TOE is tones of oil equivalent of fuel used)
3. Emission of electricity used (kgs. CO2 (eq) per kwh of electricity consumed)
4. Share of renewable power used in total electricity consumed
5. Emission intensity of PBIDT (kgs. CO2 (eq) per INR '000 of PBIDT in reporting year).

These parameters are very objective and unambiguously quantifiable parameters and they are independent of scale and type of operations (except for parameter of total emissions) of the company. Thus, these parameters can be used for estimating 'Carbon risk' of any company that reports the data as mentioned above.

Current status

We have already compiled historical data of more than 300 companies..

Thus, we can help in developing an index which can cover much larger number of the listed companies and can help investors in assessing the 'Carbon risk' of companies while taking their investment decisions.

However, post 2014 there is a change in Regulations related to reporting of such data as part of Director's Report.

Hence, under current Regulatory regime, it is difficult to estimate the parameters based on published information.

Voluntary disclosure or revised regulations mandating reporting of energy consumption data will help in having a very transparent system for estimating "Carbon Risk" of any company.

It may be possible for SEBI to ,also, consider disclosure of energy consumption data as mandatory requirement for listed companies.



Ethical Energy Index (EEI)

We have now developed a methodology to evolve an index which reflects relative 'Carbon emission risk' of any company on a scale of 0-100 depending upon their performance in a given financial year.

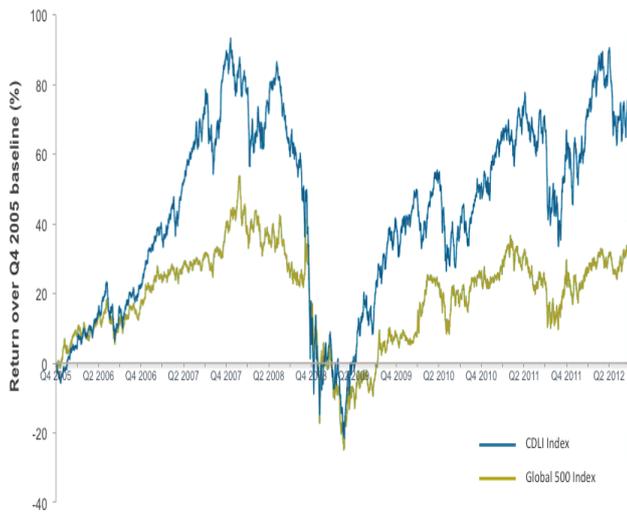
The methodology involves assigning weightage to different parameters mentioned above and assigning 'Carbon risk' value for their given performance for that particular parameter in a given financial year.

The calculation basis and matrix is briefly summarized in following table:

Sr.	Parameter used	Weightage In INDEX	Zero risk value	Highest (100) risk value	Basis
1	Total GHG emissions (as T CO ₂ (eq.))	20	10000	200000	India's emissions are more than billion T. (Highest risk value indicates that if 5000 cos. emit at this rate they will contribute total emissions of
2	Emission intensity of fuel mix used (T CO ₂ (eq.)/TOE)	25	2.35	4	Amongst fossil fuels solid fuels like coal have highest emission of about 4 and natural gas (cleanest fossil fuel) has emission of 2.35.
3	Emission intensity of Power consumed (kgs.CO ₂ (eq.) / kwh)	25	0.35	0.81	Grid power supply in India currently has average emissions of 0.81 (as published by CEA). If a new high efficiency gas based CCGT is used for power generation than emission intensity would be 0.35.
4	Share of renewable power in total power (% of total power)	10	5	0	RPO obligations by different Regulators, on an average, indicates that if a company uses 3-5% or more of renewables than it complies with RPO. If company does not use renewable power than it is high risk.
5	Emission intensity of PBIDT (kgs.CO ₂ (eq.)/INR '000 of PBIDT earned)	20	17	100	India's GDP emission intensity is 23 kgs per INR'000 in year 2012. PBIDT of a company is the closest representation of company's contribution to India's GDP. India has committed to reduce GDP emission intensity by 25% i.e. to 17 kgs. Generally manufacturing is more emission intensive hence highest risk value is taken as 100.

We have considered these parameters, risk values and weightage based on our in depth understanding of the subject and a very brief basis is given in above table. We can discuss the reasons and logic behind these values in detail with interested partners.

We would be able to provide these basic EEI index for all these 1000-1500 companies for their latest reported financial year data, within 2-3 weeks of their publication of Annual Report for any financial year.



Source: Carbon Disclosure Project

Carbon Risk Index for Stock Exchange

EI can be used to develop an index on any stock exchange to reflect carbon risk of companies covered in Index

We can help to develop a 'Carbon risk Index' for a group of companies listed on your exchange (companies which are required to publish energy related information as per details given in our approach to database).

We propose that such an index can be weighted average of the EEI of each company (based on their market cap value at a give point of time on the Exchange). Thus, this would be a real time index.

$$\text{Carbon Risk Index(CRI)} = \frac{\sum (MC)_i * (EEI)_i}{\sum (MC)_i} \text{ ("i" varies from 1 to n companies)}$$

Where: MC indicates the 'Market Cap' of the company and EEI indicates the value of EEI (to be provided by us) of that company for the latest available financial year.

Thus, at any given point of time, the Sensex movement would result in a new value of CRI on Exchange.

Significance of CRI would be that if Sensex increase is with increasing CRI than the value creation in the group of companies is at the cost of increasing 'Carbon risk' and if the Sensex increases with decreasing CRI than it indicates the value creation in group of companies is by reducing 'Carbon risk'.

In order to adjust the actual Sensex to 'carbon risk' the exchange can also publish

Sensex-carbon risk adjusted (Sensex-CRA) which would be computed by dividing the Sensex with CRI.

$$\text{Sensex-CRA} = \text{Sensex}/\text{CRI}.$$

Thus, real time chart indicating 'Sensex', 'CRI' and 'Sensex-CRA' would be a useful tool for any investor to assess the 'Carbon Risk' of their investment decision.