

**TOWARDS A GREEN SUPPLY CHAIN IN INDIA – PART II : THE PUSH
FOR A REGULATORY FRAMEWORK TO DIRECT GREEN SUPPLY
CHAIN EFFORTS IN INDIA**

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ABSTRACT

Green supply chain is an area where global corporate leaders have already laid focus and have undertaken necessary actions to set industry best practices. In PART I of this two part series we had explained and described the current efforts underway in Indian corporates to adopt to the challenges of green supply chain . In this PART II of the series we describe our study and work done in the area of government regulations and establishment of a framework for giving a direction to these efforts .Governments across the world have been deploying policies and regulations to impact corporate strategies and business operations towards adopting environmentally sustainable practices. Thus in today's world, what is considered as a voluntary initiative towards sustainability, also entails the potential of being introduced as a Government regulation in the near future.

The paper also identifies key issues and potential barriers encountered by the various industries in India in implementing green supply chain practices. The paper finally concludes with specific recommendations to facilitate and promote environmentally sustainable practices in the supply chain domain among Indian companies.

Keywords : sustainability , green supply chain , global reporting initiative (GRI) , government of India (GOI) , guidelines for sustainability , triple bottomline reporting

Introduction (a brief overview of the current GOI regulations)

India, a non-Annex I country to the convention of UNFCCC(UN Framework for Climate Change) (UNFCCC, 2013) , quite evidently realises the threat posed by climate change and has been proactively taking steps towards combating the same through implementation of policies and regulations.

The genesis of environmental regulations in India is given below:

The Report of the Working Group on Environment & Environmental Regulatory Mechanisms - In Environment & Forests for the Eleventh Five Year Plan (2007-2012) - Government of India Planning Commission New Delhi (August, 2007) provides details of the progress made in the development of green initiatives by the Indian industry .In July 2011, Ministry of Corporate Affairs published the National Voluntary Guidelines on Social, Environmental & Economic Responsibilities of Business. This was a refined version of Corporate Social Responsibility Voluntary Guidelines 2009, released by the Ministry of Corporate Affairs in December 2009. However, the adoption of these principles in business was a voluntary initiative by the industries

On 23rd September 2011, Guidelines on Sustainable Development for CPSEs – Central Public Sector Enterprises - was released by the Department of Public Enterprises (Ministry of Heavy Industries & Public Enterprises), for implementation of the same with immediate effect from FY 2012-13. However, there were a significant number of issues faced by the CPSE's in implementing these norms.

On 24th February 2012, DPE published the Guidelines on Sustainable Development for the year 2012-13. The objective was to bring uniformity to the process by specifying the mandate and scope of activities to be performed by CPSEs for Sustainable Development.

On 30th March, 2012, Ministry of Power published the Notification on Perform, Achieve and Trade (PAT) scheme, which is a market based mechanism to enhance cost effectiveness of improvements in energy efficiency in the Designated Consumers through certification of energy savings that can be traded. The report itself was published in July 2012 .

On 13th August 2012, the Securities and Exchange Board of India (SEBI) published a circular on Business Responsibility Reports(BRR) mandating the inclusion of the BRR as part of the Annual Reports for listed entities.

Thus there has been a consistent thrust from the Government of India towards adoption of environmentally sustainable practices in business operations of corporates across all sectors. Chapter 4 of the Eleventh five year plan on Environment & Environmental Regulatory Mechanisms Report clearly states the focus of the Government in containing and formulating a framework for Air Pollution and Air Quality Management .

Specific example of environmental regulation in India

The implementation of first Phase of PAT norms by the Ministry of Power and BRR(Business Responsibility Reports) requirements implemented by SEBI, is a testimony to the fact that the Government looks forward to implementing environmentally sustainable practices across all industries. While PAT targets to improve the efficiency of operations in 8 sectors of the manufacturing industry , BRR norms mandate top 100 listed companies for mandatory disclosure of sustainable practices. Thus one can evidently foresee the changing business scenario in India. Novel practices of present day may soon be identified by government regulatory bodies as prime areas of emphasis and mandated for adoption by Indian industry.

Sustainability framework and GRI

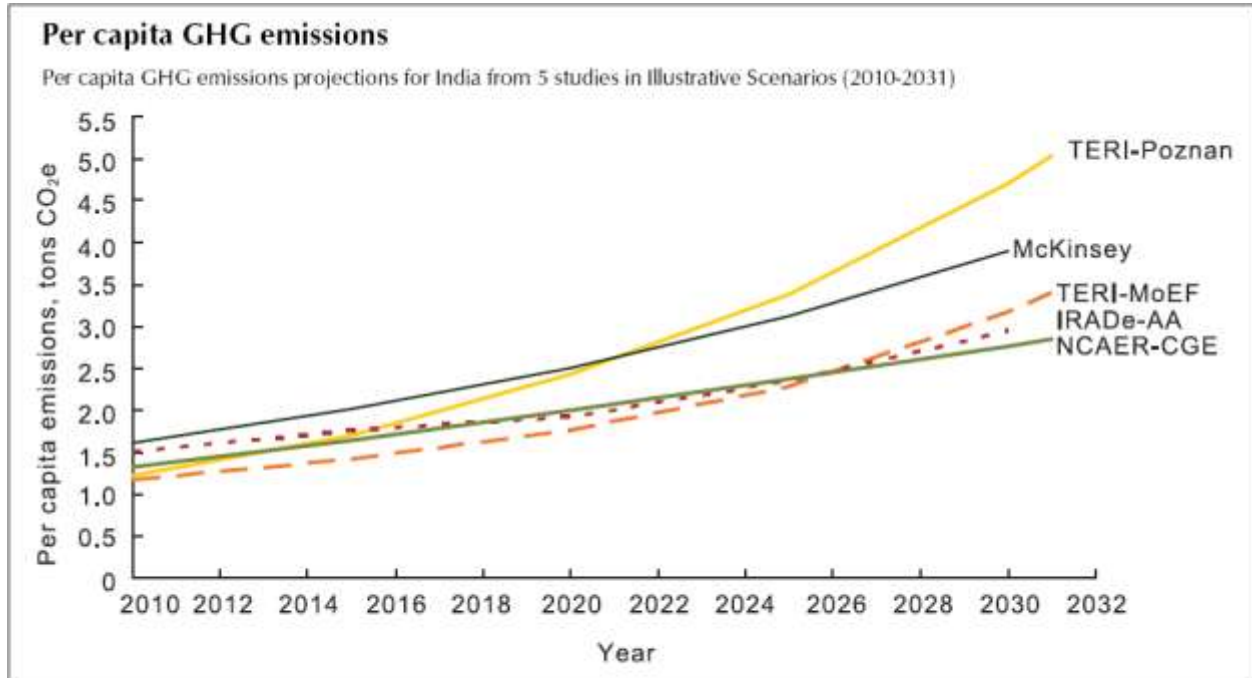
The Global Reporting Initiative (GRI) Sustainability Reporting Guideline offer Reporting Principles, Standard Disclosures and an Implementation Manual for the preparation of sustainability reports by organizations, regardless of their size, sector or location(G4 Reporting guidelines , 2013) . The GRI thus provides a concrete framework of measuring each and every aspect of business operations from the sustainability point of view . It essentially centres on the concept of Triple Bottomline reporting of organizations in terms of economic performance, social performance and environmental performance. Recognising these as essential requirements of business performance, in 2012, SEBI introduced the mandate on incorporation of BRR as a part of the annual report. The mandate was made applicable to the top 100 listed companies in the first year. The Business Responsibility Report (BRR) is a declaration of the sustainable

performance of corporates and is essentially aligned to the guidelines and concepts introduced by GRI. However, the extent to which organisations can adopt the sustainability framework and measure their performance parameters remain primarily guided by level of the entity, type of project and the geographic scope.

Correlation with supply chain

In all the topics discussed above, we observe a general trend of changing concepts and outlook in terms of business operation and performance of corporates. The transport sector is the second largest contributor to carbon dioxide emissions in India (UNEP , 2010) and is expected to grow 10 times by 2050 in the baseline scenario, 6 times by 2050 even in the Blue Map scenario and 8 times by 2050 in the Blue Shift scenario (UNEP , 2010) .

Also looking at the report of the Ministry of Environment and Forests on India’s Greenhouse Gas Emissions profile published in 2009, the estimated emissions for the next twenty years are as per the following graph (Figure 1) :-



² 1 tonne of carbon is equivalent to 3.67 tonnes of CO₂e
³ The terminal year is 2031-32 for the TERI-MoEF and TERI-Poznan Studies.
⁴ McKinsey study estimates include CH₄ emissions from agriculture, not taken into account in the other models

Figure 1 : Estimated Emissions per capita for the next 20 years
 Source : India’s GHG Emissions profile , GOI , MOEF , Sep 2010 , p 6

Meanwhile looking at the total greenhouse gas emissions estimates in billion tonnes, the estimates till 2032 look as follows (Figure 2) :-

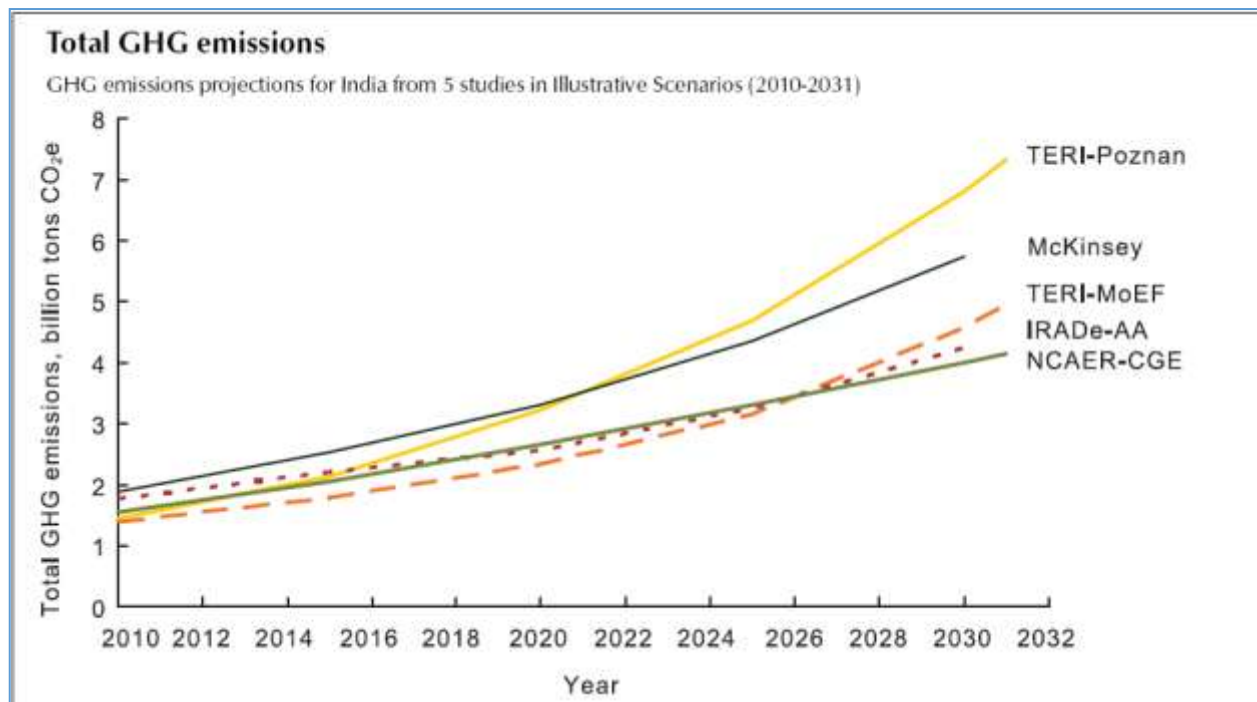


Figure 2 : Estimated Total Emissions for the next 20 years

Source : India's GHG Emissions profile . GOI . MOEF . Sep 2010 . p 6

A framework for measuring green initiatives

The environmental impact of business operations is computed by estimating the carbon footprint of the organisation. Traditionally, carbon footprint is defined as the “measure of the impact human activities have on the environment in terms of the amount of green-house gases produced,

measured in units of carbon dioxide". It is a subset of the ecological footprint, including all human demands on the biosphere. It encompasses all possible causes that give rise to GHG emissions i.e. direct (on-site, internal) and indirect emissions (off-site, external, embodied, upstream, and downstream).

There are various standards to estimate the carbon footprint of an organisation. PAS 2050 (PAS 2050 , 2014) is the British Standard for measuring carbon footprint of

- Goods and Services
- Manufacturers, retailers and traders
- Business-to-business (B2B) and Business-to-consumer (B2C)
- UK and international supply chain

The standard essentially provides the framework for quantifying the environmental impact of organisations and enables companies to make credible commitments of carbon footprint reduction and achievements on life-cycle GHG emission of products, under Product Related Emission Reduction Framework(PAS , 2050) .

The other standard is the framework prescribed by Greenhouse Gas Protocol (Global Research Institute , 2014) . It is the most widely used international accounting tool for government and corporates to understand, measure, and manage greenhouse gas emissions emanating from their business operations. The framework is developed jointly by World Resources Institute and the World Business Council for Sustainable Development. The framework entails nearly every GHG standard and program to finally deliver a comprehensive tool, usable by all. The salient features of carbon footprint measurement are

- Measure of impact of human activities on environment measured in carbon dioxide (CO₂) equivalent units mapping the organization wide GHG emissions over a specific period of time
- Total amount of CO₂ emitted over the full life cycle of a product or service.
- Total amount of CO₂ attributable to the actions of an individual/ organization (mainly through energy use) over a period

- Useful for individuals/ organizations to conceptualize their impact in contributing to global warming.
- Provides basis/ directions for further action:
 - Identification/ implementation of emission reduction opportunities (Emission Reduction)
 - Identification of ways and means to offset emissions (Emission Offset)
- Methodology of computation

The first step in approaching carbon footprint calculation is to determine the organizational boundary. In setting organizational boundaries, a company selects an approach for consolidating Green House Gasemissions and then consistently applies the selected approach to define those businesses and operations that constitute the company for the purpose of accounting and reporting GHG emissions.

In doing this, there are two approaches(Guidelines , 2009) that an organization can select from:

Equity share approach: In this approach, a company accounts for GHG emissions from operations according to its share of equity in the operation. The equity share reflects economic interest, which is the extent of rights a company has to the risks and rewards flowing from an operation.

Control approach: In this approach, a company accounts for 100 percent of the GHG emissions from operations over which it has control. It does not account for GHG emissions from operations in which it owns an interest but has no control. Control can be defined as either financial control or operational control.

After an organization has determined its organizational boundaries, it shall establish its operational boundaries. The establishment of operational boundaries includes identifying GHG emissions and removals associated with the organization's operations, categorizing GHG emissions and removals into direct, energy indirect and other indirect and choosing which of the other indirect emissions will be quantified, monitored and reported.

Direct GHG emissions and removals: The organization shall quantify all direct GHG emissions from facilities within its organizational boundaries. The organization should quantify all direct GHG removals from facilities within its organizational boundaries.

Direct GHG emissions from generated and exported electricity, heat and steam may be reported separately, but shall not be deducted from the organization’s total direct GHG emissions.

Energy indirect GHG emissions: The organization shall quantify indirect GHG emissions from the generation of imported electricity, heat or steam consumed by the organization.

Other indirect GHG emissions: The organization should quantify indirect GHG emissions, other than energy indirect GHG emissions, that are a consequence of the organization’s activities, but occur from GHG sources that are owned or controlled by another organization, based on requirements of the GHG program in which they are operating, internal reporting needs or the intended use for the GHG inventory.

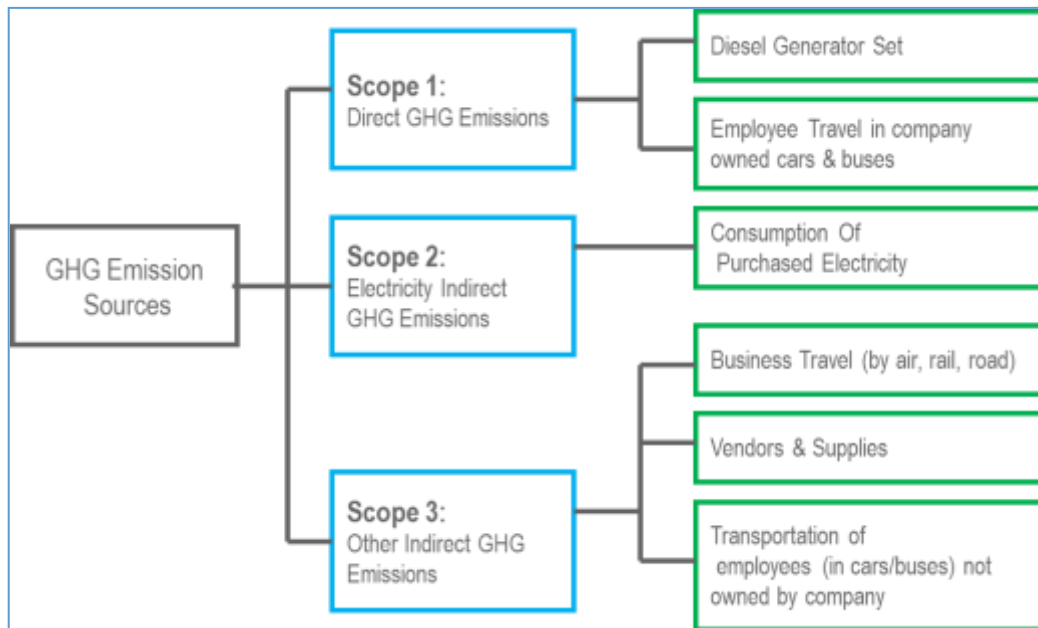


Figure 3 : GHG emission sources classification , adapted from “ Guidance on how to measure and report your greenhouse gas emissions “ , September 2009

Computation tool: For computation of Scope I and Scope II emissions,(see Figure 3) GHG Emission Calculation Tool of “The Greenhouse Gas Protocol initiative” (World Research Institute , 2014) is often used. The tool calculates the GHG emissions from vehicles that are owned / controlled by the organisation, public transport by rail, air or water and static combustion of fossil fuel. The tool uses default emission factors which vary by country. The tool essentially categorises its database into UK, US and Other countries, to indicate the country specific data sets. The tool is a property of WRI (World Resource Institute , 2014) but is publicly available for use by all. The emission factors used in this tool are referred from UK Dept. of Environment, Food and Rural Affairs (DEFRA), US Environmental Protection Agency (EPA) and the Intergovernmental Panel on Climate Change’s (IPCC 2006) Guidelines for National Greenhouse Gas Inventories(UNEP , 2006) .

For calculation of Scope II emission, grid emission factor as published by the government, is used. For India, the Central Electricity Authority compiles a database containing the necessary data on CO₂ emissions for all grid-connected power stations in India. The database provides the weighted average emission factor, simple operating margin (OM), build margin (BM), and combined margin (CM) for both Southern Grid and NEWNE grid of India. The unit used is tonnes of CO₂ / mwh, which eases the computation further. The calculations are based on generation, fuel consumption and fuel quality data obtained from the power stations (Ministry of Power , 2014) .

The relevance of these carbon footprint computation framework, boundaries, methodologies and tools for computing the environmental impact of supply chains depends on the nature of operation of the organization. From computation per se, Scope II and Scope III computation are deemed to be more relevant for supply chain assessment.

How can India catch up with the rest of the world?

Some of the most developed economies in the world have used their national green policies to great effect to influence and incentivise sustainability .For example Germany during the period 1999-2005,introduced a raft of measures starting from establishing CO₂ emission trading for industrial and power generation plants, reducing environmental subsidies, introducing subsidies

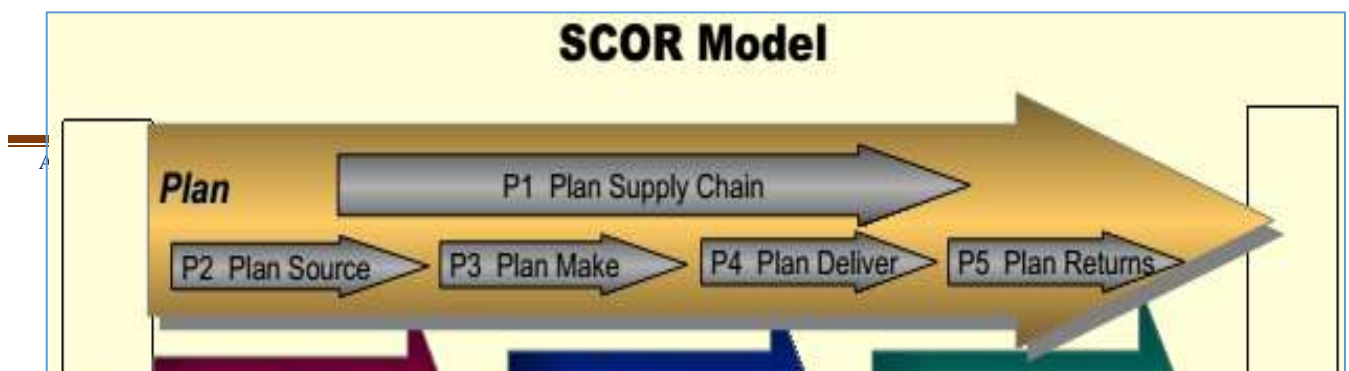
for renewable energy and energy technologies which amounted to financial incentives worth Euro 40-50 billion(2% of Germany's GDP at that time). Similarly Korea also has adopted a green growth strategy to gain economic competitiveness through use of advanced technologies. In fact the South Korean government is investing in 27 technologies as part of Green Technology roadmap targeting to become the 7th largest economy by 2020 and be in Top 5 in the global green industry .(Chung , 2012)

Even though the scenario in terms of environmental sustainability through green supply chain in India doesn't look encouraging at present, there is a huge scope for its adoption into existing supply chains. New supply chains that come into being in India also can be "green" right from the start of operations provided the right environment is present for their sustenance and growth. India can also develop a comprehensive green strategy to kick start a truly green revolution.

Design and Implementation of a regulatory framework in India

A green supply chain is an integral part of the overall sustainability movement . However since the transport sector is a big contributor to the GHG gases (Chaudhary , 2013 and the UNEP report , 2010) and in view of the fact that the service sector of the industry is increasing its contribution to the GDP in all countries , it is important to treat the transport sector and , consequently , the supply chain sector as a separate part of the GHG reduction efforts . While the GOI needs to develop an overall approach to the GHG issues there is also a need for a unique place for supply chain operations .

Government regulations made in collaboration with industry experts will go a long way in faster implementation and development of green supply chains across all Industries in India. For example the Supply Chain Council's SCOR framework (Fiure 4) can be one such framework that can guide the Indian Industry on green initiatives. The existing SCOR model can be modified and amalgamated with the green supply chain to create a national framework.



Adoption of the SCOR framework will increase the visibility of operational and financial advantages of the supply chain practices.

Making TBL part of the companies act

The concept of triple bottom-line (TBL) was founded in 1995(Figure 5) . It made for a new accounting framework which interrelates profits, people and planet .This accounting framework if made mandatory for corporate India will make sustainability of the environment a key area for deliverables apart from financial deliverables like profits and revenues. All the dimensions of triple bottom line can be monetized or an index can be arrived at which makes for easy measurement of the parameters. Making it part of the Indian Companies Act will make sure that Indian companies takes deliverables in terms of greenness of the supply chain a key part of the company's objectives.

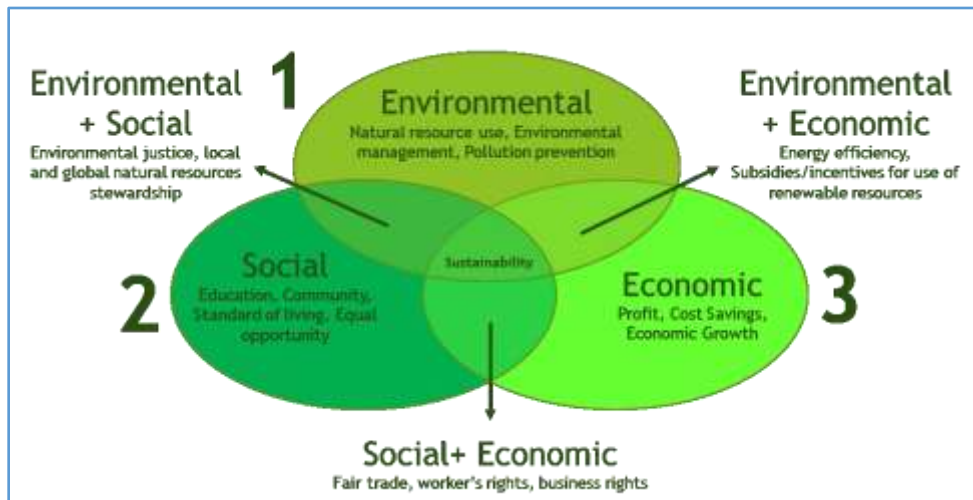


Figure 5 : The Triple Bottom Line

(Source : www.ibrc.indiana.edu/ibr/2011/spring/article2.html)

Incentivising the industry for adoption of green supply chain practices

Indian Industry needs moderate to high amounts of incentives for adoption of the best green practices in the supply chain. Some of the following measures could be used by the government and regulatory bodies for driving and accelerating the best practices:-

- Tax breaks to companies successfully adopting green supply chain practices subject to verification by external audit team.
- Awarding Small and Medium scale industries which achieve six sigma level of competencies in sustainability
- Setting up training and awareness programs among small and medium scales industries relating to green supply chain practices
- Recognize companies that are implementing REUSE ,RECYCLE and REDUCE policy in their overall business process.
- Setting up a national carbon footprint reduction program and encouraging companies to be part of it.
- Promoting and providing infrastructure for sea, river and rail transports so that overall GHG emissions and carbon footprints can be reduced.

Promoting use of alternative materials and efficient processes

Promoting alternative and environment friendly raw material by subsidizing across whole of the supply chain will go a long way in encouraging the adoption of raw materials like biodegradable plastics and bamboo based packaging.

Creating competition

By awarding global MNCs who have been actively working on greening their supply chain will also be useful into pushing Indian companies into action.

Conclusions and recommendations

Summarising , India needs to integrate with the sustainability framework already in place in many parts of the developed world . Amongst these the TBL and the SCOR tools are very important . As also the PAS 2050 types of instruments for measurement and reporting of emission gases . For promoting green supply chains prevention of emissions needs to be done through technology adoption , waste reduction practices (which can be driven through lean thinking initiatives) . Adopting the SCOR framework to capture process details and then redesigning the existing processes to make them “ greener” should become the norm in the industry . The government has to play the role of a facilitator as well as the “ setter of standards “ to drive improvements .

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