

Sustainability: Challenges, Indicators, Valuation and Economics for Implementation in Industries

Business is the only mechanism on the planet today powerful enough to produce the changes necessary to reverse global environmental and social degradation.” – Paul Hawken

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Abstract

The concept of Sustainability explores the relationship among economic development, environmental quality, and social equity. This concept has been evolving since 1972, when the international community explored the connection between quality of life and environmental quality at the United Nations Conference on the Human Environment in Stockholm. Sustainable development is comprised of three components: economic, environmental, and social. These three are frequently referred to as Triple Bottom Line and are used to gauge the success of a particular development project. It is critical that each component is given equal attention in order to ensure a sustainable outcome. This balance becomes obvious when each component is examined individually. Even though the industries were convinced to use Cleaner Production (CP) for productivity improvement, it has not been really sustained in companies and the multiplier effects are slow. The lack of a human dimension probably is a significant hindrance in making TBL self-sustained in Indian industries. A few organizations took the initiative to test this hypothesis, supporting a demonstration project on financial, environmental and social issues which is called “Triple Bottom Line (TBL)”. The thrust of this TBL project was to use CP as a baseline and extend its concepts to cover social issues also. Indeed, most of the big international firms today reports with a Triple bottom line Reporting guidelines (TBLR), one indicating profit, the two others showing the social and environmental consequences of their actions.

The demonstration industries undertook TBL assessment including CP and social issues like employee work hrs, compensation & benefits, freedom of association, health & safety, harassment & abuse, discrimination, use of child or bonded labor etc. The TBL assessment in three tanneries evolved many TBL opportunities. Out of these several opportunities were implemented.

Background

The economics of sustainability deals with natural, human-made, and human capital. It is thus more than environmental economics, because it includes the development of an economy and society, not just management of environmental issues. Economics in general deals with the production and distribution of wealth and is sometimes defined as the science dealing with the use of, or allocation of, scarce resources.

To achieve sustainable development, people often talk about the triple bottom line- Economic efficiency, Equity, and Environmental Economics, in short the three E's. There are even companies that put a triple bottom line on their balance sheets, to indicate how they are doing economically, how they are doing with regard to social issues, and how they are doing with regard to the environment (The Economist, January 2005). This is not a new idea; it is simply thinking conceptually about the three E's and indicating how well the components meet these goals. In this paper we focus on barriers and constraints in implementing TBL methodology in Indian Scenario. Three factors can be seen as determining the competitiveness of an enterprise in the global economy: the economic, environmental and social factors. While cleaner production encompasses a considerable degree the economic and environmental impacts, the sociological factor is a missing link towards sustainable enterprise development.

It is in this backdrop, that the concept of “Triple Bottom Line (TBL)” can be introduced. The objective is to assess inter linkage of financial, environmental and social performances of Indian Industries and

develop an approach to deal with all the above in an integrated manner for India. This paper discusses some of the TBL experiences in India and the initiatives undertaken by the industries.

What is TBL? TBL is the process of evaluating company performance in three dimensions: financial, environment and social using a set of indices to identify problem/focus. Consequently, systematic measures to prevent or alleviate the problem following CP procedures were applied, considering not only the economic and environmental aspects but also social issues. The three sets of indices are:

Financial Bottom Line. The primary concern of the financial bottom line in the TBL context is not the accounting figures but the indicators reflecting the long term economic value of investing in the company. The indicators employed also represent efficiency and effectiveness of resource utilization, i.e. those relating to purely finance, resource utilization efficiency, resource utilization indicator, turnover and overall effectiveness. The key figure in TBL is “Value Added”, which in this context means revenue minus cost of raw material and energy. This allows us to visualize operational performance in all three dimensions, which traditional terms such as profit cannot.

Environmental Bottom Line. The fundamental principle here is to minimize waste generation per functional unit. As a result, production cost decreases and environmental impact is prevented at source. Indicators employed for this bottom line are production related environmental indicators, which includes both generic parameters and those specific to each industry. In other words, CP should be employed to address environmental issues in the company.

Social Bottom Line. This new area is all about labor and the quality of life in the work environment. There are eight areas of major concern, i.e., hours of work, payment and compensation, freedom to communicate, health and safety, harassment and abuse, discrimination, child labor, and bonded labor. The criteria for this bottom line are to act in accordance with national laws and registration and international labor standards.

Methodology of TBL Demonstration: Methodology of TBL consisted of five steps, i.e. gap analysis, in-house training, brainstorming, follow up, and conclusion. Each company’s TBL team assessed the condition of their business in three dimensions. Then CP procedures were used to improve existing conditions from TBL options.

Application of TBL concept: As with CP, the primary purpose of TBL approach is to bring enterprises to see international pressures as a positive driving force to encourage management to look more closely at the operations of the business and to make it more successful and sustainable over the long-term. Once recognize by evidence that TBL is not a cost but a concrete help in planning and tracking environmental and social improvements that bring financial benefits, they can then be engaged in the virtuous cycle of continuous improvement. The two primary building blocks of improvement methodology in TBL approach are the Cleaner Production Process (CP), and the Social/Human Resource Development Process (HR). These two processes are very similar and are compared in the table below:

Table 1: Main Stages in the Cleaner Production and Social/ Human Resource Development Process for TBL

Project Phase	CLEANER PRODUCTION	HR DEVELOPMENT
Preparatory Phase	Stage 1: Getting Started	Stage 1: Getting Started
<ul style="list-style-type: none"> • Designate a Cleaner Production / HR Improvement Team • Team Training 		
	Stage 2: Analysing Process Steps	Stage 2: Analysing HR Performance

<ul style="list-style-type: none"> • List Process Steps / Departmental Units • Identify & Select Wasteful/Polluting Processes and HR problem areas • Baseline Data Collection <ul style="list-style-type: none"> • Gap Analysis 		
Application Phase	Stage 3: Generating Cleaner Production Opportunities	Stage 3: Generating HR Improvement Opportunities
Stage 4: Selecting Cleaner Production Solutions	Stage 4: Selecting HR Improvement Solutions	
Assess options on technical, financial, environmental and HR criteria		
Stage 5: Implementing Cleaner Production Solutions	Stage 5: Implementing HR Improvement Solutions	

As shown in the table the TBL approach involves different stages but it is essentially made up of two key phases:

Preparatory Phase: The environmental indicators cover air emissions, water effluents and solid wastes. In particular, the indicators considered are: Water Consumption; Energy Consumption; Waste Generation; Releases of key Water Pollutants and Releases of key Air Pollutants. An additional indicator is compliance with all applicable environmental rules, regulations and standards. The social indicators address the need to change the social consciousness of the companies’ management and to provide decent working conditions, while others refer more to the productivity of the employees. They cover the following issues: Hours of work; Compensation & benefits; Freedom of association; Health & safety; Harassment & abuse; Discrimination; Use of child labour and Use of forced/bonded labour.

Once the baseline data have been collected the TBL teams compare them to a set of benchmarks that are set for each of the TBL indicators. The benchmarks can be either external or internal. External benchmarks may be drawn from a variety of sources. These will include national legislative or administrative standards, national industry averages or best practice, international norms or best practice or technical optima. For instance, environmental benchmarks can refer mainly to national effluent or emissions standards while the social benchmarks will often refer to both national and international regulations and codes of conduct. Internal benchmarks are likely to reflect either management targets or goals. TBL approach encourages Industries to choose those benchmarks that are most relevant to their activities, client demands and social and environmental context. The result of this comparison between the actual situation and the benchmarks is a “gap analysis”, which prepares the ground for the following phase of the TBL approach. The Leading Indicators (or benchmarks): consist of the policies, systems and procedures that a company management should have in place to eliminate or at least minimise the risks of negative social and environmental “outcomes”. They “lead” in the sense that they aim to prevent a problem happening in the first place. The Lagging Indicators (or benchmarks) consist of standards of performance for a range of TBL issues. They “lag” in the sense that they are based on measures of “outcomes” or “outputs”. They typically include environmental efficiency and emission standards as well as those relating to the treatment of the workforce.

Application phase: In This phase, the TBL teams evaluate the results of the gap analysis. The teams first assess what improvement options exist to close the gaps that have been shown to exist between the actual situation and the chosen benchmarks. Then they assess the options for technical feasibility and financial viability in the light of the priorities of the enterprise, and submit to management their recommended set of improvement options to be implemented. Once the management has accepted the recommendations, the teams can then take on the task of implementing them. Social and environmental improvements like better housekeeping, raw materials and energy conservation, reuse and recycling, a better working environment and better working conditions all can reduce operating

costs; they have proved to also increase product value added and product quality and to reduce product rejection rates.

The concept of continuous improvement in TBL approach: Three stages can be distinguished in this virtuous cycle of improvement, which tend to build on each others over time. These are:

Compliance: Many enterprises will decide to adopt the TBL approach in order to simply comply with buyers' expectations or local regulation, with the aim of retaining their "licence to operate" in the face of buyers' demands or government inspections. These enterprises will focus on putting in place policies, procedures and facilities that are essentially "bolted-on" to their existing operations and that will blunt criticism in the short run. These measures are generally not costly to implement.

Efficiency: With time, or sometimes in parallel with the pressures to comply, enterprises will come under pressure to improve performance and they will use this pressure, channelled through a TBL approach, as a driver for cost savings, productivity improvements and quality enhancements, focusing on process efficiency and resource utilization ("eco-efficiency" and "social efficiency"). Essentially, such enterprises are using the TBL approach to re-invigorate and fine-tune their existing processes and systems. This option offers a mix of cost saving and productivity improvements.

Differentiation: Later on, enterprises involved for some time in the TBL process can think of using the TBL approach strategically, aiming at strengthening their competitive position by moving them from being "price-takers" to being "price-setters". Using the TBL approach as the delivery mechanism, enterprises can use outside pressures as a driver for product and market differentiation. The objective is to shift the focus from the product per se to the service delivered by the product, which widens the perspective and brings an enterprise to consider the whole "value chain" not just the processing stage (e.g. eco-labelling, Environmental Management Systems, supply chain greening, etc.).

The improvement process and the potential revealed: On the basis of the gap analysis, problems were prioritized on the basis of their environmental and social impacts, and different TBL options were identified to "close the gaps". Most of the proposed options belonged to one of the following main categories: Good housekeeping, training and social improvement; Better process control & optimization of production activities; Reduction (or modification) of input raw material; Changes in the equipment; Changes in the technology; and Recycle, reuse and material recovery.

Technical issues related to the implementation of the options were evaluated, as were the possible anticipated financial, environmental and social benefits they might give rise to. For every proposed option the technical analysis covered: Equipment Requirements; Manpower Requirements; Impacts on Production Quality; Energy Consumption; and Resource Consumption.

The environmental impact of every option was summarized in terms of the change in pollution load (COD, BOD, TDS) and of volume of waste generated, while the social impact was covered considering i) Required social changes to implement the option; these are evaluated considering the requirements themselves, such as training needed to put in place the selected option and considering also the impact -essential, marginal or very limited- that they would have on workers; and ii) Total social benefit (both employees' and employer's benefits, e.g. less absenteeism, better work environment, etc.).

Every alternative was also financially evaluated in terms of: Investment requirements; Changes in environmental costs; Savings and Payback period. The results of the assessment phase, were then used by the teams to select the TBL options that they would recommend to management to be implemented.

TBL: Constraints, Catalysts and Enabling Measures

The commitment is required at differing degrees and in different forms, in four basic stages of any sustained TBL program:

Enrolment: being prepared to “sign up” for the program in the beginning,

Application: being prepared to commit company resources, especially staff time to investigating company performance.

Implementation: being prepared to invest resources in implementing options arising from the TBL process.

Maintenance: being prepared to sustain over the long term the initial gains made as a result of implementing improvement options.

The enrolment stage: Getting firms to commit to the TBL process is the first and in some ways the biggest hurdle. The following table shows the sort of factors that can be at play at this stage of the process.

CONSTRAINTS	CATALYSTS	ENABLING FACTORS
New, untested idea - no established tool kit to work with.	Growing buyer pressures coming down the supply chain.	Endorsement of TBL by a local commercial or trade body.
Risk of exposure to external scrutiny (press/NGOs/Tax offices) or of “leakage” of commercially sensitive information.	Growing regulatory pressures especially in the environmental area.	Ability to limit exposure through some form of Memorandum of Understanding (MoU).
Risk of exposure to potentially open-ended demands on staff time and other company resources.	Need to find additional sources of competitive advantage in the face of ever-increasing international price pressures.	History of positive prior contact with the local technical partner to the project.
No clear benefit in terms of certification or credentials.	-	Possibility of accessing national and international level experts at zero or low cost.

The application stage: Even if a company manager’s interest in TBL can be raised, a series of barriers can mean that this interest will never be turned into an actual activity. The following are some of the more general factors that can be at play.

CONSTRAINTS	CATALYSTS	ENABLING FACTORS
Managers’ understanding of the idea in practice as it does not fit existing categories such as “codes”, benchmarks or quality standards.	Pressures from owners and/or senior managers.	Familiarity with other “bottom-up” improvement processes such as Cleaner Production, Kaizen, Quality Circles, Total Quality Management, etc.
Resistance from middle managers, not prepared to do their “homework” or make staff available.	Managers having a performance related stake in the company e.g. being shareholders.	Hearing of the benefits achieved by other firms at feedback sessions.
Lack of in-house monitoring or data collection systems, particularly in relation to labour issues.	Pressures from peers in other companies at periodic review sessions.	Provision of high-grade technical help in measuring performance, especially in the environmental areas.

The implementation stage: Even after highly cost-effective improvement options have been identified, there can still be factors impeding their implementation.

CONSTRAINTS	CATALYSTS	ENABLING FACTORS
Competing priorities at owner/ senior manager level e.g. expanding the factory, completing a major order or introducing automation.	Easily demonstrable gains to the bottom line in the form of direct or indirect savings.	Low implementation costs and quick payoffs.

The maintenance stage: While some improvement options raise company performance to a new, higher – and largely irreversible – level, others, especially the easiest to implement, give rise to benefits that are contingent on the maintenance of certain procedures or good practices on a continuing basis. Sustaining initial gains is therefore an important issue.

CONSTRAINTS	CATALYSTS	ENABLING FACTORS
Management staff changes – loss of key managers or re-deployment elsewhere.	Capacity Building by continuous training.	TBL becomes international standard.
Labour turnover and labour absence among shop floor workers.	Begin stabilising the workforce (turnover and retention) and reducing labour absence.	Transparency of achievement of TBL in the factory.
Literacy & skill levels among “front-line” workers.	Recruit and retain higher level workers.	Better process instrumentation.
Lack of incentives to maintain worker motivation and application.	Introducing group based incentive schemes to share gains with workers.	-
Lack of good communication flow.	Good communication flow from bottom up and top down e.g. Morning Talk.	Public recognition, both national and international.

Conclusion: From the experiences in the TBL Demonstration Project among Indian Industries, we can preliminarily conclude that the results of the demonstration project have proven the importance of promoting TBL among Indian Industries to improve their environmental performance and make their labor practices more acceptable in a manner that is financially advantageous. The TBL approach leads to continuous improvement and the implementation and maintenance of options that create benefits in all three bottom lines.

TBL approach represent a starting point to move forward and provide to Indian Industries a simple and practical tool to respond to national or international pressures on their environmental and social performance in a proactive manner. Thus the social dimensions help to sustain CP in companies. This is because it has direct impacts to employees, who are the actual implementers of CP in the firms.

The Triple bottom line (TBL) approach introduces the concerns relating to the environment and society alongside the usual business concept of profitability (the economic bottom line). However, the TBL concept suffers from at least four main intricacies:

1. Companies cannot simply put profitability on the same level as social and environmental considerations, as a company cannot survive by behaving in a socially or environmentally responsible manner while making losses.
2. Social and environmental benefits tend to be long-term before impacting on stakeholder value.
3. TBL equates social with environmental, whereas social clearly encompasses environmental as one among many other concerns.
4. Therefore, let corporations focus on creating stakeholder value as measured by profits, but in a socially responsible manner. Let us not add on a “surplus fewer deficits” approach based on environmental or social considerations. A company that does poorly on one line, namely profits,

but wonderfully on the environment or social component of TBL, is not going to last long in a competitive world!

Linkages between CP Process and the Social/Human Resource Development Process: Since the CP process and that of HR Development have been designed in TBL approach to have many methodological similarities, it is useful to review how the two processes work together, especially since typically a common team will manage the two processes. Possible types of options generated by the CP process on the one hand and the HR Development process on the other, and how these might evolve over time, are shown in the table below.

CP and HR options at different stages in TBL implementation

TBL Stage	CP Improvement Options	HR Improvement Options
“Compliance”	Better Housekeeping Better process control (“Low hanging fruit”)	Policies & Procedures in place Improved worker facilities First Aid, fire & HS facilities and training
“Efficiency”	Changes in capital equipment Process re-engineering Cycle time reduction options	Reducing absenteeism Reducing labour turnover, improving retention Reducing accidents and excessive overtime Improving take home pay
“Differentiation”	Product Analysis Life Cycle Analysis	Worker empowerment Ongoing HR investment

The balance of emphasis that a team will give between CP and HR issues will be determined in large part by the operational characteristics of the company. For example, companies with labour intensive operations with limited use of process chemicals, energy or water focus more on HR issues than CP, as small improvements in the former would probably give a greater payoff, at least in the short term.

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