

Sustainability Accounting and Reporting for Supply Chains in India-State-of-the-Art and Research Challenges

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Abstract- This article presents an analysis of the research opportunities in the rapidly growing field of sustainability accounting and reporting (SAR) for supply chains in India. Indian companies are gearing towards the next level of responsible growth. It was found that SAR is based on the principles of full cost accounting that includes the costing of sustainability, natural capital inventory accounting, and input-output analysis. The legal framework in India for SAR is quite old and is still evolving. Sustainability is a present challenge for India in the supply chains and value chains given their massive scales and impact on Indian and global environment, on economy and on people. This article presents an overview of the research opportunities in the field of SAR in India in the area of supply chain management.

Keywords: Sustainability, Accounting, Reporting, Standards, Disclosures, Global Reporting Initiative, Supply Chain Management

1. Introduction and Literature Review

The top Indian companies value sustainability and social responsibilities, are keen to grow responsibly, and are keen to harmonise sustainability accounting and reporting with their current accounting and reporting frameworks [1] [2] [3] [4]. The leading Indian companies have joined the network of Global Reporting Initiative (GRI) and are now able to include sustainability reporting as per GRI standards for disclosure and reporting into their reporting of business responsibilities (as required by SEBI) [1] [2]. GRI has released a comprehensive documentation of standards for integrating their sustainability accounting and reporting standards with the SEBI's requirements for reporting of business responsibilities [5]. However, some of the latest the research studies (both academic and professional) have explored and found on-the-ground challenges in SAR of Indian companies in the supply chains and also in the overall value chains [6] [7] [8]. Sustainability is often represented as a model consisting of three major areas: economics, environment, and empowerment (EEE- Triple bottom lines) so far as any supply chain are concerned. [9] [10] [11] [12]. Big supply chains are global and have great impact on the locations where they are present [13] [14]. Many researchers consider sustainability has to do a lot with capability development in fields which contribute these triple areas [15] [16] [17]. One of the specialised capabilities required is to measure or accounting the sustainable practices and their reporting [18] [19] [20] [21]. SAR is a framework of accounting and public reporting that encompasses economic, environmental, and social impacts of a business (popularly referred to as triple bottom-line reporting) that reflects the corporate social responsibility, and commitment of a company towards sustainability and sustainable development [22] [23] [24].

SAR is based on the principles of full cost accounting (or full cost-benefit analysis) that includes the costing of sustainability (triple bottom-line costing), natural capital inventory accounting, and input-output analysis [24] [25]. Sustainability costing is a measure of the economic, environmental, and social consumption by an organisation during a period that is a reflection of what it shall need to pay to restore the Earth to a state prior to



the consumption [24] [25] [26]. The natural capital inventory comprises of the natural stocks acquired by a company that is critical (consumption of ozone layer, biodiversity, and environment cleanliness), non-renewable (or non-substitutable; like oil and gas, and minerals), and renewable (or substitutable; like, natural lands, ponds, fisheries, and timber) [24] [25] [26] [27]. Finally, the input-output analysis refers to the inputs consumed (from environment, society, and national economy) and outputs produced (useful products as well as wastes) by an organisation [24] [25] [26].

SAR has emerged as a global framework but still lacks corporate commitment, appropriate and clear regulations, and clear reflection of benefits for the businesses and manufacturing industries [28]. SAR requires clear shift in leadership commitment, governance, integration with business planning, on-the-ground measuring and reporting techniques (read: GRI standards are still superficial), organisational learning, cultural integration into organisational cultures, and development of effective data collection and information systems [6] [29]. A report by KPMG (2015) on corporate responsibility revealed inconsistencies in content, quality, and trends in global SAR. This report found on-the-ground challenges in clarity of materiality and data, clarity and methods for measuring sustainability indicators, clarity in formulation of sustainability targets, communication about the data collected, and analysis and reporting of SAR benefits to the business, industry and society [3]. Rambaud & Richard (2015) also stressed the need for clarity in accounting of environmental, social, and economic capital of a company and the ways these capitals have been invested to produce useful products and services for humanity [30].

Figure A.3 [31] in Appendix A presents the principles that an organisation should follow for SAR, and Figure A.4 [31] presents the basic layout of the SAR framework. The GRI SAR standards are outlined in Figure A.2 (Source: GRI Website). However, GRI only provides guiding principles and standards for SAR. The findings by KPMG (2015) of inconsistencies in global SAR may be related with the flexibility in decision-making allowed to businesses in the GRI reporting guidelines as shown in Figure A.5 [31]. For example, if the management of an organisation decides internally that their emissions are small and not worth reporting, they may exclude measuring carbon emissions and reporting justifying it as of the category “not necessary to report”. Thus, legal and stakeholder pressures are important for consistency in SAR. In addition, large manufacturing organisations may not be ready to take accountability for emissions and non-compliances to environmental guidelines by their supply chain partners although there is a section in GRI standards on working with suppliers and outsourcing partners for sustainability compliance and SAR.

There are many challenges pertaining to SAR in India in the entire supply chains and the extended value chains. The next section presents a comprehensive analysis of challenges to SAR in India and the research opportunities in supply chains and value chains for strengthening it.

2. Challenges and Research Opportunities in Sustainability Accounting and Reporting in India

Figure A. 1 in Appendix A presents a report on top performing companies in India in the field of corporate social responsibility and sustainability [8]. The report found that the top listed companies are investing significantly in sustainable development as reflected in their SAR disclosures [8]. The report also found commitments to spending, management of spread of spending, corporate social responsibility matrix, insights into sustainable development, and sustainability governance. However, the SAR framework in India is highly skewed among listed companies and also among the industries [6] [7] [8].

The legal framework in India for SAR is quite old and is still evolving (KPMG, 2014). The SEBI's requirement for listed companies to report their level of business responsibilities, and integration with GRI's reporting standards and guidelines are good enablers for SAR in India, at least for the listed companies. However, the perceptions about SAR in companies are still more of an added responsibility for compliance reporting or for gaining some brand equity and reputation (KPMG, 2014). Further, the on-the-ground sustainability indicators and their measurement methods and approaches are not defined clearly [7]. Large companies are inward focussed in sustainability compliance and SAR and hence fail to apply the much required “stakeholder pressure” on their direct and indirect suppliers [7].

Adoption of GRI standards and guidelines by large companies for SAR in India is a major step. GRI opens up significant research opportunities for SAR in India. Academic and professional researchers may study the SAR standards and guidelines outlined by GRI and present on-the-ground approaches for following them. The

GRI SAR standard is divided into four sets of standards: universal standards (coded as 100), economic topics (coded as 200), and environmental topics (coded as 300, and social topics (coded as 400) (Figure A.2). The universal standards are further divided into foundation, general disclosures, and management approach. This part helps an organisation to create a scope and approach of SAR disclosures. This part is basic but opens up significant scope of study and methods that an organisation or industry can use for presenting and justifying its SAR scope and approaches.

The study and analysis of foundation, general disclosures, and management approach may result in profiles differentiated by size of organisation, nature of business, industry, sector, domains of impact, and extent of impact. The sustainability indicators may be designed to reflect the measures and measurement processes and skills to be followed by the organisation to justify the SAR requirements of economic, environmental, and social topics outlined in the GRI standards and guidelines.

The economic topics under GRI standards and guidelines cover the areas of economic performance, market presence, indirect impacts to local economy, procurement practices, anti-corruption practices, and anti-competitive behaviour. First of all, Indian researchers may like to study if these areas offer comprehensive coverage in the context of India. Many practices in India are traditional and may not be perceived as harmful while they are viewed differently in the global context. For example, India has a cash-based economy that has been thriving since independence. Even in 21st century, a significant part of Indian supply chains are informal and cash-based. There are little controls on environmental consumption practices, economic practices, and employment practices of Indian supply chains. Some good laws and institutions are in place but the enforcements are at low levels.

Recently, the decisions by Government of India to demonetise large denominations, introduce GST taxation, and put capping on the cash-based transactions have been widely discussed in both positive and negative contexts. A lot of research is needed on what is right for India. Should the supply chains continue to support cash-based economy or completely digitise everything and link with the unique identification of individuals, or maintain a balance? Should all labour and small vendor payments be routed through banks only? In addition, to economic impacts are there social impacts of such changes? These types of questions can only be answered after rigorous data collection and analysis.

The environmental topics under GRI standards and guidelines cover the areas of materials used by organisations, energy consumption (both non-renewable and renewable), water consumption, biodiversity consumption, emissions, effluents and wastes, environmental compliance, and sustainability assessment of suppliers. India is a large country with second largest population in the world. Hence, the extent of consumption and the permissible thresholds may not be in line with the globally acceptable standards. For example, the urban pollution levels in India are among the highest in the world. India may be facing a significant urgency in cleaning the local air than most of the western countries. Perhaps, whatever is done currently is dangerously inadequate. New research studies can highlight how close this country is to a massive catastrophe and what is the urgency facing us.

In addition to the areas related to social impacts of Indian supply chain and value chain systems, there is significant scope of research about Industrial engineering and processes for sustainable practices and SAR in Indian supply chains and value chains. Adoption of advanced technologies for measurement of hazardous gaseous emissions in factories is still evolving in India. Further, there is lack of reliable technologies and skills supporting safety and secure practices (related to industrial ergonomics) for workers working in hazardous environments and confined spaces. In spite of significant and rapid developmental projects happening in India, workers are still not provided adequate safety equipment that are common in western countries. For example, workers entering areas with possibility of toxic gaseous emissions still wear very basic gas masks or do not wear gas masks at all. Further, there are challenges of inadequate wages, inappropriate working conditions, child labour, etc. in Indian supply chains.

In addition, there needs to be research studies on technologies and designs for tracking and accounting consolidated data on emissions from all the vehicles and other logistics machineries and facilities used by a company (directly or through third party logistics providers). For example, there are research opportunities in the field of advanced wireless sensor networking, and Internet of Things for sensing environment-related variables.

In the era of application of device-based Internet enabling, RFID and Internet of things, closed vehicle area networking, dedicated bandwidth and frequency-band allocation for tracking and controlling supply chain operations, cloud computing technologies, advanced planning systems, cloud manufacturing, lean, agile, and quick response architectures and designs in supply chains, India can not only implement some of the best technologies but also develop local excellence centres for sustainability and SAR. India has a massive pool of highly competent scientists and engineers in these fields. These technologies have significant potential in making SAR effective and making triple bottom line a reality in India as revealed in some technical studies published in major technology journals of the world [32] [33] [34] [35]. As a fact, a large number of research papers related to these technologies in IEEE, ACM, Springer's journals, Emerald's journals, Science Direct, etc. are contributed by scientists and engineers in India or ones from Indian background.

3. Conclusions

Sustainability is a present challenge for India in the supply chains and value chains given their massive scales and impact on Indian and global environment, on economy of India, and on people. SAR is an emerging concept, which initially started informally in some countries and is now standardised through GRI. Many Indian companies have recently joined the GRI and are gradually improving their commitment to sustainability and SAR. However, India has significant sustainability challenge in supply chains and value chains at the technological level, ground level operations, and in traditional cultural practices. Supply chain researchers have significant opportunity in studying the Industrial engineering and technical aspects, economic aspects, labour safety and working conditions (ergonomic aspects), use of effective technologies for improving the conditions of labour, and economic aspects of sustainability compliance and SAR. Researchers may like to enter this area for conducting technical, architectural, design, as well as social studies on supply chain and value chain management. India has a massive pool of talent in relevant technology and management to build SAR and sustainability effectiveness and excellence locally.

Appendix A

Rank (2016)	Company	Rank (2015)	Company
1	Tata Chemicals Ltd.	1	Tata Steel Ltd.
2	Tata Steel Ltd.	2	Tata Power Company Ltd.
3	Tata Power Company Ltd.	3	UltraTech Cement Ltd.
4	Shree Cements Ltd.	4	Mahindra & Mahindra Ltd.
5	Tata Motors Ltd.	5	Tata Motors Ltd.
6	UltraTech Cement Ltd.	6	Tata Chemicals Ltd.
7	Mahindra & Mahindra Ltd.	7	ITC Ltd.
8	ACC Ltd.	8	Shree Cement Ltd.
9	Ambuja Cements Ltd.	9	Bharat Petroleum Corporation Ltd.
10	ITC Ltd.	10	Larsen & Toubro Ltd.

Figure A.1: SAR Ranking of top ten companies in India (Source: Majumdar, Rana, & Sanan, 2017)

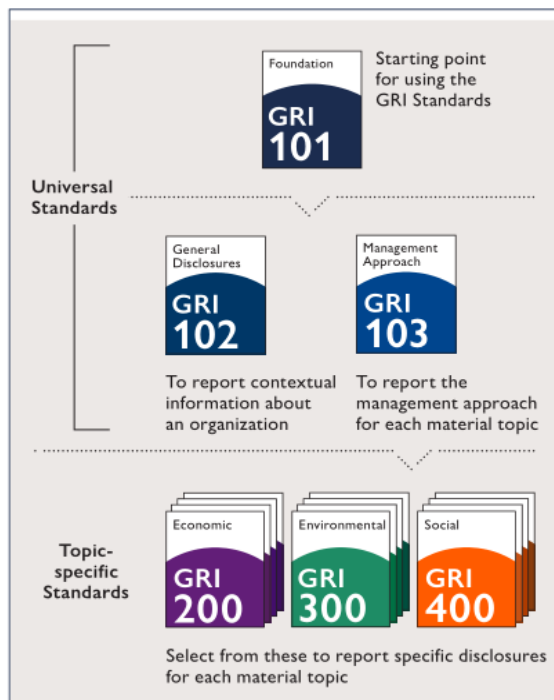


Figure A.2: Framework of GRI standards

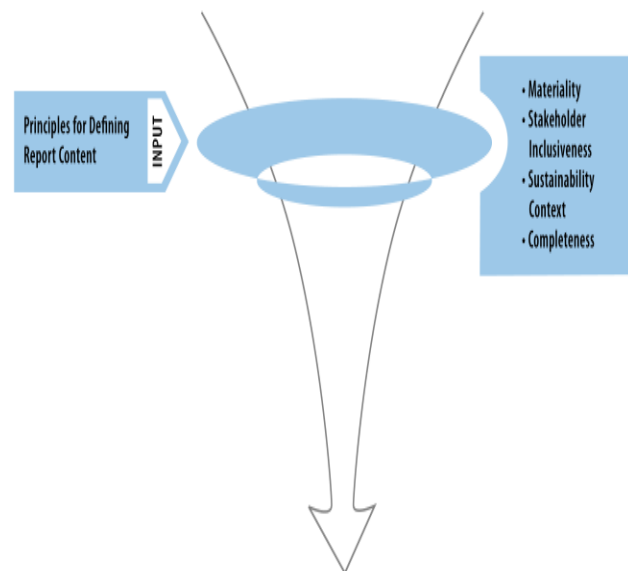


Figure A.3: SAR Principles

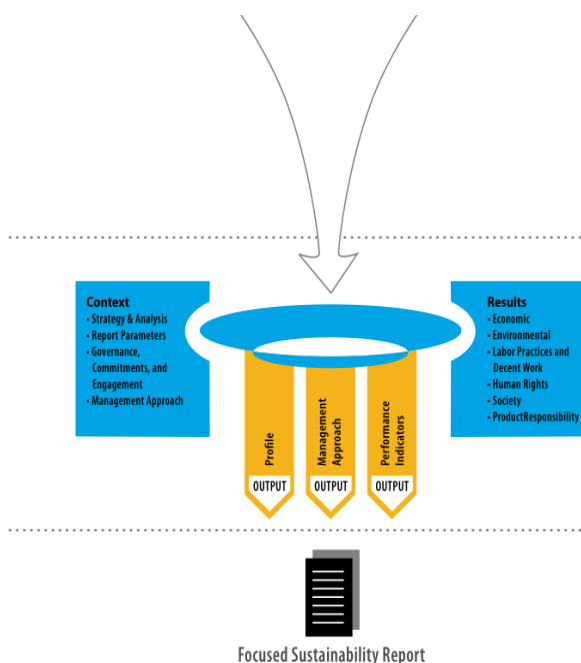


Figure A.4: SAR Framework

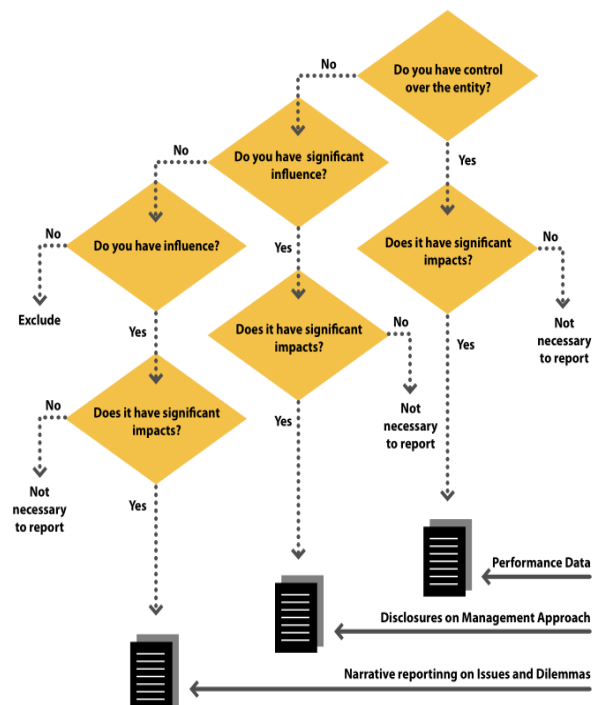


Figure A.5: Decision-making on SAR Framework

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