

Chennai Workshop Proceedings

Industry Dialogue on ESG

Reporting Challenges and the Path Forward

Friday, May 24 2024 | 10:00 – 15:00 HRS
Hall 2, Industrial Consultancy and Sponsored Research (IC&SR) Building,
IIT Madras



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Executive Summary

The Energy Consortium and the School of Sustainability at Indian Institute of Technology Madras (IIT Madras) convened a workshop with industry stakeholders on the challenges of ESG (Environmental, Social, and Governance) reporting.. The main agenda of the workshop was to engage with industry participants and get their insights into the reporting status of ESG and its challenges, especially in the Indian context. The challenges include standardizing approaches, defining clear guidelines and formats for data collection, ensuring transparency and comparability, traceability, and data integrity and, importantly, methodologies and guidelines for disclosures. The workshop also aimed at exploring opportunities for academia-industry collaboration to address existing problems with respect to the status of ESG reporting. The major focus of the workshop was on the “E” of ESG reporting, however, the “S” and “G”, being intricately linked with E, were briefly covered during the workshop. The workshop had a turnout of about 50 participants, representing industry, government, academic and non-profit organisations.

The participants of the workshop identified four key challenges: the general need for more data and lack of accuracy in measurement, ESG knowledge across workforce, skilling needs for ESG data collection and reporting, and fairness across industry for sectoral comparison. The key questions that the participants had around ESG from the workshop include economic impact of reporting compliance, cost of implementing technologies to achieve net zero, ESG compliance to meet commercial proposals for a new project to multilateral institutions and banks, and the need for awareness building and social training. Moreover, industry representatives indicated that measuring and reporting Scope 3 emissions was a challenging task that required considerable guidance. The workshop ended on a note to facilitate regular dialogues and knowledge sharing among academia, industry, and regulators to identify research gaps as well as support regulatory development and practical implementation.

1. Introduction

ESG reporting is the disclosure of the environmental, social, and corporate governance impacts of a business and a collection of factors that can materially affect a business. As ESG reporting gains momentum in India, the regulatory framework matures. India has a range of ESG challenges akin to many other developing countries, due to its population size, socio-economic diversity, and aspirations of economic success. Yet, India has evolved immensely in the ESG space and is rapidly improving, given the strong direction set by the market regulator, the Securities and Exchange Board of India (SEBI). Compared with the leading economies and keeping in line with global trends, India fares highly in ESG disclosures. It is one of the few countries in a developing context where reporting is mandatory instead of voluntary.

Stakeholders are increasingly demanding transparency and accountability on ESG issues. The specific challenges that industries face in ESG reporting include a need for standardization of approaches and terminologies based on data, improving the status of adequate data collection and benchmarking, increasing awareness of ESG reporting processes, indigenization, and availability of technology and, more importantly, methodologies and guidelines. As a corollary, the workshop aimed at exploring the opportunities for academia and industry collaboration to identify ways in which context-specific empirical research can lead the way in finding solutions that can be scaled by industry.

While the workshop covered 'S' and 'G' aspects of ESG, the major emphasis had been on the 'E' (environment), critically for two reasons. Firstly, E is related to the environment and energy, decarbonization efforts, emerging carbon markets, and green credit systems. Secondly, the collection of concerned metrics is also associated with technologies in use. As industries are accustomed to performing checklist-based audits, there is a need to not only plug gaps in data availability but also to ensure data collection quality and traceability of assessment.

The targeted outcomes of this workshop included:

- 1) Developing collaborations between industry-academia to devise locally relevant environmental metrics for carbon emissions, resource use, and pollution;
- 2) Focusing on continuous improvement by working closely with industry to establish sector-specific benchmarks that reflect best practices;
- 3) Facilitating regular dialogues and knowledge sharing between industry and regulators to identify research needs and opportunities by highlighting areas where academic research can support regulatory development and practical implementation.

These proceedings summarize the discussions held at the workshop, following the Chatham house rules, where no quotes are attributed to individuals who participated in the workshops, only the speakers who have consented.

2. Workshop Program

Sessions	Time	Speaker/Moderator
Welcome note and introductions	10:00 – 10:15 AM	Prof. Satyanarayanan Seshadri Head, Energy Consortium Associate Professor, Department of Applied Mechanics and Biomedical Engineering and Associate Head, School of Sustainability, IIT Madras
Understanding ESG through data reported under the BRSR framework	10:15 – 10:45 AM	Dr. Rahul Muralidharan R&D Specialist, Energy Consortium, IIT Madras Prof. Krishna Malakar Assistant Professor, Department of Humanities and Social Sciences, IIT Madras
Refreshment break	10:45 – 11:00 AM	
Decarbonization opportunities	11:00 – 12:00 PM	Prof. Satyanarayanan Seshadri
Networking lunch	12:00 – 1:00 PM	
Open discussion: Industry feedback, identifying needs and challenges	1:00 – 2:30 PM	Prof. Santosh Kumar Sahu, Associate Professor, Department of Humanities and Social Sciences and Associate Faculty, School of Sustainability IIT Madras Prof. Anuradda Ganesh, Adjunct Faculty, IIT Madras
Wrap-up and next steps	2:30 – 3:00 PM	Dr. Nikhil S Tambe, CEO, Energy Consortium, IIT Madras

3. Workshop Activities

3.1. Overview of the Workshop

Prof. Satyanarayanan Seshadri opened the workshop with a welcome note and introduction by setting the context to state the rationale behind hosting an ESG workshop at IIT Madras. As mentioned earlier, the primary agenda of this workshop was to engage with the stakeholders on the concept of ESG reporting and challenges in an all-encompassing way. Considering that there are multiple frameworks for reporting, originating from the Global Reporting Initiative (GRI) to India's Business Reporting and Sustainability Reporting (BRSR), the challenges for accounting and reporting can be visibly manifold.

In ESG, as widely understood, the S and G parts are to do with auditing and reporting. The E part, on the other hand, differs significantly due to the fact that an environmental component bears both qualitative and quantitative assessment metrics. However, there are quite a few areas in ESG reporting that are not noticeably clear stemming from the lack of standardization and clear approaches towards assessment, giving a degree of flexibility - and in most cases, ambiguity - in reporting.

In terms of emissions reporting, there exists the clearly defined parameters for measuring Scope 1 and 2 emissions, however, Scope 3 emissions measurement and reporting has a variety of issues. For instance, if the sectors such as Fast-Moving Consumer Goods (FMCG), the emissions generated by the industries are miniscule, compared to the emissions generated from upstream, downstream and value addition processes in a supply chain. Moreover, as part of the BRSR core, there is a mandate that top 150 companies must disclose the emissions of their supply chain partners. The review of the sustainability reports of large companies reveals that they are pushing their top 300 or 400 suppliers to commit to the climate action goals set by their companies. Such strategies are due to create a cascading effect where a major subset of the supplier companies might not have an inherent reporting requirement, but as part of the supply chain, their compliance becomes mandatory (See Section 3.2 for details).

Therefore, the workshop revolved around a number of questions in addition to identifying the key ESG reporting challenges: In light of the BRSR to be mandated for a set of listed companies, are there any extensive additions to the core reporting challenges? As key stakeholders, how did the industries visualize the collaboration between industry and academia in addressing the ESG reporting challenges? What kind of thematic inquiries do they expect from rigorous academic research that can add value to their existing knowledge on ESG within Indian business ecosystems? The intention of the workshop was to create a forum for regular exchange of ideas and improve the reporting frameworks.

3.2. Understanding ESG through Data Reported under the BRSR Framework in India

3.2.1. Uncovering Environmental Trends through BRSR Data

This dedicated session rendered a basic overview of ESG reporting and subsequent insights into the analysis of 'E' component gathered from ESG reports under BRSR framework for top 100 companies in India. The focus on E of ESG was planned owing to all the environmental sustainability indicators it incorporates including energy, environment, climate change, biodiversity, water, decarbonization efforts, emerging carbon markets, and green credits.

As a quick glance at the evolution of ESG in India, the reporting requirement started in 2009 with the Voluntary Guidelines on Corporate Social Responsibility (CSR) issued by the Ministry of Corporate Affairs. It subsequently evolved into the National Voluntary Guidelines (NGV) focusing on the environment, economic and social responsibilities. In 2012, Business Responsibility Reporting (BRR), the Business Responsibility and Sustainability Reporting (BRSR) was introduced and made mandatory for top 100 companies for the fiscal year 2012-2013. It was later extended to top 500 companies in 2015 and to top 1000 companies in 2019. The Ministry of Corporate Affairs also introduced the National Guidelines for Responsible Business Conduct (NGBRBC) the same year, which formed the basis of BRSR. In 2022, BRSR framework was launched, creating a clear mandate for top 1000 companies by market cap in the financial year 2022–2023. BRSR framework is constituted of nine principles, comprising the E, S and G components.

The workshop was primarily targeted at reporting the environmental metrics, i.e. Principle 2 (Businesses should provide goods and services in a manner that is sustainable and safe) and Principle 6 (Businesses should respect and make efforts to protect and restore the environment) with a broader imperative of infusing sustainability in business operations. The latter necessitates going beyond collecting metrics and reporting and ensuring that the disclosures can lead to some actionable outcomes. To this end, E part of ESG is significant as it deals with technologies for data collection, relying heavily on data availability, quality of data collection and traceability of the assessment. Since ESG disclosures are self-reported without any means of quality control, it is crucial to find ways to track-and-trace the data source(s) and build further credibility in the process. The Workshop also ensured to delve into the quality assurance aspect of the ESG reporting.

The workshop built on the Energy Consortium's exercise to explore and understand how Indian companies report their ESG that began in January 2023.. The focus of the exercise was to study top 100 companies from diverse sectors, with at least 8 representative companies from each sector. As part of the exercise, the environmental metrics were gathered from annual and ESG reports from individual company websites as well as from the central repositories such as National Stock Exchange website. The focus was on Principles 2 and 6 of the BRSR framework as they included both essential sustainability and leadership indicators.

As stated by the ESG working group at IIT-Madras, there are several challenges and limitations in the analysis of the compiled ESG data. First, it is exceedingly difficult to compare the environmental metrics across different sectors. For instance, some sectors are energy intensive while others are water intensive. It is impertinent to compare water use in a software company with a dairy company as the dairy industry will be highly water intensive compared to a software firm. Thus, the turnover of a company was used as a normalizing factor for the lack of any other practical parameters immediately. Second, there is variability of reporting methodology. The methods to generate environmental metrics across companies and their respective sectors vary vastly. Third, since ESG disclosures are currently self-reported, there are no means of “ground-truthing”.

Before addressing the issues concerning emissions, Rahul delved into the Greenhouse Gas (GHG) protocol that classifies emissions into three categories to improve transparency as well as to delineate direct and indirect emissions. They are categorized as Scope 1, 2 and 3 emissions. Scope 1 emissions are direct emissions from the company boundaries or the vehicles that they use inside the premises. Scope 2 is the indirect emissions, which is purchased electricity for that firm. Scope 3 is the supply chain emission. Globally 70 percent of GHG emissions from the industry sector are due to supply chains and addressing Scope 3 emissions is overly critical to decarbonization efforts. Scope 3 emissions are further compartmentalized into 15 categories, 7 downstream and 8 upstream.

In Scope 1 and 2, the prominence of hard-to-abate sectors such as cement, mining, power generation and coal, is apparent. The data presented by Energy Consortium included emission in metric ton on carbon equivalent that has been divided by the turnover for each sector. In terms of Scope 3 emissions, only 50% of companies out of top 100 percent, seem to have reported the elementary analysis in the presented work, the sectors such as electric utilities, automotive, oil refineries, real estate, gas distribution, chemicals, FMCG, retail, logistics and construction, are found to be heavyweights in Scope 3 emissions.

Rahul and Nikhil further added that their data was compared with the available data with the Carbon Disclosure Project (CDP) that houses voluntary disclosures of global companies. The comparison showed that coal and financial services were high on Scope 3 emissions. Currently, the financial sector only reports employee business travel, however, according to CDP recommendations, investments must also be included in deriving Scope 3 values. Similarly, they also created graphs for water consumption, energy intensity and waste generation, which will be a systematic way of looking into annual ESG disclosures from top companies publishing reports under the BRSR framework, as mandated by SEBI. This will help in tracking how companies can progress over time in making their business more sustainable. Such data collection and analysis also pave the way for carrying out a benchmarking exercise, which is currently challenging.

When queried about the purpose of the exercise on collecting environmental metrics from ESG reports by a workshop participant, Rahul stated the following rationale:

1. To understand reporting quality issues - In each sector, a first principles analysis can be carried out, for instance, what industries need to produce a metric ton of cement or steel? Accurate information can be extracted from first principles analysis, which can be put to work by comparing the companies that are reporting in order to spot any anomalies. Anomalies will help get to the underlying issues of ESG reporting, especially the standard of reporting quality. As current ESG metrics are self-reported, it will be evident from the data whether or not an anomaly is concurrent across certain vs all sectors. Such identification will also be helpful in identifying differences in varying industries in the same sector.
2. To create sectoral baselines and benchmarks - Creating sectoral baselines will bring insights into aspects such as sectors that are already light on resources are doing better while others that are heavy on resources, yet fail to make progress. Focusing on the latter is imperative by pushing them up in terms of transparent reporting. As part of IIT Madras, Energy Consortium also looks at this task to retrieve ESG trajectories, which can subsequently help develop a roadmap for technology development for the recovery. Additionally, Energy Consortium looks forward to creating a database so as to identify the sectors that are not reporting data. Since the start of the exercise, data imputing has started revealing a number of anomalies, clearly linked to the ESG reporting itself. For example, the reporting of the use of coal in which water footprint would not be explicit. The water footprint is reported but it got accumulated under a different criteria. Such issues can be spotted to gain a better understanding of the reporting process and how it can be improved.
3. To develop a decarbonisation potential framework as per sectors and their environmental performance - Due to the mandate by SEBI, ESG reports and specifically their environmental metrics will be publicly available every year. This will also enable us to create a decarbonisation potential framework and track how different sectors are progressing towards India's net zero targets.

3.2.2. **The Social and Governance Dimension of ESG: A Deep Dive**

The social dimension of the ESG largely deals with how a company behaves or relates with its employees, customers, with its suppliers or other stakeholders. These include health and well-being, building safety, employee relations, equality, diversity, and inclusion. The "G" Governance dimension of the ESG, as the name suggests, deals with how a company is governed on various levels. It comprises reporting on executive pay, shareholder rights, board diversity. In the nine principles in ESG as mandated by the SEBI in BRSR, as many as seven of them are related to the social and governance part. Prof. Krishna Malakar from IIT Madras's Department of Humanities and Social Sciences discussed some of the challenges which we may face

while reporting the social and governance dimensions. First, similar to reporting “E”, an overarching challenge related to data collection, data quality, and data reliability is also applicable to “S” and “G” reporting. This is especially true for bigger companies who are located across states or across regions; the challenge is magnified in case of those with overseas offices. Collating and combining data points from different entities or units of the same company in various national and/or international regions into a single BRSR report is quite a challenge.

Second, an underlying complexity of social issues themselves. Social constructs evolve over time. What may be a social taboo in 2024 may not be so in 2034. Also, as both people in companies reporting ESG as well as government officials vetting ESG reporting are human beings, each from a different social background, there is an inherent human bias at various stages of reporting and assessing. Disclosing information with fairness without offending any stakeholder and creating conflict is, thus, a challenge. Thus, the reporting of social measures necessitates not just transparency but also accountability. Considering that being transparent can expose companies to scrutiny and criticism, the industries can be reluctant to share the information. Another major challenge with transparency is balancing it with protecting sensitive information. Additionally, data collection and reporting the metrics will need to be done by a specialised employee, which requires hiring a new team that will be at a cost. With the reporting demands becoming stringent, many companies have already started hiring and making a separate expert team which can report on the sustainability measures.

The third S and G reporting issue is concerned with the long vs short term results. Social and governance improvements often yield long-term results which are not visible immediately. Thus, reporting short-term progress remains a challenge.

Krishna further expanded upon a few challenging points, given the different measures towards BRSR reporting as mandated by SEBI. For example, in Principle 1 of BRSR format, SEBI mentions that a company must design and conduct training programs for each of the 9 principles. Since ESG is a new concept, companies are already grappling with a confusion in regard to what measures are to be included. Considering the diversity of the criteria within each principal, designing and conducting all-encompassing training programs becomes a challenge. In this case, companies will need to hire dedicated personnel from audit companies, consultancy firms or from the academia to conduct these programs at the start of the reporting process. Another challenge is companies must report what kind of fines and penalties that they are implementing on all its employees for not adhering to the principles. A major task is to design the fines and penalties for non-adherence, which include both monetary and non-monetary actions. Companies will be in need of a rulebook or a handbook, detailing various kinds of fines and penalties w.r.t. not adhering to distinct levels of the principles.

The BRSR also talks of an anti-corruption and anti-bribery policy. Most large-scale companies have and implement such a policy already; it is small cap companies that may only have it on paper but is practically ineffective. Thus, while reporting if

all the details on the existence of these policies are to be given, the companies need to put in serious efforts in designing such policies. Additionally, companies must report the kinds of capital investments they are making on research and development with respect to technologies that can reduce the environmental as well as the social impacts of product and process. In that context, we are pushing for technologies that can reduce emissions in turn reducing the environmental impact of products or processes. At the same time, a vision to reduce the social impact is also warranted. Companies need to hire experts and/or consultants who can perform environmental and social life cycle assessments of the products and processes that vary from a sector to sector. Therefore, as a life cycle assessment assumes the environmental life cycle assessments as the core, there is also a need to recognize “social life cycle assessment” as part of the process, under the new mandate.

It is important for companies to ensure the wellbeing of their employees as well, which clearly requires multi-dimensional thinking. What kinds of insurance do the employees have access to? Are there maternity/paternity benefits and day-care facilities available at or near the workplace? Such issues and associated measures are to be well-thought out. Multinational companies such as large and mid-cap companies often have good policies towards insurance, maternity and/or paternity benefits. However, with BRSR mandates, even smaller companies are required to design social benefits. There is also a possibility of paternity leave becoming mandatory, which is currently not the case in India.

Overall, providing employee benefits could be challenging, especially for small-cap industries, with differential gender-based impacts. The recent Supreme Court judgement says that women should be given childcare leave of two years, and the rule is also applicable for private companies. In governmental agencies, the rule is already in place with women being able to claim two years of childcare leave until their child is 18 years old. The private sector, if mandated to do so, may look at it as “loss of human resource”, getting apprehensive about hiring women, which will in turn defeat the purpose.

As part of the social mandates, companies are also expected to report on accessibility of the workplace to place to differently-abled employees in terms of whether there are enough lifts, whether there are enough ramps in the workplace, whether there are washrooms available for differently-abled people, among others. In addition, health and safety management practices are important too. Large companies engaged in manufacturing and production must already have health and safety protocols in place. Such practices are to be put in place for small companies so that reporting can be done without any hassle.

Principle 4 says that businesses should respect the interest of and be responsive to all stakeholders. However, what constitutes as stakeholders is not defined. Do stakeholders include only the customers of the company or constitute even the village, the town, or the locality where the company is located? Moreover, companies must design internal mechanisms to redress human rights issues. Such grievance redressal forums are common in large companies but yet uncommon for

smaller companies, putting pressure through hiring an expert external resource and producing a redressal committee.

As per the government rules, the policies around prevention of sexual harassment (PoSH) already exist. Under the same force, all companies must redress sexual harassment issues. This calls for broadening an umbrella to not to be limited only to sexual harassment but encompass any kind of human rights violations. This would include harassment by bosses, doing unpaid overtime that can be included in the grievance redressal committee.

As part of BRSR, companies are also required to do social impact assessments and hiring external experts might be the best way to achieve it. Under the Environment Protection Act, large-scale companies must conduct an Environment Impact Assessment and must provide rehabilitation, resettlement, and employment in small towns. The similar rule will also apply to small companies under the new regime. This is applicable to a broader supply chain scenario as the BRSR reporting also inquires whether companies are giving preference to purchase from the suppliers from marginalized or vulnerable groups. Plus, the declaration of any consumer complaints with respect to data privacy, cybersecurity, and unfair trade practices, is also mandatory under BRSR, reinforcing the necessity of envisioning and implementing mechanisms to receive and respond to consumer complaints and feedback. Handling data security is becoming incredibly challenging day by day and not all industries are equipped for the task.

3.3. Decarbonization Opportunities

Following the E,S, and G-specific discussions, this session was planned as an open floor. Energy as one of the core elements in ESG reporting, remained the central part of the exchange. Having embedded in everything that we do, Energy plays a key role in the efforts towards environmental sustainability. Energy is primarily visualized through five utilities - electricity, heating, cooling, water, and compressed air. These utilities combined with the contribution of material and labour, are the basis of any production. These five utilities form the core of India's Panchamrit goals at COP26 commitment, where the supply side i.e. the energy at the source is one among the key focus of Energy Consortium. As for the demand side, the goal is to contribute towards ESG goals by contributing towards the reduction in demand, reducing the emissions from manufacturing, and then getting to net zero.

At the Energy Consortium at IIT Madras, the net zero targets are primarily seen through the lens of four approaches. One is better energy utilization, particularly facilitated through the innovation in energy efficiency. It can also be approached from the nature of energy utilization. Energy efficiency can be achieved via multiple ways and the type of energy usage can be one way to approach it. A classic example would be: one may possess an excellent boiler with ultra-high efficiency by powering it via burning LPG or any kind of fuel. When one's requirement is only 60 or 70-degree hot water, it does not make any sense to burn the fuel. Because purely from the energy type of energy use perspective, that is a criminal waste of utilization of that high

grade energy. Herein, when one claims better energy use, it is drawing upon the perspective of the grade of energy. It can be achieved by an increasing focus on heat pumps as a technology. It is a hundred-year-old technology, which has been receiving more focus, because the Ukraine war gave the gas shock in Europe, thereby European systems have started moving towards heat pumps for domestic heating. There are multiple industrial applications along such lines.

To get a global perspective, the energy demand worldwide is about 31 trillion terawatt hours, of which industrial heating is about 53%. Out of which, close to 40% is for temperatures less than 200 °C, which could easily be substituted and used from electric heating through heat pumps. Electrification is another mega-trend, as one may call in terms of decarbonizing as seen with the transportation sector. We are already starting to see such paradigm shifts with industrial energy use.

The Energy Consortium is deep-diving into energy efficiency, especially in terms of identifying the best viable way(s) to achieve it using technologies such as high-efficiency motors. Looking at utilization of energy in cooling towers, technologies may include compressed air systems, ETPs, among others. Another important aspect of Energy Efficiency, especially in the context of renewable energy (RE) is to do with increased demand. With a better-managed demand, RE becomes a lot more effective, primarily because round-the-clock (RTC) renewables can be employed with higher cost effectiveness. Jumping directly to the implementation of RTC without technological advancement and increased demand, is often prohibitive, thereby doubling the cost associated with the energy storage with little to no change in offtake of storage.

For making our energy systems efficient and sustainable, a Systems Approach is a requisite. For example, looking at growing opportunities, particularly in the FMCG sector and processing sector, where temperatures required are usually less than 100°C (possibly up to 150°C), requiring serious rethinking of boiler and design systems individually. The traditional way of doing a plant layout is to have a boiler in a certain place that generates steam at 8 bar, 10 bar, 15 bar, 17, up to 25 bar, and supply it through half a kilometre of pipeline. It is then supported by multiple headers and distribution stations and so on, which inherently has a lot of wastage - there is a steam trap every 15 to 20 meters while each of which loses about 11 to 12 kg of steam whenever it operates. Such examples highlight the serious cumulative loss that can be minimized with a holistic approach. The traditional reason in this case is to keep the transmission cost to a minimum, but this is where technologies such as heat pumps, can be a promising and attractive solution with an ability to individually integrate a heating system.

Another example can come from a dairy industry, also from the plant level. Usually, it requires water to be 70-80°C. In some cases, ultra-high temperatures (UTH) are needed to put milk in tetra packs, e.g. if the plant has sprayed rice, it requires 160°C heat for spray drying. Although it may look like an occasional UHT requirement that needs running of a high energy-consuming boiler, milk in tetra

packs is increasingly becoming a customary, thereby increasing the demand for UHT and high energy consumption. A Systems Approach will come in handy in such cases.

Importantly, looking at end use becomes particularly important, because end use is what drives the final energy consumption of the entity, be it an individual or a company. Since heating and cooling are crucial processes, it makes sense to store energy as phase change material or hydrates or so on, rather than put it in an electrochemical system and then convert it once more. With all these issues to tackle in light pushing the respective industrial entity towards decarbonization, the process involves fuel substitution, biofuels, and hydrogen and subsequently Carbon Capture, Utilization and Storage (CCUS), all of which comes as a huge penalty on the energy the entity uses without any economic incentive. Addressing CCUS as the end-phase activity defeats the very purpose of the whole decarbonization exercise.

Then, there is a component of carbon offsets by plantations and other nature restoration methods. These often come off as easy and attractive “green” solutions directly attached to the public presence with a feel-good factor. Such nature restoration projects by industries barely involve technical knowledge in systematically planning plantations or grassroots organizations that can effectively implement them. In the end, from a real decarbonization perspective, they offer extraordinarily little, because there is truly sparse evidence. For example, it is known that a tree can sequester 280 kg of CO₂ per year, but only when the tree is mature with a certain-sized trunk. Hence, there isn’t a guarantee that planting million trees will immediately act as a huge carbon sink. The process of so-called afforestation is counter-productive on so many levels as it can often remove ecosystems, which may or may not be forested in the first place. Forests sequester more carbon in the soil than by the trees itself, because there is a lot of undisturbed soil, which is much better at sequestering carbon than the trees itself. We are yet to fully understand the larger ecological impacts, let alone social implications of uprooting an ecosystem. There are, thus, bigger questions to ask: Are there any standards for calculating the tree-based carbon sequestration? Can the size of the tree, the year of the tree plantation be considered?

At the forefront of decarbonization research, IIT Madras can throw light on such aspects including technologies and tools for CCUS in the Indian and global contexts. Some are available while others are far away from getting ready, merely as goalposts. The solution exists for supply side decarbonization in the form of renewables, which is often a “known” measure helping India and many other countries in meeting their nationally determined contributions. There lies a question of how decarbonization should be handled on the demand side. There isn’t yet a mechanism available to do long duration storage. Hydro-power is often seen as an option, but besides that, it is hard to estimate it in terms of gigawatts? Moreover, there are underlying issues such as lack of substitutes for fuels in high-power consuming industries (e.g. steel). There are technologies that can be hybrid involving hydrogen-based reduction. Such technological solutions are relevant for small-scale

businesses with small-sized boilers but may not be effective for the large-scale industries.

Then, there is a perception towards net zero that varies from industry to industry. For example, the ESG workshop had a fair share of insurance companies and sectors other than hard-to-abate sectors and it was important to understand what net zero really means to them. Academia often approaches it from a technology perspective, but to what extent industries are interested in gaining knowledge around a net zero technology? More so, is it only technology that they think of when thinking of net zero? The expectation, again from a systemic approach, is that the industrial perception should include all the scopes, including those from the supply chain and customers, essentially everything put together. Keeping 2030 in view, the task is clear, i.e. to go from Scope 1 to neutral. The core objective of the workshop was also to understand how industries look at the associated costs, especially what was the level of willingness to pay. The question also includes the emerging concept of “the net zero premium” that an industry or its associated supply chain will provide in the near future. But then, how will such a premium be implemented? For example, will a company get a premium from its customers to go Scope 1 to neutral? If so, what would be the share from the company e.g. paying 20% as an upfront cost? IIT Madras Team sought opinions from the workshop participants on these forward-looking questions, assessing whether or not businesses are starting to find value in moving from Scope 1 to neutral.

As suggested by the workshop participants, they understand that if companies commit to a net zero transition, there is obviously capital deployment that is required. The company leadership needs to assess that capital deployment is likely to reduce their returns, or it is going to impact the profit margin. Typically the question arises towards whether or not there will be any costs involved for the customers. There is also a clear role of compliance in such decisions - as more and more companies are now reacting not because of Indian market, but because of European market - the latter has started offering companies a premium. Is such a premium incentive enough to encourage many Indian manufacturing industries to go net zero, or is it not sufficient to really push the needle forward? All these are valid questions to ponder on as it is primarily the hard-to-abate sectors that are currently mandated by the CBAM but the mandate is likely to cascade down to plastics, rubber, and soon consumer products in the next three-four years.

It was curious to hear from the workshop participants about how they look at a net zero transition as a three to four-year roadmap, and whether or not they are starting to proactively act on it beyond year-to-year ESG reporting. The representatives from SICCI, FICCI, CII voiced that when they represent industry-wise, there are obviously individual firms' priorities, but as an industry, there will have to be some soul-searching needed on two grounds. First, as a collective, how and what ways one specific industry sector should look at it? Second, as an individual working in a company, there is often a thought process ‘I may do better but my colleagues may not do as much as I do but they will still benefit from the premium’, which is tied

with accurate reporting well-supported through standardization. The transparent data processing and reporting is, thus, required to read out those not in action versus those in action.

There was a general consensus among the workshop participants that the aforementioned thinking process on the employee and the leadership level would essentially benefit from hands-on guidance/consultancy from institutions such as IIT Madras and its components including Energy Consortium and School of Sustainability. IIT Madras gathered the expectations from the participants, especially the aspects of multi-level capacity building beyond “The Big Four” consultancy model.

4. Group Activity

The final activity of the workshop was the breakout group discussions. Three groups were formed based on random selection of all participants excluding the organisers. The groups' feedback regarding challenges with ESG based on their individual group discussions, is summarized below:

4.1. Group 1

- Comparison across industries not available
- Unskilled human resource
- Lack of knowledge and training at company level
- Necessity of Key Performance Indicators (KPIs)
- Variable reporting
- Unclear frequency for data collection
- Uncertainty about determining the appropriate reporting framework/format
- Under-reporting common
- Year-on-year reports only, leading to less data to improve upon
- ESG discussions limited only to the board level
- Global mandates/skilling needed

4.2. Group 2

- Lack of measurements, lack of accuracy, lack of applicability in data reporting
- Variations in reporting
- Level of flexibility available with reporting
- Need for clearer definitions
- Impact on certain activities

4.3. Group 3

- Dearth of industry-specific metrics
- Unavailability of benchmarks
- Ranking limited only to good to bad
- Region-specific data not available

5. Identified Challenges

- 1) **Data:** There is a general need for more data for companies (both internal and external data points). There is a lack of accuracy in measurements, in availability of benchmarks, in frequency of collection of data
- 2) **Limited knowledge across workforce:** The general workforce is not yet duly sensitized. Thus, trickling down ESG knowledge would enable organizations to be well-prepared to identify and implement best practices in collecting, compiling and cascading data. The knowledge piece has two aspects:
 - a. ESG is limited to the board - probably for all the right reasons as Leadership indicators form the bedrock of ESG disclosures and reporting. However, such a “closed boardroom” approach may not motivate a nuanced data collection and compilation at lower levels, which is yet to be harmonized within organizations, let alone across the industry.
 - b. Building awareness toward ESG within and across the organizations is critical.
- 3) **Requirement for skilling:** This need is being felt both inside and outside the company.
 - a. Specific training regarding ESG disclosure and their preparation is necessary for a specific group within the company. It will help make the entire exercise seamless and probably can be better integrated into other enterprise level practices.
 - b. External resources are required as they can particularly help address the need arising across value chain partners w.r.t. Scope 3 emissions.
- 4) **Lack of fairness across industries**
 - a. There is a need to have a fair way of comparing different industries and attributing the emissions as per the business. For example, representatives of the cement industry vocalized the concern as they approach ESG very differently than an IT company would.
 - b. The role of academia and R&D cells within industry, even better as a joint force, is crucial in identifying strategies for infusing fairness across industries. IIT Madras is specifically proposing developing certain sector specific comparators and normalization factors to aid in this.

6. Thoughts and Questions from the Participants and Workshop Discussions

1. Economic impact (positive as well as negative) on the central activity arising from the compliance reporting under ESG disclosures
2. Unknown cost of implementing technologies to achieve net zero and a role of IIT Madras in capacity building
 - There is a general consensus that carbon accounting and offset would be the way forward. How to assess them?
 - How to involve the value chain partners in the emission accounting?
 - How to associate the cost and benefit realization to each of those in the value chain?
3. Representing commercial proposals for new projects to multilateral institutions and banks (e.g. WDB.)
 - Industries need help in understanding ESG-related parameters for compliance and how to meet them
4. Awareness building and social training as the need of the hour
 - Specific challenges exist in the deployment of ESG, and gaps exist in the on-ground implementation where expert advice and help are solicited.

7. Key Takeaways

The Industry Dialogue on ESG organised at IIT Madras, Chennai is the first among the workshop series to engage with industry stakeholders in identifying ESG reporting challenges. The invited participants identified key challenges and questions with reporting ESG including the lack of benchmarking, standards, clear definition of reporting parameters, data collection and its frequency, and the need for skilling in the current ESG reporting landscape.

The workshop had a mix of participants who are currently undertaking ESG reporting and facing challenges as well as people who are new to ESG reporting. While the participants identified the overall concerns with respect to challenges in ESG reporting, the nuanced insights into specific problems faced by reporting companies could not be fully achieved. Moreover, the participants were not strictly bearing the profiles of ESG analysts or sustainability officers of reporting companies, thereby offering peripheral views on the reporting process to an extent,

While there are benefits to having a diverse set of participants, subsequent iterations of the ESG workshop could include more representatives companies who are currently reporting their ESG to get a nuanced understanding of reporting challenges. Doing so will help IIT Madras to: First, consolidate the response from diverse industry sectors, and second, take to the regulators with specific recommendations to ease the process of ESG reporting, which will, in turn, ensure that Indian businesses become more sustainable over time.

