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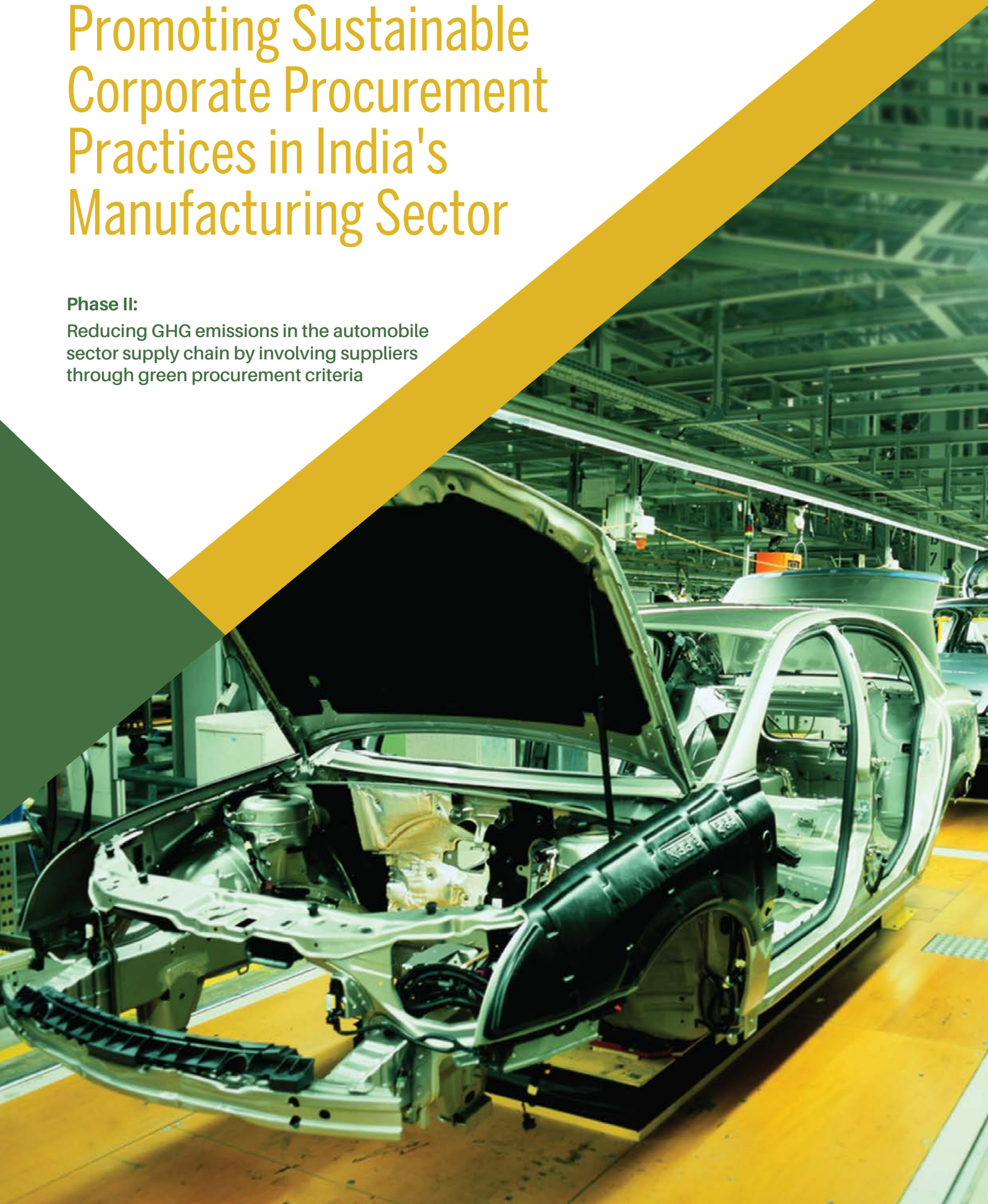
Promoting Sustainable Corporate Procurement Practices in India's Manufacturing Sector

Phase II:

Reducing GHG emissions in the automobile sector supply chain by involving suppliers through green procurement criteria



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Abbreviations

ABF	Alligned Business Framework
AIAG	Automotive Industry Action Group
APLMA	Asian Pacific Leaders Malaria Alliance
BS IV	Bharat Stage IV
CDP	Carbon Disclosure Project
CSR	Corporate Social Responsibility
DoE	Department of Electronics
DKI	Decarbonisation Index
DSQI	Design Structure Quality Index
EHS	Environment Health and Safety
ESG	Environment Social Governance
EVs	Electronic Vehicles
GM	General Motors
GDP	Gross Domestic Product
GHG	Green House Gas
GSC	Green Supply Chain
GTC	General Terms and Conditions
GPC	Global Protocol for Community
GSCM	Green Supply Chain Management
HGCIT	Hero Global Centre for Innovation and Technology
IGBC	Indian Green Building Council
IFC	International Finance Corporation
ISO	International Organisation for Standardization
ICMA	Institute of Cost & Management Accountants
LCA	Life Cycle Assessment
LEED	Leadership in Energy and Environment Design
LMA	Leadership Management and Accountability
MDEP	Maine's Department of Environmental Protection
MSMEs	Micro, Small and Medium Enterprises
NDCs	Nationally Determined Contributions
OHSAS	Occupational Health and Safety Assessment Series
OEM	Original Equipment Manufacturer
REC	Renewable Energy Certificate
RoI	Return on Investment
RBA	Responsible Business Alliance
SHPV	Smart Hybrid Passenger Vehicles
SBTi	Science Based Target Initiative
SMEs	Small and Medium Enterprises
SoC	Substance of Concern
VOC	Volatile Organic Compound

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Introduction

India is committed to the Paris Agreement with targets to reduce emissions by 33% to 35% of its gross domestic product (GDP) by 2030 as defined in the Nationally Determined Contributions (NDCs). Automobile sector contributes to 16% of India's GHG emissions

The automotive industry is one of the world's most important economic sectors by revenue. As of 2019, globally, India is the 4th largest market for vehicle sales by volume, including two-wheelers, three-wheelers, passenger vehicles, and seventh-largest manufacturer of commercial vehicles, totalling to 26.3 million, subject to a 5.1% upsurge from 2019 to 2020 (Society of Indian Automobile Manufacturers, 2019).

At the same time, the transportation sector also accounts for more than 16% of total carbon equivalent emissions & above 33% of particulate matter pollution in India. With no aggressive and sustained mitigation policies implemented, transport emissions could rise faster than emissions from the other energy end-use sectors and reach around 12 Gt CO_2eq/yr by 2050 (UNFCCC, 2018).

Following alarming reports from the IPCC, climate change has engaged policymakers worldwide to chart policies at different administrative levels to mitigate increasing greenhouse gas emissions. It is widely acknowledged that these emissions need to significantly reduce to meet international and national GHG emission reduction targets. India is committed to the Paris Agreement with targets to reduce emissions by 33% to 35% of its gross domestic product (GDP) by 2030 as defined in the Nationally Determined Contributions (NDCs). Effective April 2020, India adopted BS VI vehicular and fuel emission standards as a part of its Auto Fuel Policy. The BS VI emissions standards will result in up to 40% reduction in PM emissions and a 43% reduction in NOx compared to BS IV emission standards(The road from Paris: India's progress toward its climate pledge, 2020).As per the NDCs, India has chosen electric vehicles as a pathway for achieving its goal. Electric Vehicle manufacturers and MSMEs involved in manufacturing these vehicles have also received incentives under India's Covid 19 stimulus package.

Government policies focused towards EVs, are expected to reduce the use phase emission from vehicles. However, about 18% of the automobile industry emissions occur in the supply chain[1]. While the world transitions to Electric Vehicles (EVs), the emissions during the use phase of vehicles are expected to decrease, tilting the share of emissions in the vehicle's lifecycle more towards the supply chain. Thus, no automobile manufacturer can claim to be low carbon-intensive unless it has taken care of its long list of the supply chain, even if it is manufacturing electric vehicles. Determining supply chain emissions may not be hard but implementing measures to reduce emissions surely is tough.

With growing concerns of climate change and environmental degradation, sustainability has become a strategic priority for automotive companies.These concerns have led companies to foray into green practices, integrating environmental management into their systems and measuring their suppliers' performance.

An automobile supply chain is extremely intricate, involving the production and fabrication of raw materials (aluminium, steel, plastics, etc.), semi-finished materials (wiring, cable, hardware, etc.), and suppliers of machinery and sub-systems extending up to three tiers – assemblers or system integrators (Tier-1), module suppliers of compressors, motors, etc. (Tier-2), and process-oriented suppliers (Tier-3) – apart from OEMs.

Small and Medium Enterprises (SMEs) involved in the automotive supply chain play asignificant role in growth and extension of the Indian auto components industry, which contributes 25.6% to the manufacturing GDP and 3.8% to India's national GDP, besides providing indirect employment to over 1.5 million people. It provides jobs to many, but is resource intensive and threatens the environment. Consumer pressure, government regulations, investor push and stakeholder demands for a competitive edge have forced the automotive industry to contemplate on their environmental and social impacts in addition to their financial returns. Globally, these pressures have led many automotive industry businesses to adopt Sustainable Supply Chain Management practices (Mathivathanan et al., 2018).

Thus, the Indian automobile supply chain, primarily dominated by the MSME needs to prepare itself for a low carbon future. The need for large OEMs to step up is equally important to contain climate change and retain global competitiveness.

[1] The automotive industry is making driving cars far more sustainable. But can it do the same for the way parts are moved? | Supply Chain Dive

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Background

The project is to highlight findings of the assessment of procurement guidelines and provide recommendations on flexible incentive mechanisms to be adopted by OEMs, such that it may help suppliers learn and adapt

The project's overall objective is to develop and implement a capacity building programme for MSME auto component suppliers to improve Greenhouse Gas (GHG) accounting and reporting practices as well as facilitate GHG emissions reduction in the supply chain of Indian automobile OEMs. The project also aims to identify incentives for participation of suppliers in collaboration with their corporate buyers, viz. automobile OEMs, which in turn would benefit through easy availability of supply chain (Scope-3) emissions data, enabling them to meet their reporting obligations and planning Scope-3 emission reduction targets and initiatives. Project implementation is planned in a phased manner.

The report on outcome of Phase I of the project focuses on development of the project baseline.

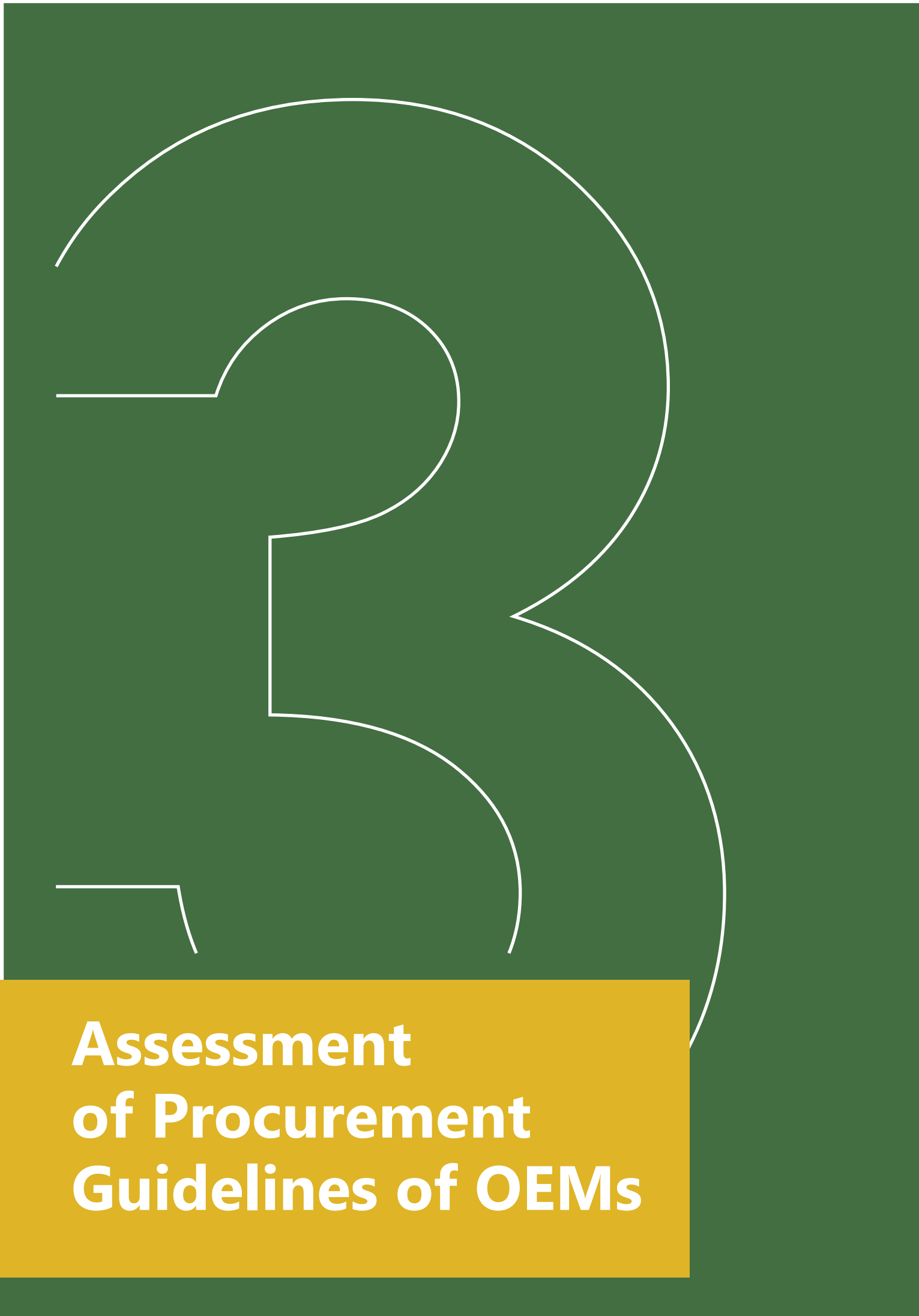
The Key findings of the Phase I report were:

- There exists a huge gap in the understanding of climate change and GHG emission estimation amongst MSMEs in the automotive supply chain in India
- Adoption of procurement criteria addressing GHG emissions of suppliers by OEMs is a key criterion in supplier action; however, it seems to be inadequate and missing in the Indian context
- Identifying financial incentives, a critical enabler, for supply chain action on climate change
- A structured data and knowledge sharing platform could be one of the models for data sharing by MSMEs

Objective of the Phase II report of the project is to highlight findings of the assessment of procurement guidelines and provide recommendations on flexible incentive mechanisms to be adopted by OEMs, such that it may help suppliers learn and adapt.
This report builds on the experience and outcome of the Phase I report.

This report contains:

1. An assessment of the green procurement guidelines adopted by some of the top performing Indian and global automobile OEMs
2. A road map of green procurement guideline for Indian OEMs
3. Possible flexible incentive mechanism that OEMs could adopt



Assessment of Procurement Guidelines of OEMs

The GHG emission reduction has to take place at an unprecedented rate at all levels to achieve the net-zero target. Indian automobile supply chain action needs to be beefed up to meet the climate goal

A global survey of OEMs conducted by Automotive Industry Action Group (AIAG) predicts that GHG emissions and energy consumption will be a top issue in the environmental performance of OEMs and the supply chain in the next decade. The next big issues after GHG emissions (as per the report) are natural resource management, waste management, and water management, that have overlapping importance for a climate-resilient future. Thus, the scope of climate engagement is bound to increase.

Undoubtedly, GHG emission reduction has to take place at an unprecedented rate at all levels to achieve the net-zero target. Findings of Phase I of this project point out that penetration of GHG footprint estimation and reduction action is low in the Indian automobile MSME sector, and hence it is imperative to delve deeper into creating enablers for enhancing this action. An increase in depth and breadth of sustainable procurement practices of OEMs with emphasis on disclosure of GHG emissions and GHG reduction plan is the next logical step for action by MSMEs in India.

There has been a significant evolution of supplier green practices and incorporation of these into the OEMs' procurement guidelines on a global level. Some Indian automobile companies like Mahindra and Mahindra have also embraced ambitious climate goals. The fallout of their ambition is also visible and soon intensifying into action across the value chain.

This section attempts to draw on the best practices adopted by automobile companies globally and the top automobile companies in India on the basis of revenue collected, climate change commitments and action taken in the value chain.

3.1 Climate Commitment by OEM's

Commitments to climate change by companies like GHG emission reduction targets and signing various international agreements, forums to mitigate climate change started nearly two decades ago. But the pace of action has gained momentum and become more scientific in recent times, more ambitious, rational and science-based targets are becoming mainstream to climate commitment in the private sector. **The Science-based Targets Initiative (SBTi) helps companies understand the efficacy of their current targets and realign targets to support in reaching the global goal on climate change determined by the Paris Agreement.**

Automobile and component manufacturing companies are globally embracing more ambitious commitments and targets on climate change. Globally, about 40 automobile and component manufacturing[2] companies are committed to SBTi , out of which 7 are Indian companies. While many OEMs and suppliers are not a part of SBTi today, there is momentum towards such targets. **Many of the large OEMs that do not appear on the SBTi list have other commitments and targets to support climate action.**

To meet the ambitious and specific Scope 3 targets(provided in Table 1), it becomes imperative for OEMs to call for action in the value chain. All Scope 3 targets that use the word "purchased goods and services" per unit of the item sold, or provide an overarching absolute Scope 3 target, would require action in the supply chain.

The intricacy of the automotive supply chain may be evaluated from the fact that a typical vehicle comprises of approximately 20,000 components with about 1000 sub-assemblies or modules (Schwarz, 2008). The automotive supply chain includes a horde of Tier 1,2, and Tier 3 suppliers with many assembly operations and dealerships. Due to this nature of the supply chain, it is often witnessed that the climate change targets in Scope 3 impact the entire supply chain and not a specific segment, though the time frame of impact may vary.

Post Covid-19 pandemic automakers are rebalancing their supply chains. They are looking for sourcing hubs outside China. Simultaneously, the Indian

[2] Companies taking action - Science Based Targets

government offers production-linked incentives, totalling $7.5 billion over the next five years to encourage exports.[3] The government of India has, from the prior to the pandemic as well been pushing for Make in India.

At this juncture, to maintain the competitiveness with global players and to be able to attract global finance, it becomes imperative for Indian automobile MSMEs to join the action on climate change. However, a quick overview of the Scope 3 GHG estimation and commitment to reducing it by the top Indian companies (Table 2) reveals that compared to large global automobile companies

- Only a few have public disclosure of Scope 3 GHG estimates,
- Even fewer have a well-defined commitment to reducing supply chain emissions

Setting Targets to Achieve Zero Emission World[4]

The world is transitioning to a zero-carbon economy. The Science Based Targets initiative (SBTi) drives ambitious climate action in the private sector by enabling companies to set science-based emissions reduction targets. The SBTi is a partnership between CDP, the United Nations Global Compact, World Resources Institute (WRI) and the Worldwide Fund for Nature (WWF). The SBTi is also the lead partner of the Business Ambition for 1.5°C campaign - an urgent call to action from a global coalition of UN agencies, businesses and industry leaders, mobilizing companies to set net-zero science-based targets in line with a 1.5°C future.The SBTi call to action is one of the We Mean Business Coalition commitments.

Targets are considered 'science-based' if they are in line with what the latest climate science deems necessary to meet goals of the Paris Agreement – limiting global warming to well-below 2°C above pre-industrial levels and pursuing efforts to limit it to 1.5°C.

The Science Based Targets initiative (SBTi):

- Defines and promotes best practice in emissions reductions and net-zero targets in line with climate science.
- Provides technical assistance and expert resources to companies to set science-based targets in line with the latest climate science.
- brings together a team of experts to provide companies with independent assessment and validation of targets.

More than 1500 companies globally, are taking action in line with Science-based Targets. Nearly 800 have already established their Science-based targets, and more than 600 have committed to an ambitious 1.5°C target.

Table 1: Value Chain Commitments under SBTi By Automobile and Component Companies

Company	Country	Value Chain Targets
Mahindra USA, Inc.	USA	• Reduce Scope 3 GHG emissions by 70% per tractor sold by 2034 from the 2019 base year
Sumitomo Electric Industries, Ltd	Japan	• Reduce absolute Scope 3 GHG emissions 15% by FY2030/31 from a FY 2018/19 base year • Reduce absolute Scope 3 GHG emissions from indirect use phase emissions by 15% over the same time frame.
Valeo	France	• Reduce absolute Scope 3 GHG emissions from purchased goods and services 15% by 2030 from a 2019 base year • Reduce absolute Scope 3 GHG emissions from direct and indirect use of sold products by 15% by 2030 from a 2019 base year

[3] The Indian automotive industry: From resilience to resurgence? | McKinsey
[4] About Us - Science Based Targets (https://sciencebasedtargets.org/about-us)

General Motors	USA	• Reduce Scope 3 GHG emissions from the use of sold products of light-duty vehicles by 51% per vehicle kilometre by 2035 from a 2018 base year. The target boundary includes biogenic emissions and removals from bioenergy feedstocks
Ford Motor	USA	• Reduce Scope 3 emission from use of sold products. GHG emissions by 50% per vehicle kilometre by 2035 from a base year of 2019
Nemak, S.A.B. de CV.	Mexico	• Reduce absolute Scope 3 GHG emissions from purchased goods and services by 14% over the same time frame
BMW Group	Germany	• Reduce Scope 3 GHG emissions from the use of sold products by 40% per vehicle kilometre by 2030 from a 2019 base year • Reduce Scope 3 GHG emissions from purchased goods & services and upstream transportation & distribution services by 22% per vehicle sold by 2030 from a 2019 base year
Continental AG	Germany	• Reduce absolute Scope 3 GHG emissions 30% by 2030 from a 2019 base year • Reduce indirect use-phase emissions associated with products used in motor vehicles by 30% over the same time frame
Mahindra Heavy Engines Ltd.	India	• Reduce Scope 3 GHG emissions by 30% per engine sold by 2033 from a 2018 base year, covering emissions from the use of a sold product, upstream transportation and distribution, employee commute, and downstream transportation and distribution
Faurecia	France	• Reduce absolute Scope 3 GHG emissions by 46% by 2030 from a 2019 base year
Swaraj Engines Limited	India	• Reduce Scope 3 GHG emissions by 30% per engine sold by 2033 from a 2018 base year
Volkswagen AG	Germany	• Reduce Scope 3 GHG emissions from the use of sold products of light-duty vehicles by 30% per vehicle km by 2030 from a 2018 base year • Volkswagen subsidiary Scania CV commits to reduce Scope 3 GHG emissions from the use of sold products by 20% per vehicle km by 2025 from a 2015 base year
Volvo Car Group	Sweden	• Reduce Scope 3 GHG emissions from the use of sold products by 52% per vehicle kilometre by 2030 from a 2019 base year
Fortune Parts Industry Public Company Limited	Thailand	• Reduce absolute Scope 3 GHG emissions by 25% over which period? *The target boundary includes biogenic emissions and removals associated with the use of bioenergy
GromaxAgri Equipment Limited	India	• Reduce Scope 3 GHG emissions by 40% per tractor sold over the which period?
Gestamp	India	• Reduce absolute Scope 3 GHG emissions from purchased goods and services and fuel and energy-related activities by 22% by 2030 from a 2018 base year

Robert Bosch GmbH	Germany	• Reduce absolute Scope 3 GHG emissions by 15% by 2030 from a 2018 base year
Mahindra & Mahindra Ltd	India	• Reduce Scope 3 GHG emissions by 30% per sold product unit by 2033 from a 2018 base year
Mahindra Electric Mobility Limited	India	• Reduce Scope 3 GHG emissions by 30% per vehicle by 2033 from a 2018 base year
Mahindra First Choice Services Limited	India	• Reduce absolute Scope 3 GHG emissions by 20% by 2032 from a 2017 base year
Mercedes-Benz AG	Germany	• Reduce Scope 3 GHG emissions from the use of sold products by 42% per vehicle kilometre by 2030 from a 2018 base year
PSA Automobiles SA	France	• Reduce Scope 3 GHG emissions from the use of sold productsby 37% per vehicle kilometre by 2034 from a 2018 base year.**The target boundary includes biogenic emissions and removals from bioenergy feedstocks
Groupe Renault	France	• Reduce Scope 3 GHG emissions from the use of sold products by 41% per vehicle kilometre by 2030 from a 2010 base-year

Table 2: Value chain Commitment by Top Indian Companies outside SBTi[5]

Company	Value Chain Targets
Tata Motors Ltd.	• Estimated its Scope 3 emissions by category, including purchased goods and services • Target to achieve net-zero carbon emissions across the supply chain, products and operations by 2039[6]
Maruti Suzuki Limited	• It does not report its Scope 3 emissions • Public information no target for Scope 3 reduction[7]
Mahindra & Mahindra Limited	• As mentioned in the above table
Hero MotoCorp Ltd.	• No specific Scope 3 targets publically. However, 40% carbon neutrality is a target
Bajaj Auto Ltd.	• Does not disclose its Scope 3 emissions
Ashok Leyland Ltd.[8]	• Estimates Scope 3 emissions but do not include emissions due to the purchased goods and services • No specific Scope 3 emissions reduction target
TVS Motors Ltd.	• No external communication on Scope 3 emissions
Eicher Motors Ltd.	• No externally communicated Scope 3 emissions and targets
Force Motors Ltd.	• No commitment on GHG
SML ISUZU Ltd.	• No commitment on GHG

[5] Companies have been cosen based on their size
[6] Annual Reports, Financial Statements, Balance Sheet of Tata Motors
[7] Maruti-Suzuki-Annual-Integrated-Report-2019-20-Low-res.pdf (windows.net)
[8] Sustainability-Report-2018-19Lowres.pdf (ashokleyland.com)

3.2 Taking Action to Green the Supply Chain

Green Supply Chain (GSC) is an environmentally conscious supply chain. Patrick Penfield of the Whiteman School of Management very suitably defines Green Supply Chain Management (GSCM) as "the process of using environmentally friendly inputs and transforming these inputs into outputs that can be regained and re-used at the end of their lifecycle thus, creating a sustainable supply chain". Some of the benefits of GSCM, according to Raman 2014, are given in Figure 1.

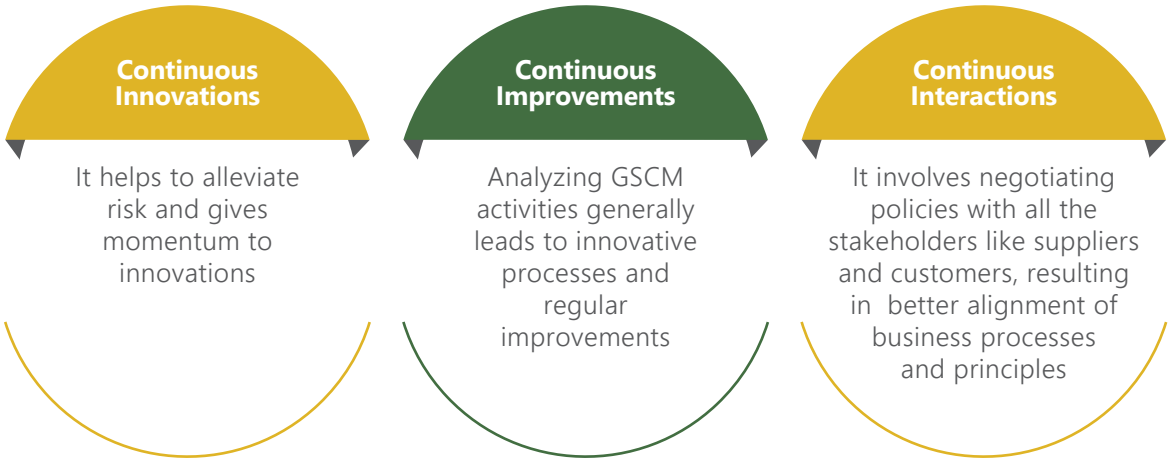


Figure 1: Outcome of Green Supply Chain Management (Source: Raman, 2014)

While words like "green" and "sustainable" are often used interchangeably when describing supply chain initiatives that extend beyond cost and quality, the two are different in certain aspects. **In this report, a green supply chain implies a supply chain with targets, activities and/or initiatives to address climate change.** A sustainable supply chain includes procurement practices extending beyond the environment to include social & environmental factors into deliberation alongside financial factors in procurement decisions. It includes looking beyond the traditional economic parameters and making decisions based on the whole life cost, the related risks, measures of success and implications for society and the environment.

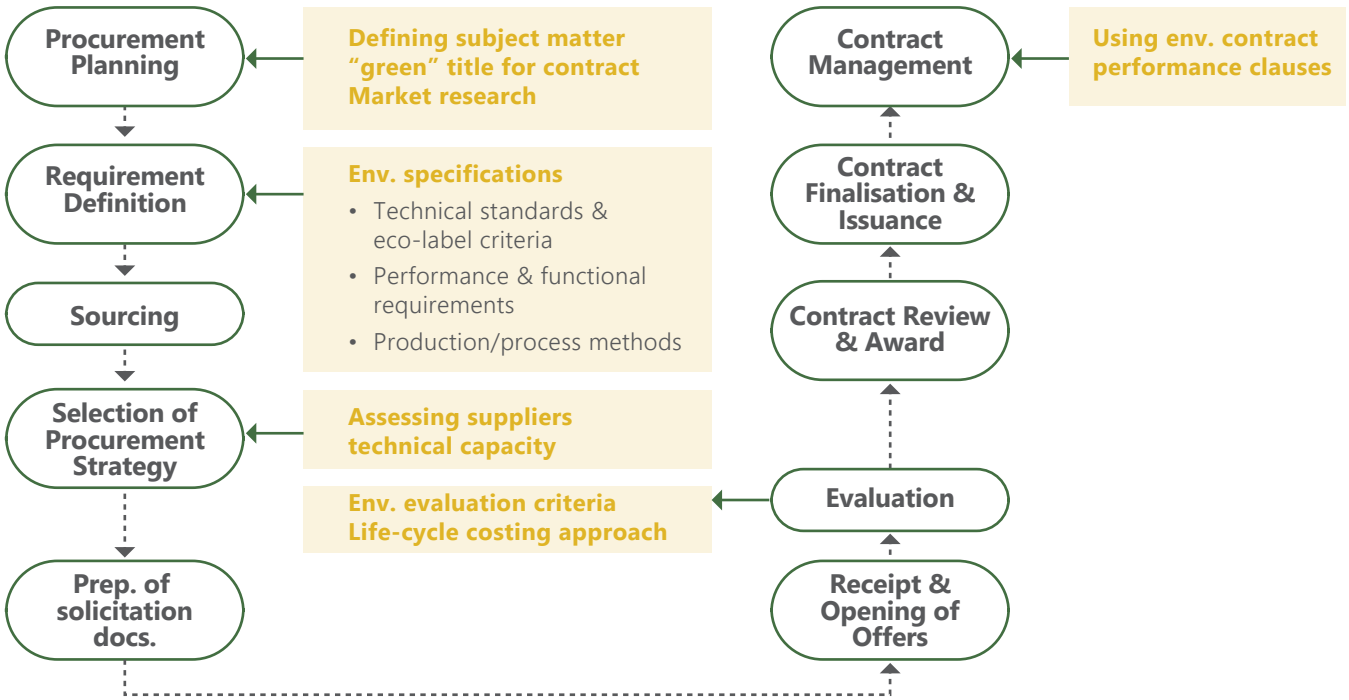


Figure 2: Environmental interventions in the procurement cycle (Source: UNDP, Environmental Procurement, 2008)

There are several means to include sustainability in procurement decisions. Procurement is in a vital position when it comes to creating sustainable/ green development in a supply chain. However, it should ideally be integrated into the early stages of purchasing and considered carefully throughout the process to achieve holistic results (Figure 2 above).

Making decisions for the green supply chain requires setting procurement into the broader strategic context, including value for money, performance management, corporate and community priorities. It has to involve all procurement dimensions, beginning from procurement strategy, governance, systems and procedures of procurement to collaboration with suppliers for innovations and change (figure below).

In addition, green performance should be an integral part of the procurement process applying incentives and penalties approach.

Figure 3: The Circle of Integrated Green Procurement

3.2.1 Overview of Green Procurement Practices in the Automobile Industry

Globally, green procurement practices have advanced in the automobile industry, way beyond asking suppliers to provide their GHG inventory. Leading companies have ambitious targets (as evidenced above), which trickle down to the suppliers in all tiers. Some of the leading practices are briefed here. Detailed information on the procurement practices of some of the companies is provided in Annexure I of the report.

Green procurement guidelines become effective with training, and evaluation support helps suppliers stay prepared. To increase the sustainability quotient of its suppliers Mahindra and Mahindra, provides training, capacity building, awareness sessions etc. Similarly, several other large Indian and global automobile companies also organise such programmes.

Various OEMs adopt supplier scoring and rating practices. Often the rating on climate performance is clubbed with overall sustainability performance and presented as a composite rating. For example, Mercedes-Benz has developed a multi-indicator based sustainability score for its suppliers' network within the internal initiative called "Supplier Ambition Rating". In addition to reducing greenhouse gas emissions, the focus is on the environmentally friendly

use of resources and the socially responsible extraction of raw materials. Mercedes-Benz has declared that starting 2021, the results of the Supplier Ambition Rating will be an important criterion for awarding decisions.

The material used and source of material plays an important role in climate and environmental friendliness of the automobile industry. Therefore, most of the action is needed in the supply chain. Maruti Suzuki restricts the use of Substances of Concern (SoC) in auto parts[9] through its design, which is then strictly controlled by internal standards adopted across the supply chain. It also conducts supplier audits to ensure compliance. The company has developed a green procurement guideline to support the initiative. Maruti expects its Tier 1 suppliers to extend the SoC management concept to Tier 2 of the supply chain.

Supplier inclusive approaches are being developed so that suppliers could play a larger role in the climate journey. For instance, General Motors(GM) has created a "SustainabilityCouncil" with key suppliers. The council will develop and enact new standards, increase transparency and reduce emissions throughout the supply chain. GM has decided to prioritize and source more sustainable materials to become carbon neutral by 2040.

Climate risk assessment in the supply chain is gaining popularity. It is a topic that is also of significant relevance as new policies and scenarios develop post-Covid 19. In its climate disclosure report, Group PSA mentions that while conducting global risk assessment, it evaluates physical risks on its owned sites as well as in its supply chain. It also assesses its suppliers for transition risks like political and legal, and technology risks. It identifies the most resilient suppliers and supply chain options for business continuity. It is adopting close collaboration and innovation across the supply chain to ward off climate risk and establish a green supply chain.[10]

[9] Maruti-Suzuki-Annual-Integrated-Report-2019-20-Low-res.pdf (windows.net)
[10] Climate report, driving climate leadership, Group PSA 2019

Proposed Inclusions in Green Procurement Guidelines

Effective green procurement practices will be an important pathway to enhanced climate action in supply chain

Procurement requirements are considered important in driving carbon reductions in all organizations, but the preferred style of these requirements vary.
This diversity is partly related to general carbon management maturity and partly to the organisation's general contracting practice and policy culture. Though the importance of sustainability is gaining visibility, the biggest question among the procurement teams is how to adopt such practices without significantly impacting the operating and net profit. There are different views in implementing these processes. Certain organizations view it as an extra burden to their balance sheet, whereas others view it as a competitive advantage. This section provides a set of sequential or progression criteria in procurement to facilitate the transition to low carbon development.

4.1 Getting Started with Greening the Supply Chain

Take an inside out approach. First, undertaking a few activities at the OEM's end before engaging suppliers through procurement guidelines would result in a systematic outcome. These could include:

- Adopting a **clear vision and strategy** by the OEM for low carbon development. Supporting it with a policy could be an added advantage.
- Development of **GHG inventory** for Scope 3 emissions
- **Define and transparently communicate** specific supply chain goals and targets for the reduction of supply chain GHG emissions. **Aligning goals and targets with international commitments** like SBTi, energy productivity, renewable energy etc., assists in bringing more credibility and resources.
- When defining requirements, consider **implementation costs for setting** and following up requirements. Make provisions and allocate adequate human, financial and technical resources for the same.

The procurement guidelines should align with overall commitment and objectives of the OEM. It should set the path for gradual adoption of green procurement measures by the suppliers. In particular, focus should stay on GHG mitigation measures. A long-term learning perspective needs to be applied and establish different combinations of award and selection criteria, reduction requirements, specific requirements and rating schemes may be preferable over time. **Align requirements and activities with general contracting models and encourage models that enable integration of knowledge and carbon management in the supply chain.**

4.2 Knowing the Supplier Footprint

GHG emission and its reduction have always been a voluntary requirement for vendors. However, to enable carbon emission reduction strategy in the supply chain, it is important that such guidelines be made a mandatory requirement for vendor qualification. Through vendor declaration on its GHG emissions, OEMs are able to achieve a more accurate estimate of the supply chain footprint. Component wise or product wise emission estimation becomes possible through this process. Identification of supplier or product category which contributes to higher supply chain emission also gets identified. This knowledge serves as the best start to identifying the suppliers that need more attention or collaboration to reduce emissions.

To determine supplier footprint, the following indicative questions/items could be incorporated in the procurement guidelines:

- Is measuring and reporting carbon emissions important to your organization?

  a. Yes, b. No
- Does your company measure and report carbon emissions?

  a. Yes, b. No

- If not, what are the internal barriers to measuring and reporting emissions experienced?
- If yes, please disclose your company's Scope 1 and 2 greenhouse gas emissions. (Scope 1 emissions are those produced directly by your company through fuel combustion in owned or leased vehicles and facilities, as well as emissions from industrial processes. Scope 2 emissions are those produced to generate the electricity consumed in your owned or leased facilities).
- Which standards does your company adopt for GHG calculation? For example, the GHG protocol, ISO 14064
- Third-Party verification or assurance of your Scope 1 and 2 emissions: Please disclose if your company seeks third party verification or assurance of your Scope 1 and 2 greenhouse gas emissions, and, if so, what is the level of assurance (e.g. 'limited' or 'reasonable' assurance statements)?
- Calculating your own value chain (Scope 3) emissions: Please disclose if your company calculates its Scope 3 greenhouse gas emissions. Scope 3 emissions result from activities, such as fuel combustion, industrial processes, or electricity consumed in assets not owned or controlled by your organization but are associated with your company's value chain.

4.3 Suppliers' GHG Reduction Plan and Initiatives Disclosure

Going deeper, the next step for companies is to understand the commitment, plan, and actions proposed by the supplier to reduce GHG emissions. A future plan from suppliers defines the maturity of their climate action and provides OEM with an understanding of the expected trajectory of its supply chain initiatives. **Among transitional risks, policy and market risks** are taking shape speedily, in different geographies. These risks could be converted to opportunities only if the supply chain is well prepared to support the OEM. **An unprepared supply chain or supplier may indicate a need for business action by OEM, i.e. whether to prepare the supplier or identify an alternate supplier, considering the level of risk.**

Indicative questions/items that could be incorporated in the procurement guidelines to determine the supply chains' plan:

- Please disclose if your company has a carbon-reduction policy statement. If the policy is publicly available, please provide a link to the website. If not, please tell us how your company's policy has been formalized and documented.
- In case, the climate policy is part of another policy like EHS or energy policy, please specify.
- Please disclose if your company tracks energy consumption, which includes purchased electricity. If you do track energy consumption, please describe how it is tracked (e.g., frequency and method of tracking) and the uses of the data internally.
- Please disclose if your company has public goals or targets to reduce greenhouse gas emissions and/or energy.
- Please disclose if your company has received requests from other stakeholders to disclose GHG emission reduction information.
- **Comparing yearly emissions:** If your company has conducted previous greenhouse gas emissions inventories, please compare Scope 1, 2, and, if applicable, Scope 3 emissions reported with emissions in prior years. In addition, include a discussion of emissions trends over the past five years if data is available.
- **Reducing your energy use and emissions:** Please disclose if your company has a program and/or procedures to reduce energy use and greenhouse gas emissions from other non-energy sources.
- **Using green power:** Please disclose if your company uses green power and can demonstrate that it retains the associated Renewable Energy Certificates (RECs).
- Do you have conversations about product life cycle analysis at your organization level?
- **Does the company have any ISO certifications to support environment, energy or green initiatives?**
- **Do you have an energy reduction or climate change plan?**

- **How do you externally communicate your commitment and progress on climate change?**

  a. Sustainability report
  b. any other modes of communication

- **What have you done so far for reducing your GHG emissions? Any innovative initiative taken by your organization?** Please share the details.
- Have you **received support from any organization** (where you have provided your services) in reducing your carbon footprint?
- What methods do you use to drive investment in emissions reduction activities?
  - Dedicated budget for energy efficiency
  - Internal incentives/recognition programs
  - Employee engagement
  - Partnering with governments on technology development
  - Compliance with regulatory requirements/standards
  - Dedicated budget for other emissions reduction activities
- For the following initiatives implemented in the reporting year, please provide details in the table below:[11]

Table 3: Proposed approach for reporting initiatives implemented

Activity type	Description of activity	Estimated annual CO2e savings (metric tonnes CO2e)	Annual monetary savings (unit currency)	Investment required (unit currency)	Return on Investment (RoI)
Energy efficiency					
Low carbon energy purchase					
Fugitive emissions reduction					
Transportation: fleet					
Behavioural change					
Product design					

4.4 Advanced but Relevant Topics for Greening Supply Chain

Topics like circular economy, product design, waste management, material sourcing and resource efficiency are advanced topics with respect to climate action. However, they are very relevant in the context of climate action, to automobile and auto component manufacturers. MSMEs may not be well placed to respond to these aspects without support. It would be appropriate for OEMs to engage in smaller groups or with specific suppliers on the topic. Nevertheless, the procurement guideline can always include leading questions for these interactions:

1. Are any recycled or reused materials used in manufacturing? If yes, name them or describe
2. Are any recycled or reused materials used in packaging? If yes, name them or describe
3. Does product design consider material optimization or alternate material? If yes, describe
4. Does the company undertake efforts to identify alternate material as well as a source for the same material? If yes, describe

[11] nestle-response-to-cdp-2013-investors.pdf

4.5 Supplier Evaluation and Rating on Green Practices

To ensure supplier action, the evaluation of green practices must find synergy with the overall supplier evaluation practices of the company. It should also provide a mechanism to benchmark and promote suppliers with higher performance as per the green guidelines and demonstrate a commitment to long-performance on green initiatives. Each company has its method of evaluating the responses received. Integrating responses into the overall supplier management scorecard is one of the accepted practices. However, the weightage provided must be fair but not beyond to impress upon the suppliers, the urgency to consider green pathways.

The response evaluation matrix must be transparently communicated to the suppliers with a good description of expectations and impact of the response in supplier selection. It is a good practice to provide suppliers with an audio-visual description of how to respond to the supplier questions in multiple languages, including vernacular language. Supplier care system of the company should also be available to provide clarifications to suppliers.

Such practices from OEMs facilitate better supplier response.

Collaboration for Green Supply Chain Procurement Practices

Green procurement practices and expectations from each OEM can be overwhelming for the supplier. A collaborative effort by major OEMs to develop an "Automotive MSME Supplier's Green Guide" would assist in supplier action

MSMEs, as mentioned earlier, are often stretched for resources. Green procurement practices and expectations from each OEM can be overwhelming for the supplier. A collaborative effort by major OEMs to develop an **"Automotive MSME Supplier's Green Guide"** through forums like Society of Indian Automobile Manufacturers, CII etc., could provide **universal guidance to OEMs.** Universal guidance would provide more confidence to OEMs on the way forward, expectations and minimum standards to be maintained as a green supplier. The AIAG has conducted a similar exercise[12]. Further, the guidance could be incorporated in the individual OEM's green procurement guidelines.

OEMs and suppliers (mostly MSMEs) willing or committed to a low carbon future could participate in collaborative efforts on the development of green guidance tools for MSMEs. The **working group or committee** could formalize pathways for supporting the MSME supply chain on other aspects of delivering green initiatives like training, technology guidance, peer learning and experience sharing forums etc.

Such collaborative pathways have been experimented with by individual OEMs and industry associations. These collaborations through industry associations could address the fundamental needs of MSMEs and lead to the development of a green supply chain in a cost-effective manner.

OEMs (as presented earlier and in the Annexure) do collaborate with vendors/suppliers on new **product innovation.** Electric vehicles are one of the biggest revolutions that the automotive industry is witnessing. OEMs and supplier collaboration have been a consistent part of this change. Similarly, some **OEMs collaborate with suppliers on green innovation,** but there seems to be a lot more scope for such collaborations if the green technology transfer has to take place within MSMEs. Innovation should be well-entrenched into the business model and contracting procedures. **The development of institutional capabilities** that enable long-term, strategic collaborative alliances, will facilitate innovation to penetrate deep.

Procurement guidelines by OEMs must incorporate clear information on the possible collaboration opportunities that would be offered to suppliers participating in the green supply chain program of the company. It must also list out the minimum performance expectation on emission reduction from the supplier to become eligible for participation in the program.

5.1 Climate Data Disclosure Platform for MSMEs

Multiple climate data disclosure platforms are available today. Carbon Disclosure Project (CDP) is the most commonly referred platform for climate data disclosure by companies and their suppliers. However, the disclosure requirement and intricacy of these disclosure programs and platforms are better suited for non-MSME suppliers. On the other hand, it could be cumbersome for the suppliers to respond separately to large data requirements from individual OEMs. It could also lead to varying language and types of questions as well as interpretation challenges for MSME suppliers. **Creating a climate data disclosure platform for automobile sector MSMEs in India could be one of the solutions. Such an initiative would also increase the transparency of supplier submissions.**

A credible and acceptable yet simplified platform can be attempted by a collaborative effort between Indian and global OEMs, industry associations, existing disclosure platforms and organizations supporting MSME participation in climate action.

[12] 2824 CSR Practical Guid 10-30-17.indd (aiag.org)

Recommendations on Flexible Incentive Mechanism

MSMEs located in developing countries often face a challenge in accessing supply chain finance. Hence, there is a need to close the gaps and make climate finance accessible

The MSME supplier in the auto component industry often faces a financial challenge to meet green supply chain requirements. For lack of input capital or returns on input capex to meet the GHG reduction initiatives, in terms of business appreciation from the OEM, suppliers would continue staying away from investing in clean technology. Thus, if the Indian automobile supply chain must transform to a green supply chain, an appropriate financing mechanism needs to be established to support the change.

Supply chain trade finance mechanisms like payable finance, trade loans, and smart contract solutions exist and are gradually getting extended to sustainable supply chain programs. However, MSMEs located in developing countries like India and China often face a challenge in accessing the supply chain finance mechanisms. The rejection level for MSMEs appears to be the highest[13].

The sustainable finance scenario has witnessed and continues to witness change due to new products integrating ESG as well as exclusively focusing on ESG based investments. Such investment products also demand robust ESG data systems and disclosure through routes like CDP and assessments through rating agencies like Sustainalityics, or ECOVDIS etc. This brings to focus the need to bridge the ESG data gaps in the supply chain, especially with respect to climate change, for better access of finance.

Taking a step forward, some of the large automobile companies and OEMs have developed sustainable finance mechanisms. For example, Volvo Group in the year 2020 announced a sustainable finance framework to focus on clean transportation. The structure of the Framework is in line with the four key pillars of the ICMA Green Bond Principles (GBP) and LMA and APLMA Green Loan Principles (GLP), which are as follows: 1. Use of proceeds 2. Process for project evaluation and selection 3. Management of proceeds 4. Reporting mechanism.[14],[15] This financial commitment extends across the value chain and stakeholders of Volvo. It enables not just the supply chain but also the stakeholders who have invested in clean transport to avail the benefit. The framework aligns with Volvo's commitments to become carbon neutral. Similarly, a few other companies have also developed financial instruments and collaborative approaches for supply chain finance towards green initiatives.

Considering the peculiar nature of the MSME supply chain in India, there lies a need for OEMs to come together and provide a supportive finance framework for green initiatives. Some of the possible solutions to be explored are:

1. **Green Finance Program:** Access to finance is one of the biggest challenges among Indian MSMEs, with the overall financing gap estimated to be $ 400 billion[16]. OEMs and auto component suppliers could, through industry associations, push for the development of green finance programs by the government.

2. **Incentive Program:** Globally, companies have incorporated and are still in the process of incorporating incentives into supply chain procurement practices. OEMs need to device tangible incentive programs with financial outcomes for suppliers performing on green procurement guidelines. The financial outcome should be more than a reward to make a clear differentiation. It must involve measures like higher product price, larger volume contracts, reduced payment time etc., for the MSMEs who demonstrate reduction in GHG emission. It is essential that the program is built with provisions to provide better incentives to those performing better and consistently on green practices.

[13] Win-Win-Win: The Sustainable Supply Chain Finance Opportunity Incentivizing Environmental, Social, and Governance Performance with Supply Chain Finance (BSR_The_Sustainable_Supply_Chain_Finance_Opportunity.pdf)

[14] Volvo Green Finance Framework (volvogroup.com)

[15] green-financing-framework.pdf (volvocars.com)

[16] Greening MSMEs | The Indian Express

3. **Indirect Incentives:** Many companies adopt the supplier scoring method to rank the supplier. Certain companies also deploy a cut-off score in vendor qualification. OEMs may adopt minimum green score criteria for the vendor to qualify as a supplier. Another more prevalent practice is to incorporate a green score into the overall scorecard. The cut-off criteria are applied to the overall scorecard instead of the green score alone for supplier qualification. This practice, at times, provides an opportunity for suppliers without any green initiatives as well to qualify. Other incentives for suppliers with higher green scores could be access to training, technical resources, green group, sponsored energy/green audit etc.

4. **Technology Transition Cost Sharing:** Implementing climate-friendly measures can be capital intensive. A supplier may implement certain energy efficiency measures, energy reduction measures etc., to meet the green supplier requirements exclusively of a particular buyer. In such cases, a cost-sharing mechanism for technology implementation, based on a sound rationale, can be determined by the buyer with or without a payback mechanism.

5. **Collaborate with Banks and Financial Institutions:** OEMs can individually, in collaboration or through industry associations collaborate with banks and international financial institutions to carve out mechanisms to make finance available to MSMEs for green initiatives. Any concessional finance rates or sharing of finance cost by the buyer, larger payback periods, moratorium etc., could be some of the possible solutions. For example, International Finance Corporation (IFC) is focused on providing finance to MSMEs, including sustainable finance.

There is a growing array of options that can be developed and deployed for catalyzinga green supply chain. However, it cannot be catalyzed without the leadership of OEMs and the support and commitment of suppliers to incorporate green procurement practices in their operations.

7

Conclusion

The MSME supply chain is challenged due to the knowledge gap, human and financial resource gap. Channelizing support to MSMEs in climate action, could make climate action more business friendly

Automobile supply chains are vast, complex and opaque. Globally, the green supply chain is a priority for large automobile companies. The Indian automotive industry has made significant progress towards embracing overall sustainability as a strategic priority. There is still a big gap in the green initiatives of a large number of Indian OEMs even as the need to pursue it is greater and more pressing than ever. The focus and efforts towards low carbon pathway development are largely scattered and still in the initial stages.

While this is a good start, ground-level action is needed across the automotive supply chain. The MSME supply chain is challenged due to the knowledge gap, human and financial resource gap. Diverting efforts and resources towards GHG emission reduction could lead to business failure for many MSMEs. Thus, the Indian MSME sector needs guidance and support to start delivering on a green supply chain.

Some of the key measures that need to be enacted by OEMs, in collaboration with industry associations as well as financial institutions, are bridge the knowledge gap, prioritize suppliers who demonstrate greater inclusion of recycled or remanufactured material in their processes, collaborate with the supplier to integrate circular economy principles and close the gap in the recycling of auto parts, support and facilitate with know-how, human resource etc. for technology transfer and facilitate the transition in the supply chain.

Beyond all, there is a need to allocate finance to pace up transformation for a "green supply chain". OEMs needs to facilitate adequate financial allocation to enable the sustainability and green supply chain teams to implement the "green supply chain program" and develop systems and incentives to provide financial support to MSMEs for the green transition.

Annexure I: Case Studies on Achieving Zero Emission Future Through Green Supply Chain

Case I: FORD Motors

Company's commitment to reduce carbon emissions

Ford Motor Company is a global automotive and mobility company based in Dearborn, Michigan. The company has shown various commitments lately to reduce its carbon emissions:

- It aspires to achieve carbon neutrality by 2050
- It lays emphasis on the use of 100 % locally sourced renewable energy by 2035 to achieve zero air emissions
- It further aims to use recycled and renewable plastics only in its vehicles globally

Efforts made to reduce carbon emissions from the supply chain

Ford's supply chain largely influences its environmental and social impacts and values as it deals with nearly 11,000 suppliers in over 60 countries. The strategy mainly includes reducing greenhouse gas (GHG) emissions and developing a market for reduced, product-related GHG emissions to achieve sustainable supply chain engagement.

Ford adopted three frameworks to further establish mechanisms for encouraging suppliers to report on environmental performance, sharing best practices with suppliers, and verifyingthe supplier's environmental and social performance:

a. CDP's (formerly the Carbon Disclosure Project) Supply Chain Program

Ford first participated in CDP's Supply Chain program in 2010, which includes a series of questionnaires on climate change and water. According to Sustainability Report 2020, Ford surveyed 253 production suppliers (83 %) using the CDP Supply Chain program's questionnaire, and 162 suppliers (78 %) responded to the CDP Water questionnaire helping Ford identify supplier impact quantitatively and qualitatively. The selection of suppliers is based on their emissions or water intensity and their geographic footprint. Ford uses CDP data to invite PACE (Partnership for A Cleaner Environment) participation among strategic suppliers. Reporting through CDP reporting done by suppliers through the supply chain program helps Ford to setup a uniform reporting framework to monitor environmental impact.

Table 4: FORD's CDP Supply Chain Program (Source- Ford Sustainability report, 2020)

Suppliers	2018	2019
Integrating action on climate change into business strategy	84%	89%
Reporting a water-related target	81%	83%
Reporting an emissions reduction target	73%	73%

b. Partnership for A Cleaner Environment (PACE) Program

PACE is an initiative by Ford to help suppliers reduce CO2 emissions and waste, as well as help make water and energy consumption more efficient. The PACE Process for Supplier Responsibility includes:

- Develop long-term strategies and initiatives to reduce environmental impacts
- Commit to recording baseline water and GHG emissions data
- Replicate and expand successful initiatives
- Measure and report the progress achieved by sustainability initiatives against baseline data
- Communicate best practices and share knowledge with the greater supplier network

PACE has increased its potential to impact nearly 1,100 supplier sites in more than 40 countries. As part of PACE, Ford offers many practices and monitoring tools to help suppliers to achieve sustainability goals. It is done by sharing their environment progress reports. PACE participants expect to save an estimated 470 million gallons of water in their operations from 2019 to 2030, according to data collected in 2020. Suppliers in the PACE program also expect to save 680,000 metric tons of CO2 over the next five years (expected by 2025). Thus, the PACE toolkit works with more than 350 leading practices across four categories across Energy, Water, Air Emissions and Waste.

c. Responsible Business Alliance's (RBA) third-party, validated audit

Ford became the first automaker to join RBA. Under RBA, Ford actively participates in several workgroups and use its Validated Audit Protocol to assess labour, health and safety, management systems, ethics and environmental issues. Ford completed 1,186 supplier audits and 1,612 follow-up assessments to date. Ford conducted 23 new audits in 2019 using the RBA Validated Assessment Process methodology.

Also, Ford's Aligned Business Framework (ABF) provides a method for Ford to engage with strategic suppliers and to streamline best practices for responsible sourcing and environmental management. Ford's ABF network consists of 108 suppliers (79 production suppliers and 29 indirect suppliers), which provides a method for them to engage with strategic suppliers and streamline best practices for responsible sourcing and environmental management.

Ford verifies that each supplier has a proper code of conduct, suppliers provide training to ensure employees understand and comply with the code of conduct, and Ford validates its processes to ensure ongoing alignment. Suppliers verify that their own supply chain partners comply with shared standards and expectations. Through ABF, Ford is able to improve its working relationships with suppliers on a global basis that is enhancing its environmental leadership.

Green Procurement Policies:

- Improving energy efficiency is a vital component of Ford Motor Company's commitment to sustainability. Through its Go Green Initiative, Ford is extending that commitment beyond the corporation by partnering with independently owned, franchised Ford dealers to improve energy efficiency at their facilities.[17]

- Ford launched the Go Green Program in February 2010. It began with three dealerships in Florida, New York, and Nevada and has since expanded to almost half of Ford's dealership body. The program was developed by Ford Marketing Sales and Service and Ford Land's Energy Team to establish the details of the energy assessment process and the format of the assessment report. Through the Go Green Program, dealers can take advantage of Ford's expertise and resources to expand their knowledge of energy efficiency and renewable energy opportunities and earn recognition for their progress.

- Dealerships participating in Go Green receive a comprehensive energy assessment from expert energy consultants hired by Ford. Reports are prepared to cover the details of the energy use within an existing dealership, plus recommendations for energy-saving upgrades. After completion of the report, Ford conducts a thorough review with dealership management. If dealerships choose to implement any of the recommendations, Ford assists them by providing technical support and obtaining preferential pricing. Program participation is voluntary, as are dealership decisions to adopt any of the energy-saving recommendations. Dealers that proceed with facility upgrades and show significant improvement are eligible for recognition from Ford through the company's Dealership Award Program, which is being developed in partnership with DOE's Better Buildings, Better Plants Challenge.

SBTi Targets:

The Company is committed to Business Ambition for 1.5°C[18]. The company is making all possible efforts to remain committed to its business ambitions.

[17] Ford Motor Company: Go Green Dealership Program | Better Buildings Initiative (energy.gov)

[18] Companies taking action - Science Based Targets

Case II: Mahindra & Mahindra

Company's commitment to reduce carbon emissions

Mahindra & Mahindra (M&M) an Indian multinational vehicle manufacturing corporation headquartered in Maharashtra, Mumbai is one of the largest vehicle manufacturers by production in India and the largest manufacturer of tractors in the world. Significant initiatives by the Mahindra group are:

- Mahindra Group commits to be Carbon Neutral by 2040.
- M&M signed the Science Based Targets initiative (SBTi).
- Its environmental performance comprises of initiatives to manage energy, water, waste and biodiversity.
- M&M's Igatpuri plant certified carbon neutral is the first manufacturing plant certified by Bureau Veritas.

Efforts made to reduce carbon emissions from the supply chain

According to Mahindra & Mahindra's Sustainability Report 2018-19, Mahindra & Mahindra has a Sustainable Green Supply Chain Management and Procurement Policy to enhance sustainable procurement and minimize social, environmental and financial risks in its supply chain procurement and services.The policy has several provisions for suppliers, for example, promoting sustainability awareness and assessments at supply chains through IT-enabled processes, encourage suppliers develop their own sustainability reports, reduce environmental footprint by means of material, energy and water conservation, to list a few. The procurement policy includes provisions like minimizing the environmental, social and costs impact associated with the life cycle of goods and services, procurement of recycled and part-recycled products to optimize resource optimization and others.

To build a sustainable business, M&M has been taking important sustainability initiatives like awareness, training, capacity building and assessment, to enhance the sustainability quotient of the supply chain. Till 2019, training has been imparted to 1,180 suppliers by the EHS+ Centre and the company has conducted Dealer Sustainability Assessment for 577 dealers through DSQI and for 537 dealers through MDEP. Installation of rainwater harvesting systems at 31 supplier sites and solar energy plants at 25 supplier sites had also been done.

Table 5: Mahindra & Mahindra sustainability practices

Conducting Awareness Sessions on Sustainability:	Engaging the Suppliers on Sustainability:	Enhancing Skills at the Suppliers' End:	Supplier Sustainability Assessment:	Sustainability Levers in Logistics:
It includes online and classroom training sessions on environment, health & safety issues and the importance of green supply chain. In 2018-19, a total of 966 suppliers have undergone the training.	Supplier Sustainability Meets are organised regularly, to allow supplier partners to introduce sustainability based approach. In 2018-19, 32 suppliers actively participated in it.	The areas covered are, Supplier Business Capability Building (93 suppliers, 2018-19), Mahindra Supplier Evaluation Standard (121 suppliers, 2018-19) and Supply Risk Mitigation & Management (241 suppliers, 2018-19).	It covers safety, environment, human rights and compliance. In 2018-19, 72 assessments have been done. There were no negative environmental impacts on suppliers during the year under review.	The levers which have been utilised are load consolidation, route optimisation and vehicle modification. It helped in reduction to the logistics cost as well as CO2 emissions.

Some other activities that augment the process of the green supply chain in M&M:

- Suppliers categorized as Hazardous/Non-hazardous and Dangerous/Non-dangerous operations.
- Suppliers have got certified for EMS / OHSAS, and others are in progress. It resulted in reduced accident rates at the supplier facilities.
- Reusable packaging concepts have been implemented at certain supplier locations.
- The suppliers could meet 100% compliance with regulations, and The Directorate of Industrial Health & Safety has commended the initiative in writing.
- Some suppliers have undertaken tree plantation initiatives at their premises due to improved consciousness of the environment.

Green procurement policy:

The company seeks to reduce environmental impacts of its procurement process and also encourages its suppliers to adopt sustainable supply chain practices. It engages with its supply chain partners and includes the following considerations into procurement decisions:

- Encouraging suppliers to deliver products/services with a minimal negative impact on the environment and adopt safe practices in the cycle from production to delivery
- Preferring products that are eco-friendly, energy efficient and less polluting
- Disposing goods to authorized agencies in an environmentally friendly manner
- Procuring products and services that have a minimal negative impact on the environment
- Products that are water efficient and reduce water use- less toxic products to reduce health effects
- Utilizing clean technology and/or clean fuels
- Monitor, evaluate sustainability performance and identify improvement opportunities
- Reduce environmental footprint by means of material, energy & water conservation
- Encourage logistics optimization and waste reduction using 3 R (Reduce, Recycle& Reuse)
- Promote a safe and healthy workplace for the employees
- Promote sustainability awareness and assessments at the supply chain through IT-enabled processes
- Enhance sustainability within their own supply chain
- Procurement of recycled/part-recycled products to optimize resource consumption
- Procure energy-efficient equipment by defining specifications in tenders & contracts

SBTi Targets:

Car manufacturing corporation Mahindra & Mahindra Ltd. commits to reduce Scope 1 and Scope 2 GHG emissions 47% per equivalent product unit by 2033 from a 2018 base year Mahindra & Mahindra Ltd also commits to reduce Scope 3 GHG emissions 30% per sold product unit by 2033 from a 2018 base year

The targets covering greenhouse gas emissions from company operations (scopes 1 and 2) are consistent with reductions required to keep warming to wellbelow 2°C

Case III: TATA Motors

Company's commitment to reduce carbon emissions

TATA Motors is committed to reduce its carbon emissions, and the company is taking all relevant measures.

Efforts made to reduce carbon emissions from the supply chain

TATA Motors is working with channel partners to reduce climate change impact in the supply chain (Green Clean Guide, 2013). TATA motors have established a unique initiative – Green Dealership for generating awareness and promoting good environmental practices and management systems in the supply chain. The initiative aims at disseminating information on energy conservation and, subsequently, reduction in GHG emissions, which could provide potential financial savings for channel partners.

TATA Motors has estimated the carbon footprint of their tier-1 supply chain and have initiated a CO2 abatement plan at the supplier level. The following are some of their key milestones:

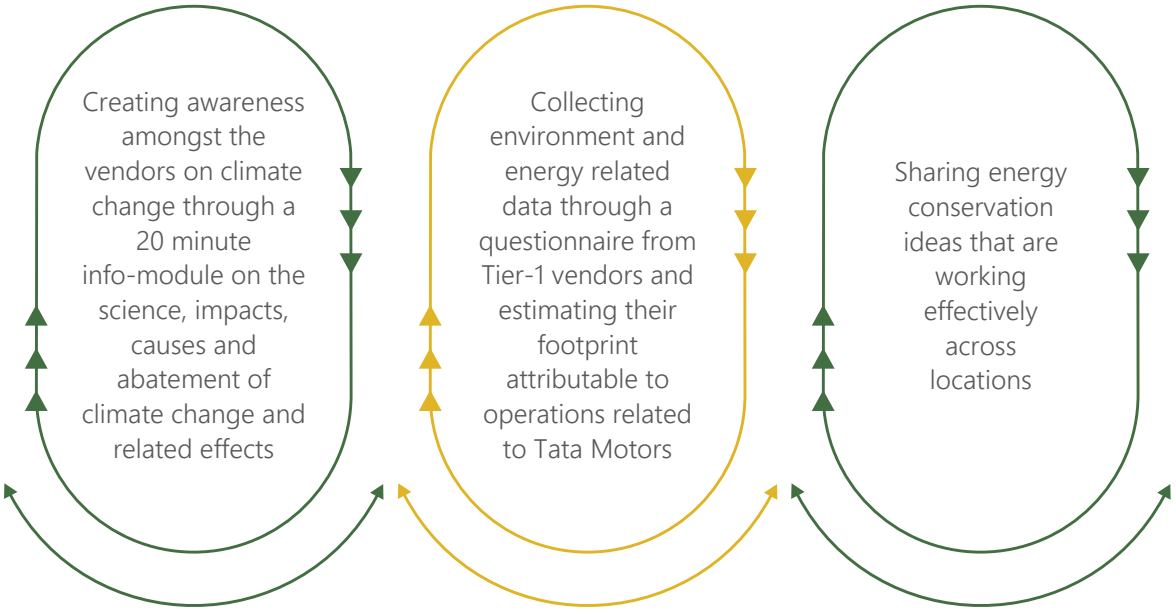


Figure 4: Key Milestones of TATA Motors, depicting the importance of Greening Automotive Supply Chain

Green Procurement Policy:

- Expanding awareness of Tata Motors' 'Environmental policy' and 'Code of Conduct' amongst vendors, contractors, and service providers through various means
- Evaluating the environmental performance of various vendors, contractors and service providers along with quality and cost giving priority to 'green' vendors/contractors and service providers and 'green' products
- Involving vendors, contractors, and service providers to improve their environmental performance by establishing an environmental management system
- Educating vendors, contractors and service providers to improve their manufacturing process to reduce their carbon footprint and use of hazardous chemicals
- Encouraging vendors, contractors and service providers to minimize logistics packaging material and maximize reuse and recycling of packaging material and use of recycled materials

SBTi Targets:

The company isn't committed to Science Based Targets

Case IV: Maruti Suzuki Private limited

Company's commitment to reduce carbon emissions

- Maruti Suzuki India Limited, formerly known as 'Maruti Udyog Limited', is an automobile manufacturer in India
- It is a 56.21% owned subsidiary of the Japanese automotive manufacturer Suzuki Motor Corporation. As of August 2020, it had a market share of 51% of the Indian passenger car market (Society of Indian Automobile Manufacturers –SIAM Report)

Efforts made to reduce carbon emissions from the supply chain

The company has one of the largest networks of supply chain in the country. It has created a supplier base of 444 local suppliers as on 31st of March 2016 for the increment of locally sourced components. Also, by 2016, nearly 88% of the supplier base by volume was located within a 100 km radius of the company facilities, which increased from 78% as previously assessed in 2013-14.

The suppliers are audited and rated against various parameters of environment, occupational health and safety, including safety management systems, general working conditions, hazard identification and control, emergency management systems and legal compliance.

The company has also developed a structured approach to assess the risks arising from major suppliers and plan proactive actions to avoid the potential impacts.

Following are some Initiatives in Green Supply Chain

- Implementation of 'Green Procurement Policy' for the management of supply chain in a more environmentally responsible manner. It aims to embed good practices which reduce environmental impacts of its supply chain, including supplier's operations. The guidelines were revised in 2015, and training on new guidelines was also arranged for all the suppliers

- The company has been encouraging suppliers to follow Environment Management System and supporting Tier-I local component suppliers in the implementation of ISO 14001. As of 31st of March, 2016, 86% of the local component suppliers' plants were ISO 14001 certified
- Localization of supply chain components to develop a reliable local source for all future requirements reduces exposure of the company to foreign exchange movement and builds capability of local suppliers, and boosts the local economy
- To reduce time, cost and emissions during transportation, the company has made improvements in logistics

Green Procurement Policy

Maruti Suzuki defines 'Green Procurement' as purchasing Green Products from Green Suppliers. The guidelines under this policy prohibit the usage of any kind of banned substances as per law in component manufacturing. It also introduced Classification, Labelling and Packing (CLP) for the parts which are being exported. The following are guidelines as per the Green Procurement Policy:

Table 6: Maruti Suzuki Green Procurement Policy

Green Procurement Guidelines

Compliance with Environment Related Regulations:	Establishment of Environmental Management System:	Establishment of SOC Management System:	Environmental Efforts in Suppliers' Business Activities:	Submission of Green Procurement Related Documents:
Suppliers are requested to conform to environmental laws and regulations as part of corporate social responsibility (CSR)	To prioritize business relations with suppliers who are playing active roles in environmental protection	Suzuki requests suppliers to enter the data on environmental impact substances contained in all parts and materials delivered to Suzuki with regard to SOC certification	Suppliers are requested to make the efforts such as reduction of CO2 & VOC emission, reduction of water consumption, promotion of energy saving, and reduction of waste	To strengthen mutual understanding on green procurement, suppliers are requested to submit 'Suzuki Green Procurement Promotion Agreement' as an evidence of the guideline

Impacts and developments

- 100% of suppliers have signed green procurement guidelines
- 95% energy to fulfil the manufacturing demand has been sourced from gas, solar
- In 2016-17, the company sold 763251 vehicles fitted with alternative fuels like CNG, LPG and Smart Hybrid Passenger Vehicles (SHPV), helping save the equivalent of 696,000 tonnes of CO2 emissions

SBTi Targets:

The company isn't committed to Science Based Targets

Case V: Volkswagen Group

Company's commitment to reduce carbon emissions

The Volkswagen Group values the earnestness of climate change and committed to the contribution to achieving the goals set in the Paris Agreement. The Group pursues the objective of unceasingly avoiding or reducing greenhouse gas emissions over the entire life cycle of a vehicle. With respect to the life cycle, the Group distinguishes between the three phases- supply chain, production and use phase of a vehicle. In procurement, the Group focuses on reduction of emissions in the supply chain. More importance is increasingly attached to the supply chain because the switch to electric mobility shifts emissions away from the use phase towards production and the supply chain.

Owing to energy-intense production, all larger aluminium parts are the exceptional focus of work. With measures like the use of green energy in aluminium production or use of recycled secondary material, CO_2 emissions of the primary material are lessened. Furthermore, a closed-loop system is in place in multiple European sites, which collects scrapped sheet metal and leads it back to aluminium suppliers. Additional materials such as steel, plastics and natural rubber are part of the group-wide decarbonization roadmap, which includes all applied and planned measures.

Impact of the actions of reducing CO_2 emissions is considered in the "Decarbonization Index" (DKI), which serves as a key performance indicator in the Group's strategy "Together 2025", outlining the goal to becoming a leading provider of sustainable mobility worldwide.

Efforts made to reduce carbon emissions from the supply chain

Volkswagen Group in 2006, came up with a comprehensive scheme- "Sustainability in Supplier Relations". The concept of sustainability in supplier relationships is firmly embedded in processes of the Volkswagen Group. Goal of the company in procurement includes integrating values of environmental protection and the perception of social responsibility as enshrined in the corporate policy into supplier relationships.

Thus, the "Sustainability in Supplier Relations" scheme is a continuous evaluation process. This ongoing development of supplier relations is essential to attain the Group's sustainability objectives.

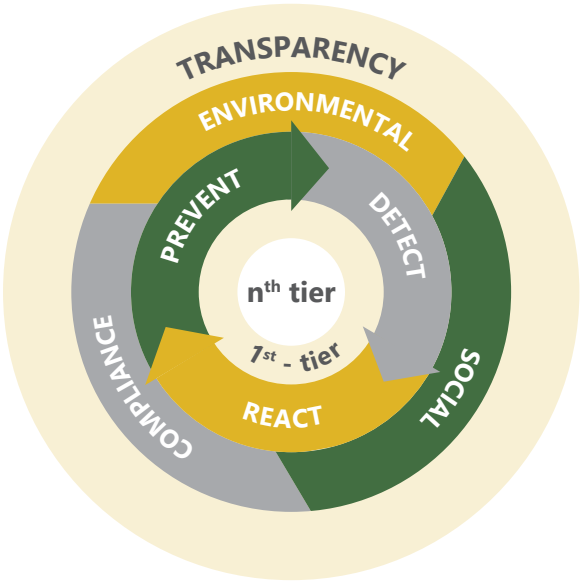


Figure 5: Sustainability in supplier relations – Volkswagen Group management concept (Source: Sustainability in Supply Chain, 2020)

In order to assure measures for reducing greenhouse gas among suppliers, the Group recognizes greatest sources of emissions along the supply chain on the basis of their vehicles' life cycle assessment data. Building on a hotspot analysis, joint roadmaps were developed in numerous workshops with suppliers from relevant industries in order to coordinate and pursue objectives and measures for CO_2 reduction.It furthermore incorporates brands and multiple departments of the Volkswagen Group, which coordinate an efficient implementation of delineated measures.

Greener procurement approach:

- The company believes that corporations should develop sustainability policies where the scope goes beyond the organization to business partners, suppliers, consumers and even competitors. Sustainability is now considered amongst valuation criteria, and this is evidenced by companies issuing their sustainability reports annually
- In procurement, the company follows a three-pronged approach to establishing sustainable supply chains with focuses on decarbonization, human rights, responsible procurement of raw materials and combating corruption. Their approach requires transparency in supplier relationships that go beyond the first-tier (Tier 1)

  a. **Prevent:** Sustainability requirements are enshrined in contracts and specifications, particularly the Code of Conduct for business partners. Suppliers are trained, and awareness for sustainability is raised.

  b. **Detect:** Sustainability risks in the supply chain are systematically analyzed and prioritized. Sustainability is anchored in the material contract award decisions across the Group, and a rating of potential suppliers' sustainability performance (S-Rating) is used. The basis for this is a self-assessment tool and on-site checks conducted on a risk-based approach.

  c. **React:** Various measures are available to react to the risks and impacts identified. These include a standardized internal process to review breaches by individual suppliers and action plans from on-site checks. The key objective is to rectify and prevent breaches actively and effectively.

SBTi Targets:

Volkswagen AG commits to reduce absolute Scope 1 and 2 GHG emissions 30% by 2030 from a 2018 base year. Volkswagen AG further commits to reduce Scope 3 GHG emissions from the use of sold products of light duty vehicles 30% per vehicle km by 2030 from a 2018 base year. Volkswagen subsidiary Scania CV commits to reduce SScope 3 GHG emissions from the use of sold products 20% per vehicle km by 2025 from a 2015 base year

The targets covering greenhouse gas emissions from company operations (Scopes 1 and 2) are consistent with reductions required to keep warming to Well-below 2°C.[19]

[19] https://sciencebasedtargets.org/companies-taking-action

Case VI: BMW Group

Company's commitment to reduce carbon emissions

- BMW Group considers that 'sustainability means investing into future'. It unlocks new business opportunities & allows minimizing risks and finding timely solutions to environmental, social and business challenges - for them &their stakeholders. The BMW Group is fully committed to the 'Paris Agreement' (COP 21). Thus, one major focus of their sustainability activities is to lower the CO2 emissions over the complete product lifecycle.

Efforts made to reduce carbon emissions from the supply chain

- The precise sustainability requirements for suppliers of production materials & non-production related supplies are specified in the 'BMW Group International Terms and Conditions for the Purchase of Production Materials and Automotive Components - IPC'& the 'General Terms and Conditions for Indirect Purchasing' (GTC). Meeting sustainability requirements for suppliers is fully integrated into the procurement process (BMW Group Supplier Sustainability Policy, 2020)
- With more than 70% of value creation, the supplier network has a huge impact on the carbon footprint of their products. They demand suppliers to provide transparency concerning emissions data from their own operations as well as from upstream activities, e.g. via Lifecycle Assessments (LCA), the CDP Supply Chain Program or the CO2 questionnaire for production locations. The Group expects suppliers to implement effective measures to reduce their direct and indirect CO2 emissions (including their upstream supply chain) in line with the Paris Agreement
- BMW Group has been taking part in the Supply Chain Program of the Carbon Disclosure Project (CDP) since 2014. In the year 2019, the Group has already achieved a CO2 reporting for 78% of the purchasing capacity by their suppliers
- The organization aims to keep this coverage at about 80% from 2020 on because the Group respects this to be a balanced approach between transparency requirements and reporting burden for suppliers with lower purchasing volume.By participating in CDP, suppliers can record their resource consumption on a universally recognized platform, which is consistent with the global climate discussion
- BMW Group annually requests suppliers to report their resource consumption, CO2 emissions & improvement potential to them via CDP. These suppliers are selected by their sales volume and emission as well as consumption relevance. They can rate suppliers according to their efficiency, set goals to save energy and resources as well as track their development over time.

Group supplier sustainable policy

BMW group supplier sustainability policy includes the following aspects:

- Resource management and environmental protection
- Social responsibility
- Lawful and Responsible Conduct
- Preventing the flow of funds to armed groups and conflicts
- Implementation of these standards in the supply chain
- Ensuring compliance, consequences of misconduct and grievance mechanism

SBTi Targets:

BMW Group commits to reduce scope 1 and 2 GHG emissions 80% per vehicle produced by 2030 from a 2019 base year*. BMW Group commits to reduce SScope 3 GHG emissions from use of sold products 40% per vehicle kilometer by 2030 from a 2019 base year. BMW Group commits to reduce SScope 3 GHG emissions from purchased goods & services and upstream transportation &distribution services 22% per vehicle sold by 2030 from a 2019 base year.

The targets covering greenhouse gas emissions from company operations (Scopes 1 and 2) are consistent with reductions required to keep warming to 1.5°C.[20]

[20] Companies taking action - Science Based Targets

Case VII: Toyota Motors

Company's commitment to reduce carbon emissions

Toyota is one of the leading automobile manufacturers in the world. The company has expanded its thoughts towards the widely talked about issue of environmental concerns due to manufacturing. According to Toyota Environmental report (2012), it is resolute to use the energy efficiently, decrease the amounts of emissions & other waste products that are a result of the manufacturing process. The company has documenteda"Global Environment Commitment" charter, which characterizes the its obligation to take actions to build a sustainable society.

The company has been named the world's Best Global Green Brand for the past three years. Toyota is working across their supply chain to devicea large scale zero emissions initiative. At present, the organization is running a campaign called "Toyota Environmental Challenge 2050." There is a series of 6 challenges they are working to meet by 2050. It hopes to achieve zero CO2 emission across their vehicles, plant operations, and product life cycle. Also, Toyota is working to optimize water usage and improve society's impact on nature (Sustainability Data Book 2019).

Efforts made to reduce carbon emissions from supply chain

Toyota firmly gearsupand follows sustainable measures through all phases of manufacturing, design stage to supplying the end product. The company works widely with the suppliers to ensure that environment is given the first priority while sourcing raw materials as well as manufacturing energy efficiently. The company provides trainingsregularly to both suppliers and employees, and encourages them to come up with innovative ideas to decrease waste and the consumption of energy which eventually would contribute to the overall sustainability goal. It works together with its suppliers right from the design phase, sourcing of raw materials and producing products by consuming low energy (Thummalapalli, 2019).

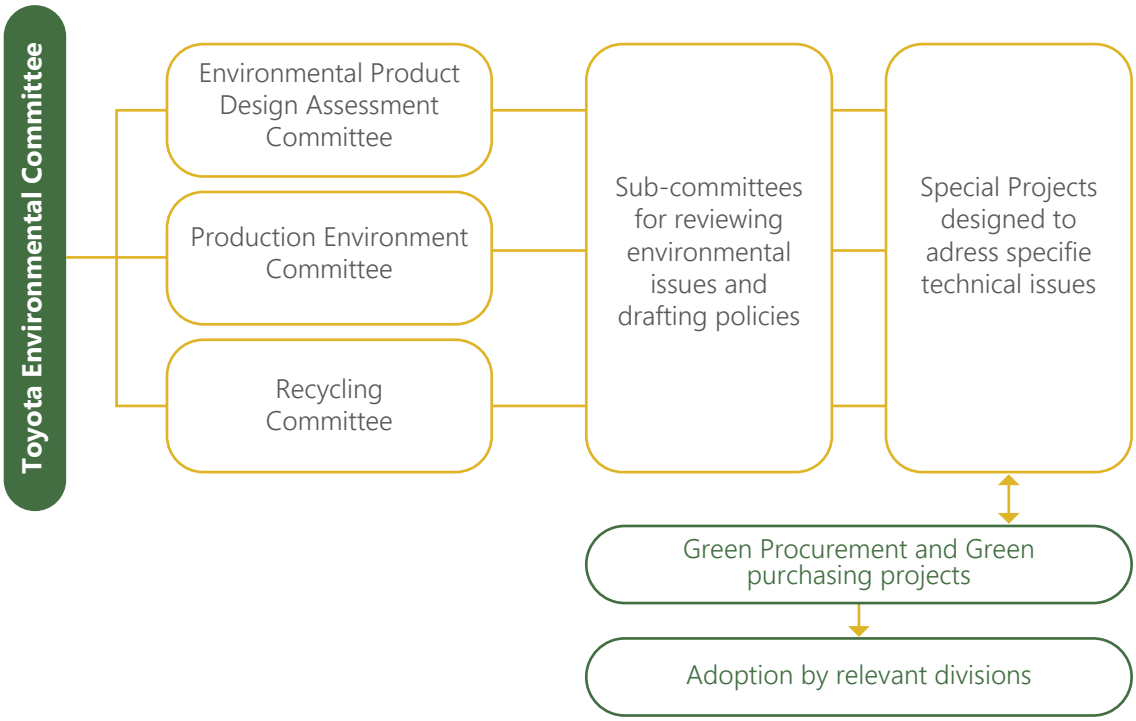
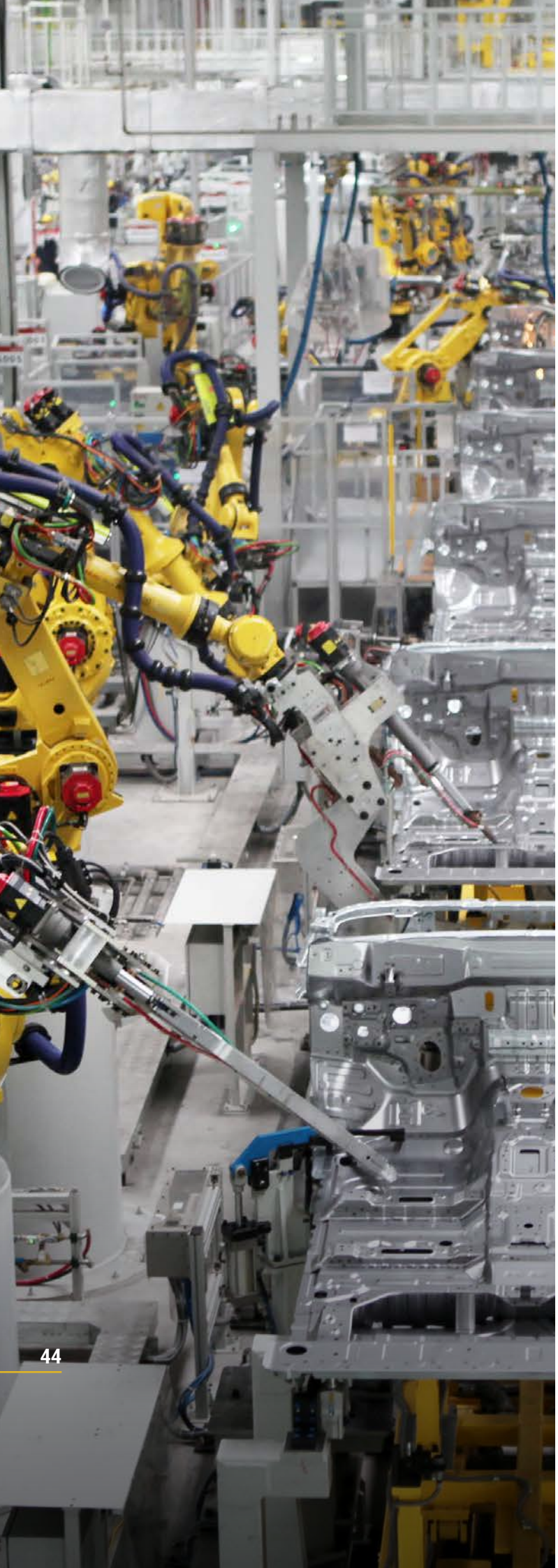


Figure 6: Toyota Organization Chart for Environmental Initiatives (Source: Thummalapalli, 2019)



Green purchasing guidelines

- Establishment of Environmental Management System-in order to perform supply chain management entirely, business partners and upstream business partners (e.g. tier 1 or tier 2 suppliers) are required to confirm to the environmental management system. It is also required to consider environmental impact throughout the product life cycle while promoting the environmental management system
- Reduction of Greenhouse Gas Emissions-business partners are requested to develop products and services that reduce greenhouse gas (GHG) emissions, and reduce GHG emissions at the operation base and in logistics
- Reduction of Impact on Water Environment-business partners are required to reduce impact on the natural environment caused by water usage at the operations base
- Promotion of Resource Recycling- in order to promote usage of recycling materials, Toyota requests that business partners develop technology and products that use recycling materials or recyclable materials and products considering proper treatment. Furthermore, it is required to reduce waste at operations base and usage of packaging materials in logistics
- Management of Chemical Substances-information according to the practical operation has been updated. Please confirm the details and follow the guidelines
- Establishment of a Society in Harmony with Nature -business partners need to consider biodiversity in the product and serviceand implement various initiatives to establish a society in harmony with nature

SBTi Targets:

The company isn't committed to Science Based Targets

Case VIII: Hero MotoCorp Limited

Company's commitment to reduce carbon emissions

- Hero Motocorp Limited(HMCL), formerly Hero Honda, is an Indian multinational motorcycle and scooter manufacturer based in New Delhi. The company is the largest two-wheeler manufacturer in the world, and also in India, where it has a market share of about 46% in the two-wheeler category.

Efforts made to reduce carbon emissions from supply chain

- The organization has implemented Green Supply Chain Management Program and a Green Charter to achieve environmental sustainability in their operations through continuous monitoring mechanisms and supporting vendors in their supply chains.
- The organization has adopted a Green Vendor Development Program which is an initiative to bring sustainability practices in its supply chains and influence vendors to adopt specified environmental standards and undertake environmental initiatives.

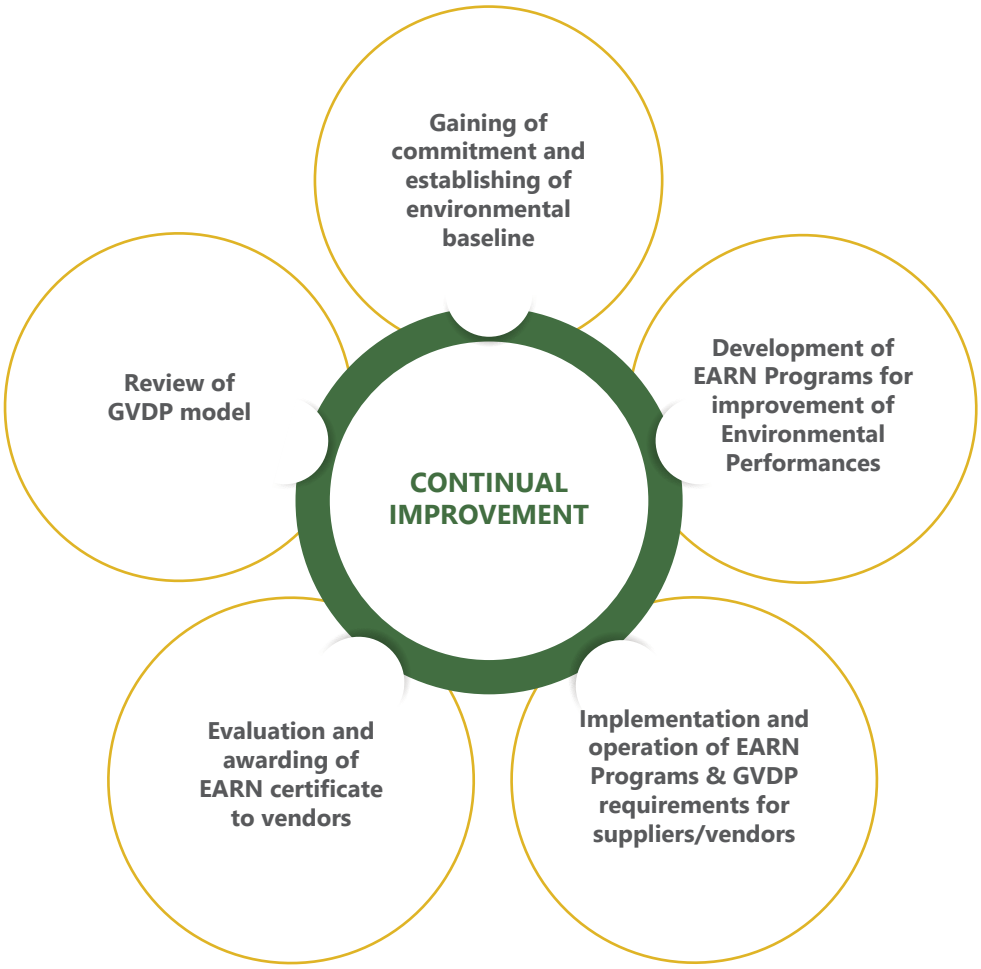


Figure: 7 Hero MotoCorp Green Vendor Development Program

Green manufacturing policy

- **Green Building:** Latest plants have been developed on the green building concept i.eNeemrana Manufacturing plant, GPC, HGCIT facility Jaipur are LEED IGBC certified these are Hero's one-of-a-kind-garden factories. From efficient building envelope to the Big Foot air handlers, to water and energy optimization - the Garden Factory demonstrates HMCL's environmental aspirations
- **Green Roof:** Put together all are plants cover 1,16,500sq meters of green roof, the latest being 25000sqm in 2016-17 at Vadodara. Hero's green roof helps to conserve energy by moderating the temperature on the roof and within surrounding areas. It also helps to reduce the storm water runoff volume and peak flow rate dramatically. The green roof can restore aesthetic and ecological value of open urban spaces. In addition to this, it protects conventional roofing systems by doubling the service life of the underlying waterproof membrane
- **Green Bio walls and Green Houses:** Their latest plants,greenhouses with green roof, with hydroponics technology, requires only 2% of water as compared to actual farming.By recycling carbon dioxide into the greenhouse, HMCL enhances plant photosynthesis. The green walls generates oxygen and gives back to the work environment
- **Sewage Treatment Plant:** Hero ensures that sewage is biologically treated to attain efficacy. This treatment plant is designed to accommodate up to 6 hours of holding and ensuring effluent is 100% treated and recycled into soft water that is used in cooling towers
- **Zero Liquid Discharge Plant:** To prevent water pollution, Hero has also invested in an Effluent Treatment Plant which is capable of treating waste water that contains degreasing chemicals, acidic/ alkaline nature, plating waste, heavy metals and waste oil that is generated out of processes. The waste water is either reused in general activities or recycled back to processes with help of reverse osmosis process and multi effect evaporators thereby reducing the fresh water foot print. The company recycles 90% of waste water back to the process using Zero liquid discharge platform. Balance 10% is being reused for horticulture activities
- **Rainwater Harvesting:** All plants are equipped with efficient rain water harvesting system which captures the rain water runoff and recharged into the aquifer thereby improving the ground water levels with total rain water harvesting potential of 25lakh cubic meters which is much more than annual water requirement. The rain water harvesting scheme extends up to the surrounding community and villages with an objective to control the rain water runoff, maintain ground water levels and hence improve water security and minimize water logging / flooding
- **Waste Food Recycling:** Hero ensures hygienic disposal of municipal waste through its organic waste converter, which in turn generates manure. This waste goes through 15 minutes of treatment and is then homogenized and odour free. It is turned into compost in the next two weeks and finally is available for landscaping and greening applications. The waste treatment helps in preventing generation of methane which has 25 times more global warming potential as compared to CO2
- **Paint Conservation:** Along with preventing water pollution, Hero MotoCorp does its very best to prevent releasing pollutants in the air as well. The company has gradually adopted water-based painting system and advanced robotic painting system which improves paint transfer efficiency. The latest Vadodara plant is provided with a unique feature of VOC control in the paint shop using the concept of Regenerative Thermal Oxidizers (RTO) to treat the VOC before letting the emission into the environment
- **Energy Conservation:** The company has taken several initiatives towards conservation of energy and carbon reduction during the year 2016-17

SBTi Targets:

The company isn't committed to Science Based Targets

Annexure II: References

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CESD leverages its role of all-inclusive ecosystem player, partnering industry, government, and civil society. It has been a pioneer of environment management systems, biodiversity mapping, sustainability reporting, integrated reporting, and social & natural capital valuation in India, thus upgrading business in India to sustainable competitiveness.

With two locations in India, CESD operates across the country and has also been active in parts of South and South East Asia, Middle East, and Africa. It has held institutional partnerships and memberships of the United Nations Global Compact, Global Reporting Initiative, International Integrated Reporting Council, Carbon Disclosure Project, development agencies of Canada, the USA, the UK, and Germany.

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