CII-ITC Centre of Excellence for Sustainable Development

20 YEARS OF CELEBRATING SUSTAINABILITY

Confederation of Indian Industry

Insights from Madhya Pradesh Food Processing Clusters: Building a Climate-Smart & Resilient Future

September 2025

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Abbreviations

BUR	Biennial Update Report
CCAC	CII Climate Action Charter
CII	Confederation of Indian Industry
CBAM	Carbon Border Adjustment Mechanisms
CESD	Centre of Excellence for Sustainable Development
EU	European Union
GDP	Gross Domestic Product
GHG	Greenhouse Gases
MSME	Micro, Small, and Medium Enterprises
MP	Madhya Pradesh
NAPCC	National Action Plan on Climate Change
NDC	Nationally Determined Contribution
R&D	Research and Development
RE	Renewable Energy
SAPCC	State Action Plans on Climate Change
TCFD	Task Force on Climate-Related Financial Disclosures
UK	United Kingdom
UNFCCC	United Nations Framework Convention on Climate Change
ZED	Zero Effect, Zero Defect

Executive Summary

The Micro, Small, and Medium Enterprise (MSME) sector in India employs over 110 million people and contributes 28% to the nation's Gross Domestic Product (GDP), with a significant contribution towards exports (Ministry of MSME, 2022). The sector is vital to India's transition to a low carbon economy, with the potential to play a central role in achieving the nation's net zero goals by 2070. However, MSMEs are becoming increasingly vulnerable to climate risks that impact productivity and operations, making it critical to give them access to technological upgrades, financial support, and climate resilient strategies to support the transition.

The CII Climate Action Charter (CCAC) MSME Toolkit, developed and anchored by the CII Centre of Excellence for Sustainable Development (CESD), offers a comprehensive framework for integrating climate resilience into business operations. It focuses on global agreements such as the Paris Agreement, India's NDCs, and net zero targets. Structured around the Task Force on Climate-Related Financial Disclosures (TCFD) framework, the toolkit helps MSMEs assess climate risks, establish emission baselines, and create emission reduction strategies.

With over 500 MSMEs on board, the platform provides sector specific initiatives to mitigate climate risks and promote sustainability, while providing signatories with continuous support, recognition, customized gap assessment reports and climate awareness workshops.

The CCAC MSME Toolkit helps businesses to effectively measure and manage GHG emissions, enabling actionable climate solutions. Under the CCAC initiative, CESD conducted a study involving 28 food processing companies in Madhya Pradesh (MP). The study found a 12% reduction in GHG emissions by 13 Phase 1 signatories between 2022 and 2023, attributed to the implementation of renewable energy and energy efficient practices.

Additionally, the signatory companies embraced sustainable initiatives such as solar energy, water conservation, and ethical sourcing, leading to greater operational efficiency and enhanced competitiveness.

To advance sustainability, CCAC outlines key recommendations across five areas: Climate Awareness & Training; GHG Emission Footprint; Climate Action & Strategy; Climate Resilience; and Climate Action Finance. The Charter's engagements with the signatories encompasses training; improving GHG tracking; fostering collaboration; adopting climate risk management and providing access to funding for climate action.

MP's food processing sector is a significant contributor to India's processed food exports but faces emerging challenges from global policies such as the European Union's (EU) and United Kingdom's (UK) Carbon Border Adjustment Mechanisms (CBAM), increasing costs related to packaging, logistics, and energy. The sector, however, struggles with limited climate awareness; inadequate financial support; and a lack of technical expertise. Despite policy measures such as the Madhya Pradesh MSME Promotion Policy, MSMEs face significant barriers to adopting sustainable practices due to gaps in technological resources, infrastructure, and innovation support.

This report includes an outline of MP's food processing sector and makes specific recommendations including adoption of solar powered cold storage, energy efficient systems, electric vehicles, biogas from organic waste, and sustainable packaging. Such initiatives have the potential to help reduce their impact on the environment, improve operational efficiency, and strengthen the sector's competitiveness.

Background

The MSME sector is a critical pillar of India's economy, employing over 1109 lakh individuals and ranking as the second largest employment provider in the country (Ministry of MSME, 2022). The sector considerably contributes to the country's economic and social growth by encouraging entrepreneurship, creating jobs, and serving as a support system for large enterprises.

Manufacturing activity represents a significant percentage of the MSME base (33% - refer Table 1). The sector employs 360.41 lakh individuals while trade employs 387.18 lakh individuals, other services engage 362.82 lakh people and non-captive electricity generation and transmission creates 0.07 lakh jobs across rural and urban areas (Source : Annual Report, Ministry of MSME, 2023-24). The MSME sector contributes a significant 28% to India's Gross Domestic Product (GDP) and 40% to exports (Indian Institute of Public Administration, 2021), underscoring its indispensable role in fostering economic growth and stability. According to the Ministry of MSME's Annual Report 2023-24 Madhya Pradesh, with an estimated 26.74 lakhs of MSMEs accounts for the maximum number of such enterprises, in the country and ranks among the top 10 States for them.

Table 1: Estimated Number of Enterprises in the MSME Sector (Activity Wise) – 2023-24

Activity Category	Estimated Number of Enterprises (in Lakhs)			Share (%)
	Rural	Urban	Total	
Manufacturing	114.14	82.50	196.65	31
Electricity*	0.03	0.01	0.04	0
Trade	108.71	121.64	230.35	36
Other Services	102.00	104.85	206.85	33
All	324.88	309.00	633.88	100

*Non-captive electricity generation and transmission

Source: https://msme.gov.in/sites/default/files/FINALMSMEANNUALREPORT2023-24ENGLISH.pdf

The micro sector is estimated to employ 1076.19 lakh individuals, representing about 97% of the total MSME sector employment. The small sector employs 31.95 lakh individuals (2.88%), while the medium sector employs 1.75 lakh individuals (0.16%). Almost 45% employment across micro, small, and medium enterprises comes from rural areas and 55% from urban areas (Table 2).

Table 2: Distribution of Employment in Rural and Urban Areas – 2023-24

Sector	Estimated Numbers (in Lakhs)				Share (%)
	Micro	Small	Medium	Total	
Rural	489.30	7.88	0.60	497.78	45
Urban	586.88	24.06	1.16	612.10	55
All	1076.19	31.95	1.75	1109.89	100

Source: https://msme.gov.in/sites/default/files/FINALMSMEANNUALREPORT2023-24ENGLISH.pdf

India's MSME sector is characterized by high greenhouse gas (GHG) emissions, primarily due to its significant reliance on fossil fuels. The sector's informal nature makes it difficult to accurately calculate total GHG emissions, leading to varying estimates. The MSME sector accounts for approximately 25% of the total energy consumption within India's industrial sector, with electricity making up 15% and thermal energy constituting 85% (FMC and GIZ 2018).

Projections based on a recent study predict a dramatic rise in energy consumption of India's MSME sector, with CO2 equivalent emissions expected to surge from 30 million tonnes in 2016-17 to 72.17 million tonnes by 2029-30 - an increase of over 100% (FMC and GIZ 2018). MSMEs not only contribute extensively to GHG emissions, but are also significantly vulnerable to the risks associated with climate change. The risks affect infrastructure, operations, productivity, and resource availability, resulting in financial difficulties, job losses, and increased migration.

The tight profit margins that MSMEs typically operate with make investing in advanced and sophisticated technologies a challenge for them. India's Biennial Update Report (BUR), 2021 highlights that the MSME sector continues to rely on obsolete technologies and practices, leading to increased energy intensity (TERI, 2021).

Climate change and emerging transitional risks further complicate MSMEs' challenges with respect to global competitiveness, limited production capacity, technology modernization, access to financing, and the development of a skilled workforce.

Despite these challenges MSMEs have the potential to become a driving force in helping India achieve its Nationally Determined Contributions (NDCs). These include a 45% reduction in emissions intensity by 2030, increasing renewable energy (RE) capacity to 500 GW, and achieving net zero emissions by 2070. These commitments align with the Paris Agreement's aim to limit global warming. MSMEs can play a key role in paving the way for India's transition to a low carbon future and turning net zero by 2070, while limiting global warming to 1.5°C.

Given their criticality to the country becoming a USD 35 trillion economy by 2047 (PIB, 2019), Government of India has of late placed high priority on the MSME sector. Going forward, addressing the MSME sector's structural challenges and enabling a shift towards cleaner technologies will support the Government's national climate goals, while enhancing the sector's resilience, competitiveness, and contribution to long term sustainable development.

CII Climate Action Charter (CCAC) Platform

The CII Climate Action Charter (CCAC) platform is a strategic initiative launched by the CII Centre of Excellence for Sustainable Development (CESD), aimed at fostering climate resilience and promoting sustainable practices in the Indian industry. The initiative represents a significant step towards integrating sustainability into Indian industry's core operations.

The CCAC platform provides a structured approach for climate action by businesses and empowers them to take proactive measures in combating climate change while fostering economic growth. The initiative is based on four principles showcased in Figure 1.

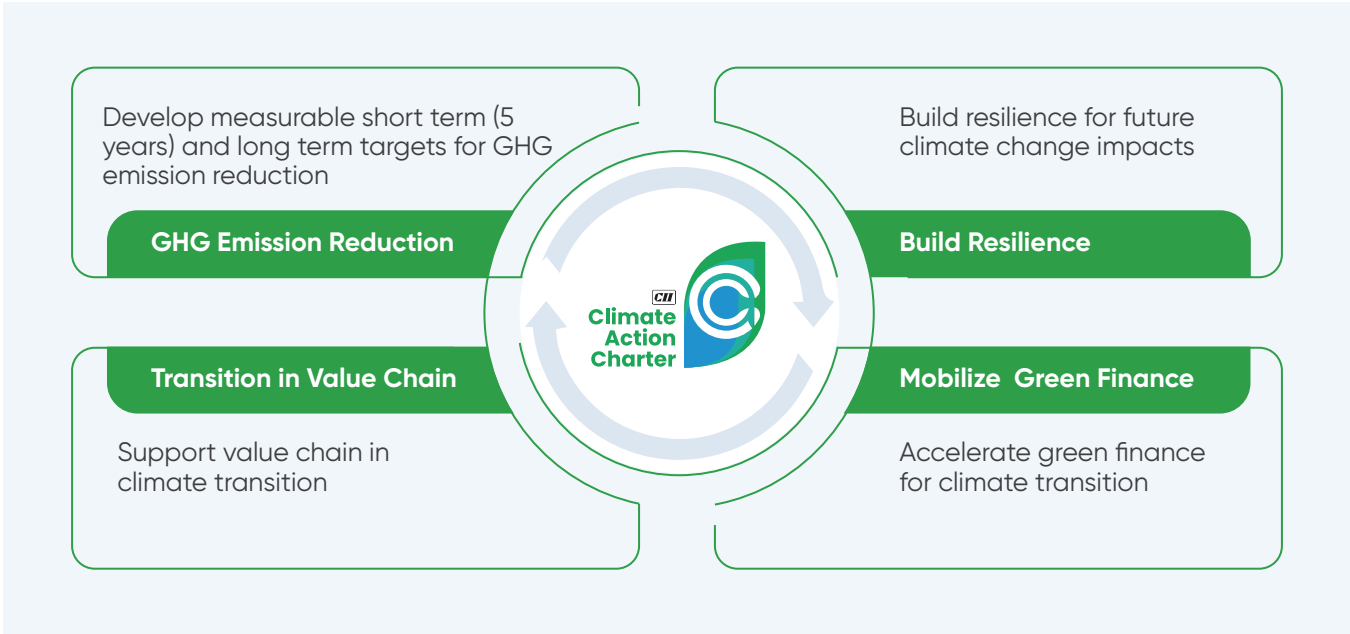


Figure 1: Four Principles of the CII Climate Action Charter

The CCAC MSME Toolkit, the Charter's dedicated toolkit, offers a robust framework to support MSMEs in achieving climate goals and strengthening sustainability efforts. As part of the initiative, numerous climate awareness workshops have been organized across major industrial clusters nationwide. These workshops aim to deepen the industry's understanding of climate change and emphasize the need for them to adopt climate resilient practices. The workshops also raise awareness about the Paris Agreement, India's Nationally Determined Contributions (NDCs), and the national net zero targets, guiding stakeholders in aligning their organization's operations and supply chains with global climate targets.

The CCAC MSME Toolkit, structured around the Task Force on Climate-related Financial Disclosures (TCFD) framework, comprises 28 focused questions. It facilitates a comprehensive evaluation of key areas for each Charter signatory, including climate risk and vulnerability, awareness and training, action and strategy, GHG emission footprint, and financing for climate initiatives.

CESD assists signatories in preparing their annual GHG inventory for Scope 1 & 2 emissions as well as establishing emission baselines, and thereafter supports them with drawing actionable strategies for achieving emission reduction. During a three year support period, consistent assistance is available to signatories to navigate their climate action journeys. Upon completion of the Charter assessment, participating businesses receive a 'Recognition Certificate

for Commitment to Climate Action' (valid for one year) and a tailored gap assessment report. Certificates are renewed annually after submission of the updated annual emission data.

Thereafter, a comprehensive cluster level insights report is developed, drawing from the analysis of submissions and the current state and national policy landscape. The report identifies sector specific challenges and provides actionable recommendations across stakeholder engagement, technological advancements, and the CCAC framework. The platform empowers signatories with actionable insights, enabling organizations to integrate climate risks and opportunities into their governance, strategy, and risk management processes. It fosters sustainable business practices and enhances preparedness to thrive in a changing climate.

Madhya Pradesh is one of the ten States where the CCAC initiative has achieved significant outreach. Through focused engagements with key industrial clusters, local businesses, and MSMEs, the efforts have effectively raised awareness about the Charter's objectives and benefits. The initiatives were designed to inspire climate action and promote the adoption of sustainable practices among MSMEs, fostering a greener and more resilient industrial landscape across the State.

Madhya Pradesh: Geographical and Economic Landscape

Madhya Pradesh (MP). centrally positioned in India, is endowed with abundant natural resources and shares borders with Uttar Pradesh in the northeast, Chhattisgarh in the east, Maharashtra in the south, Gujarat in the west, and Rajasthan in the northwest. Though Bhopal is the capital citiy, Indore stands as its largest and most populous city. Other major urban centres include Chhindwara, Dewas, Gwalior, Jabalpur, Rewa, Sagar, and Ujjain. Geographically, MP is the second largest State in India by area and ranks fifth in terms of population with a GDP contribution of close to 4% to the national GDP (https://mp.gov.in/). Some major industrial sectors in the region include agriculture equipment manufacturing, automobiles, engineering, food processing, and textiles.

Why the Food Processing Sector

Food processing stands out as one of Madhya Pradesh's prominent industrial sectors. The State plays a major role in India's agro-processing export landscape, supplying a wide range of products to diverse international markets. MP's exports include chocolates, confectionery, ghee, paneer, milk powder, wheat flour, lentils, ready-to-cook items, soybean based products, and edible oils. These goods are exported to Bangladesh, China, European Union, Middle East, North America, Southeast Asia, United Kingdom, United States among many more.

CESD prioritized the food processing sector for CCAC interventions in light of the introduction of Carbon Border Adjustment Mechanisms (CBAMs) by European Union (EU) and the United Kingdom (UK). While CBAM specifically targets carbon heavy imports such as aluminium, cement and steel, food products are not yet directly affected. However, indirect impacts such as increased carbon costs associated with packaging, logistics, and energy intensive processes like cold storage pose potential

challenges for Madhya Pradesh's food processing sector. Moreover, countries such as Australia, Canada, and Japan are considering similar CBAM policies, signalling a global trend that exporters must proactively adapt to safeguard market access and maintain competitiveness.

Food processing involves various stages, including production, packaging, and transportation, each contributing to the product's overall carbon footprint. If upstream suppliers in sectors like packaging (e.g., aluminium cans) face increased costs due to CBAM, the expenses may be transferred to food processing companies, affecting price competitiveness.

European consumers and retailers are increasingly favouring products with lower carbon footprints. Going forward, exporters demonstrating sustainable practices may gain a competitive edge, while businesses lagging in environmental performance are expected to encounter market resistance. Energy intensive activities such as grain milling, oil seed processing, and cold storage could see increased scrutiny for their carbon footprint. Exporters to Europe and the UK may need to align production processes with low carbon standards to remain competitive. The focus on embedded emissions in supply chains are likely to necessitate carbon accounting and reporting by MSMEs.

Impact of Policies on MSMEs

The MSME sector in India accounts for about 30% of energy used by formal industrial units. However, only 48.2% MSMEs rely on electricity as the main energy source, and 38.6% do not use any formal energy supply (IIM Ahmedabad, 2020), highlighting the sector's complexity. The sector's informal and unorganized nature presents numerous challenges for stakeholders in adopting energy efficient technologies and transitioning to non-fossil fuel energy sources. Key barriers include a lack of technical expertise, limited awareness of formal financing options, and misconceptions about low carbon pathways, all of which must be addressed to enable a successful shift towards energy efficient systems.

The Madhya Pradesh MSME Promotion Policy (February 2025) and Madhya Pradesh State Action Plan on Climate Change and Human Health (2022-2027) align to encourage sustainability and climate resilience. Financial incentives are offered alongside initiatives promoting renewable energy (RE) and frameworks for resource efficiency and waste management. However, despite encouraging sustainable practices, the policy frameworks lack sector specific guidance and step-by-step implementation strategies, thus limiting adoption across diverse MSME operations.

The table below outlines the interconnected nature of policies and challenges, highlighting the importance of targeted interventions to address the gaps effectively.

S. No.	Policies	Challenges
1.	**National Action Plan on Climate Change (NAPCC):** Includes eight missions such as NMEEE for energy efficiency, National Solar Mission for solar energy adoption, and the Mission on Sustainable Habitat for urban and industrial sustainability.	MSMEs, especially in rural and informal sectors, lack awareness of NAPCC's objectives and available support. Policies are perceived as distant and not sector specific.
2.	**State Action Plan on Climate Change (SAPCC):** Offers state level frameworks customized to local industrial needs, focused on reducing emissions, improving energy efficiency, and promoting renewable energy adoption.	Inconsistent implementation across states, with some regions announcing advanced programmes while others lagging, creating disparities in support for MSMEs.
3.	**Zero Effect, Zero Defect (ZED) Initiative:** Provides ratings and certification to MSMEs based on parameters such as energy efficiency, pollution control, and use of renewable energy and also offers incentives for compliance and upgrades.	Awareness of ZED certification and its benefits is low among MSMEs, particularly those in informal sectors. Technical complexity adds to the hesitation in adoption.
4.	**Financial Schemes:** Programmes such as the Credit Linked Capital Subsidy Scheme (CLCSS) and TEQUP offer subsidies for energy efficient technology upgrades and renewable energy adoption. State subsidies are also available for solar energy and waste management systems.	High upfront costs for adopting advanced technologies deter small and resource constrained MSMEs. Limited access to financing options compounds the challenge.
5.	**Renewable Energy Policies:** Include national programmes like FAME for electric vehicles, subsidies for rooftop solar installations, and incentives for clean energy projects.	Renewable energy infrastructure remains underdeveloped in rural and industrial clusters, limiting the feasibility of widespread adoption by MSMEs.
6.	**Circular Economy Policies:** The National Resource Efficiency Policy (NREP) promotes practices such as waste reduction, eco-friendly packaging, and recycling to enhance resource efficiency.	MSMEs have a slow rate of adopting circular economy models due to lack of technical guidance, sector specific solutions, and incentives tailored to their operations.
7.	**Capacity Building Programmes:** Include initiatives such as the Entrepreneurship and Skill Development Programmes (ESDP) and Bureau of Energy Efficiency (BEE) workshops that train MSMEs on energy saving practices and new technologies.	Limited access to capacity building opportunities, especially in remote areas, and a shortage of skilled workforce to implement energy efficient technologies.
8.	**International Collaborations:** Programmes like the GEF-UNIDO MSME initiative and access to Green Climate Fund (GCF) provide financial and technical support for MSMEs to transition to clean energy and sustainable practices.	Complex processes for applying to international funding programmes and low awareness among MSMEs of such opportunities hinder their ability to benefit from these programmes.

S. No.	Policies	Challenges
9.	**Madhya Pradesh's MSME Promotion Policy (2019–2024):** Offers financial incentives, tax rebates, and subsidies to support renewable energy adoption, waste management, and eco-friendly business practices.	The policy's urban centric focus leaves rural MSMEs with insufficient infrastructure, financial resources, and guidance for integrating sustainable practices.
10.	**Industrial Cluster Initiatives:** Focus on shared infrastructure for renewable energy (e.g., solar parks) and waste management systems in industrial clusters to support MSMEs collectively.	Infrastructure development in industrial clusters is uneven, with a lack of facilities like waste treatment plants and centralized solar power systems in many regions.
11.	**Monitoring and Reporting Mechanisms:** Develop systems to track and measure MSME progress in emission reduction, energy efficiency, and adoption of sustainable technologies.	Weak or non-existent monitoring systems lead to a lack of accountability and clear measurement of climate action impact among MSMEs.
12.	**Innovation Support:** Limited policies to encourage MSMEs to invest in research and development (R&D) for green technologies and tailored solutions for their specific needs.	Insufficient financial and institutional support for innovation, discouraging MSMEs from developing indigenous technologies that could address their sustainability challenges.

Charter Study Insights: MP's Food Processing Sector

A total of 28 MSMEs from Madhya Pradesh's food processing sector, with 90% being micro and small enterprises, were successfully onboarded on the CCAC platform. These MSMEs are based across key industrial clusters such as Bhagirathpura, Jawahar Marg, Khargone, Khar, Nemawar Road, Palda, Pithampura, Sanwer Road, Siyaganj, Takoganj and Udyog Nagar. The study is based on comprehensive responses received on key areas such as climate risk and vulnerability; awareness and training; climate action strategies; emission reduction efforts; and access to climate related finance. The key insights gained from the study are discussed ahead.

The study revealed that over the past three years there was significant increase in employee awareness about the impact of climate related events on business operations. Almost 61% respondents (Figure 2) reported a notable rise in awareness, largely fuelled by external media and self-directed learning. It underscores the urgent need for more structured organizational efforts to translate this heightened awareness into actionable climate strategies.

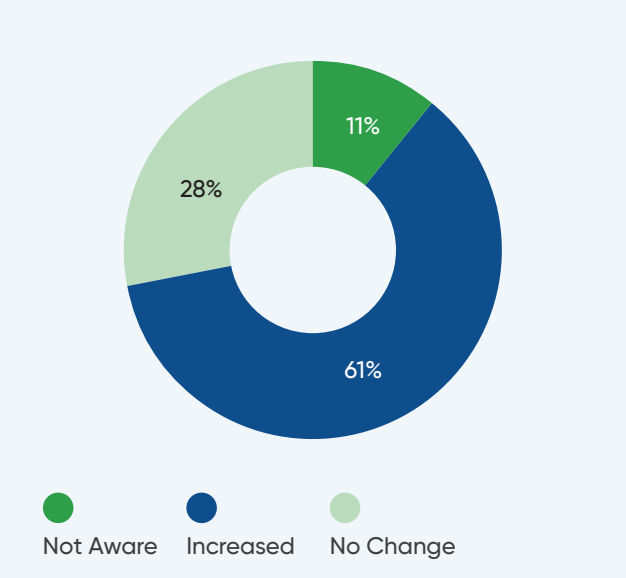


Figure 2: Percentage Enhancement in Employee Awareness of Climate Impact between 2021-23

A significant gap in implementation of formal climate awareness training programmes for employees was also highlighted by the survey (Figure 3). While awareness of climate change has increased, 67.9% companies reported not having formal training focused on mitigation and adaptation strategies. The gap between rising awareness and absence of structured training initiatives presents a valuable opportunity for organizations to introduce targeted programmes. Without such formal training, increased awareness alone may not be enough to equip employees with necessary skills to drive meaningful environment action in the workplace.

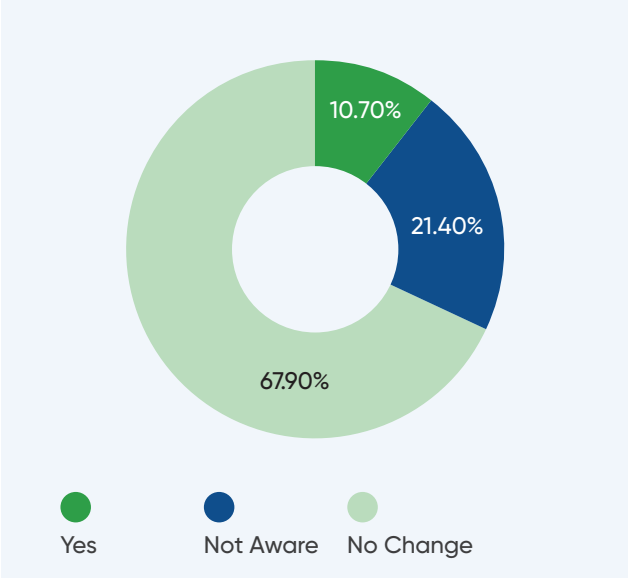


Figure 3: Organizations' Response to "Formal Climate Awareness Training for Employees"

Insights from 28 respondents on leadership engagement in promoting and participating in climate awareness initiatives reveal a worrying trend (Figure 4). Approximately 21% respondents reported no leadership team involvement in climate action and 46% respondents indicated only moderate participation. In a business landscape where active leadership involvement is crucial for fostering systemic change and embedding sustainability into corporate strategy high leadership engagement at only 4% of the respondent companies offers immense scope for action

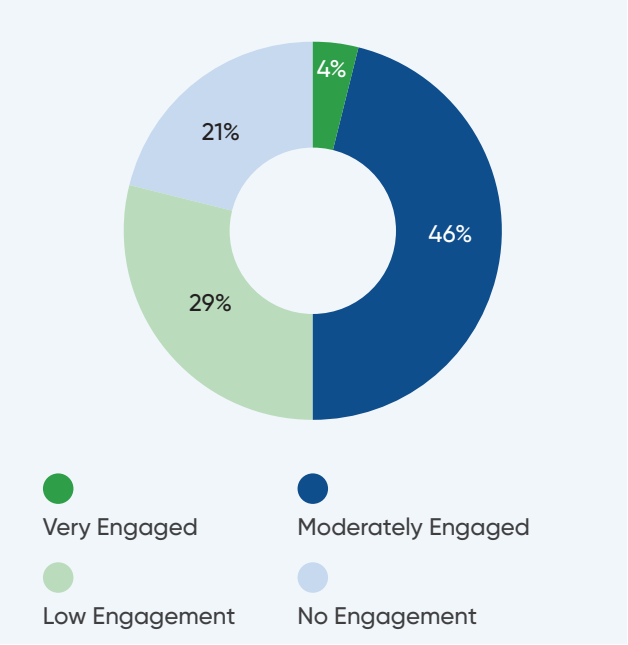


Figure 4: Leadership Engagement in Climate Initiatives

Of the 28 signatories, 50% indicated that they actively track and document GHG emissions, providing a sound basis for advancing climate initiatives (Figure 5). Conversely, the absence of systems to monitor emissions in the remaining 50% highlights a significant gap that requires immediate attention to enable comprehensive and impactful climate action.

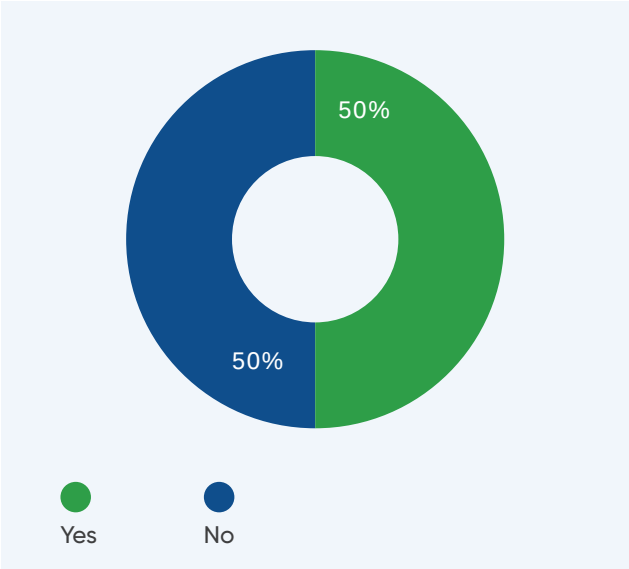


Figure 5: Percentage of Companies Tracking and Inventorizing GHG Emissions

A complete lack of collaborative efforts with stakeholders (Figure 6) reflects no engagement across the value chain, encompassing suppliers, customers, and sectoral partners. This limited interaction poses a significant challenge, as it restricts the potential for achieving broad based and impactful emission reduction outcomes.

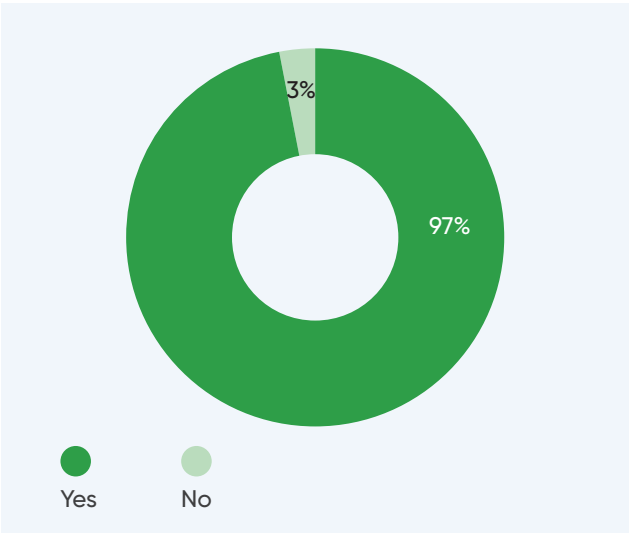


Figure 6: Percentage of Companies Making Collaborative Efforts to Reduce GHG Emissions Across the Value Chain

The percentage of companies currently employing practices or initiatives to address climate risks is alarmingly low at 10.7% (Figure 7). This limited preparedness raises concerns, especially within the food processing sector, which remains highly susceptible to both the physical and financial repercussions of climate change.

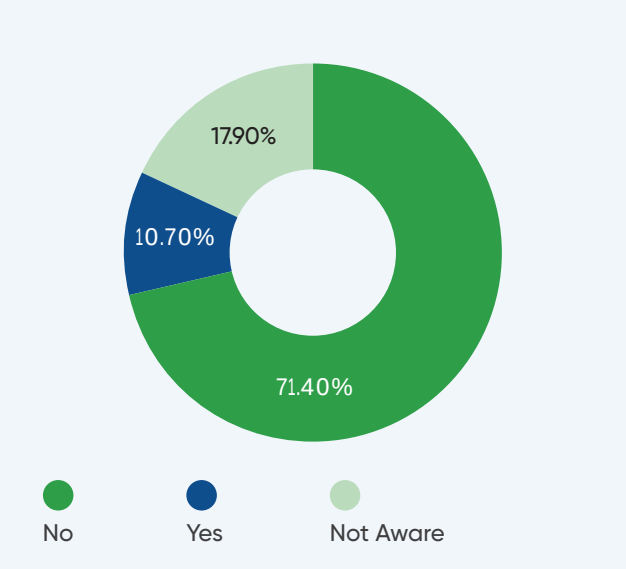


Figure 7: Percentage of Companies Having Practices/ Initiatives to Manage Climate Risks

Approximately 57.10% respondent companies expressed a commitment to achieving net zero Greenhouse Gas (GHG) emissions (Figure 8). However, a noticeable gap exists between these ambitious commitments and implementation of concrete practices required to manage emissions and mitigate climate risks. The gap might be an outcome of the dismal leadership engagement and focus on climate training alluded to earlier in this section. The disconnect may pose significant challenges to sustaining long term progress towards net zero objectives.

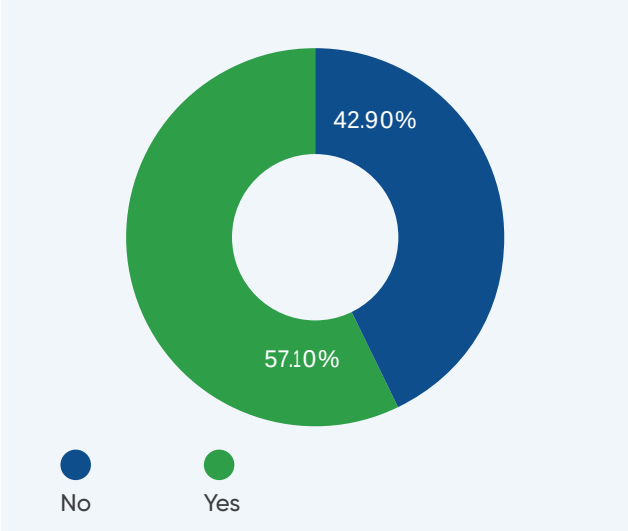


Figure 8: Percentage of Companies Committed to Net Zero Emissions

Close to 43% companies perceive climate risk vulnerability as low, based on a self-assessment, while 50% classify it as medium risk (Figure 9). This split highlights a potential underestimation of climate risks despite increasing awareness of such risks. The underestimation could be attributed to lack of training or a lack of direct experience with severe climate related disruptions, especially in sectors that have not yet faced significant climate impacts.

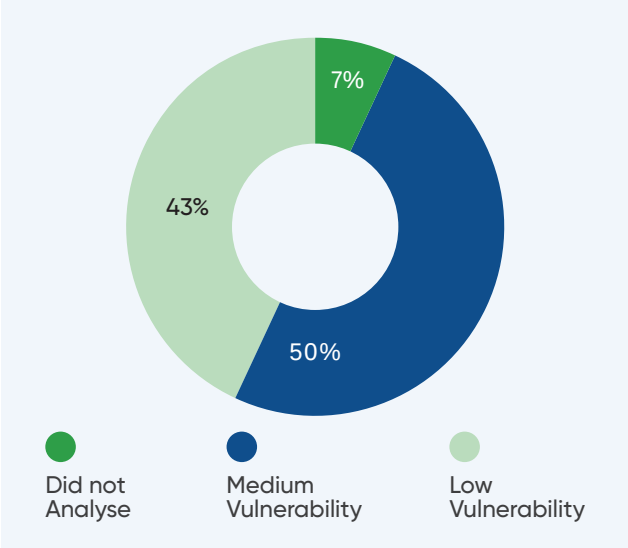


Figure 9: Percentage of Companies Reporting Climate Risk Vulnerability

Approximately 39% companies report inadequate flexibility in their transportation and delivery systems to deal with the impact of climate change, highlighting a vulnerability in logistics and distribution networks (Figure 10). Though an almost equal percentage (36%) claim to have such flexibility, another 25% respondents reported lack of awareness of the level of their adaptiblity to climate change. Such lack of adaptability could significantly impact timely delivery of goods and disrupt business operations during climate induced events such as floods or extreme weather conditions.

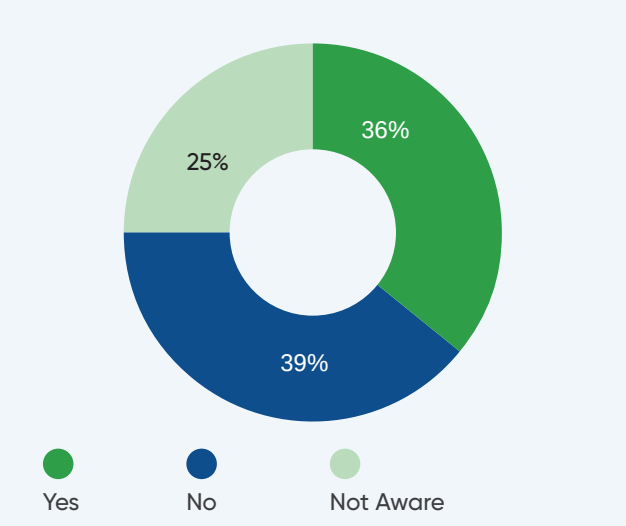


Figure 10: Awareness of Organization's Flexibility of Transportation and Delivery Systems to Climate Change Impacts

Only about 21.40% companies anticipate that climate change could impact availability of the raw and auxiliary materials (Figure 11). A low level of concern may reflect a limited understanding of the potential disruptions climate events could cause to supply chains, particularly in agriculture based sectors such as food processing, where climate change can adversely impact crop yields and supply consistency.

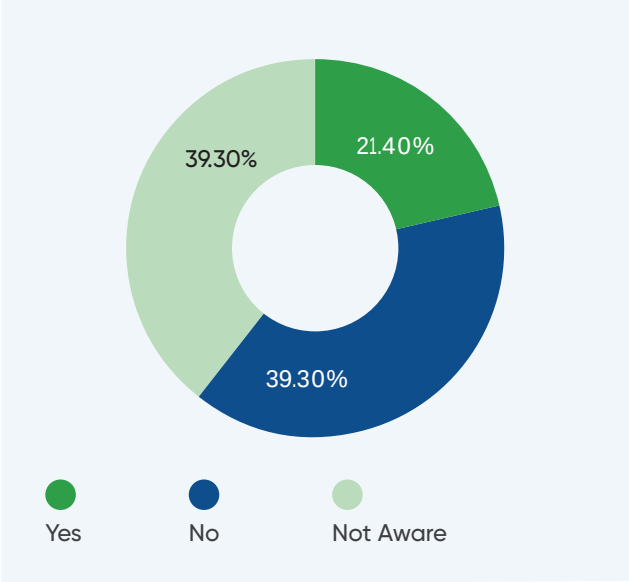


Figure 11: Awareness of Climate Change on Raw and Auxiliary Material Availability on Organization

A total of 78.60% companies experience lack of financial support for GHG emission reduction or sustainability projects, while 21.40% remain unaware of existing financial assistance opportunities (figure 12). Not even 1% of the companies responded that they had received financial support for sustainability projects; this highlights significant challenges for MSMEs in accessing grants, incentives, or other funding mechanisms essential for advancing climate initiatives, underscoring the need for enhanced awareness and streamlined access to financial resources.

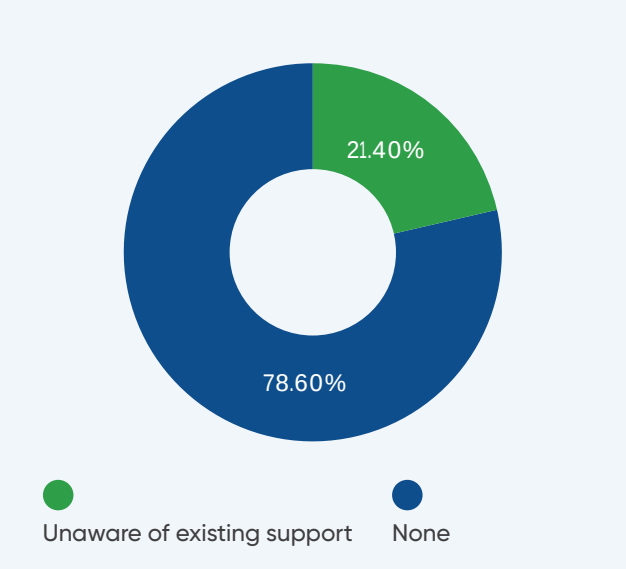


Figure 12: Organizations' Response to Financial Support for Sustainability Initiatives

About 64.30% respondent companies had not allocated a budget for climate initiatives suggesting that sustainability is not a financial priority (Figure 13). The lack of funding may hinder implementation of climate related projects, limiting opportunities for energy efficiency improvements, waste reduction, and emissions monitoring.

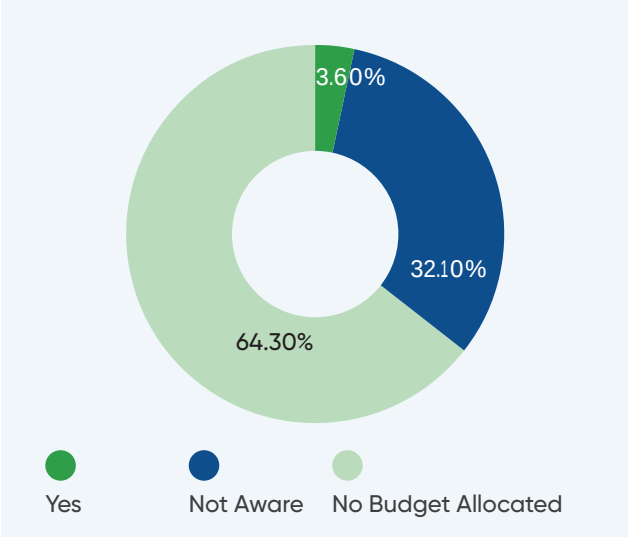


Figure 13: Organizations' Reporting Allocation for Climate Action Initiatives

A study of the survey has revealed that 93% companies have yet to make efforts to undertsand that climate change has the potential to impact business finance (Figure 14), indicating a widespread oversight of critical risks. The risks include escalating operational costs, supply chain disruptions, and compliance related expenditures. Without such evaluations, organizations may remain unprepared to address financial challenges posed by climate change, potentially jeopardizing long term business resilience and stability.

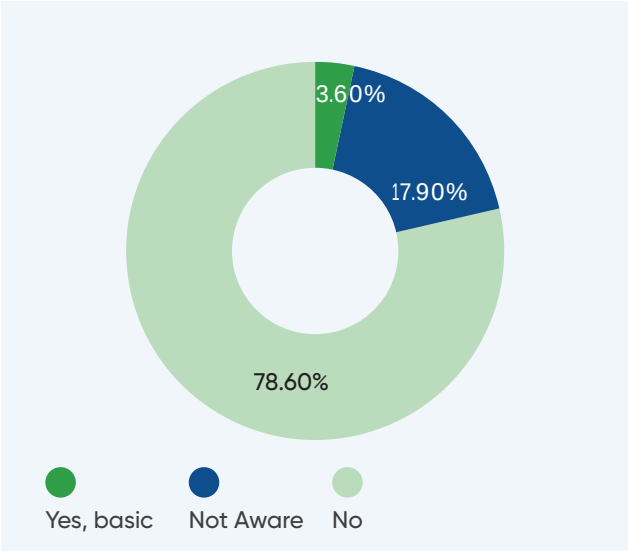


Figure 14: Organizations' Efforts to Assess Impact of Climate Change on Business Finances

Impact of CCAC MSME Toolkit

The Greenhouse Gas (GHG) Protocol serves as the globally recognized standard for measuring, quantifying, and managing greenhouse gas emissions. Widely adopted by government bodies and businesses, it provides a robust framework for assessing emissions across operations, value chains, and mitigation initiatives. The CCAC platform leverages this standard, offering an integrated approach to emissions accounting. The GHG Protocol categorizes emissions into three categories:

- **Scope 1:** Direct emissions from owned or controlled sources, such as emissions from company owned boilers, furnaces, and vehicles.
- **Scope 2:** Indirect emissions resulting from generation of purchased electricity, steam, heating, and cooling consumed by the organization.
- **Scope 3:** All other indirect emissions across the value chain, including those from purchased goods and services, business travel, waste management, and the use of sold products.

Establishing and Reducing Industrial Carbon Footprint: Baselines to Action

Accurately mapping and establishing a baseline for GHG emissions is a critical first step in an organization's journey toward sustainability. The platform equips MSMEs with the resources to quantify and baseline Scope 1 and Scope 2 emissions.

By creating a reliable reference point, businesses can measure emission performance over time, set achievable emission reduction targets, align with industry benchmarks, and ensure compliance with both regulatory and voluntary climate reporting standards. The process lays down the foundation for meaningful progress in climate action and resilience.

The Charter supported 13 food processing signatories in Madhya Pradesh during Phase 1 rolled out in 2022. The efforts emphasized the development of GHG emissions inventory and baselining for Scope 1 & 2 emissions. The total GHG emissions inventoried by these companies stood at 1274.64 tCO2e in 2022 and 1198.26 tCO2e in 2023 as can be inferred from Figure 15. These reductions highlight the effectiveness of the Charter's interventions in promoting impactful climate action.

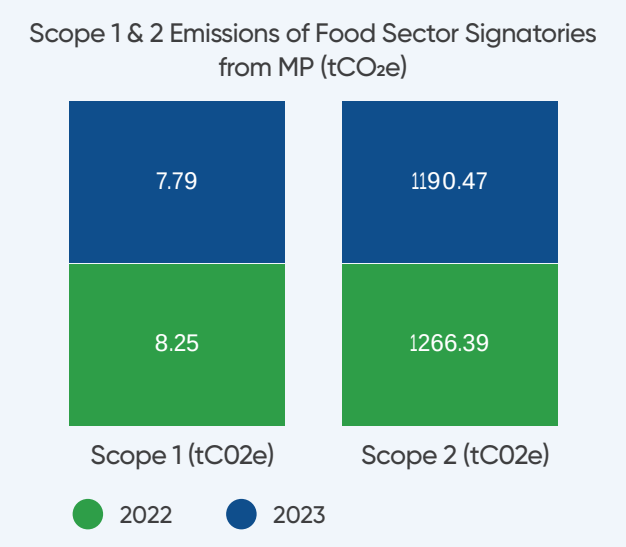


Figure 15: GHG Emissions (tCO_2e) in Phase 1 MP's Food Processing Signatories: 2022 vs 2023

The 13 food processing companies onboarded during Phase 1 achieved 5.5% reduction in Scope 1 emissions, 6% reduction in Scope 2 emissions from 2022 to 2023, indicating close to 12% decrease in emissions (Figure 16). The reduction was largely driven by an increased adoption of renewable energy, which reflects a diminished reliance on fossil fuels and a broader shift towards sustainable energy practices throughout the value chain.

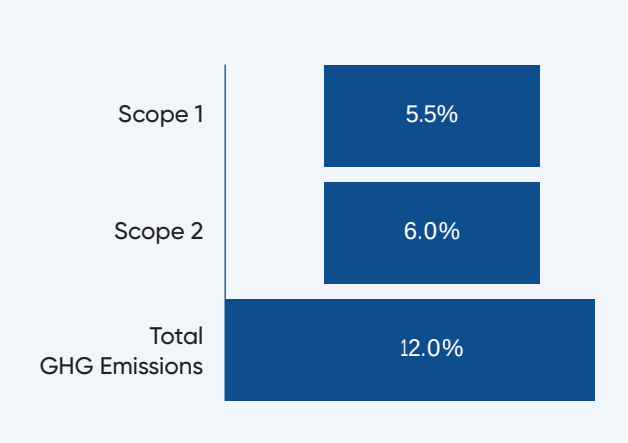


Figure 16: GHG Emissions and Reduction for Scope 1 and Scope 2 in 2022 and 2023 (tCO_2e)

The detailed GHG emissions inventory prepared in 2023 for 28 signatories, including 15 new participants who signed up in Phase 2, totalled 1295.195 tCO_2e (figure 17).

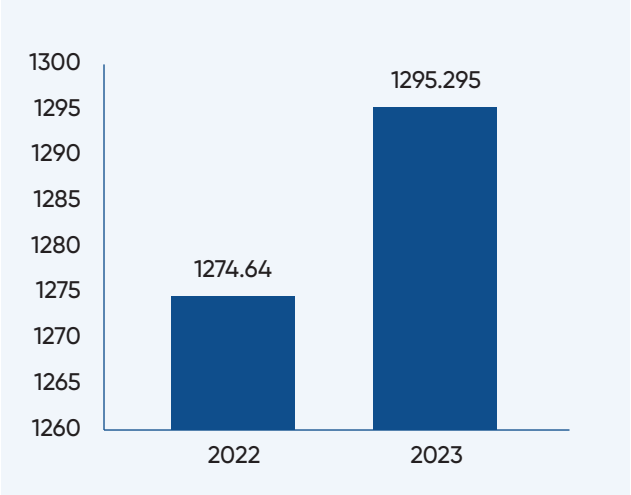
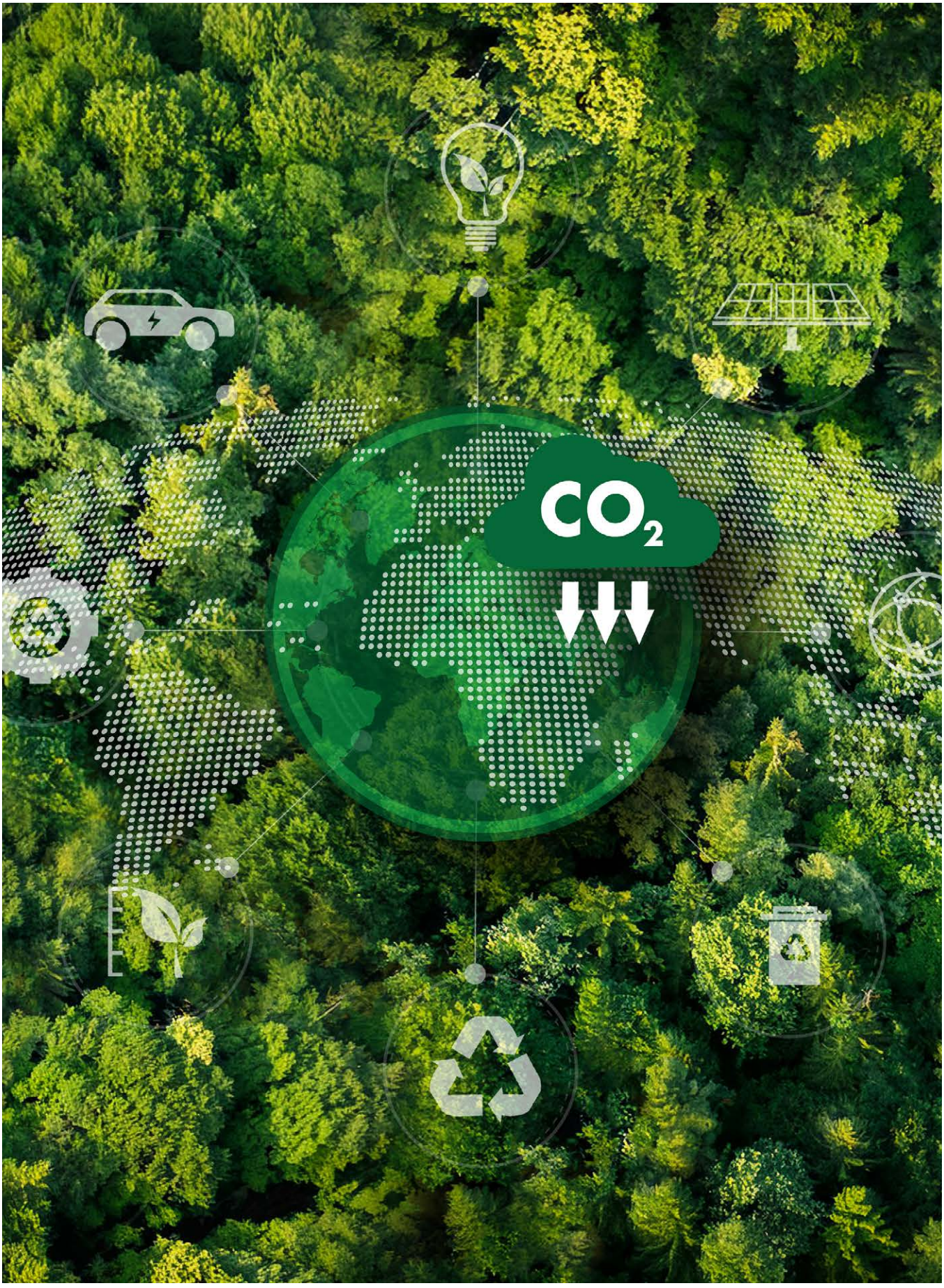


Figure 17: Total GHG Emissions Inventory (Scope 1 and 2) for 2022 and 2023 (tCO_2e)


CO_2

CCAC Initiative: Illustrative Outcomes

This section discusses a few illustrative outcomes that highlight significant milestones achieved by the CCAC initiative. The initiative has played a major role in raising climate change awareness among its signatories. Through the CCAC initiative, MSMEs in MP's food processing sector have embraced renewable energy, water conservation, rainwater harvesting, and sustainable procurement practices. By partnering with suppliers committed to ethical and environmentally responsible sourcing, companies have minimized their environmental impact on supply chains. The efforts have reduced the signatories' environment footprint, improved operational efficiency, lead to cost savings, and increased market competitiveness, demonstrating the transformative power of green practices in driving sustainable growth and resilience within the sector.

CCAC Signatory 1

An Indore based leader in confectionery manufacturing demonstrated exceptional commitment to sustainability as a member of the CII Climate Action Charter. In FY 2023-24, the company installed a 150 KW solar power system, significantly decreasing their reliance on conventional electricity while reducing energy costs and emissions from non-renewable sources.

With a view to adopting eco conscious practices, the company implemented advanced emission control measures, including installing optimally designed exhaust stacks and monitoring systems to manage emissions effectively. Additionally, the company introduced a bag filter to purify the emissions from the wood thermal boiler, ensuring cleaner and safer air quality.

The company also prioritized water conservation by reutilizing treated water from its inhouse water treatment plant for various operational processes, showcasing its commitment to sustainable resource management.

CCAC Signatory 2

A prominent confectionery manufacturer in Indore took significant steps toward sustainability under the CCAC. They implemented a rainwater harvesting system to capture and store rainwater for use in facility operations. While reducing their dependence on municipal water supplies, and enhancing contribution to groundwater recharge, this key initiative also reflects the company's dedication to responsible water management.

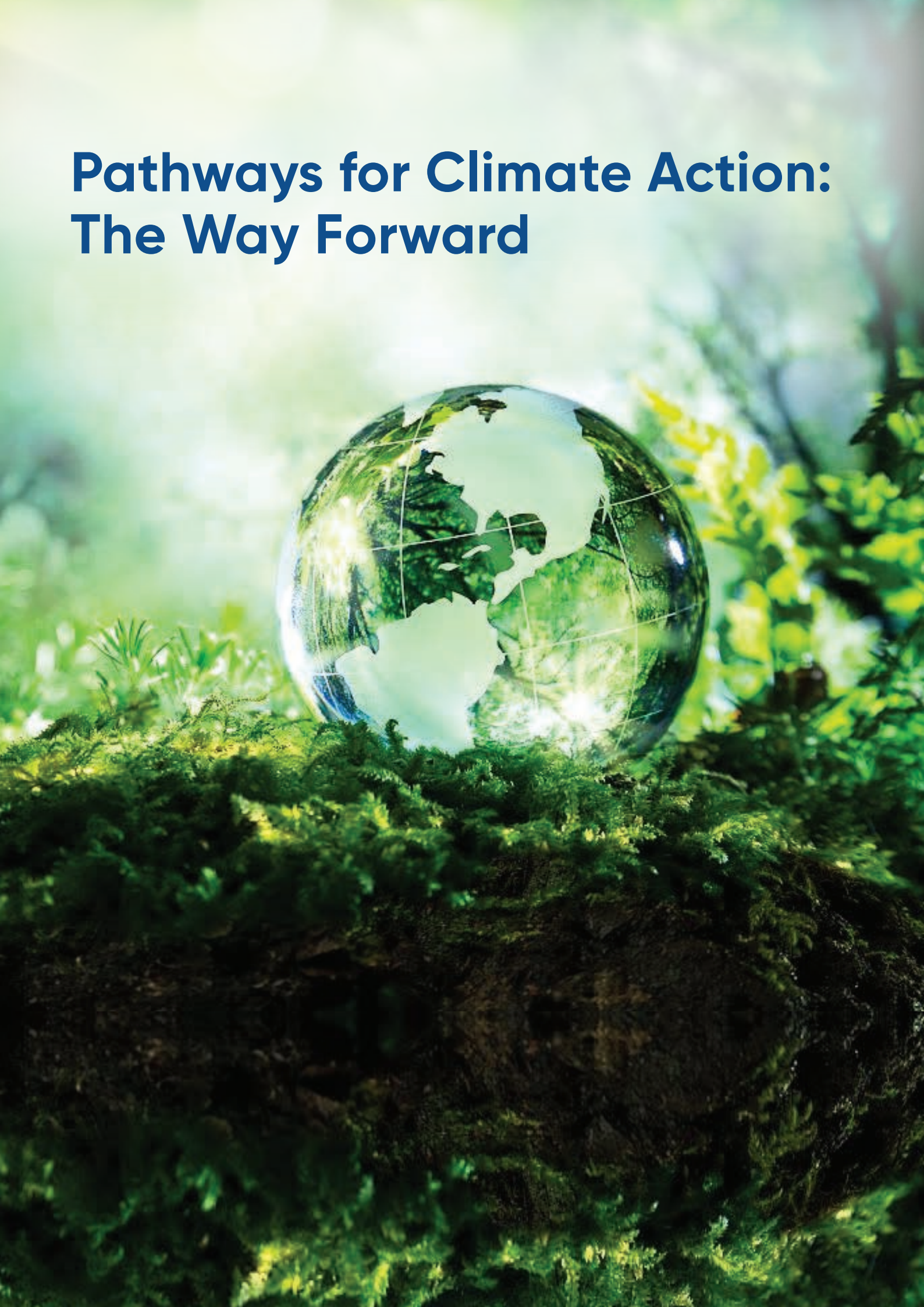
The company is also in the process of installing solar panels, which, once operational, will enable the facility to generate a substantial portion of their electricity requirement from renewable sources. This transition will lower their carbon footprint, reduce dependency on conventional energy sources, and deliver cost savings, reinforcing the focus on sustainable energy solutions.

CCAC Signatory 3

A company, based in Indore, has made notable strides in sustainability since joining the CCAC initiative. The company's installation of a solar power plant at their production facility has resulted in reduced dependency on non-renewable energy sources. It has also lowered their overall carbon emissions, and helped them achieve long term cost efficiency.

The company has also adopted sustainable procurement practices by partnering with suppliers committed to ethical and environmentally responsible sourcing. This approach minimizes the environmental impact of their supply chain, promotes waste reduction, and supports local and sustainable farming communities, ensuring that sustainability is integrated across all aspects of its operations.

Pathways for Climate Action: The Way Forward



To ensure long term competitiveness, enhance resource efficiency, and build climate resilience, the MSME's in Madhya Pradesh's food processing sector must align with low carbon development goals. Government support and industry commitment together can catalyse meaningful change. Accordingly, based on insights from the responses to CCAC questionnaire by 28 companies across clusters in the State, CESD proposes the following targeted actions for Government and industry.

Suggestions for Interventions by the State Government

CESD recommends that the Government of Madhya Pradesh considers the following actions across five categories of the CCAC platform to enhance its food processing sector's climate resilience:

Category 1: Climate Awareness & Training

- Roll out structured training programmes to improve the understanding of climate change, emphasizing energy efficiency, waste reduction, and sustainability.
- Undertake leadership engagement to embed climate action into decision making processes.
- Identify and train internal advocates to lead climate initiatives and promote awareness within teams.
- Ensure regular assessment and feedback to measure training effectiveness.
- Partner with environmental groups/organizations and industry networks to access best practices and enhance climate strategies.

Category 2: GHG Emission Footprint

- Incentivize accurate GHG emission tracking systems for effective emission management.
- Foster partnerships across suppliers, customers, and industry peers to achieve shared emission reduction goals.

Category 3: Climate Action & Strategy

- Support climate risk management strategies, especially for vulnerable sectors.
- Assist MSMEs in turning net zero goals into actionable and practical plans with necessary resources.
- Support and guide businesses in creating climate risk management strategies, especially for vulnerable sectors
- Establish networks to promote cluster based knowledge sharing of sustainable innovations.

Category 4: Climate Resilience

- Provide training on climate risks including impact of extreme weather and supply chain disruptions.
- Develop diversified and sustainable logistics solutions to mitigate disruptions.
- Assess and develop strategies to mitigate risks in raw material supply, especially in agriculture reliant sectors.
- Develop and implement resilience frameworks to guide climate risk assessments and ensure business continuity in the face of climate related disruptions.
- Encourage industry networks for knowledge exchange on climate adaptation.

Category 5: Climate Action Finance

- Improve MSMEs' access to climate finance through workshops and outreach.
- Offer low cost financing and subsidies tailored to MSMEs.
- Educate businesses on financial risks and benefits related to climate action.
- Build strategic partnerships with industry and financial institutions for resource sharing and technology adoption.
- Develop user friendly tools to help MSMEs assess and plan climate investments.

Recommendations for MP's Food Processing Sector

To strengthen collective climate action and drive sustainability in Madhya Pradesh's food processing sector, the following measures are recommended:

- **Switch to Solar Powered Cold Storage:** Replace conventional refrigeration systems with solar powered cold storages to reduce dependence on grid electricity, lower energy consumption, and cut greenhouse gas (GHG) emissions, ensuring reliable preservation of perishable goods.
- **Energy Efficient Boilers and Heat Recovery:** Install energy efficient boilers and integrate heat recovery systems to capture and reuse heat from processes such as pasteurization. These will help optimize the use of thermal energy, cut fuel consumption, and reduce carbon emissions.
- **Electric and Hybrid Vehicles for Distribution:** Transition to electric or hybrid vehicles for food product transportation to reduce emissions from fossil fuel powered vehicles, fostering cleaner logistics and distribution networks.
- **Biogas from Organic Waste:** Establish biogas plants using organic waste from food processing to generate renewable energy. Such initiatives will reduce methane emissions and offset reliance on fossil fuels, creating a sustainable energy source for operations.
- **Water Efficient Irrigation Systems:** Encourage agricultural raw material suppliers to use drip or sprinkler irrigation, which will help reduce both their water and energy consumption thus minimizing waste and emissions related to water used in production.
- **Sustainable Packaging Solutions:** Invest in biodegradable, compostable, or reusable packaging. Such initiatives will result in reduced use of resources as well as reduced emissions during production, decreasing the overall environmental footprint of packaging.
- **Energy Efficient Factory Design:** Implement energy efficient designs for production facilities, including natural lighting, advanced insulation, and efficient ventilation systems to reduce energy demand for heating, cooling, and lighting, resulting in lower emissions.

- **Efficient Wastewater Treatment:** Adopt energy efficient wastewater treatment technologies that recycle water for reuse. These will eventually lead to reducing water related energy consumption, reduce pollution, and contribute to overall sustainability.
- **Smart Energy Monitoring Systems:** Deploy automation systems, including smart meters and sensors, to monitor and optimize energy consumption in real time, enhance energy efficiency, and reduce emissions.
- **LED Lighting in Facilities:** Replace conventional lighting with energy efficient LED systems in production and warehouse areas as these are typically the highest energy consumption zones in a food processing company.
- **Investment in Renewable Energy:** Invest in solar or other renewable energy sources to power production units to reduce energy costs, enhance operational efficiency, and leverage their potential to attract eco-conscious customers.
- **Rainwater Harvesting and Water Recycling:** Improve compliance with environmental regulations and enhance profitability by installing rainwater harvesting systems and water recycling technologies to minimize water usage .
- **Waste-to-Energy Conversion:** Convert organic waste to biogas or other renewable energy forms to power operations which will help reduce energy costs, support a sustainable business model, and enhance brand reputation.
- **Energy Efficient Machinery:** Invest in energy efficient machinery to reduce electricity consumption, leading to cost savings, improved operational efficiency, and better profitability.
- **Comprehensive Waste Management:** To reduce disposal costs implement waste management systems that will convert agricultural or production waste into compost or other valuable by products.
- **Sustainable Supplier Engagement:** Engage with suppliers who prioritize sustainable and eco friendly materials, aligning with your business' sustainability goals.
- **Leverage Government Subsidies and Green Financing:** Explore available government subsidies, tax benefits, and green financing schemes to ease the upfront costs of adopting sustainable practices, making it financially feasible for food processing companies.
- **Industry Training on Green Practices:** Organize workshops and training programmes to educate industry professionals on the financial and operational benefits of green practices, fostering wider adoption across the sector.

These initiatives will not only lower the environmental impact but also enhance the competitiveness and resilience of Madhya Pradesh's food processing sector.

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CII-ITC Centre of Excellence for Sustainable Development

20 YEARS OF CELEBRATING SUSTAINABILITY

The CII-ITC Centre of Excellence for Sustainable Development (CESD) is the ecosystem creator for sustainable development in India. As a 20 year old Industry led institution within CII, the Centre drives sustainable, environmental, inclusive and climate friendly transformation among stakeholders through research, data-driven digital tools, frameworks, collaborative initiatives and capacity development.

CESD works towards bringing local and global macro challenges to the centre stage; building policy consensus on critical issues; strengthening stakeholders' awareness and representation on policy and regulatory reforms and enabling actions that positively impact the environment, nature and communities.

With a vision to drive transformation towards sustainable development, CESD continues to play a focal role in Government-Industry dialogues on national regulations; articulating stakeholders' discourse on global policies; putting forth Indian Industry's stand on macro-economic issues and accentuating the need for sustainable and inclusive transformation.

CESD focuses on six transformational pathways: Advancing Creation of a Circular Economy; Facilitating an Enabling Ecosystem for ESG Reporting; Accelerating Nature Positive Actions; Enhancing Solutions for Clean Air; Building Climate Resilience and Low-Carbon Economy and Fostering Dialogues, Engagements & Knowledge Exchange.

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The Confederation of Indian Industry (CII) works to create and sustain an environment conducive to the development of India, partnering Industry, Government and civil society through advisory and consultative processes.

CII is a non-government, not-for-profit, industry-led and industry-managed organisation, with around 9,700 members from the private as well as public sectors, including SMEs and MNCs, and an indirect membership of over 365,000 enterprises from 318 national and regional sectoral industry bodies.

For 130 years, CII has been engaged in shaping India's development journey and works proactively on transforming Indian Industry's engagement in national development. CII charts change by working closely with the Government on policy issues, interfacing with thought leaders, and enhancing efficiency, competitiveness, and business opportunities for industry through a range of specialised services and strategic global linkages. It also provides a platform for consensus-building and networking on key issues.

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For 2025-26, CII has identified "Accelerating Competitiveness: Globalisation, Inclusivity, Sustainability, Trust" as its theme, prioritising five key pillars. During the year, CII will align its initiatives to drive strategic action aimed at enhancing India's competitiveness by promoting global engagement, inclusive growth, sustainable practices, and a foundation of trust.

With 70 offices, including 12 Centres of Excellence, in India, and 9 overseas offices in Australia, Egypt, Germany, Indonesia, Singapore, UAE, UK, and USA, as well as institutional partnerships with about 250 counterpart organisations in almost 100 countries, CII serves as a reference point for Indian industry and the international business community.

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