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ICAI MSME ECOSYSTEM

ICAI STARTUP GATEWAY

ICAI Knowledge Series on MSME & Startup

ज्ञान सागर

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Startup Portal:
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UPDATES

PM Vishwakarma Haat 2026 Inaugurated at Dilli Haat, New Delhi

Union Minister for MSME Shri Jitan Ram Manjhi inaugurated **PM Vishwakarma Haat 2026**, calling it a vital platform for village-level artisans to showcase and sell their products. MoS MSME Sushri Shobha Karandlaje highlighted the participation of **over 117 artisans from across States and Union Territories**. The exhibition, open **from 18 to 31 January (10:30 AM–10:00 PM)** at Dilli Haat, features handcrafted products, live craft demonstrations, and cultural performances, celebrating India's traditional craftsmanship under the theme **"Vishwakarma Ka Abhiyaan, Viksit Bharat Ka Nirman."**

Source: www.pib.gov.in

Focus on Sustainable and Green MSMEs

The Government also spotlighted the role of **bioenergy in making MSMEs more sustainable and environmentally friendly**. Union Minister of State Shripad Yesso Naik spoke about bioenergy's pivotal role in decarbonising MSME operations, pointing toward a strategic push for cleaner technologies within the sector.

These updates reflect the Ministry's official Government of India activities in January 2026 aimed at empowering traditional artisans, enhancing global outreach, and promoting sustainable growth in the MSME ecosystem.

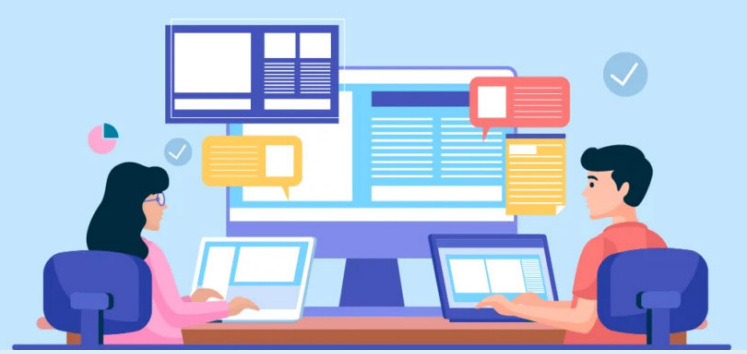
Source: www.pib.gov.in

PMEGP Support for Small Enterprises and MSME Grievance Redressal Initiatives

Under the Prime Minister's Employment Generation Programme (PMEGP), about **63% of manufacturing units** and **93% of service units** with project costs up to **₹10 lakh** were assisted during FY 2020–21 to FY 2024–25. Priority is given to smaller projects below ₹10 lakh. As per RBI guidelines, **no collateral is required** for loans up to ₹10 lakh, and **no educational qualification** is needed for projects up to ₹10 lakh (manufacturing) and ₹5 lakh (services).

The Ministry of MSME operates the **CHAMPIONS portal** for grievance redressal, handholding, and guidance on government schemes, including PMEGP. Interest rates on PMEGP loans are determined by banks as per RBI norms, with RBI ensuring transparency, fairness, and priority in loan sanctioning.

Source: www.pib.gov.in



Key Government Updates on MSME Classification, Credit Access and Startup Financing

The Government has revised the **investment and turnover limits for MSME classification** to help enterprises achieve better economies of scale, adopt technological upgradation, improve access to capital, and enhance global competitiveness, while continuing support through priority sector lending, public procurement, and various MSME schemes. As per RBI guidelines, banks are required to take **credit decisions within 14 working days for loans up to ₹25 lakh** to Micro and Small Enterprises, with MSME-related credit information mandatorily displayed on bank websites. To further improve credit access, the **credit guarantee cover under CGTMSE has been enhanced from ₹5 crore to ₹10 crore (effective 1 April 2025)**, resulting in **1,778 guarantees amounting to ₹12,498 crore** approved in FY 2025–26 (till 31 December 2025), with quarterly monitoring by RBI-chaired Empowered Committees and SLBCs. Additionally, **credit cards for Udyam-registered micro enterprises** are being issued to provide faster working capital access and promote digital transactions. The Government has also strengthened startup financing through the **Fund of Funds for Startups**, managed by SIDBI, under which AIFs have invested **₹25,547.98 crore in 1,371 startups**, including **₹3,802.86 crore in 205 women-led startups**, as of 31 December 2025.

Source: https://www.pib.gov.in/PressReleasePage.aspx?PRID=2220403&reg=3&lang=1

Manipur State MSME / Startup Policy — "Startup Manipur Scheme 2.0 & MSME Support Measures"

1. Introduction to the Policy

Manipur State Profile:

Manipur, a state in Northeast India, is rich in natural resources and has a growing entrepreneurial ecosystem. It has a population with a large rural component and rich cultural heritage in handloom, handicrafts, agriculture, fisheries, and livestock. It has been showing increasing enterprise formation: data from 201819 indicate that Manipur had 12,438 registered MSME businesses, the highest among the Northeastern states. *(source: Business Standard)* Women entrepreneurs constitute a substantial proportion of these enterprises—about 50% in some reports.The state, however, faces challenges like infrastructure limitations, connectivity in hill districts, access to finance, technological gaps, and market access constraints.

What is MSME?

MSME stands for Micro, Small and Medium Enterprises. These are businesses smaller in size in terms of investment or turnover. They are very important because they create jobs, help local people make a living, and often use local materials & skills

Why the Policy is Important for Manipur?

This policy matters because it aims to leverage the existing entrepreneurial energy in Manipur by formalizing and scaling MSMEs, enabling better access to financial and nonfinancial support, bridging ruralurban and gender gaps, and integrating local enterprises into regional and international markets. By doing so, it can generate employment, uplift remote and underprivileged communities, reduce migration pressures, and strengthen Manipur's contribution to India's growth as envisioned under national MSME reforms.

Why Do You Need to Know These Schemes?

Government of Manipur envisages to strengthen the enabling environment to address the aspirations of youth, and proposes to engage with all stakeholders in the development of an eco-system for strengthening the start-up with appropriate incubation and mentoring infrastructure, fast track statutory support, and network of appropriate funding mechanisms.

Present Highlights:

The Manipur Start Up Scheme 2.0 Policy 2022 modifies the existing 2016 policy to strengthen the environment and eco-system for startups in the state. The Office Memorandum adopting this revised policy was issued on 31st January 2023.

Here are the key highlights of the policy:

Vision, Mission, and Scope

- **Vision:** The policy aims to empower the youth of Manipur to become job creators by fostering entrepreneurship and innovation, seeking to make Manipur emerge as one of the top Startup destinations in the North East.

- **Mission Focus Areas:**
  - Strengthening business incubators and accelerators to facilitate about 40% women startups in the next five years.
  - Creating a supportive regulatory framework for hassle-free and time-bound statutory clearances.
  - Creating a platform for accessing multiple financial avenues, including venture funds, grants, bank loans, and fiscal incentives.
- **Scope and Duration:** The policy provides incentives and exemptions over and above the Startup policy of the Government of India. The policy will remain in operation for a period of five years from the date of its notification.

Key Highlight	Detail
MSME registrations (201519)	12,438 units in Manipur — highest among NE states. (Source: Business Standard)
Startup Manipur Scheme 2.0	Includes seed grants, incubator support, reimbursement incentives, nonfiscal supports like procurement relaxations.

2. About the Policy

"Startup Manipur Scheme 2.0 Policy, 2022" came into existence on 31.01.2023 vide Office Memorandum No. PLG1-3011/1/2020-PLG-PLANING, the State Government has modified the existing Manipur StartUp Policy 2016 and adopted a Manipur Start Up Scheme 2.0 Policy 2022 for strengthening the existing environment and eco-system for further growth of Startups in the State along with supporting MSME classification & support measures under state alignment with national reforms.

Definitions

- **Startup:** An entity shall be considered as a "Startup" as defined in "Startup India" G.S.R.127 (E) dated 19th February 2019 notified by DPIIT.
  (1) Upto a period of ten years from the date of incorporation/registration, if it is incorporated as a private limited company (as defined in the Companies Act, 2013) or registered as a partnership firm (registered under section 59 of the Partnership Act 1932) or a Limited Liability Partnership (under the Limited Liability Partnership Act, 2008) in India.
  (2) Its turnover for any financial year since incorporation/registration has not exceeded ₹100 crore.
  (3) Entity is working towards innovation, development, deployment or improvement of products or processes or services, or if it is a scalable business model with a high potential of employment generation or wealth creation.

Provided that an entity formed by splitting up or reconstruction of an existing business shall not be considered as a "Startup".

- **Startup Incubation:** Recognising the importance of business incubators and accelerators as a critical driver of start-ups and an important tool for economic development and job

creation the State will create ecosystem in which the incubators would play a critical role. A multipronged approach would be adopted to facilitate incubation support for the start-ups.

(1) The State will assist in creating incubators in the State to enable them to incubate a number of start-ups besides providing mentoring to the new incubators. Necessary assistance to create additional capacity in terms of incubation infrastructure including trained human resources, awareness and entrepreneurship development programs will be provided by the State.

(2) The State will facilitate setting up of new incubators in government as well as private sector. It will also facilitate setting up of incubation centres in institutions of higher learning and other leading establishments of the Government and the Private Sector.

(3) Preferential lease of land from State Government as per its land policy to government recognized incubators in the State.

(4) Priority may be given to provide space available in existing and forthcoming industrial Estate, etc. for using as co-working space.

(5) Access to Government R&D labs and resources to start-ups will be facilitated by State Government.

(6) Access to cutting edge technology for start-ups will be facilitated by the State.

- **Sector Specific Incubators**

  Sector-specific incubators shall be encouraged in areas such as IT, ESDM (Electronic Systems and Design Manufacturing), Waste Management, Healthcare and Sanitation, Agri/Horticulture, Fishery/Veterinary, Food Processing, Hi-Tech Farming, Tourism, Textiles and Garments, Downstream and Ancillary. These incubators shall be setup by the concerned government departments, either on their own or in partnership with private sector.

  - State Government will encourage departments to establish their sector specific Start-up cell and policy for promotion of start-ups.
  - State will facilitate access to effective networking and showcasing opportunities for promising start-ups through active linkage programmes.
  - A digital platform will connect all the eco-system stakeholders, network of support, funding and service providers to enable seamless access.

- **Stand Up, Revenue, Idea / Proof of Concept Stages:** Distinct categories of support under Startup Manipur 2.0 for different entrepreneur / startup maturity levels.

Policy Period and Applicability

- **Policy Period:** Startup Manipur Scheme 2.0 was introduced in 2022. It will remain in operation for a period of five years from the date of its notification i.e. 31.01.2023 or till such time the State Government may deem fit and proper.
- **Applicability:** Entire State of Manipur, including valley and hill districts. Applies to startups & MSMEs meeting eligibility criteria under the scheme. Sectors included under "priority sectors" as defined in the policy.

Terms & Conditions for Extending Incentives and Concessions

- Must be recognised under Startup Manipur (or appropriate state nodal agency).
- Must meet eligibility criteria appropriate to stage (Idea / StandUp / Revenue).
- Must have domicile in Manipur.
- Must comply with required documentation, quality standards, technical specifications (if applicable for procurement etc.).
- Adherence to budget / timeline norms; timely submission of reports, etc.

List of Service Enterprises Eligible / Not Eligible

Eligible Service Enterprises (Examples)	Likely Not Eligible / Excluded
IT / ICT / Software, ESDM, digital services	Service enterprises failing licensing / regulatory norms
Tourism, Health & Sanitation, Veterinary / Fishery Services	Services purely speculative, or non compliant with policy conditions
Food processing, agritech support services, renewable energy services	Financial intermediaries / banking which are separately regulated unless included explicitly
Design, marketing, consulting, creative industries etc. under priority sectors	Services with minimal employment / localized presence [if policy excludes]

3. Policy Features & Incentives

Provisions related to MSME / Startup Policy

- The policy aligns with national MSME reforms re classification (higher thresholds for investment/turnover).
- Startup Manipur 2.0 provides multistage support: from idea/proof of concept, through standup (support to start operations), to revenue stage (scaling).
- Prioritized support to women, SC/ST or deprived sections.

Financial Incentives

Incentive	Details
Seed Grant	Up to **₹ 3 lakhs** for proofofconcept / prototype development / product trials / market entry to business Entity/Firm, which could also be Individual Enterprise/Entity with innovative and scalable business ideas.
Financial assistance	The revenue stage Start-ups are eligible for a financial assistance from financial assistance from financial institutions upto a maximum of **₹ 100 lakhs, which includes 30% grant from Startup Manipur.**

Incentive	Details
Reimbursement Incentives	Full reimbursement of Stamp Duty / Registration Fee / Conversion Fee for first transaction on sale/lease deeds. Patent filing cost reimbursed up to **₹ 2 lakh** for domestic patent, **₹ 5 lakh** for international patent.

NonFinancial Support

- Infrastructure / incubator support in priority sectors: IT, ESDM, healthcare & sanitation, agri/horticulture, fishery, food processing, hitech farming, tourism, textiles etc.
- Organising business plan competitions, hackathons, bootcamps, workshops across districts.
- Preference / relaxation in public procurement norms for startups to reduce prior turnover / prior experience conditions, subject to quality / technical requirement compliance.

SectorSpecific Schemes

- Food Processing, Agricultural ValueAddition, Fisheries & Veterinary services.
- IT / Digital Technologies, ESDM (Electronic Systems & Design Manufacturing).
- Tourism, Textiles & Garments.

Provisions for Women, SC/ST, Rural Entrepreneurs

- Special provision for Scheduled Caste/Scheduled Tribe Categories/Minorities /Women entrepreneurs in the Greenfield area of manufacture/service/trading sector having potential for growth.
- Domicile requirement ensures inclusion of local rural entrepreneurs.
- In case of non-individual Entity at least 51% of the shareholding and controlling stake should be held by either an SC/ST/OBC/Women/Minority Entrepreneur.

4. Focused Areas for the Policy

Procedure for Availing Incentives for MSME / Startup

Register / apply under Startup Manipur Scheme 2.0 via state nodal agency (Planning Department, Government of Manipur).

1. Select the appropriate stage (Idea / Stand Up / Revenue) based on your business maturity.
2. Prepare required business plan / proof of concept / prototype (if required). Submit required documents, domicile proof etc.
3. For procurement relaxations or reimbursements, ensure compliance with technical specs, licensing etc.
4. After approval, disbursement of grant / subsidy / assistance is done as per milestone / policy schedule. For nonfinancial supports, incubator placement, mentoring, etc. are arranged.

Industries that Benefit from the Policy

- IT / Electronics / Digital Startups
- Agri & Horticulture valueadd, Food Processing & Fisheries / Veterinary Services

Healthcare & Sanitation, Environmental / Waste Management

- Textiles & Garments, Handloom / Handicrafts (if aligning with startup or MSME sectors)
- Tourism & Hospitality
- Renewable / HiTech Farming

How the Policy is Helpful in Export Promotion

- Reimbursement for patent filing helps in protecting IP, which is important for exportable products.
- Infrastructure and incubators in exportsensitive sectors (agri, textiles etc.) help improve quality / standardization.
- Support for participation in national / international events helps MSMEs / startups in exposure, linkage.
- Relaxed procurement norms may help domestic firms scale up better thus become competitive globally.

Relevant Links & Contacts for StateSpecific MSME / Startup Support

Nodal Agency	Contact / Link
Planning Department, Government of Manipur (Nodal Agency for Startup Manipur Scheme 2.0)	Email: contact@startupmanipur.in, Toll free: 1800 345 3831
Startup Manipur official portal	startupmanipur.in
Notifications for different categories (Idea / Revenue / Stand Up)	Notifications section on Startup Manipur portal.

Who Can Participate and Target Beneficiary

- New and existing startups / MSMEs in Manipur conforming to eligibility under scheme (domicile, startup maturity stage).
- Entrepreneurs in deprived / marginalized communities: SC, ST, Women, Rural / Hill districts.
- Individuals / groups with innovative ideas or prototypes.
- Units willing to participate in priority sectors.
- Enterprises ready to comply with quality, legal and technical specifications.

5. References

- Startup Manipur Scheme 2.0 Policy Document, Nodal Agency: Planning Department, Govt. of Manipur.
- Startup Manipur official portal (for scheme categories, notifications)
- Business Standard, "Manipur has highest number of MSME units in Northeast"
- India Today NE, reporting national MSME reforms impact on Manipur India Today NE
- Manipur CM's statements / press releases re startup disbursements / scheme rollout.

Manipur State MSME / Startup Policy main points:

1. **Special provisions for women entrepreneurs**
   - Under *Startup Manipur Scheme 2.0*, there is a specific **Women Startup** category. Women entrepreneurs (or womenled startups) are eligible to apply under this category.
   - They receive similar incentives (seed grants, reimbursement, etc.) and also mentorship, legal and incubation support.
   - Some schemes or subsidies earmark *"Stand Up Stage" / deprived section / SC/ST / Women / Minority* beneficiaries for priority.
2. **The State offer subsidies or incentives for specific industries**
   - The policy provides **sectorfocused nonfiscal and fiscal incentives**. Sectors receiving priority include: IT / Electronic Systems & Design Manufacturing (ESDM), Waste Management, Healthcare & Sanitation, Agri / Horticulture, Fishery / Veterinary, Food Processing, HiTech Farming, Tourism, Textiles & Garments, and downstream/ ancillary industries.
   - Incentives include seed grants, largescale financial assistance in revenue/stand up category, incubator support and infrastructure for these sectors.
3. **State's export promotion measures:**
   - The Industrial & Investment Policy of Manipur (2013) includes promotion of exportoriented units, handicrafts (which are culturally significant) and encourages standardisation/competitiveness of local products.
   - Efforts shall be made to promote Manipur as a start-up destination through participation in international and national events, sponsoring their participation. The state will also sponsor the visit of delegation of start-ups to promotional and marketing events in India and abroad.
4. **Funding or financial assistance is available for entrepreneurs**
   - **Seed Grant**: Up to **₹ 3 lakhs** for proof of concept, prototype development, product trials and market entry.
   - **Stand Up / Revenue Stage Assistance**: Financial assistance up to **₹ 100 lakhs**, which includes **30% grant** from Startup Manipur.
   - **Reimbursement of fees**: 100% reimbursement of Stamp Duty / Registration / Conversion Fee for first transaction on sale/lease deeds. Also reimbursement for patent filing costs (Domestic: up to INR 2 lakh; International: up to INR 5 lakh).
   - Other supports include nonfiscal support (infrastructure, mentor networks, incubator support).
5. **Benefits from incubation and innovation support in the State**
   - The policy provides encouragement for **sectorspecific incubators** in areas such as IT/ESDM, Healthcare & Sanitation, Food Processing, Agri/Horticulture, Fishery/ Veterinary etc.

- Startups can access mentorship, expert networks (MEN – Mentor & Expert Network) throughout the startup stages.
- Business plan competitions at the state level to identify innovative ideas; winners are awarded seed grants & assistance.
- Access to government R&D labs or resources is facilitated.

6. Tax exemptions or financial relaxations under this policy

- Yes. The policy provides **reimbursement** of Stamp Duty / Registration / Conversion Fee (on sale/lease deeds) for *first transaction* of a startup.
- Patent filing cost reimbursement with cap (Domestic / International).
- **30% grant component** in financial assistance (in Stand Up / Revenue), reducing the burden of interest/principal.

7. The process to apply for these schemes or benefits

- Applications are made via the **Startup Manipur portal**. The portal has an *Idea Stage* application form, etc.
- Applicants choose their stage (Idea / Proof of Concept / Revenue / Stand Up) and indicate category (Women / Student / etc.).
- Submission of required documents (business idea / plan, proof of domicile, identity proof etc.), followed by screening, interviews / presentation.

8. Nodal agency / department which implements this policy

- The **Planning Department, Government of Manipur** is the nodal agency.

9. Contact details: Email: *contact@startupmanipur.in*, Helpline / TollFree: **18003453831**.

10. The key contact persons for assistance

- The sources do *not publish every individual nodal officer name* in the public summary. But departmental contact is via Planning Department, Govt. of Manipur.
- Official Email: *contact@startupmanipur.in*; Phone: *18003453831*.
- Official Website: **startupmanipur.in**; also policy document is available via Startup India portal's Manipur state policies page.

11. This policy aligns with Central Government initiatives

- It complements **Startup India** by implementing statelevel funding, incubation, innovation, mentoring etc., for startups and scaling enterprises.
- It aligns with national MSME reforms (classification, support) by offering grants, nonfinancial supports, patent incentives, which are in sync with central policies.
- It supports "Vocal for Local" / "Atmanirbhar Bharat" by promoting local entrepreneurship, value addition, and encouraging selfreliance in Manipur.

-By CA Vipin Sahdev

The Renewable Energy & Green Transition in India

Opportunities and Challenges for MSMEs

Introduction: India's Energy Transition at a Critical Juncture

Energy has always played a crucial role in India's economic growth. It fuels industries, supports various livelihoods, and is essential for daily activities across different sectors. For many years, this growth heavily depended on fossil fuels, with coal, oil, and gas serving as the main sources for electricity generation and industrial energy needs. While this approach allowed for significant expansion, it also resulted in structural and environmental challenges that are becoming increasingly hard to manage. India is now at a pivotal point in its energy evolution.

The rapidly increasing demand, reliance on imported energy sources, and growing environmental issues have highlighted the shortcomings of the old energy system. Concurrently, national goals regarding climate change and carbon emissions have solidified clean energy as a key priority for the country. Renewable energy has shifted from being a future goal to becoming essential for economic stability and energy independence. This transition is significant in scale.

India is among the fastest-growing energy markets globally, fueled by urbanization, industrial growth, and increased household energy use. To meet this demand while keeping costs and emissions in check, simply relying on large power projects won't suffice. It requires a rethinking of how energy is produced, distributed, and consumed across countless businesses and locations.

This is where Micro, Small, and Medium Enterprises (MSMEs) come into play. Not only are they major energy consumers, but they also play a vital role in the renewable energy supply chain. They produce components, install and maintain systems, and operate at the local level where most energy use happens. Their choices influence how quickly renewable energy solutions transition from policy discussions to practical applications.

Thus, the energy shift is not just about hitting capacity goals or securing big investments. Its success hinges on making clean energy solutions accessible, affordable, and dependable for smaller businesses facing financial and operational challenges. To truly understand India's transition to green energy, it's essential to adopt a holistic view that places MSMEs at the forefront.

India's Traditional Energy Ecosystem and Structural Limitations

India's energy landscape has been shaped by a focus on centralization and large-scale operations. For many years, the electricity supply relied on big power plants, extensive transmission networks, and a hierarchical distribution system. While this approach fostered industrial development, it also led to inflexibilities that are becoming increasingly out of sync with current economic and environmental needs. One major issue has been the reliance on fossil fuels. Coal is still the primary source of electricity, with oil and gas being used for transportation and industry.

Although this setup provided stable base-load capacity, it made the system vulnerable to fluctuations in fuel prices, dependence on imports, and escalating environmental impacts. As energy demand continues to rise in the country, these weaknesses have become more apparent. Micro, Small, and Medium Enterprises (MSMEs), especially those located outside major urban

areas, have been hit the hardest. Unstable power supply has led to production delays, damage to equipment, and increased costs due to reliance on backup generators. The tariff structures have only added to the complexity. Cross-subsidies among different consumer groups have led to relatively high industrial tariffs in various states. Small businesses, with limited bargaining power and narrow profit margins, often shoulder these costs without the means to invest in large-scale captive power systems or mitigate the impact.

Policy Push and the Shift Towards Renewable Energy

India's shift towards renewable energy has been driven by a continuous policy initiative rather than a single pivotal moment. Over the years, clean energy has transitioned from being a peripheral aspect of energy planning to a focal point in national economic and strategic agendas. This change is indicative of rising worries about energy security, environmental effects, and stable long-term costs. Initial policy measures aimed at increasing renewable energy generation, especially in solar and wind sectors.

Setting clear goals demonstrated commitment and attracted investment. As capacity grew, the policy structure gradually adapted to tackle issues like grid integration, decentralized energy production, and market participation. Renewable energy became more intertwined with broader aims, such as reducing dependence on imports and fulfilling climate obligations. A significant aspect of this transition has been the increasing focus on decentralized energy solutions. Initiatives that support rooftop solar, distributed energy generation, and off-grid systems acknowledged that energy needs vary significantly across different businesses and regions.

For micro, small, and medium enterprises (MSMEs), these programs created opportunities to adopt clean energy that fit their local circumstances and operational requirements. State-level policies have been crucial in influencing outcomes. Differences in incentives, net metering rules, and approval processes have led to uneven adoption of renewable energy across various regions. While some states have benefited from supportive frameworks that boost adoption, others have faced uncertainty due to frequent changes and complicated processes.

For smaller businesses, managing this regulatory diversity can be challenging, often requiring more time and resources than they have available. Policy efforts have also focused on domestic manufacturing and supply chains. Promoting local production of renewable energy components has been framed as both an energy initiative and an industrial strategy. MSMEs have become important contributors to this movement, particularly in areas like manufacturing, installation, and services. Even with these advancements, the growth driven by policy has brought about increased demands for compliance and documentation.

For MSMEs with limited administrative capabilities, accessing incentives and engaging in formal programs can be quite challenging. As renewable energy gains mainstream acceptance, the success of these policies will hinge not only on their goals but also on how clear, consistent, and easy they are to implement at the business level.

MSMEs as the Backbone of India's Green Transition

While big renewable energy initiatives often grab the spotlight, the everyday implementation of India's green transition heavily relies on smaller businesses. Throughout various regions and

industries, Micro, Small, and Medium Enterprises (MSMEs) serve as the operational backbone that bridges policy goals with real-world implementation. MSMEs engage in the renewable energy landscape in multiple ways. Many focus on producing components, building structures, and supplying essential equipment. Others take on roles as installers, EPC contractors, and service providers for decentralized and rooftop systems.

An increasing number are also providing advisory and energy management services, assisting businesses in evaluating feasibility, optimizing energy use, and monitoring performance. Their impact is most apparent at the decentralized level. Small factories, warehouses, commercial entities, and service providers typically do not directly work with large developers or utility companies. Instead, they turn to local solution providers who are familiar with specific site challenges and operational conditions.

In this scenario, MSMEs serve as the main conduit through which renewable energy solutions reach the end users. Additionally, MSMEs are significant energy consumers themselves. Their combined demand affects the feasibility of distributed energy models. Decisions regarding adoption are usually motivated by reliability, cost stability, and payback periods, rather than sustainability alone. Unlike larger corporations, smaller businesses have limited financial resources, which influences both the speed and nature of their adoption. A notable advantage of MSMEs is their flexibility. They can tailor solutions, work on a smaller scale, and quickly respond to local needs.

This adaptability has allowed renewable energy to expand into areas and sectors that larger, more standardized projects might overlook. However, results can vary significantly. Variations in technical skills, access to funding, and execution quality can lead to inconsistencies within the ecosystem. Job creation is another crucial aspect. Renewable energy MSMEs generate employment opportunities in installation, operations, and maintenance, especially in semi-urban and rural regions. Their ability to grow sustainably will not only impact energy outcomes but also the wider economic implications of India's green transition.

Technology-Led Transformation in Renewable Energy

Technology has been the primary enabler of renewable energy adoption in India, not through sudden breakthroughs, but through steady improvements in cost, reliability, and usability. For MSMEs, this technological shift has changed renewable energy from a specialised infrastructure decision into a practical operational choice.

Solar Energy and Decentralised Power Systems

Solar energy has led this transformation. Improvements in panel efficiency, standardisation of components, and lower installation costs have made rooftop and decentralised systems viable for a wide range of enterprises. For MSMEs, solar offers predictability in energy costs and partial independence from grid-related disruptions.

Smaller system sizes have reduced entry barriers. Enterprises can adopt capacity incrementally, aligning investment with growth and consumption patterns. This modularity has expanded opportunities for local installers and service providers, who specialise in site-specific solutions rather than uniform, large-scale deployments.

Wind, Bioenergy, and Hybrid Renewable Models

Beyond solar, other renewable technologies play a complementary role. Biomass, biogas, and small wind systems are particularly relevant for agro-processing units, food manufacturers, and rural enterprises with access to organic waste or consistent local resources. These technologies are often integrated closely with business operations, serving both energy and waste management needs.

Hybrid systems that combine multiple renewable sources are gaining attention where reliability is critical. By reducing dependence on a single source, these models address intermittency concerns and improve operational continuity. For MSMEs, such configurations require higher planning and technical assessment, increasing reliance on specialised expertise.

Energy Storage, EV Infrastructure, and Emerging Technologies

Energy storage has emerged as a key enabler of renewable integration. Advances in battery technology have improved performance and reduced lifecycle costs, making storage increasingly relevant for enterprises facing peak demand charges or unreliable grid supply. While still capital-intensive, storage is gradually shifting from a backup option to a strategic investment.

The expansion of electric mobility has further reshaped the energy landscape. Charging infrastructure, fleet electrification, and related services are creating new demand patterns and business opportunities. MSMEs are entering this space as equipment suppliers, installers, operators, and service providers, extending the renewable ecosystem beyond power generation alone.

Digital Energy Management and Smart Systems

Digital tools have improved how renewable systems are monitored and managed. Smart meters, remote monitoring platforms, and basic energy management software allow enterprises to track generation and consumption in real time. Even partial digitisation has helped MSMEs improve control, reduce losses, and plan capacity expansion more effectively.

For service providers, digital systems enable remote diagnostics and predictive maintenance, lowering service costs and downtime. While full integration remains uneven, the gradual adoption of digital tools is strengthening operational discipline across the sector.

Circular Economy, Recycling, and Waste-to-Energy Models

As renewable deployment scales, attention is turning toward sustainability within the sector itself. Equipment lifecycle management, recycling, and waste-to-energy models are emerging as important areas of activity. MSMEs are increasingly involved in decentralised waste processing and energy recovery, particularly in agro and municipal contexts.

These models offer environmental and operational benefits but require technical capability and regulatory clarity. Their success will depend on consistent implementation and integration with local infrastructure.

Together, these technological shifts highlight a broader transition. Renewable energy is no longer defined by a single technology or scale. It is an interconnected system where flexibility, digital capability, and local adaptation determine effectiveness. For MSMEs, the challenge lies not in

accessing technology, but in selecting and managing solutions that align with operational realities and long-term viability.

Access, Affordability, and the Last-Mile Energy Challenge

Despite the decreasing costs of technology and a strong push from policies, access and affordability continue to be significant hurdles in India's shift to renewable energy. These issues are most apparent at the last mile, where the uptake of solutions hinges on their alignment with real-world business demands and financial situations. Geographical factors still play a crucial role in determining outcomes. Businesses situated in urban and industrial areas enjoy better service networks and find it easier to connect with installers and funders. On the other hand, small and medium enterprises (MSMEs) in remote or semi-urban areas confront higher transaction costs related to site evaluations, installations, and ongoing maintenance.

These challenges often weaken the rationale for decentralized solutions, even when the potential for long-term savings is evident. Affordability is closely linked to cash flow. Although renewable energy can lead to lower operating expenses over time, the initial investment often deters many small businesses. Competing needs for capital, such as upgrading machinery or covering operational costs, usually take precedence.

For MSMEs with variable or seasonal operations, uncertainty about how long it will take to recoup costs can further hinder adoption. Demand patterns also play a key role. Many MSMEs operate with inconsistent loads or have long operating hours, which makes standardized system designs less effective.

If systems don't align well with consumption patterns, the anticipated benefits may not be realized, which can reinforce doubts about renewable energy solutions. The service delivery and financing landscape at the last mile is inconsistent. Urban areas provide a range of options, while smaller towns heavily rely on local vendors with varying levels of technical and financial expertise. Gaps in quality regarding execution and after-sales support can damage performance and erode trust. Administrative complexities add another layer of difficulty.

Approval processes, the need for extensive documentation, and delays in procedures can make the perceived cost of adopting new solutions higher for businesses that lack dedicated administrative resources. However, the challenges at the last mile also present opportunities. MSMEs are well-positioned to help close access gaps by developing localized service models and tailored solutions. Tackling issues of access and affordability will be vital to ensure that the adoption of renewable energy goes beyond concentrated markets and becomes a viable option for small businesses across various regions.

Financing the Green Transition: MSME Perspectives

Financing is a key factor influencing the adoption of renewable energy among micro, small, and medium enterprises (MSMEs). Although advancements in technology and policy have eased the entry process, access to appropriate funding remains crucial for transforming project ideas into reality. Traditional bank loans often lack the flexibility needed for renewable energy investments. These investments, especially in decentralized systems, do not always fit within the conventional credit frameworks that focus on collateral and quick cash returns.

The financial benefits from these projects typically come through savings over time instead of immediate income, making it challenging for lenders who are not familiar with energy-related business models to evaluate them. Consequently, many MSMEs depend on their own savings or informal funding sources, which limits their growth and increases their risk. The size of the projects adds another layer of complexity. Installations led by MSMEs are generally small and spread out, yet they still require a level of diligence and documentation comparable to larger projects. The perceived cost of transactions often overshadows the size of the loan, making lenders hesitant.

This situation has hindered the adoption of renewable energy, even when the project finances are solid. Alternative financing options are starting to tackle some of these issues. Leasing agreements, third-party ownership, and pay-as-you-save plans can lower initial costs and align payments with energy savings, making it easier for businesses that value cash flow and flexibility over owning assets to access funding. Government-supported credit guarantees and interest subsidies have also made formal financing more accessible. However, awareness and usage among MSMEs are inconsistent.

Understanding the eligibility requirements and documentation needed can be a challenge for many smaller companies lacking financial expertise. For MSMEs involved in the renewable energy value chain, cash flow problems are significant. Late payments and prolonged payment cycles can hinder liquidity and limit growth potential. It's crucial to find financing solutions that support both project funding and operational stability to foster sustainable development. Closing the financing gap will necessitate products that cater to the specific needs of MSMEs, along with advisory support that enhances transparency and builds lender confidence.

As renewable energy becomes a standard component in business operations, aligning financial solutions with the constraints faced by these enterprises will be vital for advancing the green transition.

Regulatory Environment, Compliance, and ESG Realities

Regulations are increasingly influencing how small and medium-sized enterprises (MSMEs) in the renewable energy sector operate. As the industry grows, there are more requirements concerning grid connectivity, safety, quality, and environmental regulations. While these regulations are important, they can be particularly burdensome for smaller businesses.

Different states and local authorities have varying approval processes, which adds to the complexity and uncertainty for these enterprises. For MSMEs that lack robust administrative capabilities, navigating these regulations can delay projects and increase costs. While adhering to technical and safety standards enhances reliability, it also demands more documentation and effort. Expectations around environmental, social, and governance (ESG) factors are becoming more significant. Investors, major buyers, and corporate partners are now imposing these requirements throughout their supply chains. Many MSMEs are still figuring out how to meet these expectations, often without formal systems or adequate resources. Digital reporting and online compliance platforms are on the rise, enhancing transparency, but they require some basic system setup.

Businesses that still rely on manual processes might struggle to adapt, while those that implement simple digital solutions can enjoy greater credibility and better access. Uncertainty around

regulations continues to be a challenge. Frequent changes in rules and inconsistent interpretations can disrupt timelines and cash flow. For MSMEs, having predictability and clarity is just as crucial as ambitious policies. It's vital to ensure that regulations are proportionate and consistent to maintain involvement at the enterprise level.

Workforce, Skill Development, and the Green Jobs Ecosystem

The shift to renewable energy hinges on effective execution. For micro, small, and medium enterprises (MSMEs), the availability and retention of skilled workers pose significant challenges. Renewable energy systems demand specialized technical expertise, but this trained workforce is not evenly spread out.

MSMEs often rely on on-the-job training, which allows for adaptability but can compromise consistency and safety. Keeping skilled workers is tough since many tend to leave for larger companies that offer more stability. Additionally, new job opportunities in installation, monitoring, and service coordination are popping up, especially in decentralized markets.MSMEs take on a large portion of this workforce and act as key employers in areas outside major cities.

To foster sustainable skill development, we need practical training programs that meet real-world demands. For MSMEs, having a stable workforce is crucial for maintaining quality, ensuring safety, and enabling growth.

Persistent Challenges Facing Renewable Energy MSMEs

Renewable energy MSMEs are still encountering challenges that impact their growth and stability. They struggle with limited financial reserves and slow payment processes, which hinder their cash flow, especially during installation and engineering, procurement, and construction (EPC) tasks.

Additionally, uncertainty in policies and regulations complicates their planning and financial management. Fierce price competition in disjointed markets often leads to lower profit margins and affects the quality of their work. Meanwhile, the increasing complexity of technology requires ongoing training and system improvements, which can be tough for smaller companies to manage. Further complicating matters is the unpredictability of supply chains, including variations in input costs.

There is also a rising demand for compliance with safety and governance standards, which necessitates investments that don't yield immediate benefits. These issues stem from the inherent operational challenges rather than a lack of ability. It's crucial to tackle these obstacles to help MSMEs thrive and become more resilient, rather than remaining vulnerable to ongoing operational risks.

The Road Ahead:

Building a Resilient and Inclusive Green Economy

The upcoming stage of India's shift towards renewable energy will focus more on implementation than on aspirations. For micro, small, and medium enterprises (MSMEs), their ability to adapt will rely on cohesive integration instead of fragmented adoption. Energy plans must synchronize generation, storage, efficiency, and usage with daily operations.

Financial structures will need to facilitate not just project funding but also stability in working capital and the development of capabilities. The adoption of technology should emphasize reliability and compatibility rather than just being cutting-edge. Developing the workforce, ensuring regulatory clarity, and maintaining proportional compliance will continue to be essential factors. Consistent policies and practical assistance can greatly ease challenges for smaller businesses.

If these components are coordinated, renewable energy can transform into a dependable business resource instead of a variable risk factor. MSMEs will play a vital role in fostering a green economy that is resilient, decentralized, and widely inclusive.

Conclusion:

Renewable Energy as an Economic and Environmental Imperative

India's shift towards renewable energy is now a necessity rather than a choice. It's crucial for both economic strength and environmental stewardship. Micro, Small, and Medium Enterprises (MSMEs) play a key role in this transition, bridging the gap between policies and practical implementation.

The future of clean energy adoption hinges on the success of these MSMEs, whether it stays limited to a few sectors or spreads throughout the entire economy. Therefore, providing MSMEs with the right financial support, clear regulations, and practical assistance is vital.

A genuine and inclusive green transition won't just rely on large-scale projects, but will also thrive through the efforts of countless smaller businesses that are willing to adapt, invest, and take action.

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-By Paritosh Anand

Sustainability, Circular Economy & Green Innovation in MSMEs and Startups: From Compliance to Competitive Advantage

Executive Summary

Sustainability and circular economy practices have moved decisively from the periphery of business discourse to the core of enterprise strategy, including for Micro, Small and Medium Enterprises (MSMEs) and startups. What was once viewed primarily as a matter of regulatory compliance or reputational positioning is now increasingly recognized as a driver of cost efficiency, market access, financing eligibility, and long-term resilience. For MSMEs operating within competitive domestic and global value chains, sustainable and circular practices offer a pathway to reduce input volatility, strengthen buyer confidence, and unlock incremental value through improved resource productivity and product life extension.

At the same time, the transition to green and circular business models presents practical challenges. MSMEs often face constraints related to upfront capital requirements, limited technical capabilities, fragmented supply chains, and uncertainty around the financial returns of sustainability investments. Addressing these constraints requires approaches that balance environmental objectives with commercial realities, supported by phased implementation, appropriate financing structures, and credible performance measurement.

This article examines sustainability adoption in MSMEs through a practitioner's lens. It explores the evolving policy and market push for green MSMEs in India, explains why circular economy thinking is particularly relevant for small enterprises, and outlines practical pathways for implementation across sectors. The discussion integrates operational actions, financing mechanisms, startup-led innovation, and governance considerations, emphasizing how sustainability initiatives can be embedded into day-to-day business decision-making rather than treated as standalone compliance exercises.

By positioning sustainability as a financially governed transition—supported by accessible finance, cluster-level infrastructure, innovation partnerships, and disciplined governance oversight — the article demonstrates how MSMEs and startups can convert environmental responsibility into competitive advantage and enduring enterprise value.

For Chartered Accountants, this evolving sustainability and circular economy landscape represents a natural extension of professional practice. From sustainability-linked project appraisal and green financing structuring to ESG-aligned reporting, risk assessment, valuation support, and MSME advisory engagements, CAs are uniquely positioned to help enterprises translate sustainability intent into financially governed, compliant, and scalable business outcomes.

1. The Policy and Market Push for Green MSMEs

Over the past few years, India's industrial and economic policy discourse has increasingly foregrounded sustainability, energy transition, and circularity as essential pillars of long-term growth. This emphasis sharpened during 2024–25 as India aligned its industrial strategy with global climate commitments, including its Nationally Determined Contributions (NDCs), while simultaneously responding to commercial pressures from global supply chains. Rising domestic energy costs, volatility in raw material prices, and increasing compliance expectations from international buyers have collectively accelerated this shift from intent to implementation.

For MSMEs, this policy transition is no longer abstract or distant. Large corporates—particularly in automobiles, textiles, engineering goods, electronics, and consumer products—are embedding environmental performance criteria directly into vendor onboarding and renewal processes. Carbon intensity disclosures, waste management practices, water usage, and renewable energy adoption are increasingly being assessed as part of supplier audits. Export-oriented MSMEs, especially those supplying to the European Union, the United Kingdom, and large multinational buyers, are encountering growing scrutiny under frameworks relating to carbon footprints, restricted chemicals, and product traceability. In practical terms, sustainability has evolved into a *market access qualifier*, not merely a reputational enhancement.

Several Indian MSME clusters illustrate this shift clearly. The Tiruppur knitwear cluster in Tamil Nadu, dominated by small and medium textile exporters, faced existential pressure in the past due to water pollution concerns and buyer backlash. In response, MSMEs within the cluster—supported by state policy and judicial intervention—invested in Zero Liquid Discharge (ZLD) infrastructure through common effluent treatment plants. While the initial transition was costly, the outcome was transformative: Tiruppur exporters regained access to global apparel brands and today market themselves as environmentally compliant suppliers, with improved water efficiency and stronger buyer confidence. This cluster-level sustainability intervention converted regulatory pressure into export competitiveness.

Similarly, in Ludhiana's bicycle and light engineering cluster, MSMEs supplying to global sports and mobility brands have increasingly adopted energy-efficient furnaces, improved surface treatment processes, and cleaner finishing technologies. These upgrades were not driven solely by regulation but by buyer mandates from international brands seeking lower lifecycle emissions in their supply chains. MSMEs that adapted early were retained as preferred suppliers, while others faced gradual exclusion—a clear demonstration of sustainability as a commercial filter.

Recognizing these ground realities, policymakers have progressively designed schemes that target MSME-level green adoption rather than large-enterprise compliance alone. Central and state initiatives now emphasize energy efficiency retrofits, cleaner production methods, waste minimization, and renewable energy integration tailored to MSME scales. Programs supported by agencies such as SIDBI, state renewable energy departments, and MSME technology centers provide capital subsidies, interest subvention, and technical handholding for upgrades like efficient motors, rooftop solar installations, and process optimization.

Cluster-based interventions have been particularly impactful. For instance, common solar infrastructure in MSME industrial estates, shared waste processing facilities, and collective environmental compliance mechanisms reduce per-unit costs and make sustainability

economically viable for smaller firms. Technology demonstration projects—often implemented through MSME Technology Centres and industry associations—allow enterprises to observe real savings before committing capital, addressing the traditional hesitation around return on investment.

Importantly, the policy narrative has evolved from a compliance-centric approach to one focused on productivity, resilience, and competitiveness. Energy efficiency lowers operating costs, waste reduction improves material yields, and cleaner processes enhance operational reliability—enabling MSMEs to treat sustainability as a strategic investment rather than an imposed obligation.

In effect, the policy and market environment is converging toward a single message for MSMEs: green adoption is no longer optional, but those who act early can convert compliance into competitive advantage.

2. Why Circular Economy Thinking Matters for MSMEs

The concept of the circular economy—where resources are kept in productive use for as long as possible through reuse, repair, remanufacturing, and recycling—holds particular relevance for Micro, Small and Medium Enterprises. Unlike large corporations, MSMEs typically operate with thinner margins, limited pricing power, and greater sensitivity to input cost fluctuations. For such enterprises, sustainability initiatives that directly improve cost efficiency and resource productivity are not merely environmentally desirable; they are commercially essential.

Circular economy thinking allows MSMEs to move away from the traditional linear model of "take–make–dispose" and instead adopt practices that extract maximum value from every unit of material, energy, and effort invested. In doing so, MSMEs can simultaneously address rising input costs, increasing buyer expectations, and operational resilience—without necessarily requiring disruptive changes to their core business models.

Material Cost Reduction and Resource Efficiency

Raw materials often constitute the single largest cost component for MSMEs, particularly in manufacturing, textiles, engineering goods, plastics, food processing, and construction-related activities. Even small inefficiencies—such as excess scrap, process losses, or suboptimal input utilization—can significantly erode margins over time. Circular practices such as better yield management, reuse of production scrap, recovery of by-products, and substitution of virgin materials with recycled or secondary inputs offer MSMEs a direct pathway to cost reduction.

Several Indian MSME clusters illustrate the tangible benefits of this approach. In the Morbi ceramic tile cluster in Gujarat, many small manufacturers have adopted waste heat recovery systems and reuse fired scrap within production cycles. These measures have reduced fuel consumption and raw material waste, leading to measurable savings in energy costs while stabilizing production quality. Similarly, plastic processing MSMEs in Daman and Bhiwadi routinely reprocess in-house plastic scrap into secondary-grade products or internal components, reducing dependence on volatile virgin polymer prices.

Importantly, circular efficiency does not always require large capital investments. Simple interventions—such as process audits, improved segregation of scrap, tighter quality controls at early stages, and collaboration with recyclers—can yield incremental gains that compound over time. For MSMEs, where capital availability is constrained, such low-cost efficiency improvements often deliver some of the highest returns on investment.

Creation of New Revenue Streams

Beyond cost savings, circular economy models also enable MSMEs to unlock new and often underexplored revenue streams. Materials and products that were traditionally treated as waste can be converted into saleable outputs through refurbishment, resale, remanufacturing, or by-product utilization. This shift transforms waste management from a cost center into a potential income source.

In sectors such as electronics repair, auto components, packaging, and light engineering, MSMEs are increasingly offering refurbishment and remanufacturing services alongside primary manufacturing. For example, small enterprises engaged in industrial machinery servicing often refurbish worn components and resell them at lower price points to cost-sensitive customers, extending product life cycles while generating additional margins. In the paper and packaging sector, MSMEs commonly sell segregated waste paper, trims, and rejects into secondary markets, creating a steady ancillary income stream that offsets raw material costs.

In agro-processing and food-related MSMEs, by-products such as husk, peel, or residue are increasingly being monetized—either as inputs for animal feed, composting, or biomass energy. These practices not only improve profitability but also reduce disposal challenges and regulatory risks. Over time, such circular revenue models can evolve into standalone business lines, improving income diversification and financial stability.

Market Differentiation and Buyer Confidence

In today's supply chains, environmental performance is no longer peripheral to commercial decision-making. Large corporates, export buyers, and multinational procurement teams increasingly evaluate suppliers on parameters such as material efficiency, waste management practices, and lifecycle impacts. For MSMEs, adopting circular practices serves as a powerful signal of operational maturity, quality control, and long-term reliability.

Buyers often associate circular economy practices with disciplined processes and lower operational risk. An MSME that demonstrates consistent waste reduction, responsible sourcing, or product life-extension capabilities is perceived as less vulnerable to regulatory disruptions, raw material shocks, or compliance failures. This perception translates into stronger buyer confidence, longer-term contracts, and preferred supplier status—particularly in export-oriented sectors such as textiles, engineering goods, and consumer products.

Moreover, circular practices help MSMEs differentiate themselves in crowded markets where price competition alone is unsustainable. Eco-conscious branding, supplier sustainability disclosures, and participation in green supply chains enable MSMEs to access premium customers and niche markets that value traceability and responsible production. In many cases, these credentials become a gateway to larger orders, repeat business, and integration into global value chains.

In essence, circular economy thinking allows MSMEs to convert efficiency into profitability, waste into value, and sustainability into market advantage. When approached pragmatically and aligned with business realities, circularity is not an abstract environmental concept but a practical strategy for cost control, revenue enhancement, and long-term competitiveness.

Sector-Wise Circular Economy Applications and the CA's Advisory Lens

Sector	Typical Circular Interventions	Primary Business Impact
Textiles	ZLD, water recycling, fabric waste reuse	Export access, water security
Engineering	Scrap reuse, remanufacturing, waste heat recovery	Cost reduction, margin stability
Food Processing	By-product utilization, biomass energy	Waste monetization, compliance
Plastics	In-house recycling, EPR-aligned packaging redesign	Raw material cost control

While the principles of circular economy are universal, their application varies significantly across sectors. For MSMEs, practical adoption depends on production processes, material profiles, buyer requirements, and regulatory exposure. A sector-specific understanding therefore becomes essential—not only for entrepreneurs but also for professional advisors guiding them through sustainable transitions.

Textiles and Apparel MSMEs

The textile and apparel sector, dominated by MSMEs, is one of the earliest adopters of circular practices in India—largely driven by export market pressures and environmental compliance requirements. Clusters such as **Tiruppur (Tamil Nadu)**, **Ludhiana (Punjab)**, and **Surat (Gujarat)** provide clear evidence of how circularity has moved from regulatory necessity to competitive advantage.

In Tiruppur, MSMEs engaged in knitwear exports adopted **Zero Liquid Discharge (ZLD)** systems through common effluent treatment plants, enabling complete recycling of process water. While capital-intensive initially, this transition restored access to global apparel brands and stabilized long-term water availability. Many units also reuse fabric cut waste for secondary products such as cleaning cloths or blended yarn inputs, improving material yield.

Similarly, textile dyeing and processing MSMEs increasingly substitute virgin chemicals with compliant, lower-impact alternatives and recycle steam condensate and process heat. These practices reduce both chemical costs and energy intensity—directly improving operating margins while satisfying buyer sustainability audits.

Engineering and Auto-Component MSMEs

Engineering MSMEs—particularly in clusters such as **Pune, Coimbatore, Faridabad, and Ludhiana**—have adopted circular practices focused on material efficiency, remanufacturing, and energy optimization. Auto-component suppliers, many of whom operate as Tier-2 or Tier-3 vendors, face strict expectations from OEMs regarding waste reduction and lifecycle efficiency.

Common circular interventions include reuse of metal scrap within production cycles, remelting of machining waste, and refurbishment of worn tooling and fixtures. Several MSMEs engage in **component remanufacturing**, where used parts are reconditioned and resold to aftermarket customers at lower price points—creating incremental revenue without proportional material costs.

Energy recovery initiatives—such as waste heat utilization from furnaces and compressors—have also gained traction. These measures reduce fuel consumption and improve capacity

utilization, delivering payback periods that are often shorter than traditional capacity expansion investments.

Food Processing and Agro-Based MSMEs

In food processing, circular economy practices are closely linked to by-product utilization and waste minimization. MSMEs in **rice milling, fruit processing, dairy, and spice grinding** commonly generate organic residues that were earlier treated as disposal challenges.

Increasingly, rice husk is used for biomass energy, fruit peels are converted into animal feed or compost, and processing residue is supplied to secondary industries. Such practices reduce waste handling costs and generate steady ancillary income streams. In export-oriented food MSMEs, improved traceability and waste management have also enhanced compliance with international food safety and sustainability standards.

Notably, these interventions often require minimal technological sophistication—making them especially suitable for small enterprises with limited capital but strong operational discipline.

Plastics and Packaging MSMEs

Plastic processing MSMEs—especially in **Daman, Vapi, Bhiwadi, and Noida**—have long practiced in-house scrap recycling. What has changed in recent years is the formalization and optimization of these practices in response to Extended Producer Responsibility (EPR) norms and buyer scrutiny.

Many MSMEs now segregate, reprocess, and reuse plastic scrap for non-critical applications or sell it into organized secondary markets. Packaging MSMEs increasingly redesign products for recyclability and reduced material usage, aligning with customer sustainability goals while lowering resin consumption.

These circular practices help mitigate volatility in polymer prices and reduce dependence on virgin raw materials—directly strengthening financial resilience.

The Chartered Accountant's Advisory Lens: Assessing Circular ROI and Compliance Readiness

In practice, this advisory role extends across multiple professional domains—including cost audits, internal audits, valuation assignments, ESG disclosures, due diligence, and MSME consulting—where Chartered Accountants can embed circular economy considerations into mainstream financial and risk assessments rather than treating them as standalone environmental initiatives.

For MSMEs, one of the biggest barriers to sustainability adoption is uncertainty around financial returns and compliance implications. This is where the role of the **Chartered Accountant as a strategic advisor** becomes critical. Beyond statutory compliance, CAs are uniquely positioned to translate circular economy initiatives into financial, operational, and risk management metrics that business owners can trust.

From an ROI perspective, circular investments should be evaluated not merely as capital expenditure but as **cost-avoidance and margin-stabilization tools**. A CA can help quantify savings from reduced energy consumption, lower raw material procurement, waste disposal cost reduction, and incremental revenues from by-products or refurbished outputs. Simple payback analysis, internal rate of return (IRR), and lifecycle cost comparisons enable MSMEs to make informed decisions without overcommitting capital.

On the compliance front, CAs play a pivotal role in aligning sustainability initiatives with evolving regulatory frameworks—such as pollution control norms, EPR obligations, export compliance requirements, and ESG disclosures increasingly demanded by buyers and lenders. Assessing documentation readiness, audit trails, and reporting systems ensures that green initiatives strengthen, rather than complicate, the compliance posture of MSMEs.

Equally important is financing readiness. Many green upgrades qualify for **concessional finance, subsidies, or non-dilutive funding**, but only if financial records, project justifications, and utilization plans are properly structured. A CA's involvement significantly improves the MSME's ability to access such funding while maintaining governance and financial discipline.

In essence, when guided through a structured, financially grounded lens, circular economy adoption shifts from being an environmental aspiration to a **measurable business strategy**. The Chartered Accountant, acting as a bridge between sustainability intent and commercial execution, becomes a key enabler in helping MSMEs pursue green transitions that are both compliant and profitable.

Thus, this section naturally reinforces the idea that **sustainability in MSMEs is not an environmental abstraction but a financially governed transition**, where professional advisory—particularly from Chartered Accountants—ensures viability, credibility, and long-term value creation.

3. Practical Green Actions for MSMEs: A Prioritized and Phased Approach

For MSMEs, sustainability initiatives yield the best results when they are sequenced deliberately and implemented incrementally. Attempting large-scale or simultaneous transformations often leads to capital strain, operational disruption, and loss of focus. In contrast, a phased approach—anchored in immediate cost savings and operational improvements—allows enterprises to build confidence, generate internal funding, and gradually scale their green initiatives.

A practical green strategy for MSMEs therefore begins with interventions that deliver high impact at relatively low cost, before progressing toward more structural changes in design, sourcing, and infrastructure. This prioritization is particularly important for smaller firms with limited managerial bandwidth and financial flexibility.

Energy Efficiency as the First Lever

Energy efficiency is widely regarded as the most effective starting point for MSME sustainability journeys because it offers predictable savings, short payback periods, and minimal operational risk. Electricity and fuel costs constitute a substantial share of operating expenses in sectors such as manufacturing, textiles, food processing, and engineering. Even modest efficiency gains can therefore translate into immediate and recurring financial benefits.

Common interventions include replacing conventional lighting with LED systems, upgrading old motors with energy-efficient variants, installing variable frequency drives (VFDs), optimizing compressed air systems, and recovering waste heat from boilers or furnaces. MSMEs in clusters such as Coimbatore, Rajkot, and Faridabad have successfully implemented these measures, often achieving energy savings ranging from 10–25 percent without altering core production processes.

Importantly, many energy efficiency upgrades are supported by concessional finance, ESCO models, or subsidy-linked programs, reducing upfront investment barriers. As a result, energy

efficiency improvements often serve as the self-financing foundation upon which broader sustainability initiatives can be built.

Resource Mapping and Waste Segregation

Once energy consumption is addressed, the next logical step is to understand how materials and resources flow through the enterprise. A basic resource and waste audit—covering raw materials, water, packaging, and by-products—helps MSMEs identify points of loss, inefficiency, and avoidable waste.

Segregating waste at source is a simple yet powerful intervention. By separating scrap, rejects, and by-products by type and quality, MSMEs can enable reuse, recycling, or resale rather than disposal. In many cases, what appears to be inevitable waste is actually the result of inconsistent processes, inadequate quality checks, or lack of standardization.

For example, MSMEs in the plastic processing clusters of Daman and Bhiwadi routinely recover and reuse in-house scrap, significantly reducing dependence on virgin polymers. Similarly, engineering units often remelt metal scrap internally or sell it into organized secondary markets, converting waste streams into predictable revenue sources. These practices improve material yield while strengthening cost control.

Material Substitution and Design for Reuse

As MSMEs mature in their sustainability journey, they can begin exploring design-level interventions that enhance circularity over the product lifecycle. This may include substituting high-impact materials with lower-impact alternatives, adopting standardized or modular components, or redesigning packaging to improve recyclability and reduce material usage.

Such changes are particularly relevant in sectors like consumer goods, packaging, electrical components, and light engineering, where product design choices directly influence waste generation and reverse logistics complexity. While these interventions may require closer collaboration with designers, suppliers, or customers, they often lead to simplified inventories, reduced procurement costs, and improved regulatory compliance.

Design for reuse and recyclability also prepares MSMEs for future regulatory requirements and buyer expectations, especially in export-oriented supply chains where lifecycle assessments and material traceability are becoming increasingly common.

Cluster-Level and Shared Solutions

For many micro and small enterprises, individual investments in renewable energy, waste treatment, or pollution control infrastructure are neither economically viable nor operationally efficient. In such cases, cluster-level and shared solutions offer a pragmatic alternative.

Common effluent treatment plants, shared solar installations in industrial estates, collective waste processing facilities, and centralized recycling units allow MSMEs to benefit from economies of scale while meeting environmental norms. The success of cluster-based ZLD systems in Tiruppur and shared infrastructure in several industrial estates across Gujarat and Maharashtra demonstrates the effectiveness of this approach.

Beyond cost savings, shared solutions also reduce compliance risk, simplify regulatory engagement, and encourage knowledge-sharing among enterprises—strengthening the overall resilience of MSME clusters.

Green Certification and Market Access

Finally, MSMEs that have established basic sustainability practices may consider selective adoption of green certifications or supplier sustainability codes. While certification should not be pursued solely for branding purposes, it can provide a structured framework for documenting processes, monitoring performance, and communicating credibility to buyers.

Eco-labels, buyer-mandated supplier codes, and basic environmental management certifications often act as gateways to premium markets, long-term contracts, and preferred supplier status. For MSMEs engaged in exports or supplying to large corporates, such credentials enhance trust and reduce onboarding friction.

From a governance perspective, certification processes also instill internal discipline by formalizing documentation, audits, and continuous improvement mechanisms—benefits that extend well beyond environmental performance.

Strategic Takeaway for MSMEs

Table 2: Phased Green Actions for MSMEs and Typical Payback Ranges

Phase	Typical Actions	Indicative Payback
Phase 1 (Immediate)	LED lighting, motor upgrades, audits	6–18 months
Phase 2 (Medium)	Waste reuse, water efficiency, ESCOs	1–3 years
Phase 3 (Structural)	Solar, ZLD, design changes	3–5 years

Sustainable transformation for MSMEs is most effective when it follows a clear progression: *energy efficiency →resource efficiency →design optimization →shared infrastructure →market-facing credentials*.

By prioritizing actions based on impact, affordability, and operational readiness, MSMEs can integrate sustainability into their core business strategy—without overstretching financial or managerial capacity.

What MSMEs and CAs Should Do Next

- Identify 2–3 sustainability actions with short payback and measurable savings
- Assess eligibility for subsidies, ESCO models, or concessional finance
- Align sustainability metrics with cost records and financial statements
- Maintain documentation for lender, buyer, and audit readiness

4. Financing the Green Transition: From Intent to Implementation

While the commercial rationale for sustainability and circular economy practices is becoming increasingly evident, access to appropriate finance remains the single most significant constraint for MSMEs seeking to undertake green initiatives. Energy-efficient machinery, renewable installations, cleaner production technologies, and waste management systems typically involve upfront capital expenditure, whereas financial returns accrue gradually through cost savings, productivity gains, or improved market access.

Public Schemes and Concessional Finance

At the foundation of India's green MSME financing architecture are central and state government schemes that provide capital subsidies, interest subvention, and technical assistance for environmentally beneficial investments. These schemes aim to shorten payback

periods and reduce perceived risk for enterprises considering energy efficiency upgrades, cleaner production technologies, or renewable energy adoption.

Such support is particularly effective when linked to standardized technologies—such as energy-efficient motors, LED lighting, improved boilers, or rooftop solar installations—where savings can be reasonably estimated. By lowering the effective cost of capital, concessional finance enables MSMEs to internalize sustainability investments as operational improvements rather than discretionary expenses.

From a governance perspective, participation in these schemes also nudges MSMEs toward better documentation, utilization tracking, and outcome reporting—capabilities that strengthen long-term financial discipline.

Green Credit and Preferential Loan Instruments

Beyond subsidies, green credit products have emerged as a critical financing channel. Development-focused institutions such as SIDBI, select public sector banks, and state financial corporations now offer loans specifically earmarked for sustainability-linked investments. These facilities typically feature lower interest rates, longer repayment tenures, or partial risk coverage, reflecting the public-good nature of environmental projects.

For example, MSMEs undertaking energy audits and implementing recommended efficiency measures often qualify for preferential lending terms, allowing loan repayments to be aligned with actual energy cost savings. This alignment reduces repayment stress and improves project viability, particularly for enterprises with constrained working capital cycles.

However, access to such financing is closely tied to financial transparency, credible projections, and structured documentation, highlighting the importance of disciplined financial planning and robust documentation at the planning stage.

Capital Subsidies, Interest Subvention, and Repayable Grants

A distinctive feature of green MSME financing in India is the growing use of hybrid instruments, including capital subsidies and repayable grants. Under these structures, a portion of the investment cost is reimbursed or converted into a low-cost loan contingent upon achieving predefined performance outcomes—such as energy savings, emission reductions, or waste diversion targets.

Repayable grants, often supported by climate-focused funds or multilateral agencies, reduce downside risk for MSMEs while maintaining accountability. If targets are met, repayment terms remain concessional; if not, corrective mechanisms are triggered. This structure balances financial prudence with developmental objectives and is particularly effective when deployed through industrial clusters or sectoral programs.

Blended Finance and Risk-Sharing Mechanisms

Blended finance plays a pivotal role in mobilizing private capital toward MSME sustainability projects that may otherwise be viewed as high-risk or non-core by lenders. By combining public or concessional funds with commercial financing, blended structures absorb a portion of project risk and improve credit appetite among banks and NBFCs.

Mechanisms such as partial credit guarantees, first-loss facilities, and co-lending arrangements allow MSMEs to access credit without additional collateral or personal guarantees. Importantly, these structures also introduce stronger project appraisal, monitoring, and reporting frameworks—benefiting MSMEs in subsequent financing engagements.

As sustainability-linked lending gains prominence, such blended models are expected to become increasingly mainstream, particularly for first-time green investments.

Energy Service Companies (ESCOs) and Pay-As-You-Save Models

Among the most MSME-friendly green financing mechanisms is the ESCO model, where an Energy Service Company designs, finances, and implements energy efficiency interventions. Instead of upfront capital expenditure, the MSME repays the investment through a share of the actual savings generated over time.

This "pay-as-you-save" approach is particularly effective for interventions with predictable outcomes, such as lighting retrofits, motor replacements, compressed air optimization, and waste heat recovery. The key advantage lies in risk transfer: performance risk is largely borne by the service provider, while the MSME benefits from immediate operational savings and improved efficiency.

For smaller enterprises with limited borrowing capacity, ESCO models provide a low-risk entry point into sustainability without balance sheet strain.

Supply Chain Finance, Buyer-Led Programs, and Green Capital Spillovers

While direct access to instruments such as green bonds remains limited for individual MSMEs, indirect participation is expanding through buyer-led sustainability programs. Large corporates raising green or sustainability-linked finance increasingly extend preferential terms to compliant MSME suppliers—such as faster payments, longer contracts, or co-funded upgrades.

These arrangements effectively channel green capital downstream, integrating MSMEs into sustainable value chains without requiring them to independently navigate complex capital markets. As a result, compliance readiness, data transparency, and basic sustainability reporting are becoming strategic capabilities for MSMEs seeking long-term buyer relationships.

The CA's Role in Structuring and Governing Green Finance

Navigating the evolving landscape of green and blended finance requires more than technical intent; it demands financial structuring, compliance alignment, and performance measurement. Chartered Accountants play a central role in evaluating project feasibility, quantifying cost savings, preparing financial models, and aligning repayment structures with cash flow realities.

By assessing subsidy eligibility, blended finance options, and covenant implications, CAs help MSMEs avoid overleveraging while maximizing concessional benefits. Equally important is ongoing monitoring and reporting—ensuring that green investments strengthen financial resilience rather than introduce hidden stress.

Green and blended finance instruments are not standalone solutions—they are enablers. When integrated with phased sustainability strategies, institutional support mechanisms, and disciplined financial oversight, these instruments allow MSMEs to adopt green technologies without compromising liquidity, governance, or control. As sustainability becomes increasingly linked to creditworthiness and market access, the ability to structure and manage green finance will emerge as a defining capability for competitive MSMEs.

This positions Chartered Accountants as trusted intermediaries between MSMEs, lenders, and policymakers—ensuring that green investments are not only environmentally sound,

but also bankable, compliant, and aligned with enterprise cash-flow realities.

What MSMEs and CAs Should Do in Green Financing

- Identify green projects with clear cost savings or compliance relevance
- Map eligibility for subsidies, concessional loans, ESCOs, or blended finance
- Structure repayments in line with projected savings and cash flows
- Maintain documentation for lender review, audit trail, and outcome tracking

5. Startups as Accelerators of Green Innovation for MSMEs

While policy support and green finance create the enabling environment, startups increasingly act as the execution bridge that converts sustainability intent into practical, implementable solutions for MSMEs. Unlike large corporations that can internalize research, development, and technology investments, MSMEs typically lack the scale and risk appetite required to develop proprietary green solutions. Startups fill this gap by offering modular, affordable, and outcome-oriented sustainability solutions, often delivered on an "as-a-service" or performance-linked basis.

This model allows MSMEs to access innovation without heavy upfront capital expenditure, long implementation cycles, or technological lock-in. Instead of owning complex systems, MSMEs pay for outcomes—energy saved, waste processed, emissions tracked, or materials recovered—aligning sustainability investments directly with business results.

Green Solutions Delivered "As-a-Service"

A growing number of Indian startups are designing sustainability solutions specifically suited to MSME operating realities. These include digital marketplaces for recycled and secondary raw materials, compact and modular waste-processing units, energy monitoring and optimization platforms, water reuse systems, and digital tools for tracking material flows and emissions.

For example, startups offering energy analytics and IoT-based monitoring enable MSMEs to track electricity consumption at the machine level, identify inefficiencies, and optimize usage without employing dedicated energy managers. Similarly, modular waste-handling solutions allow small manufacturing units to segregate, compact, or preprocess waste on-site, improving recovery rates and reducing disposal costs.

By offering subscription-based pricing or pay-per-use models, these startups lower entry barriers and make green technologies accessible even to micro and small enterprises.

Digital Enablement of Circular Economy Practices

Startups also play a crucial role in operationalizing circular economy principles. Digital platforms now connect MSMEs to markets for recycled feedstock, surplus materials, packaging waste, and by-products—transforming what was previously a disposal challenge into a revenue opportunity.

Material traceability tools help MSMEs document sourcing, reuse, and recycling practices, which is increasingly important for buyer audits, export compliance, and sustainability-linked financing. In sectors such as textiles, plastics, and food processing, such digital visibility strengthens both operational discipline and market credibility.

These tools are particularly valuable because they integrate sustainability data into day-to-day business systems, rather than treating environmental reporting as a standalone or compliance-only activity.

Risk Sharing and Faster Adoption through Pilots

One of the most significant advantages of startup–MSME collaboration is risk sharing. Startups are often willing to pilot solutions at limited scale, customize offerings for specific use cases, and refine models based on on-ground feedback. This reduces adoption risk for MSMEs and allows learning through controlled experimentation rather than large, irreversible investments.

Pilot-based engagement also enables MSMEs to assess commercial impact before scaling—whether in terms of cost savings, productivity gains, or compliance readiness. From a financial governance perspective, such pilots support evidence-based decision-making and smoother access to subsequent financing.

Role of Incubators, Industry Bodies, and Cluster Programs

The effectiveness of startup-led green innovation is significantly enhanced when supported by incubators, industry associations, and cluster development programs. These institutions play a critical matchmaking role—connecting MSMEs with vetted solution providers, facilitating pilot deployments, and aggregating demand across clusters.

Cluster-level pilots also improve scalability, reduce transaction costs, and enable shared learning. For startups, this accelerates market validation; for MSMEs, it lowers adoption risk and ensures that solutions are tailored to sector-specific realities.

Strategic Implications for MSMEs

For MSMEs, partnering with green startups represents a pragmatic pathway to sustainability—one that balances innovation with affordability and governance. Rather than viewing sustainability as a long-term, capital-intensive transformation, MSMEs can adopt an incremental, service-based approach, leveraging startup ecosystems to test, adopt, and scale green practices aligned with their operational and financial capacity.

When combined with structured financing, professional advisory support, and cluster-level facilitation, startups emerge not merely as technology providers, but as co-creators of commercially viable sustainability models for India's MSME sector.

6. Measurement and Reporting: Keeping Sustainability Practical, Proportionate, and Decision-Useful

For most MSMEs, sustainability measurement should be simple, relevant, and directly linked to business decisions. Attempting to replicate large-corporate ESG reporting frameworks often overwhelms smaller enterprises and leads to disengagement. Instead, MSMEs benefit from adopting a limited set of high-impact indicators that are easy to track, interpret, and integrate into routine management processes.

The objective of sustainability measurement at the MSME level is not exhaustive disclosure, but operational visibility—understanding where resources are consumed, where inefficiencies exist, and how improvements translate into cost savings and market readiness.

Focus on a Small, High-Value Set of Metrics

A practical measurement framework typically begins with a few core indicators that cut across sectors and provide meaningful insight into resource efficiency:

- Energy intensity (kilowatt-hours per unit of output), which helps track efficiency gains from equipment upgrades or process optimization
- Material yield and scrap percentage, reflecting production discipline and circularity opportunities
- Water consumption per unit of output, particularly relevant for food processing, textiles, chemicals, and engineering clusters
- Proportion of recycled or reused materials, indicating progress toward circular economy practices

These metrics can often be derived from existing records—electricity bills, production logs, purchase registers, and waste disposal records—without requiring specialized software or consultants in the early stages.

Embedding Measurement into Daily Operations

Measurement delivers value only when it is embedded into routine operations, rather than treated as a periodic reporting exercise. MSMEs that integrate sustainability indicators into monthly reviews, production planning, or cost analysis are better able to identify trends and act early on inefficiencies.

For example, tracking energy consumption per unit can quickly reveal equipment degradation or process deviations, while monitoring scrap rates can highlight training gaps or material quality issues. Over time, such insights contribute to better cost control, improved margins, and more predictable performance.

Digital tools—such as basic accounting software, energy monitoring devices, or simple dashboards—can further reduce manual effort and improve data reliability, particularly when linked to billing, inventory, or production systems already in use.

Building Credibility with Lenders, Buyers, and Regulators

Consistent sustainability measurement enhances external credibility, even when reporting remains modest in scope. Lenders increasingly look for verifiable data on energy use, operational efficiency, and environmental risk when evaluating MSME financing proposals—especially for green or sustainability-linked credit products.

Similarly, large buyers and export customers often require basic environmental information as part of supplier onboarding or periodic audits. MSMEs that can present structured, time-series data—however simple—signal governance maturity, process discipline, and lower operational risk.

From a regulatory standpoint, maintaining clear and consistent records also reduces compliance risk and simplifies future transitions to more formal reporting requirements, should they arise.

Evolving Measurement as Capabilities Mature

Sustainability measurement for MSMEs should be viewed as a progressive journey, not a one-time exercise. As systems, skills, and business complexity evolve, enterprises can gradually expand their indicators, improve data granularity, or adopt sector-specific metrics aligned with buyer expectations or financing needs.

Crucially, scaling measurement should be driven by business relevance, not external pressure. When measurement supports cost reduction, financing access, or market expansion, it becomes self-sustaining rather than burdensome.

Professional Oversight and Governance

From a governance perspective, professional support—particularly from Chartered Accountants—plays a vital role in ensuring that sustainability data is reliable, consistent, and decision-useful. By aligning sustainability indicators with financial records and operational data, MSMEs can avoid duplication, improve accuracy, and strengthen confidence among stakeholders.

Strategic Insight for MSMEs

Effective sustainability measurement is not about reporting more—it is about seeing better. By focusing on a few meaningful indicators, embedding them into daily operations, and scaling gradually, MSMEs can turn sustainability data into a tool for efficiency, credibility, and long-term competitiveness—without overwhelming systems or teams.

Practical Reporting Guidance for MSMEs and CAs

- Start with 3–4 core efficiency indicators linked to cost drivers
- Integrate sustainability data into routine MIS and reviews
- Ensure consistency between operational data and financial records
- Scale reporting depth only when linked to financing or buyer requirements

7. Challenges, Risks and Mitigation Strategies in the Green Transition

While sustainability, circular economy practices, and green innovation offer long-term strategic advantages to MSMEs, the transition is not without challenges. For many enterprises, the path toward greener operations involves navigating financial, operational, technical, and governance-related risks. Recognizing these risks early—and adopting proportionate mitigation strategies—is essential to ensure that sustainability initiatives strengthen, rather than strain, the MSME's business fundamentals.

1. Upfront Capital Constraints and Cash Flow Risk

One of the most significant challenges MSMEs—particularly first-generation and owner-managed enterprises—face in adopting green technologies is the requirement of upfront capital expenditure. Energy-efficient machinery, renewable energy installations, waste treatment systems, or cleaner production technologies often involve initial investments, while the financial benefits accrue gradually through operating cost savings. This timing mismatch can create short-term cash flow stress, particularly for MSMEs that are highly sensitive to input price volatility.

Mitigation Strategy: MSMEs should prioritize projects with shorter payback periods and measurable savings, such as energy efficiency upgrades, before undertaking

capital-intensive interventions. Leveraging concessional finance, capital subsidies, ESCO models, and blended finance structures helps reduce upfront burden. A phased investment approach—aligned with cash flow projections and supported by professional financial evaluation—ensures that sustainability initiatives remain financially sustainable.

2. **Technology Selection and Over-Investment Risk**

   Another common risk is the premature adoption of complex or oversized green technologies. MSMEs may be tempted to invest in sophisticated systems driven by compliance pressure, peer influence, or vendor persuasion, without fully assessing operational suitability or utilization capacity. Such over-investment can lead to underutilized assets, maintenance challenges, and cost overruns.

   Mitigation Strategy: Technology decisions should be grounded in actual production needs, scale, and absorptive capacity. Pilot projects, modular systems, and cluster-based shared infrastructure provide safer entry points. Independent technical assessments, preferably through empaneled experts or cluster institutions, reduce the risk of misaligned investments. MSMEs should adopt a "right-sized" approach—starting small and scaling only when performance data supports expansion.

3. **Skill Gaps and Operational Readiness**

   Green transition often requires new skills—ranging from equipment handling and data tracking to compliance documentation and reporting. Many MSMEs operate with limited managerial bandwidth and may lack in-house expertise to manage new technologies or sustainability frameworks effectively. Without adequate skills, even well-intentioned initiatives may fail to deliver expected outcomes.

   Mitigation Strategy: Rather than immediate hiring, MSMEs can rely on shared expertise models such as cluster-level technical support, incubator-linked advisors, part-time consultants, or vendor-provided training. Government-backed training programs, sectoral workshops, and digital learning modules also play a crucial role in bridging knowledge gaps. Importantly, sustainability responsibilities should be clearly assigned internally, even if execution support is external.

4. **Compliance and Regulatory Uncertainty**

   Environmental regulations, reporting expectations, and certification standards continue to evolve, creating uncertainty for MSMEs. Enterprises may hesitate to invest in green upgrades due to concerns that regulatory requirements could change, rendering current investments insufficient or misaligned in the future.

   Mitigation Strategy: MSMEs should focus on universally accepted efficiency and resource conservation measures—such as energy reduction, waste minimization, and water efficiency—that remain relevant regardless of regulatory shifts. Engaging with industry associations and staying informed through official advisories helps enterprises anticipate changes. Maintaining proper documentation and data records ensures readiness to adapt to future compliance requirements with minimal disruption.

5. **Data Reliability, Measurement, and Reporting Risk**

   Sustainability claims without reliable data expose MSMEs to reputational and contractual risks, especially when dealing with large buyers or lenders. Inconsistent measurement,

poor documentation, or reliance on estimates can undermine credibility and delay access to green finance or long-term contracts.

Mitigation Strategy: MSMEs should adopt a limited but consistent set of metrics, as discussed earlier, and integrate data collection into routine operations. Alignment between operational data and financial records enhances accuracy. Periodic professional review ensures that reported data is credible, auditable, and decision-useful. Over time, structured reporting strengthens governance and reduces external scrutiny risks.

6. **Market Acceptance and Buyer Alignment**

While sustainability is increasingly valued, not all customers are immediately willing to pay a premium for green products or processes. MSMEs may face uncertainty regarding whether sustainability investments will translate into improved pricing, volumes, or contract stability.

Mitigation Strategy: Green initiatives should be linked not only to environmental benefits but also to cost efficiency, quality improvement, and risk reduction. MSMEs should proactively engage buyers to understand sustainability expectations and align investments accordingly. Participation in buyer-led sustainability programs, supplier development initiatives, or long-term contracts reduces market risk and improves return visibility.

7. **Governance and Strategic Alignment Risk**

Perhaps the most understated risk is treating sustainability as an isolated technical exercise rather than a strategic business decision. Without governance oversight, sustainability initiatives may remain fragmented, poorly monitored, or disconnected from overall business objectives.

Mitigation Strategy: Sustainability decisions should be evaluated alongside financial performance, risk management, and growth planning. Professional advisors—particularly Chartered Accountants—play a critical role in integrating sustainability initiatives with budgeting, capital structuring, compliance, and performance monitoring. This ensures that green transition efforts enhance enterprise resilience rather than becoming parallel, unmanaged projects.

The green transition is not a single decision but a managed transformation. When risks are identified early and mitigated through phased investment, professional oversight, and institutional support, sustainability becomes a source of operational discipline, financial resilience, and competitive advantage. MSMEs that approach the transition strategically—rather than reactively—are far more likely to realize both environmental and commercial value.

Conclusion

For MSMEs and startups, sustainability and circular economy practices are no longer peripheral considerations limited to environmental compliance or corporate responsibility narratives. They are fast emerging as core business strategies that influence cost structures, market access, financing eligibility, and long-term enterprise resilience. As regulatory expectations tighten—both domestically and in export markets—and buyers increasingly integrate environmental criteria into procurement decisions, sustainability is steadily becoming a determinant of competitiveness rather than a discretionary choice.

From a practical standpoint, the experience of MSMEs across sectors demonstrates that green transitions need not be disruptive or financially prohibitive. When approached through a phased and prioritized framework—beginning with energy efficiency, resource optimization, and waste reduction—sustainability initiatives often deliver tangible operational benefits. Reduced energy bills, improved material yields, lower compliance risks, and enhanced process discipline translate directly into improved margins and cash flow stability. Circular economy practices, in particular, enable MSMEs to extract additional value from existing resources, convert waste streams into revenue opportunities, and strengthen supply chain resilience in the face of volatile input prices.

Equally important is the evolving ecosystem that now supports MSME-level green adoption. Public policy has moved beyond enforcement toward enablement, with schemes that combine technology support, capital subsidies, concessional finance, and cluster-based infrastructure. Financial institutions are increasingly recognizing sustainability-linked projects as lower-risk, future-aligned investments, while blended finance instruments and ESCO models are helping bridge the gap between upfront capital needs and long-term savings. Startups, meanwhile, are acting as accelerators by offering modular, "as-a-service" green solutions that allow MSMEs to access innovation without assuming disproportionate risk.

However, the transition to sustainability is not automatic. It requires disciplined financial planning, credible measurement, and governance oversight to ensure that environmental initiatives strengthen—rather than strain—enterprise fundamentals. This is where professional advisory support becomes critical. By integrating sustainability decisions with cash flow analysis, capital structuring, compliance readiness, and performance monitoring, MSMEs can avoid over-investment, manage risks effectively, and align green initiatives with long-term business objectives. Sustainability, when anchored in sound financial and governance frameworks, becomes a value-creating strategy rather than a compliance exercise.

For Chartered Accountants, this transition presents a clear and expanding professional mandate. As trusted advisors to MSMEs and startups, CAs play a critical role in integrating sustainability into financial planning, project appraisal, valuation, risk management, ESG-aligned reporting, and financing strategy. By ensuring that green initiatives are commercially viable, compliant, and well-governed, Chartered Accountants help enterprises move from sustainability intent to execution with confidence.

Looking ahead, India's MSME and startup ecosystem stands at an inflection point. The shift from resource-intensive to resource-efficient enterprise models is no longer aspirational—it is increasingly inevitable. MSMEs that embrace sustainability and circular economy principles early, supported by institutions, access to finance, and innovation-led collaboration, will be better positioned to access premium markets, attract patient capital, and withstand future regulatory and economic shocks. In this sense, sustainability is not merely about environmental stewardship; it is about building future-ready enterprises that combine competitiveness, resilience, and responsible growth in equal measure.

-By Pushkaraj Vishnu Joshi

MSMEs & Startups as Gamechangers of the Indian Economy in the AI & Digital Transformation Era

A Professional Insight Paper for Business Leaders, MSME Owners, Startup Founders and Chartered Accountants

Executive Summary

Micro, Small and Medium Enterprises (MSMEs) and Startups are emerging as the most critical drivers of India's economic resilience, innovation and employment generation. In the current era of Artificial Intelligence (AI), digital platforms, automation and data-driven decision-making, these enterprises are not merely adapting — they are redefining business models and value chains.

This article provides a structured, practical and sector-oriented perspective on how MSMEs and Startups are leveraging AI and digital transformation, the opportunities emerging across manufacturing and service sectors, and the expanding strategic role of Chartered Accountants as transformation partners.

1. MSMEs & Startups – Strategic Importance in the Indian Economy

MSMEs and Startups form the backbone of India's economic framework. Unlike large enterprises, they operate close to markets, customers and local ecosystems, enabling faster innovation, customization and adaptability.

Dimension	MSMEs	Startups
Primary Focus	Operational efficiency & scale	Innovation & disruption
Risk Profile	Moderate	High but high-growth
Technology Adoption	Incremental	Digital-first
Economic Role	Employment & stability	Innovation & competitiveness

2. Digital Transformation – A Business Necessity, Not a Choice

For professional business users, digital transformation must be viewed as a structured business journey rather than isolated technology adoption. MSMEs and Startups that align digital initiatives with business objectives achieve higher returns on investment.

2.1 Structured Digital Transformation Framework for MSMEs

Manual Operations → Digital Records → Cloud Applications → Integrated ERP → Data Analytics → AI-driven Automation

3. Manufacturing MSMEs – Transition to Smart & Data-Driven Enterprises

Manufacturing MSMEs are undergoing a paradigm shift driven by Industry 4.0 technologies. AI, IoT and analytics are enabling predictive decision-making, quality optimization and cost efficiency.

Business Area	Traditional Model	Digital Model	AI-Enabled Outcome
Production Planning	Manual scheduling	ERP-based planning	Demand forecasting
Maintenance	Reactive repair	Sensor-based monitoring	Predictive maintenance
Quality Control	Sampling checks	Digital inspection	Real-time defect detection
Inventory	Rule of thumb	Data-based planning	Inventory optimization

4. Service Sector MSMEs & Startups – Platform-led Growth Models

Service sector enterprises benefit the most from digital platforms due to scalability, low marginal cost and rapid market access. AI enables personalization, automation and predictive service delivery.

Sector	Digital Enablement	AI Use Case	Business Impact
Professional Services	Cloud accounting, CRM	Client analytics	Higher billable efficiency
Healthcare	Telemedicine platforms	Predictive diagnostics	Expanded reach
Logistics	GPS & tracking systems	Route optimization	Cost reduction
Education	EdTech platforms	Adaptive learning	Scalable delivery

5. Evolving Role of Chartered Accountants in MSME & Startup Ecosystem

Chartered Accountants are uniquely positioned to act as transformation catalysts. Their understanding of finance, governance, risk and compliance enables them to guide technology adoption with strong business alignment.

5.1 Strategic Value Delivered by Chartered Accountants

- Digital finance transformation & automation
- AI-based audit, assurance and fraud analytics
- Startup valuation and financial modeling
- Regulatory compliance including GST, Income Tax, MCA and data protection
- Advisory on ERP, analytics and governance frameworks

6. Emerging Business Opportunities in the AI & Digital Era

Both existing MSMEs and new Startups can create sustainable value by aligning technology with industry-specific needs.

Enterprise Type	Opportunity Areas	Value Creation
Existing MSMEs	Digital supply chain, analytics services	Cost leadership
Manufacturing Startups	Industry-specific AI solutions	Product differentiation
Service Startups	SaaS & platform models	Scalable revenues
CA-led Firms	Tech-enabled advisory	High-value consulting

7. Key Challenges and Structured Mitigation Approaches

Challenge	Impact on Business	Strategic Mitigation
Skill Gap	Low adoption	Targeted training & upskilling
Technology Cost	Delayed transformation	Cloud & subscription models
Cybersecurity Risks	Data breaches	Basic security controls & audits
Change Resistance	Implementation failure	Phased change management

8. Conclusion – Building Future-Ready MSMEs & Startups

In the AI and digital transformation era, MSMEs and Startups are not followers of change but creators of economic momentum. With structured digital adoption, professional guidance and strategic governance, they can achieve global competitiveness, sustainable growth and long-term resilience. Chartered Accountants, as trusted advisors, will play a defining role in this journey.

-By Prof. (Dr.) Kapil Kumar Suri

QUIZ

1. **MSMEs are important for the economy mainly because they:**
   - A. Reduce imports
   - B. Promote employment and inclusive growth
   - C. Increase foreign exchange reserves
   - D. Replace large industries
2. **Which of the following is NOT a typical challenge faced by MSMEs?**
   - A. Access to finance
   - B. Skilled manpower
   - C. Regulatory compliance
   - D. Excessive market dominance
3. **Which digital tool helps MSMEs track sales, inventory, and finance together?**
   - A. MS Word
   - B. ERP System
   - C. Antivirus Software
   - D. Email Client
4. **Cloud Computing helps MSMEs mainly by:**
   - A. Increasing physical infrastructure
   - B. Reducing flexibility
   - C. Lowering IT costs and improving scalability
   - D. Eliminating data security risks
5. **Which of the following is an example of Digital Payment used by MSMEs?**
   - A. Cheque
   - B. Demand Draft
   - C. UPI
   - D. Cash
6. **What is the role of Data Analytics in MSMEs?**
   - A. Only for statutory audit
   - B. To increase manual work
   - C. To support better business decision-making
   - D. Only for large corporations
7. **CRM software is mainly used to:**
   - A. Manage employee attendance
   - B. Maintain statutory registers
   - C. Manage customer relationships and sales pipeline
   - D. Prepare financial statements
8. **Digital Marketing helps Startups by:**
   - A. Eliminating competition
   - B. Reducing product quality
   - C. Reaching customers at lower cost with better targeting
   - D. Avoiding customer feedback
9. **What is Artificial Intelligence (AI)?**
   - A. Human intelligence replacement
   - B. Computer systems performing tasks requiring human intelligence
   - C. Internet-based software
   - D. Accounting automation only
10. **Chatbots are mainly used by MSMEs to:**
    - A. Replace auditors
    - B. Automate customer support and queries
    - C. Prepare GST returns
    - D. File income tax returns

Answers: 1.B 2.D 3.B 4.C 5.C 6.C 7.C 8.C 9.B 10.B

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