All Things Sustainable Manufacturing

The IPI team spoke to Shivaji Jadhav from Aragen, an India-headquartered CDMO that recently received a Platinum rating from EcoVadis, placing it among the top 1% of assessed companies for sustainability practices. Shivaji discussed the practical steps CDMOs can take to advance their sustainability goals, reduce carbon emissions, and integrate responsible practices across their operations.

Sustainability has evolved from a compliance obligation to a strategic priority within the pharmaceutical industry. As global regulatory frameworks tighten and societal expectations shift, it has become increasingly clear that sustainable manufacturing is no longer optional but essential for long-term success. This article explores how CDMOs can embed sustainability practices into their manufacturing operations and provides a roadmap for others seeking to follow suit.

For forward-thinking pharmaceutical companies, sustainability is now deeply intertwined with growth strategies. Rather than treating it as a separate initiative, leading organisations have integrated environmental responsibility into their core values and operations. Embedding sustainability ensures operational efficiency, cost savings, and enhanced corporate reputation while also addressing the urgent need for global environmental stewardship.

Investment in sustainability initiatives – such as achieving zero waste to landfill targets, increasing renewable energy transitions, and committing to science-based emissions reductions – signals a commitment to long-term value creation. Beyond meeting regulatory requirements, these efforts strengthen stakeholder trust, enhance employee engagement, and align with evolving industry standards. A company-wide focus on sustainability can also inspire innovation, attract top talent, and drive competitive advantage. Long-term sustainability in manufacturing demands a structured, strategic approach. Companies must first articulate a clear sustainability vision, supported by actionable roadmaps and dedicated resources, including Environmental, Social, and Governance (ESG) teams. Comprehensive sustainability reporting, transparent communication, and third-party certifications are essential tools for demonstrating commitment and progress.

Aligning efforts with global frameworks such as the United Nations Sustainable Development Goals (SDGs), the Global Reporting Initiative (GRI), and the Carbon Disclosure Project (CDP) ensures that efforts are both credible and impactful. Companies that embed these frameworks into their strategies can effectively measure success, identify improvement areas, and maintain accountability at all levels.

Key areas of focus should include investments in renewable energy, sustainable product development, responsible material sourcing, and ongoing stakeholder engagement. Sustainability ratings and third-party assessments, such as EcoVadis, can help measure progress, set benchmarks, and drive continuous improvement across operations.

Making Sustainability a Daily Practice

Sustainability must be more than a stated goal; it needs to be woven into the organisation's culture and embedded into every business process. Leading pharmaceutical companies achieve this by making ESG performance an integral part of their governance structure, often reviewed at the board level and monitored monthly by senior leadership teams.

Clear internal policies, employee training programs, and strong leadership commitment help ensure that sustainability objectives permeate the entire organisation. Initiatives such as "green teams," sustain-ability champions, and employee-driven innovation challenges create a culture of ownership and responsibility toward sustainable practices.

Additionally, setting measurable internal targets – for energy consumption, emissions reductions, waste management, and water conservation – enables companies to monitor daily practices and make sustainability a lived experience rather than a distant aspiration.

Building Sustainable Supply Chains

Pharmaceutical companies face a significant challenge – and opportunity – in greening their supply chains. Implementing supplier sustainability programs that set measurable goals, conducting regular assessments, and promoting supplier participation in industry-wide initiatives, such as the Pharmaceutical Supply Chain Initiative (PSCI), are critical.

Supply chain policies must prioritise responsible sourcing, transparency, and environmental stewardship. Companies can develop and enforce Responsible Procurement Guidelines that evaluate suppliers based on their environmental certifications, use of green chemistry principles, and life cycle assessments of their products.

Collaboration, rather than compliance policing, should define supplier relation-ships. By working together to share best practices, co-invest in sustainable technologies, and build mutual account-ability frameworks, companies can amplify their positive environmental impact.

Innovative Carbon Reduction Strategies

Reducing carbon emissions across pharmaceutical manufacturing operations requires a comprehensive and innovative approach. Aragen is committing to Science-Based Targets initiative (SBTi) to reduce Scope 1, 2, and 3 emissions significantly by the early 2030s and achieve net-zero emissions across their value chains by mid-century.

Transitioning to renewable energy sources is a primary strategy. We have set ambitious targets, such as sourcing 50% or more of our total electricity from renewable sources within a defined timeframe, to drive measurable progress.

Beyond energy transitions, companies are innovating through green chemistry awards, promoting sustainable R&D practices, and incentivising the development of low-impact production methods. We are also embedding sustainability into research and development. Green Chemistry Awards have been introduced to encourage scientists to apply green chemistry principles in new molecule development.

Electrification of vehicle fleets, sustainable packaging innovations, and use of bio-

based materials further enhance emissions reduction efforts. For example, we have moved from a coal-based boiler to a bio-briquette system, significantly reducing our environmental footprint. At our Bengaluru site, we have shifted from diesel-fired boilers to cleaner, more sustainable piped natural gas (PNG) cutting down our emissions significantly and are steadily working towards transitioning to 100% renewable energy across all operations.

Partnering with logistics providers that offer carbon-neutral shipping solutions and investing in energy-efficient manufacturing facilities also demonstrate leadership in sustainable transformation like our partnership with DHL Express India to utilise their GoGreen Plus service, helping lower emissions from international shipments.

The Role of Water and Waste Management

Water conservation and waste management are critical components of sustainable manufacturing. Leading companies are setting aggressive goals to achieve water neutrality, particularly in regions facing water scarcity.

Advanced water recycling systems, rainwater harvesting, zero liquid discharge plants, and improved wastewater treatment protocols help minimise the industry's water footprint. Similarly, ambitious zero-waste-to-landfill programs, coupled with expanded recycling initiatives and use of biodegradable materials, can substantially reduce environmental impact.

Monitoring water and waste metrics regularly and setting site-specific goals ensures continuous improvement and alignment with broader sustainability targets.

Maintaining and Advancing Sustainability Standards

Achieving a prestigious sustainability certification marks a significant milestone, but maintaining and advancing these standards requires relentless focus. Companies must embed continuous improvement mechanisms into their ESG frameworks.

Expanding renewable energy sourcing, replacing high Global Warming Potential (GWP) refrigerants with low-GWP alternatives, adopting internal carbon pricing mechanisms, and consistently updating procurement standards ensure ongoing progress.

Moreover, ambitious social sustainability goals, such as increasing workforce diversity, supporting community health initiatives, and improving workplace equity, must complement environmental efforts.

Third-party assessments, regular reporting, and transparent communication with stakeholders help maintain momentum and demonstrate ongoing commitment to sustainability leadership.

The pharmaceutical industry stands at a critical inflection point. The companies that embed sustainability into their core strategies, culture, supply chains, and innovation agendas will be the ones that thrive in the evolving global landscape.

Sustainability is no longer a peripheral concern; it is foundational to building a resilient and future-ready industry. By aligning with global standards, integrating sustainability into daily operations, collaborating with supply chains, and continuously innovating, pharmaceutical companies can drive meaningful change and secure a sustainable future for all.

The journey demands steadfast leadership, a willingness to embrace change, and an unwavering commitment to long-term goals. Those who act decisively today will be tomorrow's industry leaders, setting benchmarks not just for environmental stewardship, but for holistic, responsible business success.

Shivaji Jadhav

Shivaji Dashrath JadhavSVP & Head, EHS & Sustainability. Shivaji Jadhav is responsible for driving EHS and sustain-ability functions across Hyderabad, Visakhapatnam and Bangalore, at Aragen. He has 25+ years of experience across pharmaceutical and chemical manufacturing industries, with expertise in EHS management, process safety management, regulatory compliance, emergency management and risk mitigation. Prior to joining Aragen, Shivaji worked with Atul Limited, TEVA API, Watson Pharma and Dr. Reddy's Laboratories.