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ABS Reform is missing link in Indiaâ??s plant-based innovation story

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In an exclusive AgroSpectrum interview, Sanjaya Mariwala, Executive Chairman and Managing Director of OmniActive Health Technologies, argues that Indiaâ??s Biodiversity Act is quietly evolving from a policing statute into a potential industrial policy lever for plant-based innovation. He credits the 2023 amendments for easing compliance, aligning approvals with innovation cycles, and legitimising cultivated crops and traditional knowledgeâ??but warns that fragmented state-level ABS practices still deter scale and global investment.

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Mariwala makes the case for a national ABS code, digital single-window compliance, and reward-linked reductions for companies investing in cultivation and conservation, shifting biodiversity from a cost centre to a competitive advantage. On R&D, he stresses that clarity on Digital Sequence Information, uniform research exemptions, and shared biofoundries are essential if India is to replicate its pharma success in botanicals, nutraceuticals, and functional ingredients. *His message is blunt: Without predictable regulation, traceable supply chains, and incentives for value addition, India risks remaining a raw-material supplier even as rivals like Brazil and Thailand race ahead in the global bioeconomy.*

Biodiversity Act as an Industrial Policy Tool

Can the Biodiversity Act evolve from a compliance framework into an enabling policy that accelerates Indiaâ??s plant-based sectorsâ??nutraceuticals, botanicals, plant proteins, phytopharma, and bio-based materials? What key amendments or guidelines would catalyse this shift?

It is already moving in this direction, but the process needs further refinement. The Biological Diversity (Amendment) Act, 2023, brought about three important structural changes.

First, it began with the removal of punitive measures and their replacement with financial penalties ranging from Rs 1 lakh to Rs 50 lakh. This change reshapes the act from a deterrence perspective to one of compliance.

Second, it introduced key exemptions for cultivated crops, for codified traditional knowledge, and for AYUSH practitioners. These exemptions are designed to encourage domestic innovation and legitimise traditional practices without administrative overreach.

Third, it aligned the Act with innovation cycles by requiring NBA approval before the grant of IPR, not before filing. This allows Indian entities to file patents without bureaucratic delays, while foreign applicants still require prior approval.

However, the real bottleneck is state-level variability. With 8,610 licensed herbal manufacturing units operating across India, differences in interpretation across State Biodiversity Boards (SBBs) create regulatory unpredictability, especially where ABS is determined case-by-case or increased for â??high economic valueâ? species.

To convert the Act into an industrial accelerator, India needs:

A national ABS code with fixed, uniform rates

A digital single-window platform (the proposed Biodiversity Compliance Exchange) to bring transparency, standard timelines, and predictable costs

A reward-linked model where companies investing in cultivation and conservation receive measurable ABS reductions

This is how the Act can shift from policing to enabling, but only if stakeholders demand a unified national ABS code, transparent compliance systems, and active reward mechanisms for conservation investments. It is time for industry, government, and researchers to work together and advocate for these changes.

De-risking R&D for Plant-Based Innovation

Indiaâ??s botanical R&D pipeline is modest compared to its biodiversity. What national policiesâ??DSI guidelines, standardised approvals, research exemptions, shared biofoundriesâ??could unlock world-scale innovation in plant-based actives and functional ingredients?

Three elements matter in R&D: access, clarity, and infrastructure.

The 2025 Biological Diversity Regulations recognise Digital Sequence Information (DSI) as a "biological resource", but importantly, they exempt academic research from benefit-sharing, ensuring fundamental science is not disrupted. This clarity is essential because genomic and metabolomic research are the backbone of new plant-derived actives.

The Act also provides research exemptions for non-commercial bio surveys and academic studies, but these must be made uniformly applicable across all states to avoid uncertainty for institutions and startups.

The next step is shared infrastructure. There is a need for bio-conservatories, seed banks, biosafety labs, shared bio foundries, and pilot-scale bioprocessing facilities. These are critical for SMEs, which often cannot afford large-scale fermentation units or botanical extraction facilities on their own.

Indiaâ??s pharmaceutical capabilities demonstrate what coordinated R&D ecosystems can achieve. India already produces one-third of the worldâ??s pills and over 65 per cent of global vaccines. A similar ecosystem for plant-based actives supported by predictable access, rapid approvals and shared facilities can unlock world-scale innovation.

Cultivation Over Extraction: A Policy Turning Point

India still depends heavily on wild-sourced plants. What policy leversâ??contract farming incentives, carbon-linked subsidies, insurance schemes, guaranteed buyback mechanismsâ??can accelerate the shift to regenerative, large-scale cultivation of medicinal, aromatic, and functional crops?

The Act now provides a strong policy foundation. Cultivated biological resources are exempt from ABS, which makes formal cultivation far more attractive than wild collection for industry players.

The next step is to incentivise cultivation through:

Contract farming for medicinal and aromatic plants

Guaranteed buyback arrangements to reduce farmer risk

Crop insurance schemes tailored to high-value species

Carbon-linked incentives, since sustainable cultivation can generate biodiversity and carbon credits that reduce financing costs

It all hinges upon the following completely transformative idea: The provision of a reduction in ABS in accordance with substantiated farming and ex-situ conservation. An enterprise that invests in farming threatened species under section 38 of the Act should be able to reduce its ABS burden. This also applies to any cultivated crop. Every project should be linked to development investment by every enterprise in contract cultivation. This will establish a positive feedback loop where investing in conservation makes economic sense rather than merely being a compliance activity.

We already have a proof of concept. The experience of the Kani tribeâ??where benefit-sharing for the Jeevani formulation ensured local protection of the resourceâ??shows that conservation thrives when incentives align with community and industry interests.

Moving cultivation to the centre is not only sound environmental policy but also essential for long-term supply security. Stakeholders must now push for targeted incentives, drive investment in regenerative practices, and ensure that policy reforms prioritise large-scale, sustainable cultivation as the future of India's plant-based industry.

ABS Designed for Scale, Not Stasis

Non-uniform ABS fees and multi-layer approvals discourage industry investment. Should India adopt a national ABS code with fixed rates and digital processing to make compliance predictable and attractive for plant-based companies?

The need for scale arises based on the predictability that comes with it. Currently, there are discrepancies in ABS evaluations across the states, leading to what can be perceived as â??regulatory arbitrageâ?• where companies can shift operations based on jurisdictional leniency or clarity.

The 2025 Regulations begin with the proper framework in terms of fixed slabs of ABS based on turnover (0.2 per cent to 0.6 per cent in the case of large assessees) and exemptions up to turnover of Rs 5 crore. Although such a framework works well, there needs to be uniformity nationwide.

It will remove any scope for subjective interpretation and ensure low-risk compliance by MSMEs. Otherwise, India will continue to demonstrate â??world-classâ?• intention but lackadaisical execution. It will continue to confuse the global fraternity as to whether it has the â??capabilityâ?• or â??systemsâ?• in place.

Global Competitiveness: India vs. Brazil, Vietnam, Thailand

Competitor nations are aggressively scaling plant-based bioindustries. What policy steps are essential for India to compete in high-growth segments like curcumin, ashwagandha, moringa, plant proteins, and natural coloursâ??beyond raw material exports?

Three areas require immediate attention.

First, cluster-based development:

One model that India can follow to reduce the issues related to domestic manufacture and distribution is the â??BCG modelâ?• in the Thai market, where there are clusters developed based on the region that specialises in a certain kind of crop or bioindustry. These clusters can include turmeric in Karnataka, ashwagandha in Rajasthan, or moringa in Tamil Nadu. The formation of these clusters requires research on the market potential of each product. This work must be undertaken jointly by the Ministry of AYUSH, the Ministry of Food Processing, and the Ministry of Commerce. Each cluster could have three to four crops and a primary processing industry.

Second, value-added exports:

It is important that India moves ahead in the global trade from raw botanical supplies to traceable, scientifically attested, and standardised ingredients. The Indian nutraceutical industry already employs over 3 million people and utilises close to a thousand botanical plant species, but most exports are in raw or less-processed form. To incentivise higher value addition, the ABS system should be structured so that basic commodity exporters pay the highest ABS, with the levy decreasing progressively as the level of value addition increases.

Third, global compliance readiness:

Import rules under the European Union require verification that plant-based goods are deforestation-free and geolocation-tagged to confirm their origin. If we want to encourage exports, we need to align our local rules to meet the needs of such regulations being formed across major markets. This responsibility again rests with the Ministry of Commerce. Our interests in such a case would be best served if FTAs incorporate provisions that allow negotiation of these regulatory obligations as part of the agreement.

The supply chains in India need traceability and GPS-tagged farm data, as well as sustainability certifications, in order to maintain competitiveness in exports. In other words, achieving these three changes will help India shift from being a large raw material provider to becoming an innovation hub in high-value plants.

Reimagining Community Participation in Value Creation

How can India move beyond transactional ABS payouts to truly participatory modelsâ??community-owned plantations, co-operative extraction units, shared IP rightsâ??that make local communities' economic partners in the rise of the plant-based bioeconomy?

Indiaâ??s biodiversity prosperity depends heavily on the communities that live closest to it. Instead of transactional ABS payments, participation should be embedded into value chains.

The next step is to incentivise cultivation through:

Community-owned plantations and cooperatives, especially for species that require careful stewardship

Co-managed extraction units, where communities run primary processing supported by industry partners

Shared IP rights, following global models where indigenous communities become co-owners in patents when traditional knowledge is involved

Community Protocols, enabling communities to set terms of access for biological resources and knowledge

Reverse ABS structure, which imposes higher rates on low value-added exports and lowered or no ABS on higher value exports, should be the regime to be established.

Building Trusted, Traceable, Export-Ready Value Chains

Global buyers demand traceability, residue-free cultivation, and proof of conservation outcomes. What regulatory upgradesâ??digital traceability mandates, bioresource certification, ESG-linked incentivesâ??are required for India

to secure premium export markets?

Traceability has emerged as the need of the hour. The Deforestation Regulation in the European Union makes it mandatory for importers to submit geolocation data regarding all farms in the supply chain, causing a shift in trade equations.

India needs three regulatory upgrades:

Digital traceability mandates using GPS-tagged farm plots, blockchain-based sourcing logs and integrated systems linked to APEDA export portals.

National bioresource certification standards are aligned with global due diligence requirements.

ESG-linked incentives reward residue-free cultivation and regenerative agriculture.

We already have a strong precedent: Indiaâ??s pharmaceutical export ecosystem meets stringent global standards. The same level of traceability and compliance needs to follow botanical, nutraceutical, and plant-based ingredients.

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