



SCIENCE AND TECHNOLOGY PULSE

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Editor's Note

Dear Readers,

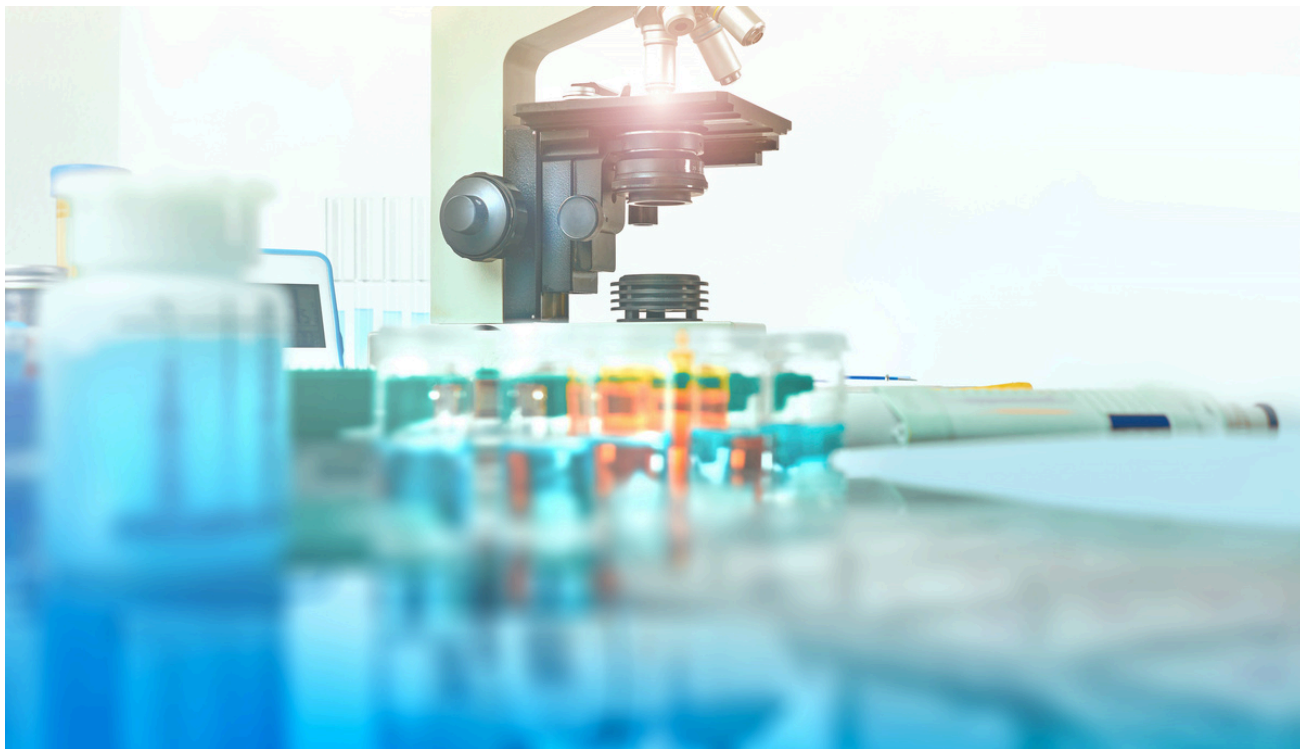
Welcome to the Fourth edition of our Science and Technology Newsletter, April 2026.

This edition highlights India's continued focus on strengthening pharmaceutical innovation, healthcare delivery and industrial growth through targeted policy reforms and global collaborations. Initiatives such as partnerships between NIPER and leading pharmaceutical companies, simplified compliance measures under the Jan Vishwas framework and policy support for Special Economic Zone manufacturing reflect efforts to enhance regulatory efficiency, build skilled capabilities and strengthen domestic manufacturing competitiveness.

At the same time, progress in emerging technologies, digital healthcare and sustainable agriculture reflects the growing alignment between research, policy and industry. Innovations such as neuromorphic sensors, advanced biosensing tools and AI-enabled drug discovery highlight the expanding use of cutting-edge technologies across healthcare and industrial systems. Advancements in biodiversity governance and milestones under India's Gaganyaan programme further underscore the role of science and technology in strengthening sustainability, resource management and space capabilities.

I invite readers to explore the updates, sectoral developments and upcoming global and Indian conferences featured in this edition, and to reflect on how these shifts may influence investment priorities, industrial competitiveness and India's evolving contribution to global innovation agendas.

*Warm regards,
Abhilasha Nayal*



NIPER–Roche Collaboration on Pharma Education and Research

Business Impact:

The collaboration will support the pharmaceutical, biotechnology and biopharma industries by developing a skilled workforce in regulatory sciences and advanced drug development. It will also benefit clinical research organisations, pharma training institutes and healthcare technology companies, as demand for specialised regulatory and innovation skills increases in India.

The National Institute of Pharmaceutical Education and Research (NIPER), Raebareli, signed a Memorandum of Understanding with Roche Pharma India in the presence of Manoj Joshi, Secretary, Department of Pharmaceuticals, to strengthen pharmaceutical education and industry-linked research in India. The collaboration aims to bridge the gap between academic learning and industry requirements by introducing certificate programmes in regulatory affairs for students and professionals. It will also include guest lectures and training sessions by industry experts on areas such as AI-driven pharmaceutical research, drug development and healthcare innovation. The initiative supports India's efforts to enhance capabilities in regulatory sciences, biologics and advanced pharmaceutical technologies, aligned with the government's Biopharma Shakti mission and the broader goal of transitioning from volume-based to value-driven pharmaceutical growth.

In this newsletter you can expect updates from:

Government Initiatives

Emerging Technologies

Health and Medicine

Environmental Science

Food and Agriculture

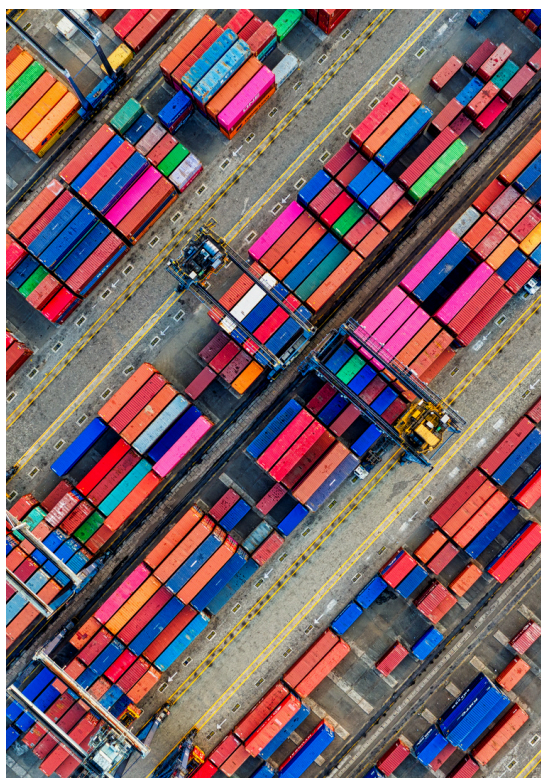
Space Exploration



Jan Vishwas Bill Simplifies Health Sector Compliance

Business Impact: It supports pharmaceutical, cosmetics, healthcare and food processing sectors by simplifying compliance processes and reducing regulatory risks.

The Jan Vishwas (Amendment of Provisions) Bill, 2026 has been passed by both Houses of Parliament to simplify compliance and promote ease of doing business across sectors, including healthcare. The Bill amends 784 provisions across 79 Central Acts administered by 23 Ministries, with 717 provisions decriminalised and 67 amended, while rationalising over 1,000 minor offences. In the health sector, amendments cover laws such as the Drugs and Cosmetics Act, 1940; Pharmacy Act, 1948; Food Safety and Standards Act, 2006; and Clinical Establishments Act, 2010. A key change replaces imprisonment for minor procedural violations with graded monetary penalties and introduces adjudication mechanisms to resolve minor compliance issues through civil penalties rather than court proceedings, reducing litigation burden and improving regulatory consistency.



SEZ Units Allowed Domestic Sales at Concessional Duty

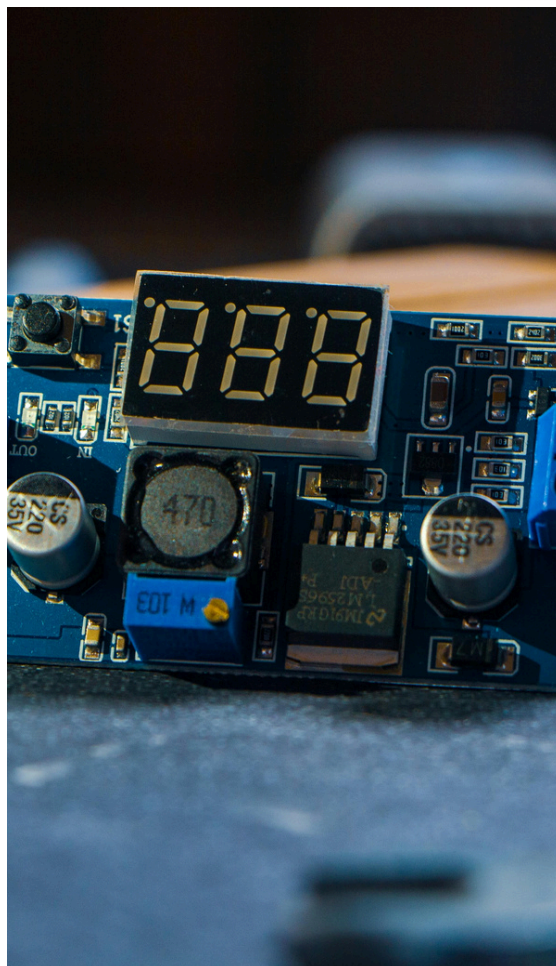
Business Impact: This measure will support the manufacturing and export-oriented industries, including electronics, pharmaceuticals, textiles and chemicals, by enabling firms to utilise unused production capacity and diversify revenue streams into the domestic market.

The Government of India has introduced a one-time relief measure allowing eligible Special Economic Zone (SEZ) manufacturing units to sell goods in the domestic market at reduced customs duty rates to address global trade disruptions. The policy will remain effective from 1 April 2026 to 31 March 2027, and applies to units that began production on or before 31 March 2025. Eligible products must achieve at least 20% value addition, while domestic sales are capped at 30% of the highest export value in the previous three financial years to maintain the export focus of SEZs. Concessional duty rates of around 5%–12.5% apply, with certain sensitive sectors excluded to protect domestic industries.

Humidity-Responsive Neuromorphic Sensor Inspired by Frogs

Business Impact: This innovation could benefit the electronics, semiconductor and IoT device manufacturing industries by enabling low-power smart sensors for environmental monitoring and edge computing. It may also support wearable healthcare devices, smart infrastructure and AI hardware sectors, where energy-efficient sensing technologies are increasingly required.

Researchers at the Jawaharlal Nehru Centre for Advanced Scientific Research (JNCASR), under the Department of Science and Technology, have developed a humidity-responsive neuromorphic sensor that mimics biological brain responses to environmental signals such as moisture. The device uses 1D supramolecular nanofibres on interdigitated gold electrodes to form an active sensing layer. Inspired by moisture-sensitive behaviour in cricket frogs, the sensor can detect, process and store humidity signals within a single device, reducing reliance on separate processing units and lowering energy consumption. Tests under controlled humidity conditions demonstrated synaptic behaviours such as facilitation, depression and metaplasticity, along with basic logic functions. The findings were published in the Journal of Materials Chemistry C.



Fluorescent Sensor Developed for Nicotine Detection

Business Impact: This development can support the diagnostics, biosensor, and medical device industries by enabling low-cost, rapid nicotine-screening tools. It may also benefit the public health testing, wearable health monitoring and biotechnology sectors, particularly companies developing portable biosensing and preventive health technologies.

Scientists from the Institute of Nano Science and Technology (INST), Mohali, under the Department of Science and Technology, have developed a fluorescent “turn-on” sensor capable of rapidly detecting nicotine and its metabolite cotinine in water-based solutions and living cells. The sensor uses iron metal-organic framework (Fe-III-MOF) nanospheres, synthesised via a solvothermal process, that trap nicotine molecules and emit enhanced blue fluorescence, enabling easy detection by imaging techniques. Conventional detection methods such as GC-MS, HPLC and immunoassays are costly and time-intensive, whereas this material is biocompatible, recyclable and suitable for rapid screening. The findings, published in the journal Nanoscale, demonstrate potential for non-invasive monitoring of tobacco exposure and biomarker detection.



Amazon Launches AI Platform for Drug Discovery

Business Impact: This development will support the pharmaceutical, biotechnology and contract research industries by reducing drug discovery timelines and lowering early-stage R&D costs. It will also benefit the bioinformatics, cloud computing, and AI-driven life sciences industries that are developing digital drug design solutions.

Amazon Web Services (AWS) has introduced Amazon Bio Discovery, an artificial intelligence platform designed to accelerate early-stage drug discovery by enabling scientists to run complex workflows without coding. The platform uses biological foundation models to generate and evaluate drug molecules, supported by an AI assistant that helps design experiments and interpret results. Shortlisted molecules can be sent to laboratory partners for testing, with results used to refine future research cycles. In one case, the platform generated nearly 300,000 antibody molecules, reducing timelines from months to a few weeks. Early users include organisations such as Bayer, the Broad Institute and Voyager Therapeutics, with many global pharmaceutical companies already using AWS infrastructure.



National Mission on Natural Farming Expansion

Business Impact: The initiative will support the bio-inputs, organic fertiliser and agri-biotechnology industries by increasing demand for natural farming inputs and advisory services. It will also support growth in agri-tech, soil health and farm advisory services.

The Government of India is implementing the National Mission on Natural Farming (NMNF) with an outlay of INR 2,481 crore to promote sustainable agriculture practices. As of 5 March 2026, the mission has formed 18,786 clusters covering 8.80 lakh hectares, enrolling 18.19 lakh farmers. Farmers receive INR 4,000 per acre per year for two years (up to 1 acre), with support from 33,676 Community Resource Persons and Bio-input Resource Centres that supply natural inputs. Research across 20 centres in 16 states shows improved soil organic carbon levels (0.90% to 1.15%) and yields around 5% higher than organic farming.

Separate Nutrient Labels Found Most Effective on Food Packs

Business Impact: This evidence may influence food labelling regulations and encourage reformulation of packaged food products. Supports demand for food testing, nutrition consulting and labelling compliance services.

A study published in The Lancet Public Health found that separate front-of-pack warning labels for nutrients such as saturated fat, sugar and sodium are most effective in influencing consumer choices. The research involved over 15,500 participants in an online randomised trial comparing multiple labelling formats. Results showed that multi “high-in” labels significantly reduced the selection of unhealthy foods compared to single or numerical labels. The study also found that qualitative warning labels were easier to understand and improved recall of nutrition information, supporting public health efforts to address obesity and diet-related diseases.



NIPER–Novartis Grant to Strengthen Pharma Research

Business Impact: It supports pharmaceutical and biotechnology R&D by strengthening industry–academia collaboration and accelerating drug development activities.

The National Institute of Pharmaceutical Education and Research (NIPER), Mohali, signed a grant agreement with Novartis Healthcare Private Limited (NHPL) to support faculty-led research under the Development Pioneer Grant for NIPERs, in the presence of the Secretary, Department of Pharmaceuticals. A total of 42 research proposals were submitted across seven NIPER institutes, with one proposal from NIPER Mohali selected through an independent evaluation process. The initiative aims to strengthen industry–academia collaboration, promote translational research and enhance India’s pharmaceutical innovation ecosystem.



Mobile App Launched to Strengthen Primary Healthcare Workflow

Business Impact: This initiative will support the expansion of digital health and healthcare IT solutions across primary healthcare networks. It may also benefit health data analytics and medical software providers, as demand increases for scalable digital healthcare solutions across India's primary healthcare network.

The Ministry of Health and Family Welfare has launched a clinical workflow mobile application developed by the Indian Council of Medical Research (ICMR) to support Community Health Officers at Sub-Centre Ayushman Arogya Mandirs (SC-AAMs). The app aligns with 12 Comprehensive Primary Health Care (CPHC) service packages and provides structured guidance for patient registration, diagnosis, referrals and follow-up care. It includes features such as electronic health records, teleconsultation support and colour-coded decision tools, enabling improved case management and timely referrals. The initiative aims to enhance service delivery and strengthen digital healthcare systems at the primary care level.



India Leads Globally in Biodiversity Compliance Certificates

Business Impact: This development strengthens regulatory clarity for biotechnology and natural resource-based industries. It may also benefit the nutraceutical, herbal medicine and biodiversity-based innovation sectors, ensuring regulated access to resources and clearer compliance frameworks for commercial use.

India has emerged as the global leader in issuing Internationally Recognised Certificates of Compliance (IRCCs) under the Nagoya Protocol on Access and Benefit-sharing (ABS), accounting for over 56% of global certificates. According to the ABS Clearing-House database, India has issued 3,561 IRCCs, the most of any country, out of 6,311 globally, ahead of countries such as France (964), Spain (320), and Argentina (257). Of the 142 registered countries, only 34 have issued IRCCs so far. The certificates confirm compliance with Prior Informed Consent and Mutually Agreed Terms, supporting regulated use of genetic resources under the Biological Diversity Act, 2002.



ISRO Completes Second Crew Module Air-Drop Test

Business Impact: *This milestone supports the aerospace manufacturing and space technology industries, particularly companies involved in parachute systems, avionics and recovery technologies. It may also benefit defence manufacturing, materials engineering, and private space-sector suppliers, as demand for components supporting India's human spaceflight programme increases.*

The Indian Space Research Organisation (ISRO) successfully conducted the Second Integrated Air Drop Test (IADT-02) for the Gaganyaan human spaceflight mission at the Satish Dhawan Space Centre, Sriharikota, on 10 April 2026. In this test, a simulated Crew Module weighing about 5.7 tonnes, equivalent to the module planned for the first uncrewed mission (G1), was lifted by an Indian Air Force Chinook helicopter to about 3 km altitude and released over a designated sea zone near the Sriharikota coast. During descent, ten parachutes of four different types deployed sequentially to reduce speed and enable safe splashdown, after which the module was successfully recovered with support from the Indian Navy. The test validated the parachute-based deceleration and recovery systems, marking a key step toward readiness for India's first human spaceflight mission.

UPCOMING NATIONAL EVENTS 20 APRIL – 20 MAY 2026

23 April 2026

EVENT: ICAR-IARI Industry Meet 2026

LOCATION: New Delhi

FOCUS/ THEME: Industry–research collaboration in agriculture, crop sciences and agri-innovation.

INDUSTRY RELEVANCE: Enables agri-technology firms, seed companies, and food value chain industries to collaborate with government research institutions and explore technology commercialisation opportunities.

20 April – 1 May
2026

EVENT: UN Permanent Forum on Indigenous Issues (UNPFII 2026)

LOCATION: New York, USA

FOCUS/ THEME: Ensuring Indigenous Peoples' health, including in the context of conflict.

INDUSTRY RELEVANCE: Supports industries working in biodiversity, traditional medicine, natural products, and sustainable land use by shaping global governance frameworks for indigenous knowledge systems.

6–7 May 2026

EVENT: UN Multi-Stakeholder Forum on Science, Technology and Innovation (STI Forum 2026)

LOCATION: New York, USA

FOCUS/ THEME: Science, technology and innovation for achieving Sustainable Development Goals (SDGs).

INDUSTRY RELEVANCE: Provides strategic direction for AI, biotechnology, digital innovation and climate technology sectors through global science-policy dialogue.

18–23 May 2026

EVENT: 79th World Health Assembly (WHA79)

LOCATION: Geneva, Switzerland

FOCUS/ THEME: Global health policy decision-making by WHO Member States

INDUSTRY RELEVANCE: Influences pharmaceutical regulation, digital health, vaccination programmes, and global health standards, impacting the healthcare and biotech industries.

VeK is a policy advisory and research firm, distinguished by data-driven approach to analyse policy and regulatory developments in India and globally.

For Further Information, please contact: Abhilasha Nayal, Senior Researcher at +91 9870143357 or Email at abhilasha@vekpolicy.com

www.vekpolicy.com

