DAILY CURRENT AFFAIRS

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Trade deal is a launchpad for growth, says British PM

India-U.K. Comprehensive Economic and Trade Agreement presents unparalleled opportunities, says Starmer as he begins two-day visit; he will hold wide-ranging talks with Narendra Modi today

The Hindu Bureau
NEW DELHI

The opportunities waiting to be seized under the India-U.K. Free Trade Agreement are "unparalleled", British Prime Minister Keir Starmer said in Mumbai on Wednesday as he kick-started his first visit to India after assuming charge.

"It's the biggest deal we've struck since we left the European Union," Mr. Starmer said. "I think it's also the biggest deal that India has ever struck, so it's hugely important."

Mr. Starmer, accompanied by a delegation of nearly 100 entrepreneurs, cultural representatives, and university Vice-Chancellors, arrived in Mumbai for a two-day visit to take advantage of the opportunities brought about by the India-U.K. Comprehensive Economic and Trade Agreement signed in July.

Boosting ties: British Prime Minister Keir Starmer talking to a delegation of leaders who joined him during his trip to India. AFP

"It's not just a piece of paper, it's a launchpad for growth. With India set to be the third biggest economy in the world by 2028, and trade with them about to become quicker and cheaper, the opportunities waiting to be seized are unparalleled," he said. He will meet Prime Minister Narendra Modi on Thursday. They will address the sixth edition of the Global Fintech Fest in Mumbai.

"Welcome Mr. Starmer on your historic first visit to India," Mr. Modi said on X. "Looking forward to our meeting tomorrow for advancing our shared vision of a stronger, mutually prosperous future."

"During the visit, on October 9 in Mumbai, the two Prime Ministers will take stock of progress in diverse aspects of the India-U.K. Comprehensive Strategic Partnership in line with 'Vision 2035', a focused and time bound 10-year road map of programmes and initiatives in key pillars of trade and investment, technology and innovation, defence and security, climate and energy, health, education and people to people relations," the External Affairs Ministry said.

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Scientists win Chemistry Nobel Prize for bridging metals and organics

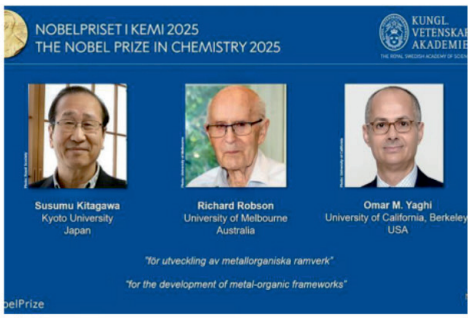
Jacob Koshy
NEW DELHI

An Australian, a Japanese and a Jordanian-American scientists were announced winners of the Nobel Prize in Chemistry for discovering and creating a class of materials, called metal-organic frameworks (MOF).

Metallic and organic substances are as far apart in the chemical world as Australia and the U.S. geographically and it was inconceivable that stable, useful products could be made out of materials formed by integrating them. But beginning Richard Robson's initial conception of them in the mid 1970s, sparked from a science project for his Melbourne University students; to Susumu Kitagawa's dogged determination, in Kyoto University, at creating porous molecules – despite knowing that they were "useless" – but tinkering with them until he created the right kind of structures that were useful enough to work as a filter whilst remaining flexible and pliant; to finally Omar Yaghi at the University of California, Berkley, making a variety of metal-organic frameworks, as he named them, that were capable of drawing water vapour out of desert air at night and releasing them as water in the day.

The three will equally share the prize of 11 million Swedish kroner, about ₹1 crore.

Following the laureates' groundbreaking discoveries, chemists have since built tens of thousands of different MOFs. Some of these may contribute to solving some of humankind's greatest challenges, with applications that include separating PFAS (a family of chemicals that are believed to be toxic) from water, breaking down traces of pharmaceuticals in the environment, capturing carbon dioxide or harvesting water from desert air, a press statement noted.



Protracted effort: From left, Susumu Kitagawa, Richard Robson and Omar Yaghi, who won the Nobel Prize in Chemistry. AP

Molecular kit

Researchers have developed a molecular kit with a wide range of different pieces that can be used to create new MOFs. These have different shapes and characters, providing incredible potential for the rational –or AI-based – design of MOFs for different purposes.

First of the block and inspired by a project to make wooden block representations of chemical bonds, Mr. Robson began by testing the inherent properties of atoms in a new way. He combined positively charged copper ions with a four-armed molecule; this had a chemical group that was attracted to copper ions at the end of each arm. When they were combined, they bonded to form a well-ordered, spacious crystal. It was like a diamond filled with innumerable cavities.

Mr. Robson immediately recognised the potential of his molecular construction, but it was unstable and collapsed easily. However, Mr. Kitagawa and Mr. Yaghi provided this building method with a firm foundation; between 1992 and 2003 they made, separately, a series of revolutionary discoveries.

Mr. Kitagawa showed that gases can flow in and out of the constructions and predicted that MOFs could be made flexible.

Mr. Yaghi created a very stable MOF and showed that it can be modified using rational design, giving it new and desirable properties.

Initially, it was challenging for the broader scientific community to appreciate MOF as they didn't seem to be much better than a class of materials called zeolites. But things changed when they succeeded in developing soft MOFs – a step up over zeolites that were hard.

Infinite boxes

The Chemistry Nobel laureates established a new grammar of matter

It would not be an overstatement to say that metal-organic frameworks (MOFs) have redefined what materials can do for society. These porous crystalline structures are built from metal ions coordinated to organic linker molecules and offer gigantic amounts of internal surface area. Their cavities can be tuned to trap greenhouse gases, harvest drinking water from air, and store hydrogen or methane as clean fuels. As industries confront climate change and scarce resources, MOFs exemplify chemistry's power to reimagine sustainability, atom by atom. The roots of this year's Chemistry Nobel Prize, awarded to the developers of MOFs, go back to the 1980s, when Richard Robson, then at the University of Melbourne, wondered whether molecular architectures could be designed rather than found. Inspired by a ball-and-stick model used for teaching, he combined copper ions with an organic molecule whose four ends bore nitrile groups. Contrary to expectations, the ingredients self-assembled into an ordered, diamond-like crystal loaded with empty cavities. Susumu Kitagawa, working in Japan, picked up on the same spirit and made a breakthrough in 1997 when he built a 3D framework of cobalt, nickel or zinc ions linked by bipyridine molecules. When drained of water, the framework remained intact, allowing the gaps between its atoms to hold and release gases as required. In 1998, he also proposed that MOFs could be made of soft solids that 'breathed' as other molecules moved in and out.

Meanwhile in the U.S., Omar Yaghi was dissatisfied with the trial-and-error of conventional reactions and pioneered reticular chemistry, with which he assembled predetermined building blocks into ordered networks. His first frameworks, reported in 1995, were robust two-dimensional nets. By 1999 he unveiled MOF-5, a zinc-based cubic lattice with extraordinary stability and surface area. A few grams contained the internal area of an entire football field. His approach allowed entire families of related MOFs to be designed systematically. Thus, Robson, Kitagawa and Yaghi established a new grammar of matter that allowed others to create thousands of MOFs, some of which moved from prototypes to industrial reactors and semiconductor manufacturing lines. The road ahead is even more promising but also exacting. Researchers are still working to make MOFs more durable in real-world conditions and cheaper to produce at scale. Integrating them into batteries and catalytic filters, for instance, requires engineering as finely tuned as their chemistry. For all these achievements, however, the vision honoured this year transcends any single material. By showing that chemistry can design empty space as precisely as solid matter, the laureates built room not only for molecules but for imagination itself.

Draft labour policy unites social security schemes

It aims at creating universal, portable social security accounts for all workers by 2030; it also seeks to raise women's labour participation to 35%, offer single-window digital compliance for MSMEs

The Hindu Bureau
NEW DELHI

Universal and portable social security is a major component of the draft National Labour and Employment Policy, which proposes to create a universal account by integrating the Employees Provident Fund Organisation, Employees State Insurance Corporation, Pradhan Mantri Jan Arogya Yojana, e-SHRAM, and State welfare Boards.

The draft policy, known as the Shram Shakti Niti, 2025, was released on Wednesday for public consultation.

The proposals include the implementation of the Occupational Safety and Health Code with risk-based inspections, gender-sensitive standards, and the convergence of various skills schemes. The draft policy presents a renewed vision for a fair, inclusive, and future-ready world of work aligned with the national aspiration of a developed India by 2047, Union Labour Minister Mansukh Mandaviya said.

"Rooted in India's civilisational ethos of *śrama dharma*, the dignity and moral value of work, the policy envisions a labour ecosystem that ensures protection, productivity, and participation for every worker. It seeks to create a balanced framework that upholds workers' welfare while enabling enterprises to grow and generate sustainable livelihoods," Mr. Mandaviya said.

Workforce reforms : The policy envisions a labour ecosystem that improves protection and productivity for every worker. FILE PHOTO

Policy outcomes

Expected outcomes of the policy include universal worker registration and social security portability, near-zero workplace fatalities, increased female labour-force participation, a sharp reduction in informal jobs through digital compliance, AI-driven labour-governance capacity in all States, the creation of millions of green and decent jobs, and a fully converged "One Nation Integrated Workforce" ecosystem. The last date to submit suggestions on the draft is October 27.

The draft policy seeks to increase women's participation in the labour force to 35% by 2030, and expand entrepreneurship and career guidance initiatives for youth. It also proposes a single-window for digital compliance, with self-certification and simplified returns for MSMEs. Promotion of green jobs, AI-enabled safety systems, just-transition pathways for workers, and a unified national labour data architecture ensuring inter-ministerial coherence and transparent monitoring are also part of the policy document.

Accountability plan

Policy implementation will proceed in three phases. Phase I (2025-27) focuses on institutional setup and social-security integration.

During Phase II (2027-30), the nationwide rollout of universal social security accounts, along with skill-credit systems, and district-level Employment Facilitation Cells. Phase III (beyond 2030) will bring in paperless governance, predictive analytics, and continuous policy renewal.

"Progress will be tracked through real-time dashboards, a Labour & Employment Policy Evaluation Index (LPEI) benchmarking States, and an Annual National Labour Report to Parliament," the document says.

The danger of an unchecked pre-crime framework

Faisal C.K
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Articles 22(3) - (7), which constitutionalised preventive detention, are the Bermuda Triangle in India's constitutional Atlantic where fundamental rights such as liberty, equality and due process vanish without a trace.

In June this year, while setting aside a preventive detention order under the Kerala Anti-Social Activities (Prevention) Act, 2007 (KAAPA) in *Dhanya M. vs State of Kerala* (2025 INSC 809), the Supreme Court of India underscored that the extraordinary power of preventive detention must be exercised sparingly and strictly in accordance with constitutional safeguards. Reaffirming the principle that individual liberty cannot be curtailed lightly, the Court highlighted the vital distinction between "public order" and "law and order" and clarified that preventive detention cannot be used as a substitute for criminal prosecution or as a means to circumvent bail orders.

Similarly, in *S.K. Nazneen vs State of Telangana* (2023), the Court held that preventive detention was not justified when the case pertained to a mere law and order issue rather than a public order concern.

However, such judicial assertions appear increasingly inconsistent with the operation of laws such as KAAPA, which envelop the entire Milky Way of "law and order" rather than confining themselves to the solar system of "public order", due to their broad definitions of "goonda" and "rowdy".

The judgment in *Dhanya M.* referenced *Rekha vs State of Tamil Nadu*, where the Court held that the power of preventive detention is an exception to Article 21 and must be treated as such – an exceptional measure to be employed only in rare circumstances. Likewise, in *Banka Sneha Sheela vs State of Telangana* (2021), the Court reiterated that any action involving preventive detention must be tested against the standards of Article 21. These rulings offer a faint glimmer of light at the end of a tunnel, yet executive overreach continues unchecked in the domain of preventive detention.

A constitutional abyss

Preventive detention in India has a long lineage, dating back to the Bengal Regulations of 1818, devised by the British to maintain colonial control. The Government of India Act, 1935, empowered provincial legislatures to enact preventive detention laws in the interest of "public order". Although Britain employed such measures only during wartime, independent India inherited and retained this colonial relic with astonishing zeal.

In *The Indian Constitution: A Conversation with Power*, Gautam Bhatia says: "Occupying an ambiguous zone between the (formally) extraordinary and the (practically) ordinary, preventive detention was thoroughly embedded into the Indian legal landscape at the time of Independence: so much so that, facing a situation of communal tensions, communist uprisings, and the Partition, it turned into a public order tool under the newly independent federal and provincial governments."

Preventive detention was fiercely debated in the Constituent Assembly. The prevailing communal unrest lent it some legitimacy. Gautam Bhatia astutely observes that "Article 22 was framed as a Janus-faced provision – incorporating elements of due process, and then excluding them from the scope of preventive detention laws."

The case of *A.K. Gopalan vs State of Madras* (1950) became a litmus test for the nascent republic's commitment to the constitutional citizen's right to life and liberty. Gopalan, a communist leader, was detained under a colonial law, later revalidated by the Preventive Detention Act, 1950. He challenged his detention under Article 21, citing the absence of "procedure established by law", and under Article 19, alleging a violation of his freedoms of movement and speech. The Court, however, rejected his claims, holding that preventive detention could only be tested on the basis of Articles 22(3)-(7).

Thus, Article 22 became an "authoritarian penal colony" or a "Devil's Island" in India's constitutional geography – isolated from the ocean of fundamental rights. Parliament was empowered to enact laws that could even dispense with the advisory board review required under Article 22(4), by merely invoking special "circumstances" or "classes of persons". Somnath Lahiri rightly warned that such provisions rendered the Indian Constitution a "Police-Constable Constitution."

When the golden triangle eclipses

Subsequent judgments fortified this constitutional Devil's Island. The top court ruled that even when the grounds of detention directly implicated a fundamental right, it was sufficient for authorities to comply with the procedures in Article 22 – there was no requirement to meet the substantive restrictions applicable to fundamental rights. This position endured despite the Court's revolutionary judgment in *Maneka Gandhi vs Union of India* (1978), which held that "procedure established by law" must mean fair, just and reasonable due process, and that fundamental rights must be read as a unified whole.

Yet, in *A.K. Roy vs Union of India* (1982), the Court fell back on pre-*Maneka* reasoning to assert that preventive detention laws could not be challenged for violating Articles 14, 19, or even the enriched interpretation of Article 21. The Court also refused to subject such laws to the doctrine of proportionality, which had become a central tenet of constitutional review elsewhere in the rights framework. Thus, a person ensnared in this Bermuda Triangle of Article 22 is effectively cut off from the Golden Triangle of Articles 14, 19, and 21, and is plunged into legal darkness.

Granville Austin, in *Working a Democratic Constitution: A History of the Indian Experience* (1999), prophetically observed: "Preventive detention had had seductive charms for the executive branch, as the former Chief Justices' letter [to the President and Prime Minister in 1966] had pointed out. Although perhaps a 'necessary evil' in some situations – such as witness intimidation – it easily became a crutch whose overuse produced not only injustice to individuals but also atrophy in police investigatory and prosecutorial skills. These hazards would only intensify over time."

Dilemma of the pre-crime

Steven Spielberg's *Minority Report* (2002) – based on Philip K. Dick's 1956 short story – powerfully dramatises the jurisprudential dilemmas of preventive detention, particularly in liberal democracies. In the film, a special police unit called PreCrime uses precognitive humans (Precogs) and advanced technology to prevent murders before they occur. The protagonist is apprehended for a murder he has not yet committed. He is presumed guilty, denied a fair trial, and offered no opportunity to be heard.

This mirrors the legal logic of preventive detention, which bypasses fundamental principles such as *audi alteram partem*, the presumption of innocence and judicial scrutiny. Although science fiction, the film offers a striking metaphor for the ethical and legal perils that accompany the logic of preventive incarceration.

In the film, alternative futures – or "minority reports" – reveal that the Precogs are not infallible. This echoes the inherent uncertainty in predicting human behaviour, which is the Achilles' heel of preventive detention regimes. In India, courts have repeatedly acknowledged that the "subjective satisfaction" of the detaining authority is susceptible to misuse, especially in cases that involve dissent, protest or political opposition.

In this metaphorical ecosystem, the sponsoring authority, detaining authority, and even the advisory board function as India's equivalent of the Precogs – issuing decisions based on perceptions and probabilities rather than proof and procedure. With weak procedural safeguards and limited judicial review, preventive detention in India presents the very dangers that Minority Report sought to warn us against.

In light of the top court's recent observations in *Dhanya M.*, there is an urgent need to re-examine the constitutional propriety of *A.K. Gopalan* and *A.K. Roy*, and to reform the preventive detention regime. At the very least, such extraordinary powers should be confined strictly to combating grave threats such as terrorism and transnational drug cartels, and not used as a routine administrative tool. Unless checked, India's pre-crime framework will continue to undermine the very constitutional values that it purports to protect.

The preventive detention regime needs reform; it should not be used as a routine administrative tool

The views expressed are personal

India to boost solar pumps scheme in Africa, island nations

The Hindu Bureau
NEW DELHI

The Union government is looking to showcase the PM-KUSUM (Pradhan Mantri Kisan Urja Suraksha evam Utthan Mahabhiyan) programme to several African countries and island nations, Union Minister for Renewable Energy (MNRE) Pralhad Joshi said on Wednesday.

"We are looking to showcase both the PM-KUSUM and the PM Surya Ghar (for rooftop solar installations) programme in countries which have problems with connectivity. We are doing this in Africa and island countries through the ISA (International Solar Alliance) platform," Mr. Joshi said at a curtain-raiser event for the ISA's eighth General Assembly, scheduled later this month. The ₹34,000-crore PM-KUSUM programme is meant to boost solar energy infrastructure in agriculture by setting up 100 GW of solar power plants in farmer-owned land. Launched in 2019, it was to have added a solar capacity of 308 GW by 2022, but has missed targets. The Centre then set a new target, of 348 GW with a deadline of March 2026.

As of September 30, only one part of the scheme, where 17.5 lakh standalone solar pumps were to be installed has made notable progress. About 70% of the pumps have been installed. On the other hand, only 6% of decentralised grid-connected renewable energy power plants, and 16%-25% of grid-connected solar pumps have been installed.

India's invasive species present a dilemma: document or conserve

Invasive alien species were introduced as ornamental fish and decorative shrubs, or as a solution to a problem, such as revegetating land; eventually they took over and displaced much of the local biodiversity, even rendering some native species locally or globally extinct, and destroyed habitats

T.V. Padma

Conservation scientists are sounding warning bells over "stealth invader" species that they say are destroying local biodiversity and changing landscapes.

This has in turn posed a chicken-and-egg dilemma for researchers: should they wait to document the effects of all invasive alien species in India and then prepare a conservation plan or should they conduct the exercises in parallel?

Invasive alien species are non-native species that have been introduced into a landscape by accident; as exotic ornamental fishes and decorated shrubs; or as a solution to a problem such as revegetating arid land. Soon these species take over a region and displace much of the local biodiversity, even rendering some native species locally or globally extinct and destroying habitats.

Invasive alien species have received more research and policy attention of late due to the economic and non-economic losses they cause. At present, some 37,000 established alien species have been introduced by human activities worldwide and every year there are 200 more, K.V. Sankaran, former director of Kerala Forest Research Institute, Thrissur, said. Of these, around 3,500 alien species (or 10%) have been found to have negative consequences for nature and people, Dr. Sankaran had told a forum of invasive alien species biologists in Bhopal in February.

India has an estimated 139 invasive alien species, mostly insect pests of crops, according to Ankila Hiremath at the Ashoka Trust for Research in Ecology and the Environment, Bengaluru. Others indirectly damage crops due to their effects on native insects. For example the invasive yellow crazy ant (*Anoplolepis gracilipes*) reduces the numbers of other ants that help keep pests in check.

Soil and water

Dr. Hiremath cited the example of the fast-growing weed *Lantana camara*. Introduced as a colourful shrub in the British colonial period, today it's in the way of efforts to conserve elephants and other large herbivores. The plant thrives in a range of soils from alkaline to acidic, and fertile to infertile, and is unpalatable for large herbivores and makes their habitat harder to navigate. The animals adapt by switching to cash crops, pushing them closer to human settlements, and increasing human-animal conflict.

Invasive plants also degrade natural wild habitats, endangering predator-prey relationships and jeopardising conservation efforts, Achyut Banerjee, assistant professor at the Azim Premji University in Bhopal, said.

Similarly, *Prosopis juliflora* is a tree originally introduced to India from South America and the Caribbean in the 19th century. In the 1960s and 1970s, the Gujarat Forest Department brought it to the Banni grassland in the Kutch region to combat soil salinisation and boost green cover. Now known locally as 'gando bawar', or the mad tree, this invasive species covers 50-60% of the original grassland area. *Prosopis* is very thirsty and guzzles water from surface soil, thus competing with grasses and native trees such as *Acacia*, Dr. Hiremath said.

The water hyacinth is among the world's worst invasive species and looms everywhere, from paddy fields to lakes that host migratory birds in winter, and even in the Kaziranga National Park in Assam. THULASI KAKKAT

This has led to more salt-water intrusion from the nearby coast rather than less – and has stressed the local wildlife, frustrated access to grazing resources, and has broken down traditional pastoralist-farmer networks.

Aquatic ecosystems are at risk as well. Dominant aquatic weed species include the water hyacinth (*Pontederia crassipes*), alligator weed (*Alternanthera philoxeroides*), duck weed (*Lemnoideae species*), and water lettuce (*Pistia stratiotes*). Water hyacinth is listed among the 10 worst invasives and looms everywhere, from paddy fields to lakes that host migratory birds in winter as well as in the Kaziranga National Park in Assam.

"Alien species are a major threat for 1,070 species of threatened freshwater fishes," Rajeev Raghavan, scientist at the Kerala University of Fisheries and Ocean Studies, Kochi, said.

India alone has 626 alien aquatic species, mostly introduced via the aquarium trade, aquaculture, and for mosquito control and sport fishing, according to Raghavan. Alien fish are now found across India, from the Dal Lake in Kashmir and the rivers and lakes of Manipur lakes to water bodies in Telangana and Kerala.

Poor documentation

A major problem scientists grapple with is the absence of extensive documentation. Unlike a few invasives, such as *Parthenium*, *Lantana*, and *Prosopis*, most of them in India have no recorded invasion histories, invaded regions or extent of consequences, said Alok Bang, assistant professor at Azim Premji University.

Freshwater invasion biology as a discipline is also "still in its infancy", according to Raghavan. There is a lack of comprehensive studies to understand micro-level distribution of alien species, their potential interactions with native species, and their impacts at the species and ecosystem levels.

> Conservation of a species might be understood differently by different stakeholders, so scientifically, we must define what we mean by conservation and impacts
>
> ALOK BANG
> AZIM PREMJI UNIVERSITY

"Conservation of a species might be understood differently by different stakeholders, so scientifically, we must define what we mean by conservation and impacts," and understand their multiple impacts, Dr. Bang said.

For example, at the species level, they affect native inhabitants' ability to survive and reproduce. At the population level, they affect the population size and genetic diversity. Species could become locally extinct and/or have reduced ranges or communities with multiple species could undergo changes in their composition and functions.

Invasive plants can also change the soil's porosity and compactness; the acidity and turbidity of water; and the availability of light (e.g. by preventing light from penetrating to the forest floor or sea floor).

At the ecosystem-level, processes like food webs, primary productivity, nutrient cycling, and energy transfers could change – or an entire existing ecosystem could transform into a new one.

Document or conserve?

Conservation researchers, practitioners, and policymakers in India thus face a dilemma. As Dr. Bang put it, should they wait to document the effects of all these species to prepare a conservation plan, or should they document and conserve in parallel?

Waiting to document all "would be unwise because there is no end to doing site-specific documentation, and we may not have the resources to do these studies."

It would be wiser to simultaneously conduct more impact studies in India and prepare conservation plans based on the knowledge of their ecological and socio-economic consequences in other countries, Dr. Bang added.

He recommended developing standardised quantitative methods to map the cumulative effects of invasive alien species on ecosystems as well as studies on impact assessment and eradication efforts.

"This approach can help identify highly impactful invasive alien species and hotspots of highly [affected] areas and prioritise sites, pathways, and species for management actions," Dr. Bang, who is working on such a framework, added.

According to him, scientists must also step out of silos and communicate and consult with diverse stakeholders that are interested in and affected by biological invasions while designing potential future prevention, control, and eradication.

He also said citizen science efforts could help create atlases of invasive species distribution.

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