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GS-02 INTERNATIONAL RELATIONS

India's test in 2026 will be to remain, in a world of fissures, a bridge



THAROORTHINK
BY SHASHI THAROOR

AS THE curtain rises on 2026, the global landscape resembles less a cohesive portrait gallery of national foreign policies and more a jagged mosaic of competing interests protruding into one another. The stage reveals the world at an inflection point: Geopolitical turbulence, AI- and tariff-driven economic uncertainty, and climate urgency are all reshaping the global order. For New Delhi, these developments are both challenges and opportunities to assert its role and promote its interests in a multipolar world.

For India, this year has been an object lesson in the dextrous statecraft required to manage an era of turbulence. We find ourselves in an era defined by maximal interdependence and minimal trust — a world where cherished partnerships have turned transactional, strategic assumptions suddenly have asterisks attached and economic ties are a new source of leverage and coercion. From the vantage point of New Delhi, 2025 was the year India truly tested the resilience of its "multi-alignment" strategy, proving that a nation can indeed be a "friend to all" while remaining beholden to none.

The defining geopolitical shock of the year arrived not from a traditional battlefield, but through the silent tightening of supply chains and the collapse of markets. When China throttled the export of critical rare earth minerals in April, the ripple ef-

fects threatened the very heart of India's "green transition" and its burgeoning electric vehicle industry; and when President Donald Trump imposed 50 per cent tariffs on India's exports, the bottom fell out of the US market for most of India's labour-intensive industries. This was "weaponised interdependence" in its purest form, and trust was an evident casualty.

Yet, India's response signalled a new confidence: Redoubling negotiations for free trade agreements with an impressive variety of partners, from the UK to New Zealand (and taking in the European Union and Oman in between), diversifying markets and extending support to exporters. By fast-tracking the National Critical Mineral Mission and deepening partnerships with the "Mineral Security Partnership" (MSP) alongside the US and Australia, New Delhi demonstrated that strategic autonomy in 2025 is synonymous with supply-chain resilience.

On the economic front, the year was a study in contrasts. While the return of protectionist rhetoric and negative tariff surprises from Washington created significant pressure on the rupee, India's domestic fundamentals remained remarkably buoyant. India's relatively stable fiscal trajectory stands out, though the much weaker rupee could lead to inflation from energy imports. The enactment of the four long-awaited labour codes in November, and the potentially transformative SHANTI Act for nuclear energy private investment

(though with worrying liability implications for the Indian taxpayer) the following month, the government underscored that it's no longer waiting for global tides to lift our boat; it's building a more nimble, "fortress-like" economy capable of withstanding external shocks. Even as the IMF adjusted the timeline for the

\$5-trillion milestone to 2028-29, India's position as the world's fourth-largest economy — nudging past Japan this year — is a testament to a "golden period" of structural reform. We cannot be complacent amidst global turbulence, but we don't need to be "tariffed" either.

India's diplomatic calendar in 2025 further illustrated the art of the adept diplomatic embrace. Geopolitical instability underscored the fragility of the international system and highlighted the importance of multi-alignment. New Delhi has deepened ties with the Global South while balancing relations with Washington, Moscow, and Beijing. The visit of the Russian President to New Delhi, occurring despite intense Western scrutiny, was a bold assertion of sovereign autonomy. It served as a reminder that India refuses to be a "spoke" in anyone else's wheel. Simultaneously, the 15th India-Japan Annual Summit in August and the launch of the Africa-India Key Maritime Engagement (AIKEYME) naval exercise signalled India's intent to lead as a "vishwa bandhu".

By positioning itself as the voice of the Global South at COP 30 in Brazil, India championed equitable climate action, demanding that developed nations move beyond targets toward the actual delivery of predictable support. India's leadership in the International Solar Alliance gained traction, as global demand for clean energy surged. Yet, India continues a tightrope

walk: Coal dependency persists, even as solar and wind investments expand, reflecting the tension between growth and sustainability. The world looks to India not just as a participant but as a leader in shaping a green future.

However, the most profound challenge of 2025 for many developing countries remained the Digital Iron Curtain. As global giants dominate the World Wide

Web and the internet splinters into sovereign fragments, India has begun to pioneer a unique "tech-diplomacy" footprint. By exporting the "India Stack" and linking the UPI payment network with partners from the UAE to Nepal, New Delhi is offering a democratic, transparent alternative to the opaque digital architectures of its rivals. In this low-trust environment, India has realised that providing public goods to the world is the most effective way to build the trust that traditional geopolitics currently lacks.

Technology has been a defining force of 2025, as AI accelerated its impact on labour markets and energy systems. India, with its vast IT workforce, is both vulnerable and poised to capitalise. Automation risks displacing millions of low-skilled jobs, yet our IT sector and digital public infrastructure position us to lead in AI innovation. India's push into AI innovation hubs and digital public infrastructure offers a pathway to global leadership. At home, we must invest in reskilling, education, and inclusive digital ecosystems. The challenge lies in ensuring inclusive growth, preventing a widening gap between urban tech elites and the rural poor.

As we look towards 2026, the phenomenon of interdependence without trust continues. India has shown that the path forward is not to retreat from the world, but to engage with a clear vision that prioritises national interest without abandoning global responsibility. The task is not simple: To navigate these inflection points with prudence, ambition, and inclusivity. By choosing multi-alignment over binary allegiances, India has ensured that in a fractured world, it remains the most stable bridge across the fissures.

The writer is Member of Parliament for Thiruvananthapuram, Lok Sabha and Chairman, Parliamentary Standing Committee on External Affairs

From the vantage point of New Delhi, 2025 was the year India truly tested the resilience of its 'multi-alignment' strategy, proving that a nation can indeed be a 'friend to all' while remaining beholden to none

GS-02 INTERNATIONAL RELATIONS

Tariffs are gone. Now, let's build on India-Australia pact



PHILIP
GREEN

As of today, January 1, 2026, no Indian goods face any tariff entering Australia. None. Zilch, nada, zippo across the board. No asterisk. No hash. No fine print.

Three years after the Australia-India Economic Cooperation and Trade Agreement (ECTA) came into force, Australia has eliminated every last tariff on Indian exports. That's completely free access to Australia's nearly \$2-trillion economy. And in return, many Australian goods now enter India under reduced or zero duties.

That's good for both countries. Driven by ECTA, trade between Australia and India has crossed 50 billion Australian dollars, or Rs 3 lakh crore, for the first time. Over the past five years, our two-way goods trade has doubled. And Australian commodity exports to India have grown strongly, fuelling "Make in India".

Meanwhile, India's exports to Australia have expanded much faster than to the rest of the world. Consider this: Over the last five years, India's global goods exports have grown 40 per cent. Not bad, right? Yes, but over the same period, India's goods exports to Australia were up 200 per cent. So, India is benefiting from trade with Australia five times faster than it is from the rest of the world. Ripper.

And these aren't just numbers. They mean economic activity — and jobs for Indians and Australians. One in four jobs in Australia is linked to trade, and with billions in Australian exports now going to India each year, I estimate around 200,000 jobs in my country are tied to trade with India.

In this country, Minister of Commerce and Industry Piyush Goyal has said ECTA will create 1 million jobs. And with the growth we've seen, I'd be surprised if we hadn't hit that number already.

This isn't unexpected. Our economies are a natural fit. They click. Australia has what India needs: The critical minerals, rare earths and skilling expertise that will supersize Indian manufacturing. And India has what Australia

needs: Quality manufactures and bonza agriculture products that suit the tastes of modern Australia.

You can see that complementarity when walking the streets of Australian cities. You will see Mahindra selling cars in showrooms. You will see supermarkets stocking produce from Indian farms. And you will see Indian-made garments for sale at major retailers. These products aren't just consumed by our Indian diaspora, now more than 1 million strong. They are enjoyed by Australians at large.

This success matters even more today. As global trade becomes unpredictable, Australia remains a reliable and committed partner for India. Three days ago, Minister Goyal said that India's relationship with Australia anchors India's economic engagement in the Indo-Pacific. As he put it, "India and Australia are building a future of shared prosperity and trusted trade." I couldn't agree more.

That's why Australia and India want to go farther. We're working to upgrade ECTA into a Comprehensive Economic Cooperation Agreement, or CECA. This can strengthen trade and investment ties across goods and services, and support new critical minerals supply chains. In November, Goyal and Australia's Minister Farrell reaffirmed their commitment to conclude CECA as soon as possible.

And that's not all: Last year, my Prime Minister released *A New Roadmap for Australia's Economic Engagement with India*, which details how Australia can contribute to and benefit from India's economic rise.

Looking back, it's clear ECTA has given Australia and India an excellent start — and that we have a lot more to do together. I can be frank with you: Over the years, trade with Australia has helped power some of the Indo-Pacific's biggest economies to prosperity. Australia can help India do the same, to the benefit of both our great nations.

That's fair dinkum!

The writer is Australia's High Commissioner to India

Over the years, trade with Australia has helped power some of the Indo-Pacific's biggest economies to prosperity. Australia can help India do the same

GS-02 – FISCAL FEDERALISM

GS-03 – ISSUES RELATED TO TAXATION

GST cut impact: Fiscal deficit widens on lagging tax collections

Siddharth Upasani
New Delhi, December 31

THE INDIAN government's fiscal deficit — the excess of its expenditure over revenue — widened sharply in November as the impact of the Goods and Services Tax (GST) cuts took their toll. Data released on Wednesday by the Controller General of Accounts (CGA) showed the fiscal deficit for the first eight months of 2025-26 stood at 62.3 per cent of the full-year target, almost 10 percentage points higher than a year ago.

India is targeting a fiscal deficit of Rs 15.69 lakh crore, or 4.4 per cent of GDP, for the current

fiscal. In April-October 2025, the government's fiscal deficit stood at 52.6 per cent of the full-year target, around 6 percentage points higher than the figure for the first seven months of 2024-25. According to Madan Sabnavis, Bank of Baroda's Chief Economist, the rise in the fiscal deficit is a sign that while expenditure has been in line with last year, "revenue collection has lagged".

While total expenditure in November rose 12 per cent year-on-year to take the total for the first eight months of 2025-26 to Rs 29.26 lakh crore — or 7 per cent higher from last year — total revenue was 13 per cent lower in November and just 3 per cent

The government's total expenditure rose 12% YoY in November and 7% in April-November, while total revenue was 13% lower in November and just 3% higher cumulatively

higher cumulatively. As per the Union Budget for 2025-26, the Centre's spending estimate for the year is Rs 50.65 lakh crore.

"The issue has been more on the tax front where tax revenue has been lower at 49 per cent of budgeted amount compared with 56 per cent last year. The impact of GST is hence visible here. There would be some reversal especially on the direct

taxation front in December when advance tax payments were made especially by corporates. The lower GST collections is also getting reflected in the monthly data released on the tax," Sabnavis noted.

The impact of the sweeping GST rate cuts that came into effect on September 22 has been visible in the monthly indirect tax data, too. In November —

which is reflective of goods and services sold in October — GST collections amounted to Rs 1.7 lakh crore, largely unchanged from November 2024's Rs 1.69 lakh crore. Including compensation cess, which was earlier counted as part of the gross GST mop-up, collections in November were down 4 per cent at Rs 1.75 lakh crore. GST data for December is scheduled to be released on Thursday.

The Centre's net tax revenue — which is gross tax collections after adjusting for refunds and transfers to states — was down 14 per cent in November and 3 per cent for April-November. The Budget estimated a 14 per cent

growth in net tax revenue from 2024-25 to Rs 28.37 lakh crore. On the whole, the Centre's total receipts, excluding borrowing, have been kept afloat by non-tax revenue, which is up 21 per cent, largely due to the Reserve Bank of India transferring a record dividend of Rs 2.69 lakh crore to the central government in May 2025. For April-November, non-tax revenues stand at Rs 5.16 lakh crore, not far from the full-year target of Rs 5.83 lakh crore.

On the expenditure front, total spending was up 12 per cent in November and 7 per cent in April-November.

FULL REPORT ON
WWW.INDIANEXPRESS.COM

SCIENCE AND TECHNOLOGY
RELEVANT FOR PRELIMS

Sex systems boost mitochondrial evolution in many kinds of insects

The results of a new study show how the way a species produces its males and females can shape the path of mitochondrial evolution, revealing an unexpected connection between reproductive biology and diversity; the implications extend to how experts keep track of insect biodiversity

D.P. Kasbekar

Researchers from the University of Guelph in Canada have reported an astonishing discovery: that the number of chromosome sets in their bodies' cells seems to be linked to the rate at which the species' mitochondrial genome evolves. This is unusual because mitochondrial DNA sits in a separate genome from the chromosomes in the nucleus, and its evolution rate is usually linked to factors like mutation rate, metabolism, and population size – rather than the chromosomes.

Evolutionary biologists had not anticipated such a connection, which could have important implications for our understanding of how fast insects' DNA changes and how we track biodiversity.

The team's findings were published in Proceedings of the Royal Society B on November 26.

Mitochondrial DNA

Insects use different ways to produce males and females. Ants, bees, and wasps make females from eggs fertilized by sperm, while the unfertilized eggs develop into males. So females have two sets of chromosomes in their genome, one from the egg and the other from the sperm, and are said to be diploid. Males have only one set of chromosomes and are said to be haploid. This type of sex determination is called haplo-diploid (HD).

On the other hand, in the diplo-diploid (DD) system, both males and females transmit one chromosome of each pair to their sperm and eggs. The males and females instead differ by which sex chromosome they have.

Mitochondria are a cell's powerhouses; they produce most of its adenosine triphosphate (ATP), the compound that serves as the energy source for all cellular functions. Acorns ago, some single-celled ancestor of earthlife engulfed a bacterium that then evolved to become mitochondria. Since then, many of this bacterium's genes were transferred to the host cell's nucleus, leaving behind a minuscule ramp. That's the mitochondrial genome, or mitogenome. The mitogenome is five-million-times smaller than our nuclear DNA. It encodes only 12 mitochondrial proteins; the remainder are encoded by nuclear DNA.

Males don't transmit their mitochondria to their progeny; only females do, via the egg.

How then could male haploidy influence the rate of evolution in a maternally inherited genome?

Scientists are aware of around one million insect species, which they've grouped into 29 groups called orders. Four of the better known orders are Coleoptera (beetles), Diptera (flies and mosquitoes), Hemiptera (true bugs), and Hymenoptera (ants, bees, and wasps). These orders are extraordinarily species-rich. Others include Thysanoptera (small slender insects), Psocoda (lice), and Lepidoptera (moths and butterflies).

For the new study, the researchers surveyed 86,000 insect species from 783 families in 26 orders. Of them, 131 families were HD and 652 were DD.

The Hymenoptera and Thysanoptera orders were uniformly HD. Coleoptera, Diptera, Hemiptera, and Psocoda



Ants, bees, and wasps make females from eggs fertilized by sperm while the unfertilized eggs develop into males. Representative image. DAVID CLODE/UNSPASH

included both HD and DD families and tribes. Lepidoptera and the remaining orders were uniformly DD.

The COI gene

To test for such differences, the team turned to one of mitochondria's key workhorse proteins, cytochrome c oxidase subunit I, or COI.

The corresponding COI gene is located in the mitogenome. The researchers took a closer look at a segment of the gene, which gives cells the recipe for a particular stretch of the COI protein.

For each of the 783 insect families, the team built a "consensus" DNA sequence for this region by combining data from at least 100 species in that family. Then they translated each family's consensus DNA into a consensus amino acid sequence. They also made a similar consensus for Entognatha, the sister group to insects, to act as a close non-insect comparison group.

They found something striking. Compared to this out-group, insect species with HD sex systems had about 1.7-times more changes in the COI protein than species with the more common DD system. HD species also showed many more small insertions and deletions of amino acids in this region.

Simply speaking, the COI gene seemed to have evolved much faster in HD species than in DD species, as if their mitochondrial DNA had been running on a different, faster evolutionary track.

The results show how the way a species

Insect species with HD sex systems had about 1.7-times more changes in the COI protein than species with the more common DD system. HD species also showed many more small insertions and deletions of amino acids in this region

produces its males and females can shape the path of mitochondrial evolution, revealing a connection between reproductive biology and diversity.

"Insects quietly keep the planet running, their numbers are under pressure, and our study shows that the way they produce males and females can influence how fast their DNA changes," Avin Pakrashi, the study's first author, a postdoctoral fellow at the Centre for Biodiversity Genomics at the University of Guelph at the time of the study, said.

The implications extend to how experts keep track of insect biodiversity.

"If certain insect groups (like HD species) accumulate mutations in their mitochondrial DNA more quickly, their COI barcodes may change at a different pace than others," Dr. Pakrashi, now with the Zoological Survey of India, added. "So some species might look more genetically distinct than they really are or cause closely related species to blur together, affecting identification accuracy."

In HD species, males carry only one copy of each nuclear gene. Because there

is no second copy to mask changes, any new mutation in these genes has an immediate effect on the body.

Making sense

Since changes in the nuclear genome show their effects right away in HD males, it pushes mitochondrial genes – especially those that interact with nuclear gene products – to evolve more quickly. This is what the new finding implies.

This exigency isn't as severe in diploid males because diploidy shelters new mutations from as quick an exposure to selection.

This said, the research paper has acknowledged that these patterns are still only correlations – although the team has also speculated on some potential causes.

One idea turns on how selection works in haploid males. Because every nuclear gene in an HD male is "visible" to natural selection, genes that improve the cooperation between nuclear and mitochondrial proteins may spread faster. That in turn could allow more new mitochondrial mutations to take hold.

A second idea is that in HD lineages, the nuclear genes effectively come from a smaller breeding pool, so slightly harmful nuclear changes may sometimes be fixed by chance. Mitochondrial genes would then be pushed to evolve compensating tweaks to keep the cell's power system running.

(D.P. Kasbekar is a retired scientist. kasbekarip@yahoo.co.in)

GS-03

AWARENESS IN THE FIELDS OF SPACE,

India's space programme, a people's space journey

India's space journey has evolved beyond a string of spectacular missions. It has the national pulse and is a source of daily inspiration. In June 2025, when Group Captain Shubhanshu Shukla displayed the Tricolour aboard the International Space Station (ISS) and spoke to Prime Minister Narendra Modi, it was a moment of pride for every Indian. The Prime Minister called it a "defining chapter" of *Amrit Kaal* ('era of nectar'), and for many, that moment felt like India's ascent was a part of their own heartbeat. It was not just science. It was identity being reshaped through vision and purposeful programmes.

That same spirit has been echoed earlier, on August 23, 2023, when Chandrayaan-3 made India the first nation to land near the lunar south pole. "India is now on the Moon," declared Mr. Modi – words which rippled through classrooms, villages and living rooms alike. India's lunar programme has been truly path breaking: Chandrayaan-1 (2008) confirmed the presence of water molecules; Chandrayaan-2 (2019) mapped the moon with high precision and prepared the ground for Chandrayaan-3 (2023), which achieved the world's first soft landing near the south pole. When the Vikram lander and Pragyan rover explored the lunar surface for a full moon day, this led children to draw depictions of lunar landscapes in notebooks, it left researchers feeling vindicated, and inspired citizens who saw India's story in space as also their own future.

India has become a trusted global partner in space. Over 400 foreign satellites have been launched aboard Indian rockets. In 2014, India became the first Asian nation and only the fourth in the world to reach Mars orbit – and on its maiden attempt, with the Mars Orbiter Mission (Mangalyaan). The Aditya-L1 mission (2023), built through multi-institutional collaboration, is providing unprecedented insights into the sun's corona and its impact on space weather. XPoSat (2024) is studying black holes, while SpaDeX (2024) has demonstrated in-orbit docking for future space stations and lunar missions.

A new space vision

These milestones are reshaping policy, culture, and aspiration. The road map is bold: continuation of the Gaganyaan programme for human spaceflight, Chandrayaan-4 and 5 for deeper lunar exploration, a dedicated Venus mission, a Bharatiya Antariksh Station (BAS) by 2035, and an Indian human landing on the Moon

**S. Somanath**

was Secretary, Department of Space, and Chairman of the Indian Space Research Organisation (ISRO). He is now Distinguished Visiting Professor, Indian Institute of Science (IISc), Bengaluru, and Adviser (Space Technology), Government of Andhra Pradesh

India is not only an active participant in the space age but is also shaping it

by 2040. These are not distant dreams but national goals, aligned with the spirit of *Amrit Kaal*.

The Prime Minister has called for building a pool of 40 to 50 trained astronauts for future missions. On National Space Day 2025 (August 23), he urged young citizens to see themselves as participants in India's human space programme. Gaganyaan, with an approved outlay of over ₹20,000 crore, is advancing steadily. Four Indian Air Force test pilots are undergoing training, and a series of uncrewed and crewed flights will culminate in India's first indigenous human space mission, presently targeted for 2027.

Space technology today is woven into the fabric of governance and daily life. Satellites deliver disaster warnings, guide fishermen, assess crop yields and insurance claims, enhance railway safety, and power the geospatial backbone of the PM Gati Shakti programme. Space is no longer a distant luxury but a democratic utility – accessible to every citizen.

At the same time, space exploration fuels Science, Technology, Engineering and Mathematics (STEM) education, advanced research, and workforce development. Future-ready technologies in space operations autonomy, robotics, in-space manufacturing, surveillance and interplanetary travel are being developed, ensuring that India retains leadership in this strategic frontier.

The transformation of India's space sector is deliberate and ambitious. The opening of the field to private players, creating a thriving ecosystem of more than 350 startups building satellites, launch vehicles, and ground systems. The space budget has nearly tripled – from ₹5,615 crore in 2013-14 to ₹13,416 crore in 2025-26 – and has been augmented by nearly ₹5,000 crore in user funds. India's space economy, currently valued at \$8 billion, is projected to grow to \$44 billion in the years ahead, creating jobs, industries and innovations that orbit around this sector.

Inspiring the next generation

The Prime Minister has challenged the ecosystem to deliver five space unicorns within the next five years and to scale up annual launches, nearly ten-fold, to 50 a year. With private participation, India is advancing technologies related to semi-cryogenics, electric propulsion, quantum communication and in-orbit servicing.

Youth are at the heart of this vision. The

International Olympiad on Astronomy and Astrophysics hosted in India (August 2025) drew nearly 300 participants from over 60 countries, with Indian students winning medals. Initiatives such as the ISRO Robotics Challenge and Indian Space Hackathon/Bharatiya Antariksh Hackathon are bringing school and college students into direct contact with rovers, satellites and rockets, building confidence that the laboratories and launchpads of tomorrow are theirs to claim.

At the policy level, the National Meet 2.0 held just before National Space Day produced 5,000-plus pages of documentation across 300 user interactions. This 15-year road map aligns every mission with the vision of *Viksit Bharat 2047*.

Global collaborations and leadership

Space has been consistently projected as a global commons, where India's leadership translates into shared progress. The South Asia Satellite has provided neighbours with communication capacity, while during India's G-20 Presidency in 2023, India announced a "G20 satellite" for climate and environmental monitoring with data shared with all nations. Collaborative missions such as NASA-ISRO Synthetic Aperture Radar (NISAR) with the National Aeronautics and Space Administration (NASA), Thermal InfraRed Imaging Satellite for High-resolution Natural resource Assessment (TRISHNA) with CNES (French space agency), Lunar Polar Exploration (LUPEX) with Japan Aerospace Exploration Agency (JAXA), and India's participation in the European Space Agency (ESA)'s Proba-3 demonstrate India's rise as a global partner, guided by the ethos of *Vasudhaiva Kutumbakam* ('the world is one family').

India's space journey is more than rockets and satellites. It is about a nation discovering new ways to see itself. The salute of Shubhanshu Shukla aboard the ISS, the landing of Chandrayaan-3, 350 startups from small towns designing space systems, young students competing in Olympiads, and satellites quietly serving national security and citizen services are all part of the same story.

In this *Amrit Kaal*, India is not simply participating in the space age. It is shaping it. With ambition, confidence, and purpose, Bharat looks to the stars knowing that the horizon belongs to it too.

The views expressed are personal