When Science Meets Geopolitics: US Policy Shifts, Talent Reconfiguration, and the Rise of South–South Collaboration

Derya Buyuktanir Karacan
Institute for International Science and Technology Policy, Elliott School of International Affairs, The George Washington University, Washington, DC, USA
E-mail: drbuyuktanir@gwu.edu

Introduction: A Structural Turning Point

The global movement of highly skilled individuals has entered a new and fundamentally more contested phase. For much of the twentieth century, the logic governing talent flows was relatively straightforward: researchers left the Global South for the North in search of better-funded laboratories, stronger institutions, and more stable career trajectories. The 'brain drain' paradigm — for all its limitations — offered a recognisable framework for understanding this directional, asymmetric movement.[1] That framework has not merely aged; it has been overtaken by a reality far more complex, more politically saturated, and more difficult to map onto the tidy geographies of sender and receiver that once defined the field.

The mobility of researchers, engineers, international students, and innovators is now shaped as much by geopolitical calculation, visa architecture, and research security policy as by scientific merit or institutional prestige. To capture the geographically and politically conditioned character of high-skilled mobility in an era of strategic competition for knowledge, innovation, and geopolitical influence, Buyuktanir Karacan and Tapia Takaki introduce the concept of *geotalent*. The full theoretical elaboration of this concept is ongoing, but its core insight is already apparent: where scientists can go, and what they can do when they get there, is increasingly determined by forces well beyond their individual control.

This article examines four dimensions of this reconfiguration: first, the structural disruption caused by recent United States (US) policy shifts and the erosion of its long-standing scientific attraction; second, the emergence of a genuinely multipolar science landscape, with particular attention to China's systematic reversal of brain drain and Europe's deliberate strategic repositioning; third, the accelerating growth of South–South scientific collaboration as a strategic response to a world in flux; and fourth, India's evolving science diplomacy as a case that crystallises both the tensions and the opportunities of this new global knowledge order.

The United States: From Magnet to Question Mark

The United States built its scientific pre-eminence on federal investment, institutional openness, and the deliberate recruitment of global talent. Foreign-born individuals accounted for 22 per cent of the US STEM workforce in 2023 and are disproportionately represented among doctorate-level researchers and innovators.[2,3] Their contribution is also reflected in scientific excellence at the highest level: immigrants account for approximately one-third of US-affiliated Nobel laureates and have received around 40 per cent of the Nobel Prizes awarded to Americans in physics, chemistry, and medicine since 2000.[4,5] These figures underscore the extent to which the United States' research capacity and global scientific competitiveness have been built on international talent attraction and retention.

That model is now under significant strain. The FY2027 federal budget request proposes cuts of 55 per cent to the National Science Foundation (NSF) and 13 per cent to the National Institutes of Health (NIH).[6] Since 2025, the US government has reportedly lost over 10,000 STEM PhD holders through layoffs and an increasingly uncertain research environment.[7] The Fogarty International Center faces repeated proposals for elimination, and multilateral commitments to large-scale science infrastructure such as ITER and Lunar Gateway are in question. NIH grantees have been directed to seek advance approval before co-authoring with researchers at foreign institutions[8] — a restriction that, whatever its security rationale, signals a fundamental retreat from the norms of open science.

Burrows and Hardegree (2026)[9] have characterised this as a potential 'Reverse Sputnik' — a self-inflicted erosion of scientific capacity by the very nation that once defined it. The US is shifting toward a more transactional science diplomacy — prioritising bilateral arrangements serving immediate strategic objectives over the longer-term relationship-building that historically underpinned its scientific soft power.[6] The global scientific community is now recalibrating rapidly.

A Multipolar Science Landscape: China's Rise and Europe's Response

Global science is reorganising itself across multiple competing and complementary poles (OECD, 2025).[10] As the US turns inward, others have moved quickly and deliberately to occupy the ground it is leaving behind. Montaño Ramirez and Petersen (2026)[11] demonstrate empirically that the global science system's core-periphery structure has been in meaningful transition since 1980, with the Global South's share of research co-production rising significantly across four decades.

China and the United States have reached a historic parity in global R&D spending, both operating at roughly $1 trillion annually, yet with fundamentally different structural priorities.[12] The more telling story, however, is human: between 2010 and 2021, over 12,000 Chinese-descent researchers returned from the US, drawn by housing subsidies, medical insurance, and competitive research grants.[13,14] These returnees — known as 'Sea Turtles' — are building research ecosystems, not simply going home. Institutions such as Westlake University and the Shenzhen Bay Laboratory have been established largely around diaspora returnee scientists and are already producing globally competitive research. Through targeted returnee programmes and purpose-built institutions, China is systematically reversing the historic direction of brain drain — not through coercion or ideology, but through the straightforward logic of competitive attraction operating at scale.[14]

Europe's response has been equally deliberate, if pursued through different means. The European Commission's 'Choose Europe for Science' initiative, launched in 2025, positions the EU as a destination for researchers from across the world — whether compelled to leave by political pressure, economic instability, or deteriorating research conditions, or simply drawn by the promise of a more open, stable, and well-resourced scientific environment. The initiative is not framed as a response to any single country's policy failures; rather, it is a deliberate and inclusive signal that Europe welcomes global scientific talent. The EU Visa Strategy streamlines pathways for internationally mobile scientists, while EURAXESS and the EU Talent Pool provide institutional infrastructure for retaining globally mobile researchers.[15] Horizon Europe — which now includes fourteen non-EU associated members, including South Korea, Egypt, New Zealand and Japan — functions increasingly as a geopolitical instrument as much as a research funding programme. Critically, Europe is not simply competing for talent from the US pipeline; it is building a more diversified ecosystem that includes significant partnerships with Africa, Latin America, and Asia through its Global Gateway strategy. Singapore has meanwhile surpassed Switzerland in at least one major global talent ranking, and the United Arab Emirates and Saudi Arabia are investing heavily in STEM and AI infrastructure.[16]

The South–South Turn: Regional Collaboration as Strategic Choice

The deepening of South–South scientific collaboration is unfolding against a backdrop of profound structural change in the international order. The relative decline of multilateralism, the fragmentation

of global governance, and the rise of competing geopolitical blocs have fundamentally altered the conditions under which science diplomacy operates. The expansion of BRICS+ in 2024 — bringing in Egypt, Ethiopia, Iran, Saudi Arabia, the UAE, and others — signals a deliberate effort by the Global South to build alternative frameworks for cooperation, and science is increasingly central to that architecture: member states are expanding shared research infrastructures and aligning innovation priorities in ways that bypass traditional Northern intermediaries. The African Union has positioned science and technology as a pillar of its Agenda 2063 framework, while regional platforms such as SAARC and ASEAN's STI mechanisms are developing research agendas oriented toward shared challenges — climate resilience, food security, public health — rather than the priorities of external funders. The rapid growth of private technology companies, the blurring of civilian and military research through dual-use technologies and escalating regional conflicts have introduced new fault lines into international scientific partnerships. In this fragmented and multipolar landscape, South–South cooperation is no longer a secondary channel — it is becoming a strategic choice pursued by governments that can no longer assume the stability, neutrality, or continuity of Western-led scientific frameworks.

Scientific diasporas are central to this process. When highly skilled professionals maintain active connections with their countries of origin — through co-authorship, joint supervision, entrepreneurship, and policy advice — they become architects of alternative knowledge networks that do not depend on Northern intermediation.[17,18] Bonilla et al. (2023)[18] document how this has taken concrete institutional form across Latin America, Africa, and Asia, through diaspora engagement platforms that build scientific communities across borders without requiring permanent return. The challenge is to convert what has often been underfunded South–South cooperation into a deliberate, institutionalised strategic priority.

India: Navigating Between Ambition and Disruption

India occupies a particularly significant position in this reconfigured landscape. After the 1980s, India moved from the periphery to near the centre of global research co-production.[11] Its net outflow of highly skilled professionals remains the world's largest — more than five times that of the next country — making the Indian diaspora one of the most strategically significant knowledge networks on the planet.[19]

India's science diplomacy has evolved accordingly. The 'Atmanirbhar Bharat' (Self-Reliant India) agenda and the Science, Technology, and Innovation Policy (STIP) 2020 reflect an ambition to become a top-tier scientific power — not by importing excellence but by cultivating it domestically and activating it globally.[20] The Vaibhav Summit and the PRABHASS platform attempt to build a 'network of networks' connecting Indian scientists abroad with domestic institutions and national research priorities. The Indo-US Science and Technology Forum (IUSSTF) has historically connected over 14,000 scientists across Triple Helix partnerships linking universities, industry, and government.[21]

But the current US retrenchment forces a strategic question: as the American side of that relationship becomes more conditional and transactional, does India double down on its US partnerships or diversify? The more promising path is to use this disruption as an opportunity to lead South–South scientific integration. India's size, its diaspora's global reach, its growing domestic research capacity, and its democratic credentials make it a credible convener of a more equitable global science system. The EU's expanding Horizon Europe partnerships, the new science diplomacy framework adopted by the European Council[22], and Global Gateway commitments signal willing partners for precisely this kind of reorientation.[15] India's deepening research ties with Brazil, South Africa, the Gulf states, and ASEAN partners further suggest that a multi-directional science diplomacy — anchored in the Global South but globally connected — is already beginning to take shape.

Conclusion: An Opportunity Disguised as a Crisis

What is unfolding in global science policy and diplomacy today is not an anomaly — it is the latest chapter in a long history of knowledge systems disrupted by power and conflict. Researchers have fled political collapse before — Syrian scientists displaced by a decade of civil war, Ukrainians forced to relocate

overnight following the 2022 invasion, and Afghan academics who lost everything when institutional frameworks collapsed around them. What is different today is the scale, the simultaneity, and the drivers. Thousands of researchers have lost positions not to bombs or authoritarian purges but to budget spreadsheets, executive orders, and the quiet erosion of institutional trust. Yet, geopolitical rupture is only one of the forces reshaping the geography of scientific talent. Climate change, water scarcity, and the compounding pressures of environmental degradation are already beginning to displace populations — and scientists are not exempt. The talent mobility we are witnessing today is driven primarily by shifting power configurations and policy choices. But the mobility of tomorrow will be shaped by forces harder to negotiate, harder to reverse, and far less amenable to diplomatic resolution.

Disruption also creates openings. China is engineering a systematic reversal of brain drain through institutional investment. Europe is positioning itself as a science haven with deliberate strategic intent. South–South networks are gaining real institutional weight. Countries like India, Brazil, South Africa, and Singapore are asserting themselves as scientific actors in their own right — not merely recipients of Northern knowledge transfer. The movement of highly skilled people is no longer simply a migration story. It is a story about power — about who defines the frontiers of knowledge and whose problems science chooses to prioritise. The countries and institutions that build equitable, resilient, and collaborative frameworks in response to the current disruption will shape the next era of global science. That is not a threat. It is an invitation.

References

1. Docquier F, Rapoport H (2012) Globalisation, brain drain and development. *Journal of Economic Literature*, 50(3): 681–730.
2. National Science Board (2026) STEM Talent: Education, Training, and Workforce. Science and Engineering Indicators 2026. U.S. National Science Foundation, National Center for Science and Engineering Statistics. https://ncses.nsf.gov/pubs/nsb20261
3. Kerr WR (2020) Global talent and US immigration policy. Harvard Business School Working Paper No. 20-107. Boston, MA: Harvard Business School. https://www.hbs.edu/ris/Publication%20Files/20-107_0967f1ab-1d23-4d54-b5a1-c884234d9b31.pdf
4. Anderson S (2023) Immigrant Nobel Prize Laureates. Fairfax, VA: Institute for Immigration Research, George Mason University. https://iir.gmu.edu/publications/nobelprize
5. National Foundation for American Policy (2023) Immigrants and Nobel Prizes: 1901–2023. Arlington, VA: NFAP. https://nfap.com/wp-content/uploads/2023/10/Immigrants-and-Nobel-Prizes.-October-2023.DAY-OF-RELEASE.October-2023.pdf
6. Srdanovic A (2026) Allies or adversaries? Science diplomacy's calibration in the President's budget request. *Federation of American Scientists*, 9 April 2026. https://fas.org/publication/fy27-budget-science-diplomacy/
7. Mervis J (2026) The great government brain drain. *Science*, 391(6784): 428–429. https://doi.org/10.1126/science.aef8893
8. Brainard J (2026) US researchers face new restrictions on publishing with foreign collaborators. *Science*, 20 May 2026. https://doi.org/10.1126/science.zlxtqyz
9. Burrows M, Hardegree E (2026) Reverse Sputnik: Is the US squandering its future in science and technology? Stimson Center, 23 March 2026. https://www.stimson.org/2026/reverse-sputnik-is-the-us-squandering-its-future-in-science-and-technology/
10. OECD (2025) OECD Science, Technology and Innovation Outlook 2025: Driving Change in a Shifting Landscape. Paris: OECD Publishing. https://doi.org/10.1787/5fe57b90-en
11. Montaño Ramirez A, Petersen AM (2026) Transformation of global science core-periphery structure

towards a multi-polar horizon: The rise of China and the Global South from 1980–2020. *Research Policy*, 55(1): 105370. https://doi.org/10.1016/j.respol.2025.105370

12. OECD (2026) OECD overall R&D growth stable; government R&D budgets decline and reorient towards defence. Statistical release, 31 March 2026. https://www.oecd.org/en/data/insights/statistical-releases/2026/03/oecd-overall-rd-growth-stable-government-rd-budgets-decline-and-reorient-towards-defence.html
13. Guerrero GT, Bolay J-C (2010) Scientific Diasporas as Development Partners: Skilled Migrants from Colombia, India and South Africa in Switzerland: empirical evidence and policy responses. Bern: Peter Lang. https://doi.org/10.3726/978-3-0352-0023-2
14. Leslie M (2026) Is the brain drain reversing? *Engineering*, 57: 3–5. https://doi.org/10.1016/j.eng.2025.11.011
15. European Commission (2026) EU Visa Policy Strategy. COM(2026)43 final. Brussels: European Commission. https://home-affairs.ec.europa.eu/document/download/f873d151-f079-424b-9575-bece4113447c_en?filename=EU%20Visa%20Policy%20Strategy.pdf
16. Monteiro F, Escalona Reynoso R, Evans PAL (2025) The Global Talent Competitiveness Index 2025: Talent and Resilience: Navigating an Era of Disruption. Fontainebleau and Washington, DC: INSEAD and Portulans Institute.
17. Buyuktanir Karacan D, Ruffini P-B (2023) Science diplomacy in the Global South: An introduction. *Science and Public Policy*, 50(4): 742–748. https://doi.org/10.1093/scipol/scad028
18. Bonilla K, Echeverría-King LF, Serafim M, Mabotha T, Buyuktanir Karacan D (2023) Editorial: Engaging scientific diasporas for development: Policy and practices. *Frontiers in Research Metrics and Analytics*, 7: 1102805. https://doi.org/10.3389/frma.2022.1102805
19. The Economist (2023) India's diaspora is bigger and more influential than any in history. 12 June 2023. https://www.straitstimes.com/opinion/india-s-diaspora-is-bigger-and-more-influential-than-any-in-history
20. Namdeo SK, Goveas JJ (2020) Indian innovation diplomacy: Choices, challenges and way ahead. *Science Diplomacy Review*, 2(3): 17–28.
21. Inamdar N (2021) Addressing global challenges through science diplomacy and knowledge diplomacy. *Science Diplomacy*, 4(3): 21–23.
22. Council of the European Union (2026) Council recommendation on a European Union framework for science diplomacy (ST 8931/26 ADD 1). 12 May 2026. https://data.consilium.europa.eu/doc/document/ST-8931-2026-ADD-1/en/pdf