

# Easing the journey from the lab bench to market

**T**he 2025 Nobel Prize in Economics (Philippe Aghion, Peter Howitt, Joel Mokyr) offered a timely lesson for nations aspiring to global leadership: Prosperity is not just about having resources, but about institutions that generate “useful knowledge”. As Mokyr argues, innovation happens only when “propositional knowledge” (the abstract science of why) meets “prescriptive knowledge” (the practical technique of how).

For India, aspiring towards a \$30-trillion economy by 2047, this distinction is critical. We have successfully built a reputation as the world’s service provider and back office. Yet, in a world where supply chains are weaponised and capital flows along geopolitical fault lines, this is no longer enough. To secure true resilience, India must transition from importing technology to creating it.

The challenge is not a lack of talent. India ranks third globally in scientific publications and fourth in PhDs awarded. We excel at the early stages of discovery — what experts call technology readiness levels (TRL) 1-3. Our labs are proficient at producing papers. But an industrial economy runs on products, not papers.

The journey from a lab bench to a market-ready product involves piloting, prototyping, validation, and standardisation — stages known as TRL 4-7. This is India’s “Valley of Death”. It is capital-intensive, risky, and institutionally orphaned. Academic grants rarely cover the cost of large-scale industrial pilots, and Indian industry, historically risk-averse, hesitates to bet on unproven technologies.

As a result, promising Indian innovations often languish in labs or are sold to foreign entities, only to be licensed back to us at a premium. We are stuck in a cycle of “knowing why” without mastering “knowing how”. The solution lies in a radical architectural shift. We need to build National Translational Infrastructure — not just more academic labs, but shared “factories of innovation” designed specifically to de-risk technology for industry adoption.

The recently released Economic Survey 2026 marks a watershed moment by acknowledging this imperative. By calling for a “national research-to-deployment pipeline” and recognising translational centres as national assets, the government has signalled that it is ready to move from being the sole provider of research and development to being a facilitator and risk mitigator.

Imagine a network of open-access facilities

where a startup working on 2D materials or advanced alloys can prototype components for defence and electronics without building a multimillion-dollar plant. Picture a precision bio-manufacturing facility where researchers can scale up from a petri dish to a pilot reactor, bridging the gap to clinical trials. Consider shared testbeds for solar photovoltaics and next-gen batteries that allow our energy sector to validate efficiency data domestically rather than relying on foreign certification.

India’s Translational Research Initiative (ITRI) is a collaborative philanthropy working towards catalysing such infrastructure across domains of high strategic significance — from chemical manufacturing to biopharma — with the objective of demonstrating that these facilities can serve as public goods, lowering the entry barrier for innovators and speeding up time-to-market.

However, building the “hardware” (infrastructure) is futile without upgrading the “software” (policy). This is where civil society organisations like Foundation for Advancing Science and Technology (FAST India) are contributing. Ease of Doing Science must become as much of a priority as Ease of Doing Business.

Reforms in procurement, for instance, are essential; a scientist cannot wait months for a specialised reagent because of archaic “LI” (lowest bidder) tendering rules. We also need to facilitate the “revolving door” of talent, allowing experts to move fluidly between academia and industry without losing their tenure or seniority. We must dismantle the bureaucratic friction that slows down science.

The scale of this transformation requires a Third Way — a model of central orchestration that unites government, philanthropy, and industry. In this model, the government provides the strategic mandate and anchor capital. Philanthropy provides the risk capital and the agility to set up high-quality governance. Industry provides the “pull” by defining problems and committing to adopting validated technologies.

The stakes are existential. If we fail to bridge this gap, we risk becoming a client State, vulnerable to technology denial and supply shocks. But if we succeed, the rewards are immense.

A robust translational ecosystem will not only secure our technological sovereignty but also position India as a global hub for deep-tech solutions.

It is time to build. With the blueprint laid out in the Economic Survey and the proof-of-concept provided by initiatives like ITRI and FAST, we have the architecture. It is time to turn our knowing-why into knowing-how, and in doing so, engineer our own destiny.



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