

Innovation "Delta" Self-Assessment Checklist for Applicants

Applicants must provide quantifiable evidence or logical projections for each "Yes" response.

1. The 10x Performance & Cost Benchmark

- ☐ **Magnitude of Change:** Can you demonstrate that your solution offers a **3x to 10x improvement** in a critical metric (e.g., speed of production, cost-per-gram, energy yield, or catalytic efficiency) compared to the current global gold standard?
- ☐ **Cost Decoupling:** Does your technology decouple "high performance" from "high cost"? (e.g., Delivering a therapeutic at 1/10th the global price without compromising efficacy).

2. First-in-Class vs. Incremental Innovation

- ☐ **Global Novelty:** Is this innovation **"First-in-World"** (a new molecular entity, a unique designer enzyme, or a novel metabolic pathway) rather than a "Me-Too" or "First-in-India" version of existing technology?
- ☐ **IP Defensibility:** Does the project aim to generate a foundational patent that could influence global standards, rather than just incremental utility patents?
- ☐ **Platform Potential:** Can this technology act as a "Force Multiplier" to solve problems in at least two other unrelated sub-sectors? (e.g., A protein stabilization platform used in both vaccines and food security).

3. Strategic Autonomy & Import Substitution

- ☐ **Supply Chain Sovereignty:** Does your project eliminate India's dependence on imported high-value reagents, viral vectors, or sophisticated equipment?
- ☐ **Indigenous Bioresources:** Does the process utilize abundant local bioresources (e.g., agri-residue, local microbial strains, or marine biomass) to replace imported feedstock?

4. Socio-Economic "Impact Delta"

- [] **Democratic Access:** Will this innovation be viable for the "Bottom of the Pyramid"? (e.g., Can it be deployed in a Tier III city or a rural primary health centre?).
- [] **Farmer Income Multiplier:** Can you show a direct path to **doubling or tripling the income** of the primary producer (farmer/collector) through your value-addition process?
- [] **Regenerative Footprint:** Does the project follow **Circular Bioeconomy** principles—turning a major waste stream into a high-value product with near-zero carbon emissions?

B. How to Use This Checklist in Your Proposal

Applicants are required to include a "**Delta Statement**" for each of the four categories above as applicable.

Example of a Strong Delta Statement:

1. "Our designer enzyme (Enz-X) achieves a 7.5x increase in plastic degradation speed compared to the current industry standard, while functioning at 15°C lower temperature, reducing operational energy costs by 60%."
2. "Currently, 2G Ethanol production from paddy straw yields approximately 250 liters per ton. Our proprietary **solid-state enzymatic liquefaction** process aims to increase this to 400 liters per ton while reducing water consumption by **8x** and eliminating the need for expensive pretreatment chemicals. This shift moves the 'Delta' of rural biorefineries from marginally profitable to highly lucrative, enabling a 3x increase in the price paid to farmers for their agri-residue."
3. "Our proposed continuous-flow bioreactor system for viral vector production reduces the physical footprint by **80%** and CAPEX by **60%** compared to current batch-process facilities. Most critically, it increases the yield of GMP-grade lentiviral vectors by a factor of **10x**, driving the cost-per-dose down from ~\$15,000 to ~\$1,500, making gene therapy a viable option for public healthcare programs."
4. "Our project introduces a **nanocellulose-reinforced PHA composite** manufactured via a proprietary solid-state fermentation process. This material delivers a **12x improvement in oxygen barrier properties** (reducing OTR from 120 to <10 cc/m²/day), matching the performance of petroleum-based PET. Unlike current bioplastics, this composite is

100% home-compostable and marine-biodegradable within 180 days, creating a 'first-in-class' solution for the \$5B Indian flexible packaging market while utilizing 40% less energy during extrusion."

5. "We are scaling the production of **recombinant human-identical Collagen (Type I & III)** using an engineered yeast platform. Our 'First-in-Class' downstream purification process achieves a **10x reduction in endotoxin levels** (<0.05 EU/mg) compared to bovine-derived alternatives. This ensures zero immunogenicity for high-end applications like dermo-fillers and wound scaffolds. By achieving a fermentation yield of **50g/L** (a 5x increase over current benchmarks), we will reduce the cost of medical-grade collagen by **70%**, enabling affordable indigenous production of advanced wound-care devices."
6. "We are manufacturing a '**Next-Gen**' **engineered DNA Polymerase** with a 10x higher processivity and 5x faster extension rate than standard imported reagents. Our manufacturing process uses a novel **chaperone-assisted folding technique** that eliminates the need for a continuous cold chain (stable at **40°C** for 6 months). This 'Delta Change' enables 10x faster PCR diagnostic cycles (from 90 mins to 9 mins) in rural settings, providing a strategic, 'First-in-Class' indigenous supply that is **90% cheaper** than imported high-end reagents."
7. "Our project replaces traditional petroleum-based polymers with a **lignin-based bioplastic** manufactured using a 'First-in-Class' enzymatic grafting process. This material achieves a **7x increase in UV-resistance** and thermal stability compared to standard PLA. By utilizing **100% abundant agri-waste** as feedstock, we reduce the production cost by **60%**, enabling the first viable, mass-scale replacement for single-use plastics in the Indian automotive and packaging sectors."
8. "India currently imports 95% of its **medical-grade Heparin**. Our proposal utilizes a novel **microbial fermentation platform** to produce recombinant Heparin, eliminating the need for porcine (pig) mucosa. This 'Delta Change' ensures a **10x more consistent molecular weight profile** and removes the risk of animal-borne pathogens. Our process is designed for high-density bioreactors, allowing us to produce this critical raw material at **1/5th the cost** of current international imports."

Category		Incremental Change (Will not fund)	10x Delta Change (We want to fund)
Biopolymers		Slightly better tensile strength or lower price.	10x barrier improvement; Marine-safe; Carbon-negative.
Medical Materials	Raw	Domestic version of an existing animal-sourced protein.	Recombinant (animal-free); 10x higher purity; 70% cost reduction.
Reagents		Standard grade enzymes for research.	Cold-chain independent; 5x faster reaction kinetics; 100% indigenous IP.
Process Tech		Optimizing a batch reactor by 5%.	Transition from Batch to Continuous Flow (80% smaller footprint).
Manufacturing		We are setting up a bigger plant.	We changed the process from Batch to Continuous, 10x smaller footprint.
Agriculture		It's a better fertilizer.	It's a bio-stimulant that allows crops to grow with 50% less water AND 5x yield.
Environment		It cleans water slightly faster.	It recovers 90% of precious metals from waste at 1/10th the energy cost.
Healthcare		It's a biosimilar for a common drug.	It's a platform that makes any CAR-T therapy 10x more affordable.