

India's Complex Molecules Opportunity: The Signal Beyond the GLP-1 Rush

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Abstract

In India, more than 50 semaglutide brands are expected to enter the market within weeks of the March 2026 patent expiry. This was a positive signal, but not a victory. The peptide active ingredient, injector devices and synthesis chemistry behind these launches were all imported. The next wave of complex molecules—including oral GLP-1s, oligonucleotides, antibody-drug conjugates and radiopharmaceuticals—will directly test these foundations. This article maps where Indian pharma should place capital in the FY27–28 window and which stakeholders must act first if India is to convert its manufacturing scale into value from complex molecules.

Introduction

India's rapid rollout of generic semaglutide following patent expiry showcased the pharmaceutical industry's manufacturing agility; but also exposed critical dependencies on imported peptide APIs, drug-delivery devices, and advanced synthesis technologies. As the global industry shifts toward complex molecules such as oral GLP-1s, oligonucleotides, antibody-drug conjugates, and radiopharmaceuticals, India faces a pivotal opportunity to build strategic capabilities, strengthen its value chain, and emerge as a global innovation-driven manufacturing hub.

India's Pharma Playbook and Why Semaglutide Fits It So Well

The March 2026 semaglutide launch fits the typical Indian generics pattern. Within 48 hours of patent expiry, more than fifteen brands were on the shelves -

Sun's Sematrinity and Noveltreat, Dr. Reddy's Obeda, Zydus, Natco, Alkem, Glenmark. Within weeks, the count crossed fifty. Prices that ran ₹10,000-₹16,000 per month for Novo Nordisk's originals fell to as low as ₹1,290 for the cheapest generics.

However, unlike previous transitions, semaglutide required capabilities Indian pharma had not built. The peptide active ingredient was overwhelmingly imported, with Biocon among the few domestic sources. Auto-injector pens were procured from European device OEMs (Ypsomed, SHL Medical, Owen Mumford). The synthesis chemistry running underneath depended on solvents that European regulators are actively phasing out. India ran the same playbook but on borrowed foundations. The next wave will contest the foundations directly.

The Four Structural Gaps Exposed by the GLP-1 Rush

Behind the headline launches, the semaglutide rush surfaced four capability gaps that will re-appear often more sharply in the complex molecules queued behind it. Each is a specific chemistry or manufacturing capability India did not need to own to win the finished dose race but will need to own to win anything after it.



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01 Peptide building blocks and coupling reagents	What it is: Specialised building blocks and coupling reagents used in peptide synthesis. The data: Over 90% of volume is imported from a handful of Chinese and Japanese suppliers. Strategic implication: Geographic risk and imported cost overhead on every Indian peptide API.
02 Sterile fill finish and delivery devices	What it is: Aseptic filling lines, prefilled syringes, auto-injector pen assembly. The data: OEM order books extend to 2028 and premium aseptic line lead times 18-36 months. In India, OneSource and Biocon are targeting new facilities and capacity increase but the domestic base is thin. Strategic implication: This is expected to induce severe supply constraints in Indian market.
03 Green chemistry compliance	What it is: Peptide and oligonucleotide synthesis without hazardous solvents. The data: EU REACH restrictions on legacy peptide solvents are tightening. First fully sustainable GLP-1 synthesis route by ACS Organic Process R&D released last year. Strategic implication: Legacy solvent processes would not be accepted in key export markets in future; new capacity invested today should be green chemistry compliant.
04 Delivery innovation	What it is: Oral tablets, depot injections and transdermal patches. The data: Oral GLP-1s reach 30-40% of the overall segment by 2032. Wegovy launched oral GLPs in 2025, Neuland-LIR Life Sciences transdermal GLP-1 collaboration announced May 2026. Strategic implication: Margin is migrating away from vanilla injectables and there is need for innovative delivery methods.

Exhibit 1: The Four Skipped Layers

Each of these gaps are vulnerable to reappear in the next-cycle molecule families. That is why it is vital to diagnose the learnings from GLP-1 rush.

PART 2 | WHERE TO PLAY: The Complex-Molecule Landscape

The complex-molecule universe spans a dozen therapeutic modalities. And all of them are being evaluated across the four factors:

1. Market size and growth.
2. Competitive intensity.
3. India adjacency.
4. Capital and time intensity.

Four of the molecules fall in India's near pipeline where a credible right to play exists. The others like cell and gene therapy, mRNA, biosimilars are outside India's near-term reach or those were the battles already fought.

MODALITY	POSITIONING (Market signal; India fit)	VERDICT
Small molecules (mature)	Mature, low growth; Native strength (statins, sartans, gliptins)	Not selected (base business)
Biosimilars	Growing but margin-compressed; Established players (Biocon, Dr. Reddy's, Zydus)	Not selected (past wave)
Peptide GLP-1s (injectable)	Currently at peak; India can do Finished-dose only; API and devices imported	Not selected (current wave)
Oral small-molecule GLP-1s	30-40% of GLP-1 segment by 2032; Classical chiral synthesis, India has existing capabilities	★ Closest Adjacency
Oligonucleotides	Market expected to triple to 17.7B by 2030; No Indian commercial-scale API player yet	★ Largest addressable market
ADCs (payload / linker chemistry)	Growing at >15% CAGR between 2026-2030; At present there are less than 5 Indian GMP sites with this capability	★ Defensible niche market
Radiopharmaceuticals	USD 13B market by 2030 growing at >16% CAGR; BARC/BRIT isotope backbone is India-unique	★ Has huge Indian market
Cell & gene therapy	High growth but still early market; Capex-prohibitive and current installed base too small	Not selected (later cycle)
mRNA therapeutics	Had a reset post COVID and is now oncology-led; No Indian ecosystem depth today	Not selected (watch now and explore later)

Exhibit 2: The Complex-Molecules Landscape Choices

Oral small-molecule GLP-1s - The Closest Adjacency

Lilly's orforglipron is heading toward launch; Novo's amycetin and Structure Therapeutics' soon to follow. Morgan Stanley projects oral GLP-1s to reach 30-40% of the overall segment by 2032, reaching \$190 billion by 2035.

Importantly, these are not peptides. They are classical small-molecule syntheses, precisely the

capability Indian bulk-drug and specialty chemical firms have built over the years making statins, sartans, gliptins and antivirals.

Competitive intensity is innovator-tight today and the generic window opens between 2028 and 2030. Capital intensity is low relative to the alternatives as Indian API sites already carry most of the infrastructure. This is India's most natural next move and is fully PLI-eligible.

Oligonucleotide Therapeutics - The Next Largest Wave

The global oligonucleotide therapeutics market is projected to become \$18 billion by 2030 (from \$6 billion in 2024). Four products have been commercialized by Alnylam while Ionis has over 35 clinical programs underway. Other oligonucleotide products like Leqvio and Olpasiran are exploring the cardiometabolic domain immediately surrounding GLP-1. The innovator side is crowded with Alnylam, Ionis, Arrowhead, Wave present, however the building-block side is not.

Aragen and Syngene operate services in India, Sai Life Sciences has invested over INR 2,000 Crore to scale up capacity from 700 to 2,000 cubic meters with peptides, ADCs and oligonucleotides as their specialty products. However, there is still no significant oligonucleotide producer in India at a commercial level. Capital and time intensity is high, but the strategic upside and addressable market is the largest in this category. First-mover advantage can enable capture this fast-growing market.

Antibody-Drug Conjugates (ADC) – Niche Market but High-Value Entry

ADCs generated \$18.8 billion in global sales in 2025 and are projected to reach \$36 billion by 2030, as per IQVIA. Deal activity crossed \$16 billion in 2024 alone, driven by Enhertu, Trodelvy and Elahere and ADC contract manufacturing segment alone is projected to grow from \$8.9 billion in 2024 to \$16.6 billion by 2030. The integrated CDMO space is already contested with WuXi Biologics, Samsung Biologics and Lonza dominating.

Piramal Pharma Solutions has committed globally with its May 2026 payload-linker suite at Riverview (Michigan), combined with earlier Grangemouth and Morpeth investments, signals their intent for an integrated play. Syngene recently scaled a novel oncology molecule for a top-10 pharma firm within six months.

However, for the wider Indian ecosystem, the smarter entry would not be in integrated bioconjugation but rather in payload and linker chemistry which is a specialty-chemistry problem. The constraint is high-potency containment which less than five Indian GMP facilities are currently equipped for, and investing in this

containment adds over 40% to operating cost. However, that can also give a defensible advantage once setup.

Radiopharmaceuticals - The Supply Constrained Market Opportunity

Radioligand therapy is projected to reach \$13 billion by 2030 as per Meditech Insights and the Lu-177 isotope market alone is forecast to grow from \$1.56 billion in 2023 to \$6.38 billion by 2032.

Novartis' Pluvicto crossed \$1 billion in sales in 2024. Global supply of Lu-177 and actinium-225 is the binding constraint on the entire theranostics pipeline. IQVIA's Global R&D Trends 2026 notes that radiopharmaceutical deal volume has more than doubled since 2019, and 1/3rd of all oncology trial starts in 2025 involved novel modalities including radiopharmaceuticals which is a 3x increase from the last decade. India is uniquely positioned in this space with BARC beginning domestic Lu-177 production in 2023 and BRIT providing the isotope backbone.

The key missing piece is the commercial-scale ligand chemistry, GMP cold-kit manufacturing and a DAE-industry partnership model to convert public-sector isotope capacity into globally competitive supply. This is a strategic entry option with medium capital requirements, and it lies in the specialty-chemical territory with disproportionate upside.

CORE PLAY Oral small-molecule GLP-1s MARKET USD 150B+ GLP-1 market by 2032 INDIA ADJACENCY Highest with already existing capabilities in classical chiral synthesis CAPITAL & TIME Low-Medium; 1.5-2 years	HIGHEST STRATEGIC UPSIDE Oligonucleotide therapeutics MARKET USD 5.9B to USD 17.7B by 2030 INDIA ADJACENCY Medium, it is new chemistry but can be built on familiar purification capabilities CAPITAL & TIME High; 3-4 years
SELECTIVE PLAY Antibody-drug conjugates MARKET \$19 billion in 2025 to \$36 billion in 2030 INDIA ADJACENCY Selective capabilities in payload/linker chemistry, not much in integrated ADC CAPITAL & TIME Very High, HPAPI-constrained; 2+ years	STRATEGIC CALL Radiopharmaceuticals MARKET \$13 billion by 2030 (Lu-177 growing at 17% CAGR) INDIA ADJACENCY Unique - DAE/BARC infrastructure existing CAPITAL & TIME Medium; 2-3 years

PART 3 | HOW TO WIN: The Playbook

“Where to Play” answers which battles to fight and “How to Win” answers which weapons to build. There are 3 broad capex levers available to Indian promoters over the FY27-28 window for firms in different starting positions.

ARCHETYPE Move Up FOR Existing peptide / API player THE MOVE Extend organically or via M&A into complex molecules (peptides -> oligos, injectables -> transdermal, generic -> innovator CDMO) MARKET SIGNALS Neuland - Bonthapally commercial peptide facility (2026) LIR Life Sciences transdermal GLP-1 collaboration (May 2026)	ARCHETYPE Move Across FOR Specialty chemical firm THE MOVE Enter pharma-grade intermediates like phosphoramidites (oligos), chelator ligands (radiopharma), HPAPI payload chemistry (ADCs) MARKET SIGNALS Adjacencies exist for firms with strong purification, chromatography and chiral-synthesis capabilities	ARCHETYPE Move Deep FOR Integrated pharma player THE MOVE Build the full stack: Sterile fill-finish + auto-injector device assembly + green-chemistry-compliant API MARKET SIGNALS OneSource, Gland Pharma, Stelis has opportunities in the fill-finish and device layer that is now the industry's binding constraint
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Exhibit 5: Three Capex Levers

Four Capability Decisions Cut Across All Three Archetypes

1. Green chemistry is the export ticket

REACH restrictions on DMF, NMP and DCM begin in 2027-28. New peptide or oligonucleotide capacity built today on legacy solvents can potentially become a stranded capital by 2029.

2. Sterile fill-finish and device capacity is the bottleneck

Any complex-molecule strategy without an owned, JV or long-term MSA fill-finish route is incomplete. Long OEM lead times force decisions now to plan for 2028 capacity.

3. Innovator CDMO beats generic API in long term play

Piramal's June 2026 public exit from the generic GLP-1 race is the industry's clearest strategic signal that innovator contracts are a stickier long-term play as they pay 3-5x better margins.

4. The capex window is short and now

Bachem, PolyPeptide, ST Pharm, WuXi TIDES and CordenPharma are committing capacity through 2028. India's peptide CDMO segment sits at a paltry USD 80M (3% of global market of USD 190B) and rapid investments needed to gain share.

Risks and Gamechangers: What Could Alter the Trajectory

Every technology transition carries scenarios that can drive the growth forward or push it back. For India's complex-molecules opportunity, five variables needs to be closely monitored.

- **Chemistry disruption:** If oral small-molecule GLP-1s such as orforglipron and amycretin capture more than 40% of the GLP-1 market by 2032, capacity built for peptide manufacturing has a risk of being stranded. Conversely, if triple agonists like retatrutide become dominant, peptide CDMO demand exponentially increases.
- **Regulatory setbacks:** Any high-profile quality inci-

dent with early Indian generic semaglutide launches, particularly on device or fill-finish could delay innovator confidence in Indian CDMOs for complex molecules.

- **Supply chain concentration:** The dependence of amino acids, phosphoramidites and chelator precursors on China's monopoly is a source of geographical risk due to potential political shocks, in case Novo Nordisk, Eli Lilly, Alnylam and Ionis enter into exclusive contracts with Bachem, PolyPeptide, ST Pharm and CordenPharma for several years, Indians will have 8-10 years without innovator projects.
- **Accelerated green-chemistry regulations:** If REACH regulations come earlier than 2027-2028 on DMF, DCM and NMP, Indians will lose their ability to export legacy processes earlier.

Conclusion: Position Now for the Next Wave

The lessons from past pharma transition cycles are clear. Indian players who have foreseen the transition from bulk to formulations or from small molecules to biosimilar have created value sustainably. The complex-molecules cycle has assumed this spot today. The convergence of cost inflection, regulatory and policy tailwinds will happen in the coming 2-3 years before the window closes.

The implications for each of these stakeholders are as follows:

Company owners and promoters

- Make choice from one of the three archetypes - Move up, Move Across and Move Deep based on initial positions but one should refrain from trying out all three at once.
- Obtain fill-finish capabilities through capex, joint venture or long-term MSA; postponing beyond FY27 would make the company rely on somebody else's OEM capacities in 2028.
- Prioritize green chemistry (DMF free, continuous flow, enzymatic hybrid) while planning for any capacity addition in peptides or oligonucleotides.

Investors

- Follow FY27 capex commitments to identify which Indian CDMOs will be leaders in FY29-32.

- Analyse earnings of complex-molecule CDMOs according to share of innovator contracts, not just volumes of generic APIs.
- Recognise that ADC payload and phosphoramidite verticals deliver specialty chemicals margins without full CDMO integration complexities.

Policy makers and regulators

- Create PLI 2.0 to incentivize advanced intermediates - protected amino acids, phosphoramidites, chelator precursors, instead of just bulk APIs.
- Speed up DAE-industry collaborations to monetize state isotope capacities and become global leaders in radiopharma.
- Mirror Indian regulations for SPPS solvents to the REACH regulation to be compliant with export standards.

Semaglutide was the signal of Indian pharma's capabilities and of what it still needs to develop. Stakeholders who got the signal and started investing in capacity, designing policies and making capex commitments would benefit disproportionately when the next wave hits.

Key Data Sources

- Business Standard (June 2026) - India CDMO capacity crunch coverage; Piramal Pharma exit from generic GLP-1 race.
- MarketsandMarkets (February 2026) -Global oligonucleotide therapeutics market USD 17.7B by 2030.
- Technavio, Grand View Research - ADC market size and ADC CDMO segment projections.
- Meditech Insights, Precedence Research - Radioligand therapy and Lu-177 market forecasts
- ACS Organic Process Research & Development (2025) -Sustainable ϵ -Lys branched GLP-1 SPPS route.
- Neuland Laboratories, Anthem Biosciences, Piramal Pharma Solutions - corporate disclosures and press releases.
- Bloomberg, India Briefing, Medical Dialogues - semaglutide patent expiry and generic launch tracking.