Manufacturing of Non-Patented Veterinary Vaccines

Investment pitchbook

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KEARNEY

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Executive Summary

Attractive Investment Destination	– **Pakistan** is emerging as a **regional powerhouse**, with a **reformed economy** (inflation stabilized at the lowest level in the past 50 years and GDP expected to cross USD 3.3T by 2050) and **vibrant talent** (7th largest global workforce, with 64% of the workforce under 30) – Investors can count on **strong government support**, including **accelerated licensing**, **tax incentives** under industrial development schemes, and **demand support**
Significant Reliance on Imports	– **Veterinary vaccine demand** in Pakistan is rising, as vaccines are **critical to national health and food security**, with agriculture contributing ~15% of GDP and poultry representing 40-50% of total meat output – Despite an **advanced pharma and veterinary research ecosystem**, Pakistan **imported USD 100 million in veterinary vaccines in 2024** (expected to reach ~USD 145 million by 2030) – Th**e National Livestock Transformation Plan** (2024–34) aims to boost productivity, food security, and exports, while livestock vaccination remains low (<30%), creating significant upside for local manufacturers.
Viable and Attractive Opportunity	– Investors can develop and operate a **manufacturing plant focused on non-patented veterinary vaccines** targeting mainly **local import substitution** – The **project cost** is estimated at **USD 45 Mn** for a **1.8 million vial capacity (1.8 billion doses)**, focused on **non-patented, poultry-segment products** priced at ~**PKR 10 per dose**, with mid-term potential to **expand into livestock segment** – Local banks can provide up **70% debt financing for construction**, with an expected **23-24% IRR for equity investors** over a 20-year operating horizon

Pakistan: Your Pharma Destination

Pakistan Value Proposition

Reformed Economy	**USD 3.3Tn[1]** Expected GDP in 2050 *(from USD >410Bn[2] today)*	**B-** Improved Credit Rating[3] from CCC-	**Top 10** In Business Entry Regulations ranking[5]	**Stabilized Inflation** At lowest levels since 1968[6]	**Stabilized Currency** Achieved since 2023 in coordination with IMF	**Special Economic Zones (SEZs)** Robust fiscal and trade incentive packages

Vibrant Demographics and Talent	**255 million** Large and growing population[8]	**64%** Population younger than 30[7]	**7th largest** Global workforce[8]	**2 million** University students enrolled every year[9]
Advanced Livestock & Pharma Ecosystem	**Top global livestock producer** #10 beef producer and #11 poultry producer	**3 Veterinary Research Institutes (VRIs)** With dedicated R&D and production facilities	**National Livestock Transformation Program** To modernize sector and ensure exports	**Animal Disease Control Initiatives[10]** Making vaccine supply a public health priority

1. Goldman Sachs; 2. National Accounts Committee; 3 Fitch Ratings; 4. Bloomberg, 84% in PKR; 5. World Bank's B-READY assessment; 6. State Bank of Pakistan; 7. United Nations; 8. CIA World Factbook; 9. Higher Education Commission; 10. Such as foot-and-mouth disease (FMD) eradication plans

Investors have an opportunity to develop and operate a non-patented veterinary vaccines manufacturing plant

4. Assuming vials with 1,000 doses
. In local currency; over 20 years of operations (detailed in Business Case section)
3. Year 10 of operations
4. Excludes working capital requirement (detailed in Business Case section)
5. At current USD exchange rate (PKR 280.6)
6. National Livestock Transformation Program
7. Veterinary Research Institutes
Source: Expert input, DRAP, Pharma Manufacturers Association

Opportunity overview and key highlights

Opportunity Description

Develop and operate a non-patented veterinary vaccines manufacturing plant, focusing formulation, fill & finish and secondary packaging and gradually integrate upstream across the supply chain

Project detailed next

High-Level Opportunity Facts

A Project Details

- **Non-Patented Veterinary Vaccines**
- **1.8 Bn Doses 1.8 Mn Vials[1]**
- **International Certification (cGMP)**

B Supply-Demand Gap	Complete reliance on imports of vaccines to satisfy local demand (imports USD 200+ Mn between 2022-2024)
C Investment Model	Private sector investment with strong government support
Return Profile	IRR: 23-24%[2]
D Run-rate Revenues	PKR 34-35Bn[3]
Estimated Project Cost	USD 45Mn[4,5] *(70:30 debt to equity structure)*

Value Proposition

Opportunity to be a First Mover

Focus of this opportunity

Cell Culture/ Fermentation → Purification, Filtration, and Formulation → Fill & Finish → Secondary packaging

First-mover advantage in an underserved market, with potential to establish manufacturing operations and gradually integrate upstream across the supply chain

- **Selected market segments** (e.g., poultry vaccines), with **important demand tailwinds** from NLTP[6]
- **Established Client Base**: Diverse local demand of veterinary vaccines from private sector companies, as well as government programs
- **R&D Partnerships**: VRI[7] local-strain research provides a strong scientific base to increase vaccines efficacy and unlock latent demand
- **Skilled Technical Talent**: Large talent pool of 100,000+ pharma professionals
- **Strong Government Backing**: Robust policies and incentives enhance project viability

A. The plant will manufacture non-patented veterinary vaccines with generalist production capabilities, focusing on fill & finish and secondary packaging in the value chain

Project details (NOTE: Plant capacity, revenue and cost per vial will depend on final vaccine chosen for production)

Offering

- Generalist production capabilities (i.e., plant equipped to manufacture multiple types of non-patented vaccines)
- Manufacturing plant to include proper segregation and changeover protocol to handle multiple vaccine types
- Opportunity to prioritize poultry segment, given the more advanced/industrialized state of the segment (livestock has a lower penetration of intensive farming)

Technical Specifications

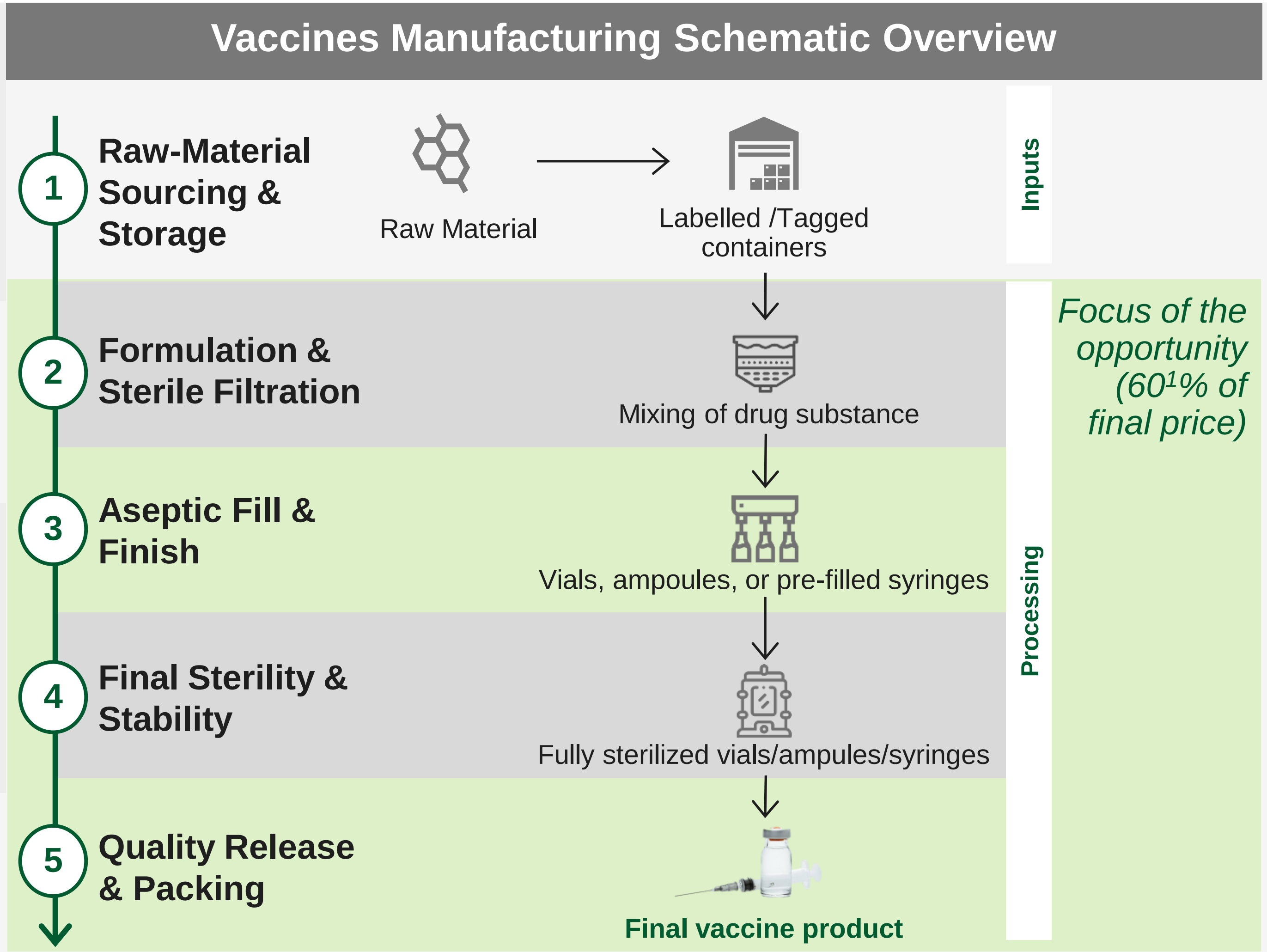
- Capacity: ~1.8 Mn vials per year (1,800 Mn doses)
- International cGMP certification enabling potential export activity

Targeted End-Users/Buyers

- Public spend linked to eradication of transboundary / high-impact livestock diseases
- Private sector companies (e.g., pharmacies, agriculture companies)
- Private sector vaccines mostly acquired by the poultry industry (>90% of demand)

Location

- In close proximity to Pakistan's main population hubs: Punjab, KPK, Sindh, Islamabad
- Targeted special economic zones

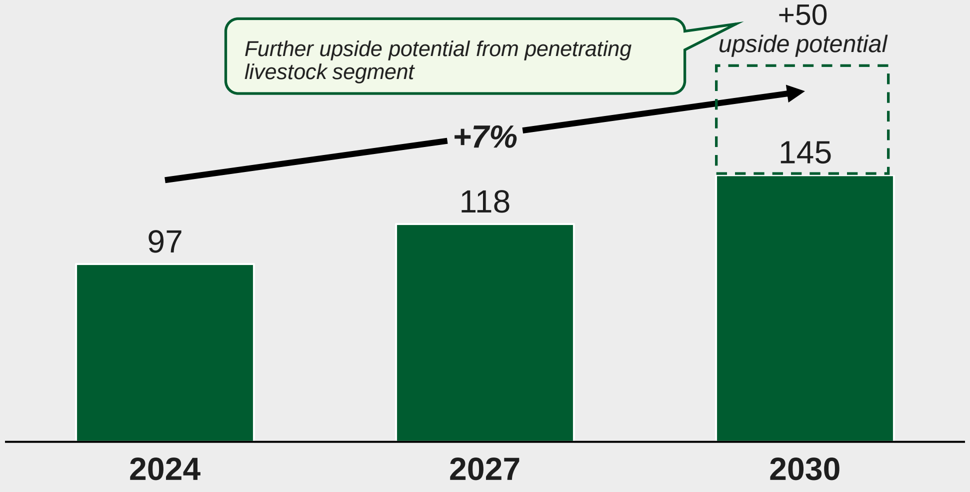


1. Expert input

B. The opportunity aims to leverage Pakistan's growing Pharma market and the Government's support to reduce import reliance for human vaccines

Vaccines Demand Tailwinds

Veterinary Vaccines Imports in Pakistan (USD Mn)[1]



- Local vaccine production remains minimal, with the vast majority of domestic demand met through imports
- Most of the imports are vaccines used for poultry diseases (>90% of vaccine demand), such as Newcastle, Bronchitis, and Influenza
- Potential for acceleration of market growth with the development of intensive farming for livestock
- Local production and development of solutions/formulations tailored to local variants of diseases offers a strong value proposition to substitute imports

Demand Drivers

Demand Drivers	
Large Market	– **Growing Demand**: Pakistan Vet Vaccine market to continue **upward growth trajectory of 5-10% p.a. until 2030**, driven by a large and growing livestock sector – Government set a **10-yr plan** (NLTP[3] 2024-34) to **modernize** the **livestock sector**, increasing **productivity**, food **security**, and generating **exportable surpluses** – **Public spend** tied to eradication of transboundary/**high-impact livestock diseases** (e.g., PPR[4], FMD[5]), **private spend** mostly driven by **poultry vaccines** (commercial farms and hatcheries) – **Global veterinary vaccines** upside with **projected to grow** from USD 12 Bn in 2024 to USD 19 Bn by 2032 at **5-6% CAGR[2]**
Increased Reliance on Vaccines	– Poultry accounts for **40-50% of the total meat production in Pakistan**, and the **poultry population has grown 10-12% p.a.** – In addition, the livestock sector is of great economic importance to Pakistan, **contributing to ~15% of total GDP** – Growth of **intensive farming for livestock**, to **enable additional vaccine adoption** (given low penetration rates <5%)
Global Trends	– Global Supply Chain Shift: Rising protectionism pushing **pharma reshoring**; Pakistan positioned as a regional hub connecting Middle East and Asia

1. Estimates include import data from DRAP; 2. Fortune Business Inisght; 3. National Livestock Transformation Program; 4. Peste des petits ruminants; 5. Foot-and-mouth disease
Source: Fitch, NIH, Pakistan Poultry Association, expert input, desktop research, Fortune Business Inisght, 6Wresearch

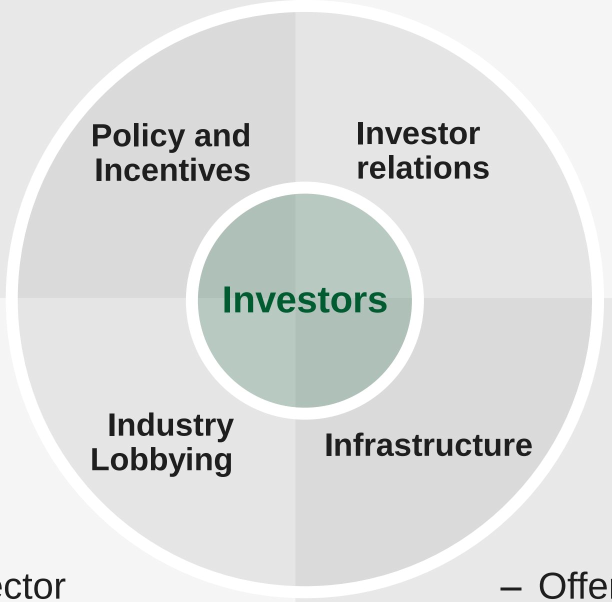
C. Investors will be supported by public and private parties in a robust Pharma ecosystem

Drug Regulatory Authority of Pakistan (DRAP / MNHRC)

- Responsible for policy framework and incentives
- Offers regulatory and technical support, as well as capability-building for the industry
- Supports investors in fast-tracking required approvals for vaccines manufacturing

Special Investment Facilitation Council (SIFC)

- Facilitates and fast-tracks foreign and domestic investments
- Provides a streamlined, one-window operation for investor support and coordination across government entities



Pakistan Veterinary Pharmaceuticals Association (PVPA)

- Represents veterinary pharma sector interests
- Engages with authorities for a science-based and efficient process
- Offers technical guidance, training and networking to industry members[1]

Special Economic Zones

- Offer fiscal and trade benefits
- Ensure robust infrastructure (e.g., electricity stability)

1. Bringing together local and international stakeholders

C. Investors will benefit from the Government support to create an attractive business and regulatory environment

Key opportunity enablers and incentives

Ease of Doing Business

- Ongoing review and simplification / deregulation across sectors
- One-stop licensing and digital registration
- PPRA[1] has rolled out an e-procurement platform improving supplier access and transparency

Expedited Approval Process

- Fast-tracked regulatory approvals (joint task force between DRAP and Ministry of Food Security) for veterinary vaccines, streamlining market entry for key products
- Government enabling development of new veterinary vaccines through R&D support / funding[2]

Tax & Fiscal Incentives

- Tax breaks and tax holidays
- Reduced import duties on vaccine required machinery and raw materials (sales tax reduction to 1% and 0% customs duties on select input materials and machinery)
- EXIM Bank of Pakistan mandated to provide project financing and working capital financing for exports and import-substi-tution projects

Infrastructure Incentives

- Special Economic Zones
  - Guaranteed electricity stability
  - Industrial infrastructure / land incentives
  - *(Planned) Pharma Economic Zone*
- Export Processing Zones (EPZs) and export-oriented incentives (e.g., duty exemptions)

1. Public procurement regulatory authority 2. Agreement between National Institute of Biotechnology & Genetic Engineering, Faisalabad and Sindh Institute of Animal Health
Source: DRAP, SIFC, P3A, other Pakistan Government entities

D. Consequently, investors can expect 23-24% IRR over the coming 22 years, with USD 45Mn in estimated CAPEX and 70% debt financing

Estimated project financials and investment case

(Figures provided are estimations based on available information)

Business Case			
Return profile	**Expected IRR**	**22-23%[1]**	– 2-year development period – Computed based on 20-year operations – Payback period impacted by development period and cash outflows for interest in first 10 years of operations
	Payback Period	**10 years[2]**	
Operations	**Revenues**	**PKR 34-35Bn[3]**	– Initial capacity utilization of 40%, ramping up to 90% over 5 years of operations – Assumes a plant capacity of 1.8Mn vials (1.8 Bn doses) per year and an average price of PKR 10k per vial (10 PKR/dose assuming vials with 1,000 doses) based on industry experts – Commercialization focused on non-patented vaccines for poultry segment, with limited differentiation and market price premium
	EBITDA Margin	**15%[3]**	– Costs assumed: COGS, utilities, labor, QC and testing, annual maintenance, marketing and sales, and other costs – Raw material (imported purified antigens for local formulation) as the main cost driver, accounting for ~50% of the cost base
	NOPAT	**PKR 5-6Bn[3,4]**	
Development	**Construction Cost[5]**	**PKR 12.6Bn[5]** (USD 45Mn[6])	– 70% financing of construction – 12-year loan duration (including initial 2-year grace period), 12.5% interest rate (based on offered local bank financing terms)
	Equity Input: Construction	**PKR 3.8Bn** (USD 13.5Mn[6])	– 30% equity required for construction
	Equity Input: Working Capital	**PKR 0.6Bn** (USD 2Mn[6])	– 30 days[7] of OPEX required in first operating period

Business case illustrates poultry vaccine plant, given immediate export substitution potential; however, livestock vaccines can be set up and generate similar performance

1. Computed on 20-year operating period and local currency;
2. Payback period excludes development lead time
3. Run-rate figures after demand stabilization (year 10 of operations / year 12 of contract);
4. NOPAT computed as EBIT * (1-Tax); corporate tax rate of 29% applied
5. Estimated construction cost based on expert input and industry benchmarks
6. At current USD exchange rate (PKR 280.6)
7. Assumes netted effect of payment cycles to suppliers and from clients

D. Support mechanisms are in place to support the mitigation of potential risks impacting the investment case

Key investment risks and mitigation measures

Risk type	Description	Degree of Risk	Investor Mitigation Actions	Public Sector Support
Demand/ Revenue	Risk of not achieving projected revenues or sales targets due to lower demand or competitive pressure	**Low** – Significant local supply imbalance in Pakistan given limited local vaccine production capabilities; limited local competition	Focus go-to-market on securing contracts with retail entities to ensure demand	Support demand through strong enforcement of regulatory requirements (i.e., localization requirements)
Macroeconomic Conditions	Risk of inflation or currency depreciation affecting profitability	**Medium** – Recent track record of inflation decline (at lowest levels since 1968[1]) pointing to stabilization	Arrange local currency financing for the project and enforce USD-indexed pricing	Facilitate access to local currency loans
Supply Chain Risks	High reliance on imported raw materials and inefficient port handling can delay deliveries	**Low** – Pharmaceutical supply chain routes, especially with China and India, are well established given the magnitude of current imports and the size of the industry	Diversify suppliers and build contingency inventory levels of essential raw materials	Ensure fast customs pass-through to avoid spoiled materials; Expand regional trade agreements
Unreliable and Costly Electricity	Unreliable and elevated electricity tariffs affecting investment profitability	**Low** – Electricity prices in Pakistan are above regional ones; however, the government is engaged in several infrastructure projects aimed at power supply stabilization, which helps bring cost down	Explore renewable energy integration to offset grid consumption on the long term	Provide more cost-effective electricity industrial tariffs to ensure investment attractiveness
Regulatory / Legal	Risk of sudden policy changes impacting contract or taxes	**Low** – Recent reforms and deregulation trend suggesting commitment to private sector partnerships	Include independent jurisdiction (e.g., UK) in contract; include robust stabilization and early termination clauses in concession contract	Offer legal protections and enable international arbitration where applicable

1. St. Louis Federal Reserve Bank

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APPENDIX

A. Pakistan has a track record of successful Foreign Direct Investments across sectors

Examples of Foreign Direct Investment (FDI) projects in Pakistan

FDI projects (non-exhaustive)

Hangzhou Newsea (China)
USD 50-70Mn

- Joint venture (ETACI Limited) to expand API manufacturing capacity in Pakistan
- USD 50–70Mn investment to add 20–30 new APIs, leveraging Citi Pharma's existing infrastructure; commercial operations expected within 12–18 months

AD Ports (UAE)
USD 220Mn

- 50 year concession agreement to manage, operate and develop the Karachi Gateway Terminal
- USD 200Mn investment in infrastructure development by AD Ports in first 10 years

Al Mirqab Capital (Qatar)
Power Construction Corp. (China) USD 2.09Bn

- Construction of coal-powered power plant in Port Qasim, under build-own-operate (BOO) model
- USD 2.09Bn investment, of which c.a. USD 500Mn in equity

DP World (UAE) and **National Logistics Corp.** (Pakistan) JV investment not public

- Joint venture (DP World: 60%) focused on road freight logistics approved
- Follows MoU by DP World for the development of 50km freight corridor from Karachi Port to Pripri

Air Arabia (UAE) and **Lakson Group** (Pakistan)
JV investment not public

- Air Arabia enters joint venture with Pakistan's Lakson Group to launch low-cost airline Fly Jinnah in 2022
- Operator certificate and license acquired

Other Announcements and MoUs
(non-exhaustive)

- Reportage Properties (UAE): JV with Empire Holding Pakistan for USD 300Mn real estate development in Islamabad and Lahore
- Emaar Group (UAE): JV with Giga Group Pakistan for USD 2.4Bn Crescent Bay real estate
- Saudi Development Fund (KSA): Potential investment in mining infrastructure (USD 100Mn)
- Manara Minerals (KSA): Exploring stake in Reko Diq copper and gold mine (USD 7Bn)

D. Opportunity P&L

Extract from financial model

Preliminary numbers being validated; figures provided are estimations based on available information

Numbers in PKR	Year 1[1]	Year 5[1]	Year 10[1]
Utilization	40%	80%	90%
Total Revenue	**8,243,761,408**	**21,611,779,121**	**34,100,592,986**
Cost of Operations			
COGS	3,503,598,598	9,185,006,126	14,492,752,019
Utilities	700,719,720	1,837,001,225	2,898,550,404
Labor	1,051,079,579	2,755,501,838	4,347,825,606
QC & testing	700,719,720	1,837,001,225	2,898,550,404
Annual maintenance	350,359,860	918,500,613	1,449,275,202
SG&A	700,719,720	1,837,001,225	2,898,550,404
Total OPEX	**7,007,197,196**	**18,370,012,253**	**28,985,504,038**
EBITDA	**1,236,564,211**	**3,241,766,868**	**5,115,088,948**
EBITDA Margin	*15%*	*15%*	*15%*
NOPAT	**743,483,040**	**2,182,602,468**	**3,529,479,143**
Financing			
Interest	1,320,655,957	966,999,530	212,034,873
Debt Outstanding	9,977,589,755	6,794,681,909	- 0.00

Revenue calculation based on:
- Manufacturing capacity of 1.8 Mn vials (1.8 Bn doses) per year
- Initial average price per vial[2] of PKR 10,000 (10 PKR/Dose)
- Limited price mark-up given low product differentiation (of non-patented product)
- Annual PKR price increase of 7%

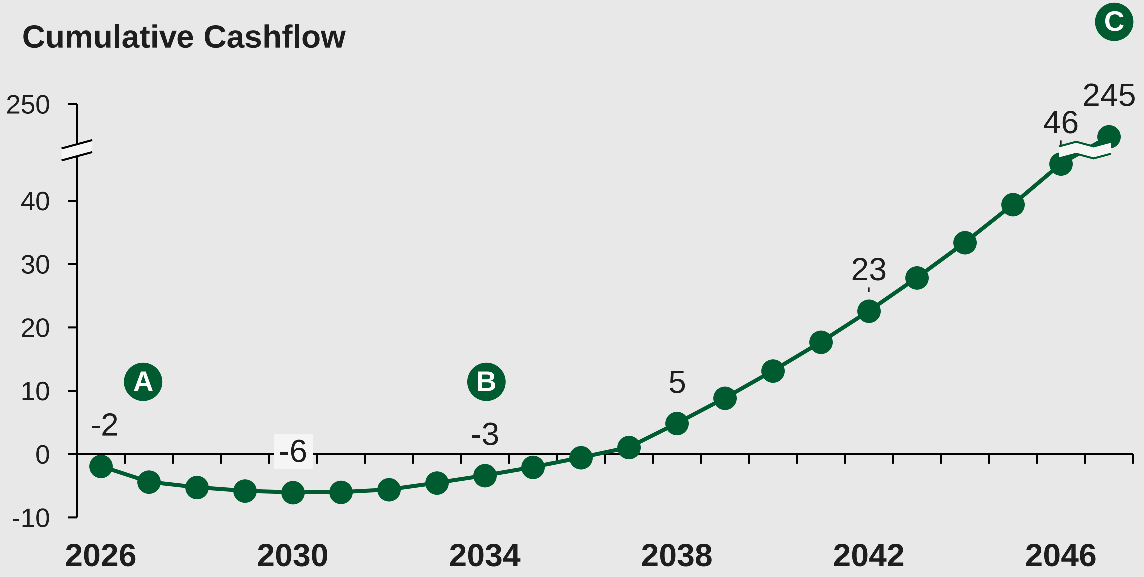
- Raw material (imported purified antigens for local formulation) as the main cost driver, accounting for ~50% of the cost base
- Expert input / industry reports
- Other desktop research and benchmarking

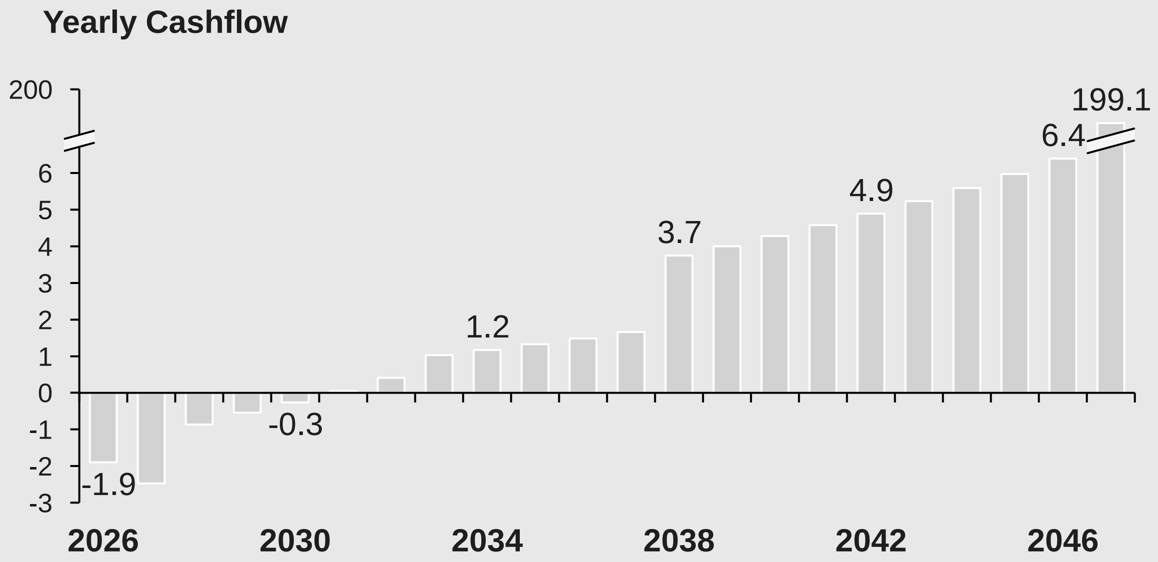
- Project coverage, loan duration and interest rate provided by local bank
- Debt in Year 1 includes additional interest accrued by not paid during development

1. Operating years, after 2-year development period (i.e., contract years 3, 7, 12); 2. Considering 10 PKR per dose, and vials containing 1,000 doses

D. Investor Cash Flows

Investor cash flows, PKR Bn





Investor cash flows:

- Upfront equity investment:
    - PKR 3.8Bn over 2 years of development
    - PKR 0.6Bn in working capital to fund initial operating period
- Cumulative cash flows over the duration of the investment: PKR 245 Bn (including terminal value)

Additional information:

A Development period: 2 years; debt drawdown as per construction phasing

B Payback period: year 10 of operations

C Terminal value: PKR 190Bn; computed as 2.8x[1] Revenue multiple (as per NYU Damodaran industry benchmarks in emerging markets)

1. Chemicals pharma valuation applied for conservatism; additional IRR upside potential from valuation expansion to Biologicals

D. P&L Assumptions

Extract from financial model

Preliminary numbers being validated; figures provided are estimations based on available information

Revenue Assumptions		
Assumption	**Unit**	**Value**
Price	**PKR / dose** **PKR / vial**	**10** **10,000**
Manufacturing Plant Capacity	**Doses / year** **Vials / year**	**1,800,000,000** **1,800,000**
Initial Utilization	**%**	**40%**
Incremental Utilization	**%**	**10%**
Final Utilization	**%**	**90%**
Inflation (PKR)	**%**	**7%**

OPEX Assumptions		
Assumption	**Unit**	**Value**
COGS	**% of Total OPEX**	**50%**
Utilities	**% of Total OPEX**	**10%**
Labor	**% of Total OPEX**	**15%**
QC & testing	**% of Total OPEX**	**10%**
Annual maintenance	**% of Total OPEX**	**5%**
SG&A	**% of Total OPEX**	**10%**
EBITDA Margin	**%**	**15%**

Source: Expert input, Company Benchmarks

D. CAPEX assumptions

Extract from financial model

Preliminary numbers being validated; figures provided are estimations based on available information

Total Project Cost			
Assumption		**Unit**	**Value**
Total CAPEX		**PKR**	**12.6Bn**[1]
Total CAPEX Breakdown	**Land**	**%**	**3%**
	Equipment *(Form., Fill & Finish, Packaging)*	**%**	**52%**
	Utilities	**%**	**15%**
	QC Area	**%**	**15%**
	Building / EPC	**%**	**12%**
	Other	**%**	**3%**

1. USD 45Mn, converted at current rates (PKR 280)
Source: Expert input, regional and global project examples

Thank You

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