

INDUSTRIAL GASES

Sector Study Report by VIS

The global industrial gases market is large and growing: market research estimates place its revenue at ~USD 108–119 billion in 2024–2025, led by demand from chemicals, steel, electronics, food & beverage and healthcare (medical oxygen and specialty gases). The sector is dominated by integrated multinationals (Linde, Air Liquide, Air Products, Messer) and is seeing a shift toward decentralized/onsite generation and specialty high-purity products.

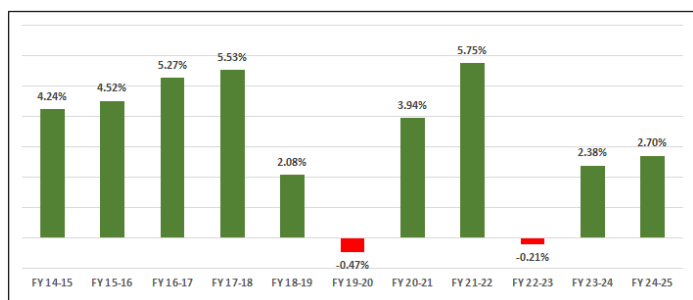
November 26, 2025

Pakistan Macro-economic Overview

Pakistan has made notable progress in pulling back from crisis, with inflation easing significantly, the current account recording a temporary surplus, and the fiscal deficit narrowing. However, the economy continues to grapple with high debt, import dependence, and a persistently narrow tax base. While short-term conditions indicate relative stability, medium-term sustainability will depend on comprehensive reforms—expanding the tax net, restructuring the energy sector, and diversifying exports beyond traditional textiles.

Growth, Prices, and Employment

GDP Growth: Pakistan stabilized growth at 2.5% in FY24 following near-stagnation in FY23. In FY25, growth inched up to 2.7%, supported by a gradual recovery in agriculture and certain service sectors. For FY26, multilateral institutions such as the IMF and World Bank project growth in the range of 3.5–3.6%, conditional on sustained policy discipline.



Inflation: Inflation was the dominant challenge in FY24, averaging above 23%, primarily due to elevated energy costs, currency depreciation, and supply disruptions. A sharp disinflation followed in FY25, with average CPI declining to 4.6%, and further easing to 3.6% during July–August FY26. This improvement reflects currency stability, moderation in food prices, and a tight monetary stance.

Employment: The official unemployment rate stands at 6.3%, based on the 2020–21 Labor Force Survey. The absence of updated surveys obscures the current labor market dynamics. Anecdotal evidence suggests limited job creation, rising underemployment, and continued informality, despite a stable headline unemployment figure.

Implication: While growth recovery is progressing, it remains fragile, with employment gains lagging behind. Inflation is now firmly under control, creating scope for monetary easing and potential adjustments in interest rates.

Fiscal and Debt Dynamics

Fiscal Deficit: The consolidated deficit remained elevated at 6.9% of GDP in FY24 but narrowed to 5.4–5.6% in FY25, supported by record FBR collections and curtailed federal development spending. The FY26 budget sets an ambitious target of 3.9% of GDP.

Tax Revenues: FBR collections rose from Rs 9.3 trillion in FY24 to Rs 11.9–12.0 trillion in FY25, with a target of Rs 14.1 trillion for FY26. Despite this improvement, the tax-to-GDP ratio remains in single digits, significantly below emerging-market benchmarks.

Public Debt: Debt sustainability continues to pose the most significant macroeconomic risk. Public debt increased to 73.2% of GDP in FY25, compared to 72% in FY24, with the nominal stock reaching Rs 74.9 trillion by April 2025. Domestic debt forms the majority, standing at Rs 54.5 trillion as of June 2025.

Debt Servicing: Interest payments now absorb over 60% of FBR revenues, severely constraining fiscal space for development and social sector spending.

Implication: Fiscal consolidation has shown progress, but debt dynamics remain highly vulnerable. Without meaningful tax base expansion, dependence on borrowing will persist, keeping debt ratios elevated.

External Sector and Balance of Payments

Remittances: A key positive, remittance inflows rose from USD 30.3 billion in FY24 to a record USD 38.3 billion in FY25, largely driven by strong contributions from the Gulf region. Momentum continued in July 2025, with inflows of USD 3.2 billion.

Exports & Imports: Exports of goods and services increased modestly from USD 38.9 billion in FY24 to

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Indicator	FY24	FY25	Commentary / Direction
GDP Growth (%)	2.4%	2.7%	Gradual recovery driven by agriculture and stabilization policies.
Inflation (CPI, % avg)	23.4%	4.6%	Sharp moderation but still elevated vs peers.
Policy Rate (%)	20.5% (Jun-24)	11.0% (Jun-25)	Tight stance easing slightly with inflation fall.
Exchange Rate (PKR/USD)	278 (Jun-24)	284 (Jun-25)	Relative stability post-IMF SBA, but pressure persists.
Fiscal Deficit (% of GDP)	6.9%	5.4%	Some consolidation via revenue measures.
Current Account Balance (\$ bn)	-2.0	+2.1	Slipped back into deficit as imports rose.
Trade Balance (\$ bn)	-24.0	-29.0	Import rebound outpaced exports.
Exports (Goods & Services, \$ bn)	30.7	40.7	Modest growth, led by textiles & IT.
Imports (Goods & Services, \$ bn)	54.7	70.1	Stronger import demand with partial recovery.
Workers' Remittances (\$ bn)	30.3	38.3	Steady inflows, supporting FX reserves.
Foreign Direct Investment (\$ bn)	1.4	2.3	Still weak but some uptick in energy & telecoms.
Foreign Exchange Reserves (\$ bn, SBP)	9.4 (Jun-24)	14.5 (Jun-25)	Import cover 1.7 months, still thin.
Public Debt (% of GDP)	70%	73%	Rising burden amid high interest payments.
Energy Prices (Avg Power Tariff, Rs/ kWh)	29.8	36.0	Significant rise, eroding industrial competitiveness.
Gas Price (\$/MMBtu)	5.0 to 11.0	10.0 to 11.0	High regional disadvantage.
Unemployment Rate (%)	6.3%	6.3%	Latest official LFS 2020–21 figure

USD 40.7 billion in FY25. However, imports expanded more sharply, rising from USD 64 billion to USD 70 billion, thereby widening the trade deficit. July 2025 reinforced this trend, with exports at USD 3.5 billion against imports of USD 6.3 billion.

Current Account: Despite the widening trade gap, record remittances drove the current account into a surplus of USD 2.1 billion in FY25 — a rare outcome after years of persistent deficits. However, July 2025 saw a return to deficit (USD 254 million), underscoring the fragility of this balance.

Implication: The external sector has strengthened due to robust remittances, but remains exposed

to import dependence, elevated energy costs, and vulnerability to global oil price volatility.

Future Outlook (FY26 and beyond)

Growth: GDP growth in FY26 is projected to improve moderately to 3.5–4%, contingent on political stability and continued progress in power sector reforms.

Inflation & Monetary Policy: With CPI easing to around 3–4%, the central bank has scope to gradually reduce policy rates, which could support investment and credit expansion. Nonetheless, risks persist if fiscal slippages erode market confidence.

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Fiscal and Debt: Meeting the FY26 fiscal deficit target of 3.9% appears challenging. Pressures from energy subsidies and weaker petroleum levy collections may widen the gap, necessitating additional borrowing. Public debt is expected to remain elevated, near 77% of GDP, raising concerns about long-term sustainability.

External Accounts: Remittance inflows are likely to remain strong, but exports will require structural reforms in value addition and market diversification to accelerate meaningfully. Imports are expected to rise alongside growth, potentially straining the current account. Adequate SBP reserves will depend on sustained support from the IMF, EU, and China.

The macroeconomic outlook remains finely balanced. Political uncertainty — whether in the form of contested reforms, governance slippages, or delays in decision-making — poses a key risk to investor sentiment and external financing flows. Similarly, slow or incomplete implementation of energy and tax reforms could reverse the recent stabilization gains by perpetuating fiscal imbalances and structural inefficiencies. Externally, Pakistan remains vulnerable to global commodity price swings, particularly oil, which could quickly widen the import bill and reignite inflationary pressures.

On the upside, steadfast adherence to the IMF program and continued engagement with bilateral and multilateral partners would help secure external financing and maintain reserve adequacy. Robust remittance inflows are also expected to provide a vital cushion to the current account, partially offsetting the structural trade deficit. If complemented by credible reforms in taxation, energy pricing, and export competitiveness, these factors could not only consolidate short-term stabilization but also lay the foundation for a more durable growth trajectory.



Global Industrial Gases Sector

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Market Size

The global industrial gases market is valued at an estimated USD 110–120 billion in 2025, reflecting steady mid-single-digit expansion (~5–7% CAGR) over the past few years. Growth momentum is anchored in Asia-Pacific, which accounts for roughly 35–40% of global revenues, supported by rapid industrialization, infrastructure expansion, and rising energy and healthcare demand.

Post-pandemic dynamics have structurally lifted the baseline for medical and high-purity gases, while specialty and electronic gases are gaining traction from semiconductor and renewable manufacturing value chains. Mature markets in North America and Europe exhibit slower but stable replacement demand, indicating that global growth is now volume-driven by emerging economies and value-driven by product specialization.

Key Regions and Players

Asia-Pacific: The largest and fastest-growing region, led by China, India, Japan, and South Korea. Demand is driven by robust industrialization, expanding healthcare infrastructure, and electronics/pharma manufacturing. Domestic producers increasingly collaborate with global majors such as Linde and Air Liquide for Air Separation Units (ASU) installations and specialty gas production.

North America: A mature but high-value market characterized by diversified industrial consumption (energy, chemicals, metals). Major global players — Air Products, Linde, and Praxair (now part of Linde Group) — dominate through long-term supply contracts and on-site pipeline networks for refineries and chemical complexes.

Europe: A technologically advanced but slower-growth market focusing on decarbonization and green hydrogen transition. Air Liquide, Messer, and Linde lead operations, supported by strong

regulatory frameworks promoting carbon-neutral gas production.

Middle East & Africa: Emerging growth driven by refinery expansion, steel, and fertilizer sectors. Regional gas producers such as Gulf Cryo and Abu Dhabi Industrial Gases are scaling cryogenic infrastructure, often via joint ventures with global firms.

Latin America: Gradual industrial recovery post-pandemic, mainly in Brazil and Mexico. Demand concentrated in steel, food processing, and healthcare. Multinationals operate through subsidiaries (e.g., Linde Brazil, Air Liquide Mexico), ensuring supply stability.

Technologies and Processes

Cryogenic (ASUs): Core technology for large-scale oxygen, nitrogen, and argon production, accounting for ~70% of global capacity (2024). ASUs deliver high-purity gases (>99.5%) and multiple outputs at the lowest unit cost for volumes above ~100 TPD, but require high CAPEX and stable utility infrastructure. The global ASU market is valued at ~USD 4.2 billion (2024), projected to grow at ~4.7% CAGR through 2034.

Pressure Swing Adsorption (PSA) / Membrane / On-site Generation: Preferred for hospitals, SMEs, and specialty users due to low CAPEX, modular design, and rapid deployment. PSA and membrane systems make up ~30–35% of new installations, expanding at ~7% CAGR. While purity and efficiency are lower than cryogenic systems, they offer flexibility and energy savings in localized setups.

Compression, Pipeline, and Cylinder Logistics: Distribution defines cost efficiency. Pipeline supply dominates high-volume clients (refineries, hospitals) by minimizing transport costs, while cylinder fleets cater to remote or retail users. Integrated logistics networks and on-site generation are increasingly adopted to offset energy and transport volatility.

Emerging Trends:

Modular ASU/PSA systems for remote and mid-scale users: Smaller, modular solutions are gaining traction in emerging markets where full-scale cryogenic

capacity is not viable — enabling localized production and quicker deployment.

Digitalization and remote monitoring: Use of IoT, AI-based predictive maintenance and remote operations for gas plants and distribution fleets is increasing to reduce downtime, O&M cost and improve safety.

Circular economy integration & CO₂/argon recovery: Some advanced plants are integrating CO₂ capture from production and utilizing argon/oxygen offspring to improve asset utilization and reduce waste.

Green hydrogen synergy: As green hydrogen infrastructure expands, industrial-gases firms are positioning to supply oxygen/nitrogen by-products or integrate with hydrogen value-chains, thus securing new revenue streams and decarbonization credentials.

Key Trends

On-site generation & pipeline builds: Major hospitals and industrial users are shifting from cylinder-supply to on-site PSA/ASU and pipeline networks to improve continuity and reduce logistics costs.

Rising demand for specialty/high-purity gases: Growth in pharma manufacturing, semiconductors, LED/solar value chains is driving higher demand for specialty gases (ultra-high purity, custom blends).

Energy & decarbonization pressure: With cryogenic ASUs extremely electricity-intensive, operators are investing in efficiency upgrades, electrification of auxiliary systems, and captive renewable energy to manage costs and emissions.

Challenges

Energy cost and reliability: Industrial gas production remains energy-intensive, with global average electricity costs rising amid power-sector volatility and decarbonization pressures. Producers are investing in efficiency upgrades, captive renewables, and long-term utility contracts to mitigate exposure.

High capital intensity: Cryogenic Air Separation Units require significant upfront investment and have long lead times, making them vulnerable to global interest rate cycles, supply chain delays, and inflationary pressures.

Distribution and logistics inefficiencies: Cylinder and tanker-based distribution remains costly due to cryogenic handling requirements and fragmented infrastructure, particularly in developing regions.

Regulatory and compliance risk: Medical and specialty gas production is subject to stringent health, safety, and environmental standards globally; disruptions or non-compliance can lead to reputational and legal consequences.

Foreign exchange and supply chain dependency: Dependence on imported compressors, valves, and cryogenic components exposes operators to currency fluctuations and geopolitical supply chain risks, especially in emerging markets.

Opportunities

Healthcare and medical gas expansion: Rising healthcare spending and infrastructure development globally are driving sustained demand for medical oxygen, nitrogen, and CO₂ in hospitals, diagnostics, and biotechnology facilities.

Specialty and high-purity gases for advanced manufacturing: Semiconductor, pharmaceutical, and food-packaging industries are expanding rapidly, boosting demand for ultra-high-purity gases and custom blends with high technical barriers and profit margins.

Modular and on-site generation solutions: Growing adoption of compact PSA and modular ASUs for decentralized production supports faster commissioning and energy efficiency, particularly in emerging and energy-volatile markets.

Green hydrogen and decarbonization linkages: Industrial gas producers are increasingly integrating into green hydrogen, carbon capture, and circular economy projects — establishing new revenue streams and enhancing sustainability credentials.

Pakistan Industrial Gases Sector

Pakistan's industrial gases sector supports diverse end-markets including healthcare, metallurgy, chemicals, food processing, and pharmaceuticals. Demand is broadly linked to industrial activity and healthcare infrastructure rather than directly proportional to GDP growth. The sector has seen periodic capacity expansions, mainly in oxygen and nitrogen, driven by rising medical consumption post-COVID, ongoing steel and fabrication activity, and increasing use of specialty gases in pharma and food sectors. However, high electricity costs, logistical inefficiencies, and limited pipeline infrastructure constrain domestic competitiveness.

Market Size

Pakistan's industrial gases market has grown steadily, supported by post-pandemic healthcare expansion, growth in food processing, and increasing industrial activity. Domestic consumption is estimated to have risen by 10–12% over the last two years, led primarily by medical oxygen and high-purity gases for pharmaceuticals. The market remains largely self-sufficient, with limited exports and a focus on local supply continuity. Demand is expected to maintain a 5–6% annual growth trajectory, broadly aligned with industrial and healthcare investment trends.

Production Capacity

Pakistan's industrial and medical gases sector has an estimated installed capacity of ~1,500 tons per day (TPD) as of mid-2025, up from around 1,300 TPD in FY2023/24, marking a ~15% expansion. This growth stems from new ASUs —large cryogenic facilities that fractionate air into oxygen, nitrogen, and argon. Notable recent additions include Ghani Chemical Industries' 275 TPD ASU at Hattar (2024) and Pakistan Oxygen Limited's ~270 TPD Port Qasim plant, both enhancing domestic supply resilience and geographic reach.

The industry structure is oligopolistic, dominated by a few vertically integrated players such as Pakistan Oxygen Limited, Ghani Chemical Industries, and Brookes Pharma, with smaller regional operators serving niche medical and industrial clients. The top two producers account for over 70% of total capacity, while smaller firms and distributors handle localized cylinder refills and retail supply.

Capacity utilization averages 70–75%, with medical and food-grade segments exceeding 80% due to

consistent demand, whereas industrial utilization fluctuates with energy tariffs, supply reliability, and cyclical manufacturing trends. Increasing investment in onsite generation (PSA units) and captive energy systems is reshaping the supply model toward efficiency and self-sufficiency.

Product Prices

Retail cylinder pricing in Pakistan reflects the combined effect of size differentiation, inflation in energy & logistics, and regulatory/compliance cost pressures. As of 2025: refill charges for large-capacity medical-grade cylinders (40-50 L) in urban centers like Karachi are documented at PKR ~800-1,200 per fill. Purchase prices for full cylinder kits (40-50 L with regulator, trolley, mask) are quoted at PKR ~28,000-35,000, with some used/older-stock cylinders listed at ~PKR 35,000 in online inventories.

The market also clearly shows a widening gap between purchase and refill cost, which suggests that increases in energy tariffs, transport/logistics cost, and safety/regulatory compliance overhead are feeding through into higher ongoing operating cost for gas suppliers and end users. This cost inflation is expected to gradually influence bulk contract pricing (though that remains largely non-transparent) and may shift customer behavior toward on-site generation or PSA solutions as cost avoidance.

Raw Material Prices

Energy input costs constitute a fundamental driver of unit costs for industrial gas producers, particularly for large cryogenic ASUs and distribution fleets. The regulatory body National Electric Power Regulatory Authority (NEPRA) approved an average uniform

tariff of PKR 31.59 per kWh for FY2025-26. While this rate appears modest, industrial users often face higher effective tariffs (e.g., bulk/industrial category ~PKR 33.48/kWh). Meanwhile, although explicit diesel pricing for October 2025 is harder to verify in the public domain, logistics and backup generation costs remain elevated. The combination of high grid tariffs, occasional load-shedding, and backup fuel use means that producers face margin risk. To mitigate, major suppliers are increasingly investing in captive solar generation, energy-efficiency retrofits, and on-site PSA systems which reduce grid-dependency and improve cost stability. Over the medium term, cost competitiveness may increasingly depend on how well producers manage the energy-input curve and logistics footprint.

Key Challenges

- Rising energy tariffs and power reliability risks: Industrial electricity tariffs (PKR 31.6–34/kWh, FY2025–26) and recurring load-shedding raise operating costs and threaten continuity for energy-intensive cryogenic ASUs.
- High capital intensity and long commissioning cycles: Large ASUs require 18–24 months and multi-billion-rupee CAPEX, making expansion sensitive to financing costs, FX volatility, and import restrictions.
- Distribution and logistics inefficiencies: Cylinder-based supply across dispersed industrial zones increases cost, turnaround time, and working-capital exposure, particularly for interior regions.
- Limited price transparency and contract risks: Bulk and pipeline offtake agreements are privately negotiated and often short-term, restricting pricing visibility and deterring long-term investment.
- Regulatory and political exposure in medical gases: Health-emergency interventions (e.g., DRAP-imposed price caps, allocation mandates) create policy and reputational risks for producers.
- Foreign-exchange and import dependency: Heavy reliance on imported cryogenic equipment, spares, and sensors exposes operators to LC restrictions and exchange-rate volatility.

Opportunities

- Healthcare infrastructure expansion: Continued hospital growth and oxygen-pipeline installations (via PSA units) are driving steady medical-gas demand with stable long-term revenue potential.
- Energy efficiency and renewable integration: Leading firms (PAKOXY, Ghani) are investing in captive solar systems and plant retrofits to curb power costs and strengthen sustainability credentials.
- Modular and decentralized generation: Increasing adoption of onsite PSA systems and small-scale ASUs enables faster, lower-CAPEX deployment to serve mid-sized industrial users and regional hospitals.
- Emerging decarbonization linkages: Integration with green-hydrogen and CO₂-recovery projects presents long-term diversification opportunities aligned with national energy-transition goals.

Future Outlook (2025-2030)

Pakistan's industrial gases sector is expected to transition from large-scale capacity expansion to a phase focused on operational efficiency, product diversification, and energy optimization. Demand growth will primarily stem from the medical, pharmaceutical, and specialty gas segments, supported by expanding healthcare infrastructure, local manufacturing in value-added industries, and gradual industrial modernization.

Producers are likely to adopt decentralized supply models, including onsite PSA units and small-scale ASUs, to improve reliability, reduce logistics bottlenecks, and enhance customer proximity. Energy efficiency upgrades and captive renewable integration (solar and waste-heat recovery) will emerge as strategic priorities amid sustained high electricity tariffs and FX volatility.

Going forward, the sector is poised for moderate growth (~5–6% CAGR) over the medium term, characterized by technology integration, renewable adoption, and rising demand for high-purity and specialty gases, although exposure to energy costs, import dependency, and regulatory uncertainty will remain key downside risks.

Pakistan's Industrial Gases Sector – Key Statistics

Indicator	Latest Figure	Commentary / Direction (source / basis)
Contribution to GDP (sectoral)	≈ 0.05–0.10% of GDP (estimate)	Industrial gases are a small niche within manufacturing/chemicals. The sector's size is small (market PKR ~8–9). No official standalone GDP share; estimate derived from sector revenues vs national GDP.
Employment (direct / indirect)	Direct: ~1,500–3,000 (estimate) Indirect: ~6,000–12,000 (estimate)	No centralized official headcount. Estimates based on staffing norms at large ASUs, corporate operations and distributor networks (regional cylinder logistics, hospital O&M). Conservative range shown; used for labour / social impact assessments. (Estimate; sector practice & company disclosures).
Annual production (tonnes/year)	Estimated range: ~383,000 – 410,000 tpa (estimate)	Basis: Installed capacity ~1,500 TPD × 365 = 547,500 tpa theoretical max. With sector utilization ~70–75%, estimated annual production ≈ 383k–410k tpa.
Installed capacity (TPD)	~1,500 TPD	National installed ASU capacity rose from ~1,300 TPD (FY2023/24) to ~1,500 TPD by mid-2025 after major projects. Major production zones: Port Qasim / Karachi (PAKOXY), Hattar SEZ (Ghani), central Punjab (legacy plants).
Capacity utilization	Overall: ~70–75% (estimate)	Medical & food-grade lines typically run >80% due to inelastic demand; industrial tonnage is more cyclical and energy-sensitive, bringing the weighted sector average to roughly 70-75%
Domestic consumption (TPD / tpa)	Majority of output consumed domestically; estimated consumption ≈ production (see production estimate)	Pakistan is largely self-sufficient; exports are limited and niche (cylinder shipments). No official published domestic tpa number — consumption assumed to equal annual production net small export volumes.
Exports (major markets)	Small / niche; mainly cylinder shipments to neighboring buyers (Afghanistan, ad-hoc regional trade)	Exports are limited, ad-hoc and cylinder-based. No large-scale bulk/pipeline exports. Export volume is modest relative to domestic production.
Export mix	Cylindered oxygen & specialty cylinders; limited bulk exports	Predominantly cylinder shipments and occasional specialty-blend contract exports for pharma/chemicals. No material pipeline or bulk export program.
Number of producers (approx.); 5 leading names	~10–20 active producers / suppliers (approx.) Leading (5): Pakistan Oxygen Limited (PAKOXY), Ghani Chemical Industries (GCIL), Ghani Gases (group), National Oxygen (regional), BOC/Linde legacy units / major distributors	A concentrated structure with 2–3 large integrated producers (PAKOXY, Ghani) controlling the bulk of ASU capacity and several regional players handling cylinders/PSA/onsite.
Energy dependence (mix of energy sources)	Grid electricity dominant (~70–90%); diesel / LDO for backup & logistics (~10–30%) (estimate)	Cryogenic ASUs are electricity-intensive and primarily grid-supplied; load-shedding forces captive diesel generation and raises logistics costs. Leading firms are piloting captive solar/renewables for auxiliary loads. Energy mix varies by plant.
Recent notable expansion projects	Ghani Chemical — 275 TPD ASU (Hattar) — commissioned Nov 7, 2024 Pakistan Oxygen — Port Qasim 270 TPD ASU (commissioned 2023–24)	These two projects account for most of the capacity additions in 2023–25 and explain the national installed base moving toward ~1,500 TPD. Several hospital PSA projects also scaled up after pandemic preparedness programs.
Carbon emissions profile / CBAM compliance	Sector share of national CO ₂ : small (no standalone % published); emission intensity = moderate (electricity-driven). CBAM exposure: indirect / low to-day, could rise with CBAM expansion (qualitative)	Industrial-gases emissions are primarily scope-2 (grid electricity). No official sector % of national emissions; CBAM currently targets heavy sectors (steel, cement) but may expand — policy briefs (SDPI) flag future exposure and recommend energy efficiency/renewables to mitigate CBAM risk.

Sector Risk Profile: MODERATE TO HIGH

Pakistan's industrial gases sector exhibits a moderate to high risk profile (3.4/5.0). While demand fundamentals remain stable due to the essential and non-discretionary nature of medical, food-grade, and industrial gases, the sector's exposure to energy costs, capital intensity, and foreign exchange volatility elevate its overall risk. The market is concentrated, with Pakistan Oxygen Limited (formerly Linde Pakistan) and Ghani Chemical Industries commanding significant shares, benefitting from economies of scale and long-term supply contracts with industrial, healthcare, and manufacturing clients.

Energy sensitivity remains the dominant risk factor — electricity tariffs (~PKR 31.6–34/kWh) and diesel prices (~PKR 276/L as of Oct-2025) significantly influence cost structures and margins. Capital intensity is also elevated due to expensive cryogenic air separation units (ASUs) and high import dependence for equipment and technology. However, the sector benefits from inelastic demand, low cyclicalities, and relatively stable pricing power, especially in the medical and packaged gases segments. Over the medium term, growth in pharmaceuticals, food processing, and manufacturing automation is expected to support steady volume growth, partially offsetting cost-side pressures.

Cyclicalities

Score: 3.0/5.0 | Risk Rating: Moderate ●

Pakistan's industrial gases demand exhibits a moderate cyclicalities. While medical, food-grade, and specialty gases ensure a stable consumption base, the industrial component (linked to steel fabrication, welding, and chemicals) fluctuates with broader Large-Scale Manufacturing (LSM) and macroeconomic trends.

- Stable base demand: Medical oxygen and food processing gases remain steady even during slowdowns.
- Industrial exposure: Usage in steel, textile, and chemicals is sensitive to industrial production levels.
- Limited export diversification: Domestic demand drives sales, making volumes sensitive to local manufacturing cycles.
- Government and hospital contracts: multi-year contracts for medical supply cushion cash flow volatility.

Overall Cyclicalities Risk Assessment: The sector's mixed demand profile — defensive healthcare consumption and cyclical industrial use — results in moderate overall cyclicalities. While downturns in manufacturing can temporarily impact tonnage, base load stability from medical and food applications prevents extreme fluctuations.

Competition

Score: 2.3/5.0 | Risk Rating: Low to Moderate ●●

Competition in Pakistan's industrial gases market is moderate, with dominance by a few large integrated players (Pakistan Oxygen Limited, Ghani Chemical Industries) and limited entry of smaller regional distributors due to high capital and technological barriers.

- Concentrated structure: Two leading firms control bulk production and pipeline networks, enjoying economies of scale.
- High entry barriers: Cryogenic ASUs require technical know-how, imported equipment, and substantial capital.
- Retail cylinder competition: Exists among smaller distributors but limited pricing flexibility due to standardization.
- Contract-driven pricing: Long-term supply contracts to hospitals and large industrial clients stabilize revenues.

Overall Competition Risk Assessment: Given the small number of producers, long-term supply arrangements, and capital intensity, competition remains moderate to low. Price undercutting is limited, and incumbents maintain strong market positions.

Capital Intensity

Score: 4.1 / 5.0 | Risk Rating: Moderate to High ●●●

The sector is highly capital intensive, dominated by

cryogenic Air Separation Units (ASUs) with high setup costs and long payback periods. New entrants face heavy upfront investment requirements, though modular PSA units offer a lower-cost entry for niche segments.

- Large-scale ASUs: Cost millions of dollars, with long installation timelines (12–18 months).
- Import dependency: Machinery and components are sourced internationally, exposing investors to FX and import restrictions.
- High fixed costs: Require high utilization levels to sustain margins.
- Emerging PSA adoption: Moderates CAPEX slightly for small-scale or hospital-level supply.

Overall Cyclicity Risk Assessment: Substantial investment requirements and import dependence raise capital intensity risk. Even with PSA adoption, overall exposure remains high to moderate, particularly for large-scale expansions.

Technology Risk

Score: 3.0/5.0 | Risk Rating: Moderate ●

The industrial gases segment relies on mature, standardized technologies (cryogenic ASU and PSA systems), which limit obsolescence risk. However, quality control, energy efficiency, and specialty gas blending require technical expertise.

- Mature base processes: Limited innovation risk in standard oxygen and nitrogen production.
- Specialty gas expertise: Requires advanced purity monitoring and process control.
- Energy efficiency improvements: Ongoing focus area as operators seek cost reductions.
- Dependence on foreign technology partners: Equipment and maintenance contracts often outsourced to global firms.

Overall Competition Risk Assessment: The risk remains moderate — while the base technology is stable, dependency on imported expertise and efficiency optimization needs keep the risk from falling lower.

Regulatory Framework

Score: 3.0/5.0 | Risk Rating: Moderate ●

The industry operates under a moderate regulatory regime, primarily focused on safety, energy policy, and healthcare oversight. While not heavily regulated, sudden interventions in pricing or allocation (especially medical oxygen during emergencies) can occur.

- Energy policy exposure: Tariff adjustments directly affect cost structures.
- Healthcare oversight: Oxygen supply to hospitals monitored by provincial health authorities.
- Environmental and safety standards: Compliance costs moderate but manageable.
- Import licensing and taxes: Affect plant setup timelines and component costs.

Overall Regulatory Risk Assessment: Policy and price intervention risk remains moderate — especially during crises — though the industry generally operates under predictable compliance conditions.

Energy Sensitivity

Score: 4.8/5.0 | Risk Rating: High ●

Energy costs are the single largest input for industrial gas producers. Cryogenic ASUs are electricity-intensive, and backup generation relies on diesel fuel — both of which have seen steep cost increases:

- Tariffs: Industrial electricity rates range around PKR 31–34/kWh (FY25–26).
- Fuel costs: Diesel prices reached ~PKR 276/L (Oct 2025), inflating logistics and generation expenses.
- Load-shedding exposure: Interruptions can force reliance on costly backup power.
- Limited renewable adoption: Most plants remain grid-dependent.

Overall Energy Sensitivity Assessment: Given the cost structure and high dependency on continuous power, energy sensitivity is high, posing the most significant risk to profitability.

Recent Events related to the Sector

Several notable developments have shaped Pakistan's industrial gases sector over 2024–2025, reflecting the transition toward energy efficiency, capacity expansion, and import substitution. The sector's dynamics remain closely tied to power tariffs, industrial demand recovery, and healthcare investment.

Commissioning of Ghani Chemical's 275TPD ASU (November 2024)

Ghani Chemical Industries successfully commissioned Pakistan's largest cryogenic ASU at Hattar Special Economic Zone, adding 275 TPD to national capacity. This project expanded the country's total capacity to nearly 1,500 TPD, supporting medical and industrial oxygen supply.

Impact: Strengthens supply resilience and national self-sufficiency while intensifying competition. The plant's efficiency upgrades also set new operational benchmarks for energy optimization and regional distribution.

Pakistan Achieves Self-Sufficiency in Industrial Gases (October 2025)

According to national trade data and recent reports, Pakistan is now largely self-sufficient in oxygen, nitrogen, and argon production, with modest exports of argon and specialty gases. Imports have fallen substantially over FY2024–25 due to domestic expansions.

Impact: Enhances supply security and reduces exposure to import-LC restrictions. The development marks a structural shift toward a net-zero import position and supports industrial continuity in healthcare and manufacturing.

Long-Term Gas Supply Contract with Engro Polymer (Mid-2025)

Ghani Chemical Industries entered a long-term industrial gases supply agreement with Engro Polymer & Chemicals Limited, ensuring steady offtake of oxygen and nitrogen for chemical manufacturing operations.

Impact: Reflects industry consolidation toward contract-based offtakes, improving revenue stability and credit quality for producers while embedding gas suppliers deeper into large industrial value chains.

Energy Tariff Escalation and Diesel Price Surge (FY2025–26)

NEPRA's FY2025–26 notified tariffs now average PKR 31.6–34/kWh, while diesel prices reached PKR 276–277/L (Oct 2025) — both materially above pre-FY2023 levels. ASU operators report higher OPEX and increased reliance on captive solar or hybrid systems to mitigate volatility.

Impact: Sustained margin pressure for energy-intensive producers. Firms are prioritizing solar integration, variable frequency drives (VFDs), and energy audits to manage cost competitiveness.

Shift Toward On-Site and Modular Generation (2024–2025)

Rising transport and logistics costs have accelerated adoption of onsite PSA (Pressure Swing Adsorption) units and small-scale ASUs in hospitals and mid-sized industries. The trend aligns with global decentralization and localized reliability models.

Impact: Enhances supply continuity and reduces logistics overhead. However, growing PSA adoption could gradually segment demand away from bulk cryogenic suppliers, affecting large-scale utilization rates.

Exchange Rate and Import Constraints (2024–25)

Persistent FX volatility and delays in opening import LCs for high-value cryogenic components and spare parts affected maintenance cycles for several producers. The rupee's weakness also inflated CAPEX for new ASU and PSA imports.

Impact: Weighs on expansion economics and raises project lead times. Firms are increasingly exploring local fabrication partnerships to reduce FX exposure and ensure spare-part availability.

Global & Regional Sources

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- Engro Polymer & Chemicals Limited – Corporate Announcements: Industrial linkages and new gas offtake agreements.
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