DGC VN

BUY

TP upside +19.5%

Close 09 January 2024

Price	VND 112,200
12M Target	VND 134,074

What's new?

- Another HOSE-listed tech play? Yellow Phosphorus (P4) is a critical input for IC manufacturing & DGC's key growth driver.
- Vietnam P4 industry is in a sweet spot for supplying Asia-ex China IC makers.
- Chlor-Alkali-Vinyl project to diversify revenues in the longer term.
- Slight revenue growth in 2024E (+4% YoY) but should rebound in 2025E (+23% YoY).
- ...driving 2025E PATMI growth to 27%.

Our view

- Semiconductor industry's demand for P4 to drive +16% revenue CAGR for DGC in 2024-28E.
- Sales concentration risk on apatite ore and P4 products to decline after CAV comes online in 2Q26.
- Upside optionality from lithium batteries, bauxite/aluminum, and a one-off property development project.
- We initiate coverage with BUY and target price of VND 134,074, implying +19.5% TSR.

Company profile: Duc Giang Chemicals (DGC VN)'s core operations include apatite ore mining and processing into value-added products, such as Yellow Phosphorus (P4). A key input for semiconductor manufacturing, P4 accounts for 38% of revenue (2023) and c.45% of our 2024-30E sales forecasts. DGC's P4 production capacity of 69.8k tons per year represents c.43% of national capacity, and Vietnam producers are very well-placed to supply Asia-ex China IC makers going forward. Other products include H3PO4 85% (22% of 2023 revenues) and wet-process phosphoric acid (13%). DGC is c.40%-owned by the chairman's family.

Share price performance relative to VN

Market cap	US$1,776mn
6M avg. Daily turnover	US$9.1mn
Outstanding shares	379.8mn
Free float	60%
FINI ownership	18.1%
Major shareholders	31.0%
Asset/Equity (x)	1.3
2025E PER (x)	11.3
2025E P/B (x)	3.1
Trading platform	HOSE
FOL Room	30.9%

Financial outlook (VND bn)

Year to Dec	2023A	2024E	2025F	2026F
Sales	9,748	10,148	12,530	15,594
Op. Profit	3,487	3,553	4,513	5,772
PATMI	3,100	3,158	4,006	5,120
EPS (VND)	7,673	7,816	9,916	12,672
EPS chg (%)		1.9%	26.9%	27.8%
P/E (x)	14.6	14.4	11.3	8.9
ROE (%)	27.1	24.3	27.2	30.0
Div. yield	2.7%	2.7%	2.7%	2.7%
DPS (VND)	3,000	3,000	3,000	3,000

Sources: DGC, Fiinpro-X, Bloomberg,Yuanta Vietnam

Duc Giang Chemicals Group JSC (DGC VN)

A Brilliant Outlook for P4 Demand

P4 is DGC's major long-term growth driver, representing c.45% of projected revenues in 2024-30E (+14.1% CAGR). P4 is a key input for thermal process acid, which is vital for IC manufacturing. DGC is particularly well positioned as a P4 supplier for IC makers in Asia ex-China. As such, we view the stock in large part as an ancillary play on the global semiconductor industry.

Chlor-Alkali-Vinyl project should reduce product concentration risk, with construction to start in Feb and commercial operations by 2Q26. We expect the CAV project to achieve 70% capacity utilization in 2026E and 100% CU by 2028E.

Forecast +16.5% revenue CAGR in 2023-27E, with P4 as the key driver. We expect +23% YoY sales growth in 2025E after the soft +4% YoY uptick of 2024E.

We forecast PATMI to rebound by +27% YoY in 2025E following the flat (+2% YoY) growth of 2024E. We expect ROE of 24.3% in 2024 and 27.2% in 2025, much higher than the regional peer median of 12.1% and 13.3%, respectively, reflecting DGC's advantages of low COGS and value chain positioning.

Upside optionality from 1) lithium batteries, 2) the potential residential property project, and 3) (in the very long-term) bauxite/aluminum business. Batteries represent just c.1-2% of 2024-30E sales in our model, while we have not factored in any value from the latter two projects, suggesting upside risks.

Yuanta vs. the Street: We are cautious on near-term ASPs and COGS, with the latter to be driven by elevated electricity and sulfur prices in 2025-26E. Still, our fair value estimate is 3% higher than the Street median, which may reflect a more cohesive in-house long-term view on the semiconductor industry.

We initiate coverage with BUY and DCF-based target price of VND 134,074, implying 12-month TSR of 19.5%. Our target price implies reasonable P/E multiples of 13.5x for 2025E (and 0.5x PEG) and 10.6x for 2026E.

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Executive Summary

We initiate coverage on DGC VN with a BUY recommendation.

Yellow phosphorus (P4) is fundamentally the core growth driver for DGC, in our view.

Another HOSE-listed "tech" play. Our positive view is primarily based on DGC's core yellow phosphorous (P4) business, which we expect to be the firm's key growth driver for the next several years. P4 is a vital input for semiconductor manufacturing, which informs our view that DGC should be seen as an ancillary play on global tech.

A multi-year sweet spot for Vietnam P4 suppliers. Notably, DGC's success in this industry is *not* predicated on Vietnam becoming a semiconductor fabrication powerhouse, a laudable aspiration but one that we believe to be unachievable in the next decade. This is not a drawback for DGC, which primarily exports the P4 it produces to Japan, South Korea, Taiwan, and India.

Vietnam has emerged as a key P4 supplier, especially to Asia ex-China, as Chinese producers are no longer exporting the material and US production is likewise primarily sold domestically.

Our house view on the global semiconductor industry. Yuanta's global IC research team led by Jorge Chang expects +14% growth for the semiconductor industry in 2025 on a 2H recovery in demand. They expect this strength to be broad-based but led by demand for artificial intelligence servers and networking applications. For details, please see Jorge's 2025 Semiconductor Outlook.

Agricultural chemicals & fertilizers are another core business.

Agriculture is another core market. Apatite is a key raw material for producing wet-process phosphoric acid (WPA), which is then used to make various phosphate fertilizers, including MAP, DAP, and NPK, which are essential for improving soil fertility and crop yields. Thus, DGC is a major supplier of input chemicals for agricultural use as well as industrial fertilizers.

Revenues from agricultural products make up the bulk of the remaining forecast revenues in our model. However, we are also factoring in 6-7% contribution to 2027-30E sales from the future CAV plant, which is expected to begin construction in Feb 2025 and start commercial operations only in 2026E.

Possible upside optionality from batteries, a one-off property development project, and – in the very long term – bauxite and aluminum.

Batteries. DGC's 2023 acquisition of 51% of a battery manufacturer opens up another potential cash flow driver for the long term. However, given limited visibility, DGC's battery business represents just 1-2% of our annual forward revenue forecasts for 2024-30E, suggesting potential upside if this business gains traction more rapidly than we assume and DGC successfully commercializes lithium batteries.

One-off property development. DGC intends to redevelop its legacy industrial plant in Hanoi for residential use, a plan that is currently awaiting various administrative approvals. While not a core business, the project could represent a one-off upside catalyst for earnings and the share price. Given lack of visibility on when or if the approvals will be issued, we have factored in zero contribution from this plan.

Bauxite-Aluminum production. A *very* long-term (and, we suspect, politically sensitive) plan that would demand c.4 years of preparation to become commercially operational *after* the required approvals are received (and the timing of the approvals is highly uncertain). Again, we have not factored this business into our model.

Company Overview

Duc Giang Chemicals JSC (DGC VN) specializes in producing yellow phosphorus (P4) and phosphorus derivatives for use in various industries including IC manufacturing and agriculture. DGC is the largest P4 producer in Vietnam.

The company is well-integrated across the value chain, including extraction & purchase of apatite ore, followed on by two main downstream production processes:

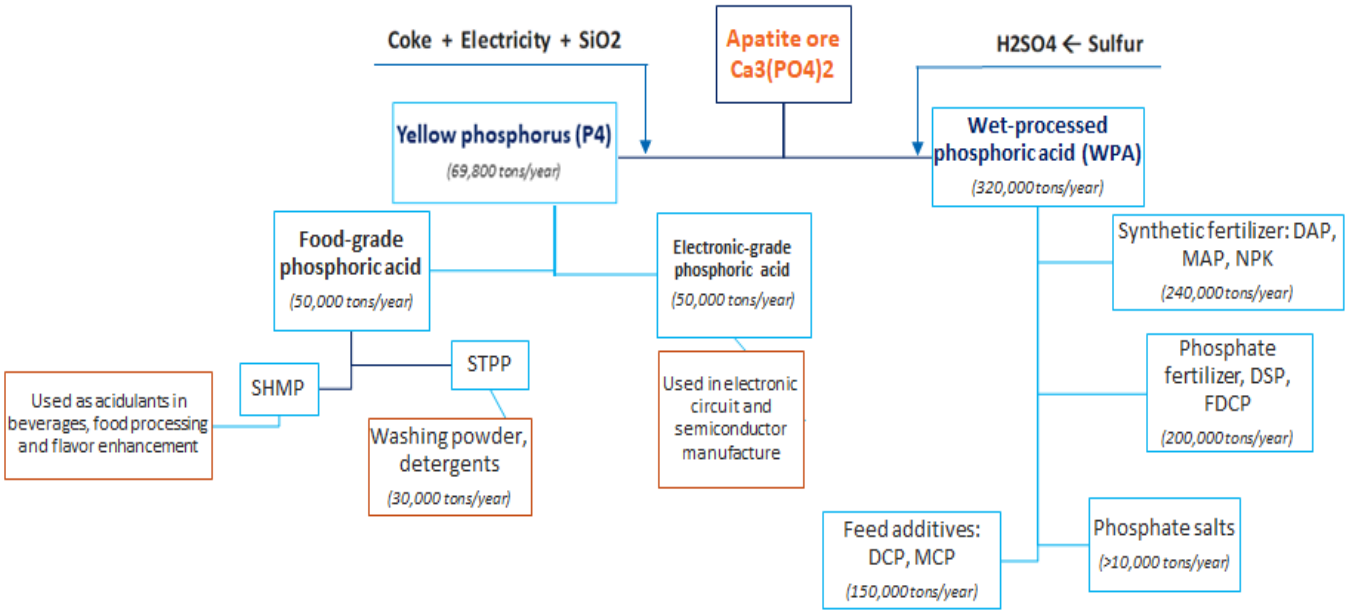
- **Thermal Process:** DGC uses electric furnaces to heat apatite ore along with other materials such as coke and quartzite (containing SiO2) to produce Yellow Phosphorus (P4). This process is highly energy-intensive, with electricity costs accounting for approximately 30% of COGS.

  The thermal process -- and its high electricity consumption – is required to produce the high-purity materials that are suitable for industrial applications, and specifically for semiconductor manufacturing.

- **Wet Process:** DGC employs an extraction method using sulfuric acid (H2SO4) to decompose apatite ore, producing wet-process phosphoric acid (WPA). Sulfuric acid costs make up about 10% of COGS.

  The wet process yields lower-purity products that are primarily suitable for agricultural use.

Fig.1: DGC's value chain

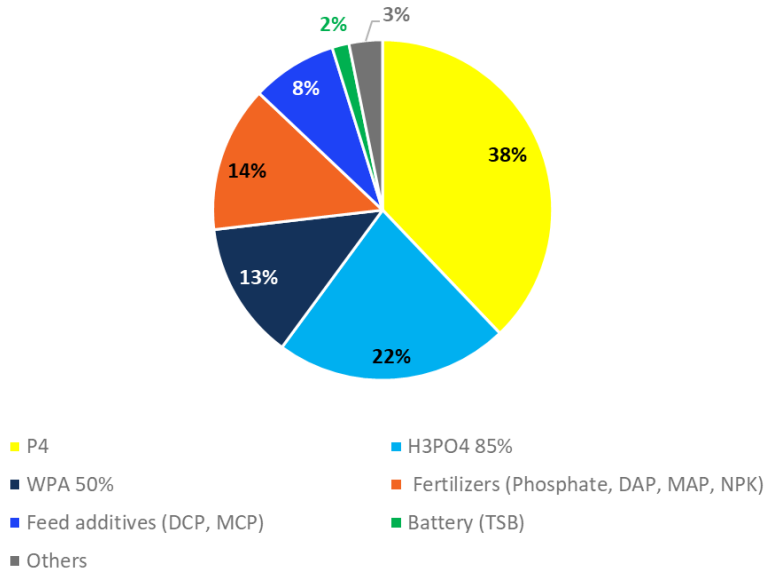


Source: DGC, Yuanta Vietnam

In 2023, products from the thermal process accounted for 62% of DGC's revenue, including key products such as P4 (38%), H3PO4 (22%), and detergent powder (1%).

Meanwhile, products from the wet process made up 34% of DGC's revenue, with main products being WPA (13%), fertilizers (14%), and feed additives (8%).

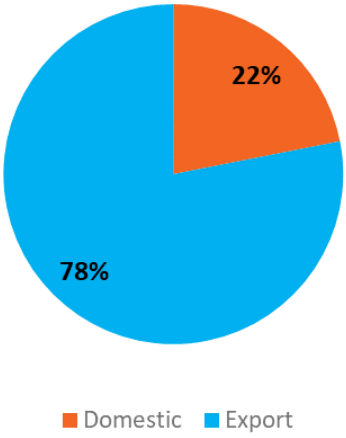
Fig.2: DGC's revenue mix by product in 2023



Source: DGC's Annual Report 2023, Yuanta Vietnam

Revenue is primarily driven by exports. Exports accounted for 78% of 2023 total revenue, with major markets including India, South Korea, Japan, Taiwan, the EU, and the U.S. As noted above, our positive thesis on DGC in the years ahead is *not* predicated on Vietnam becoming a semiconductor manufacturing powerhouse.

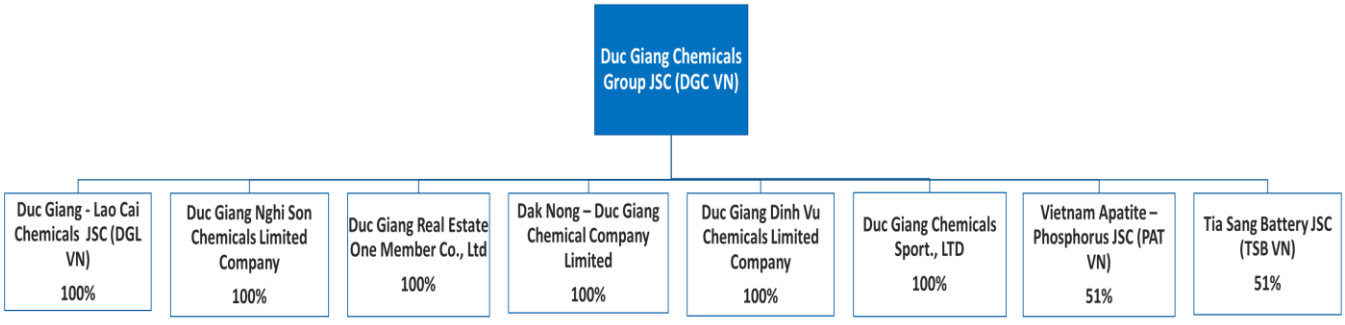
Fig.3: DGC's revenue mix by market 2023



Source: DGC's Annual Report 2023, Yuanta Vietnam

DGC's ecosystem comprises nine subsidiaries.

Fig.4: DGC's ecosystem



Source: Fiinpro-X (Data as of Jan 09, 2025), Yuanta Vietnam

Shareholder structure – A family company. By investor, the largest shareholder group of the company is that of the company's chairman, Mr. Dao Huu Huyen, and his family, who together hold approximately 40.3% of outstanding shares.

By investor group, foreign investors currently hold 18% of the company in aggregate.

Fig.5: Ownership structure by investor

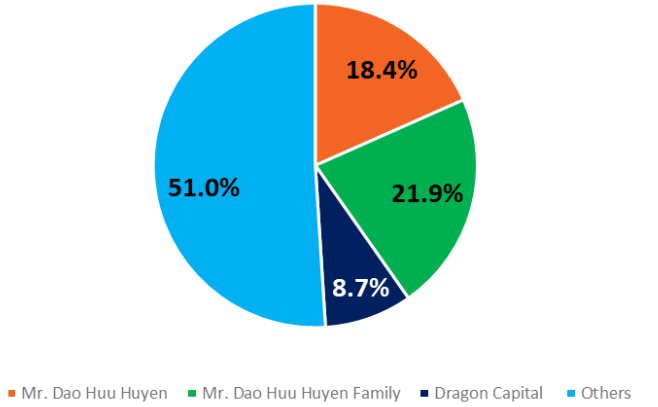
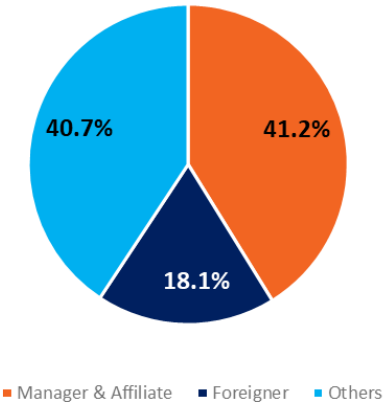


Fig.6: Ownership structure by investor group



Source: Fiinpro-X, Yuanta Vietnam (Data as of Jan 09, 2025)

Dividend policy. DGC paid a cash dividend of VND 3,000 per share in 2024, reflecting a dividend yield of 2.7% (based on the closing price on Jan 09, 2025) and an estimated payout ratio of 38.4% for the year.

The company has maintained a high cash dividend of VND 1,000-4,000 per share over the past six years, and we expect the VND 3,000 per share to persist in 2025, implying an estimated payout ratio of 30.2%.

Table 1. DGC's historical dividend policy

Year	Cash dividend	Stock dividend	Payout Ratio	Dividend yield (Base on close price as at Jan 09)
2019	1st: VND1,000/share (10%) 2nd: VND500/share (5%)	100:15 (15%)	36.3%	1.3%
2020	VND1,500/share (15%)	20:3 (15%)	26.2%	1.3%
2021	VND1,000/share (10%)	100:117 (117%)	16.9%	0.9%
2022	1st: VND3,000/share (30%) 2nd: VND1,000/share (10%)	- -	29.0%	3.6%
2023	VND3,000/share (30%)	-	39.1%	2.7%
2024	VND3,000/share (30%)	-	38.4% (estimate)	2.7%
2025F	VND3,000/share (30%)	-	30.3% (estimate)	2.7%

Source: DGC, Yuanta Vietnam

Competitive advantages:

Cost advantage 1): Self-sourcing of apatite ore, the primary raw material for yellow phosphorus production. DGC self-sources approximately 81% of its apatite ore needs (c.1.6mn tons annually) from two of its self-owned mines.

- Mine 25, operational since Mar 2021, has total permitted mining capacity of 3.7mn tons over 6 years, equivalent to about 617k tons per year; and
- Mine 19b, operational since early 2023, with a total permitted mining capacity of 5.1mn tons over 5 years, equivalent to about 1mn tons per year.

We estimate that this self-sufficiency in raw materials results in savings of at least 24% on apatite ore costs compared to purchasing the material from external sources.

Additionally, the company is upgrading its mining operations by expanding Mine 25 by an additional 11ha, with production of the new area expected to commence in 2025. Furthermore, DGC has applied to extend the mining license at Mine 25 for another five years due to its larger-than-expected apatite reserves.

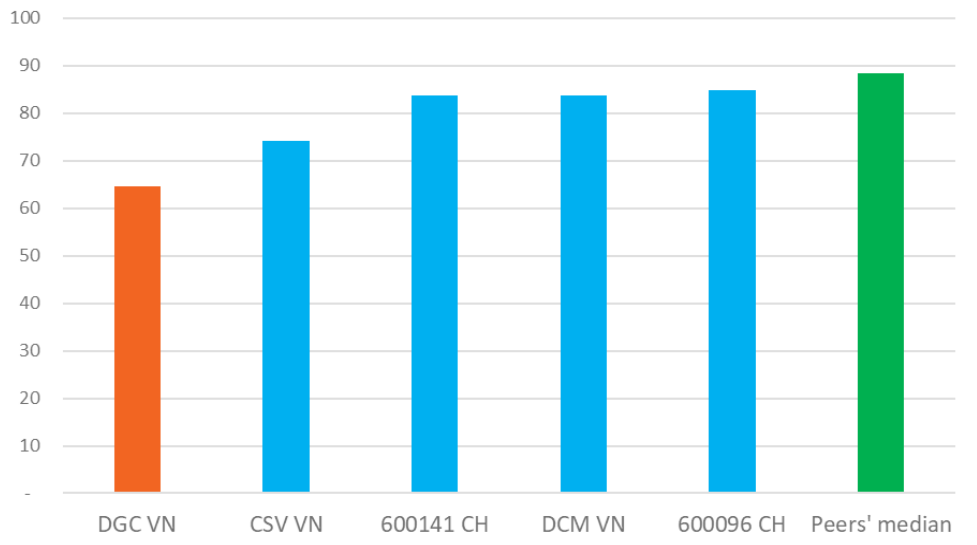
Cost advantage 2): Proprietary technology. DGC's management states that they are the only company in the world capable of producing P4 from powdered apatite ore using proprietary technology developed by a DGC engineer who now serves as a senior manager.

Based on our understanding, global competitors typically produce P4 using apatite ore in lump form. This is because the powder form's varying size and other properties result in substantial production challenges.

Powdered apatite ore Type One[1] is 46% cheaper than lump form apatite at current market prices. We estimate that DGC's proprietary technology thus reduces COGS by around 14%, given that apatite ore accounts for around 30% of the company's COGS.

DGC has the lowest COGS-to-revenue ratio among chemical companies in Vietnam and the region.

Fig.7: Top 5 chemical companies with lowest regional COGS-to-revenue



Source: Fiinpro-X, Yuanta Vietnam (Data as of Jan 09, 2025)

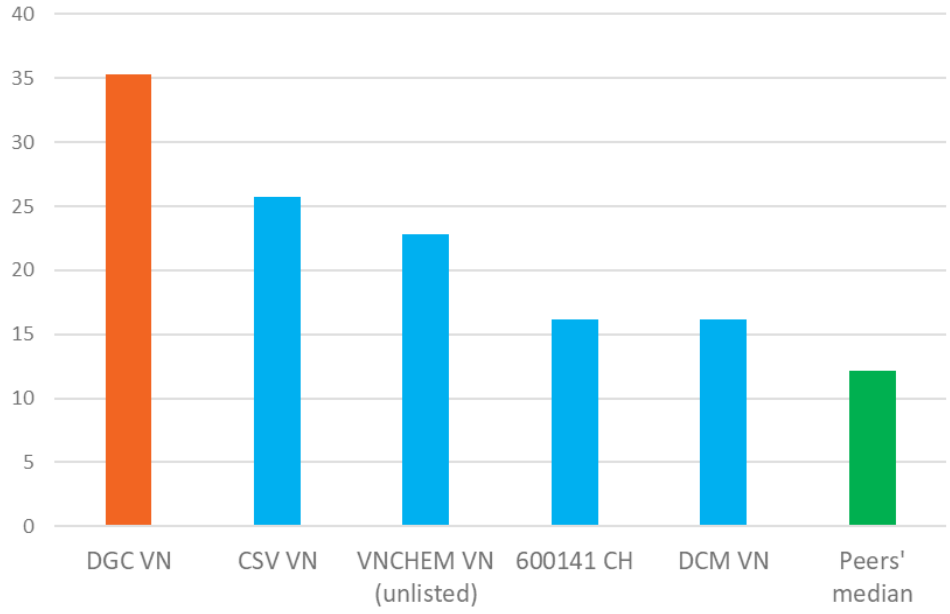
Highest gross profit margin among peers: DGC's competitive advantages have established it as a leader in business performance compared to its peers in Vietnam.

In 2023, the company achieved gross profit margin of 35.3%, the highest among chemical companies in Vietnam and the second-highest globally within the industry.

[1] **Apatite ore is typically classified based on P2O5 concentration,** with higher P2O5 content indicating greater purity and suitability for P4 production. The classifications are:

- **Type 1:** P2O5 > 30%, ideal for P4 production.
- **Type 2:** 22% ≤ P2O5 ≤ 30%.
- **Type 3:** 18% ≤ P2O5 < 22%.
- **Type 4:** P2O5 < 18%, with limited industrial use for phosphorus production.

Fig.8: Top 5 chemical companies with the highest GPM in the region in 2023 (%)



Source: Fiinpro-X, Bloomberg, Yuanta Vietnam

Moreover, in 2023, DGC's profitability was among the highest of regional industry-listed peers in terms of operating profit margin (OPM) and return on equity (ROE).

Fig.9: Top-5 regional chemical companies by 2023 OPM...

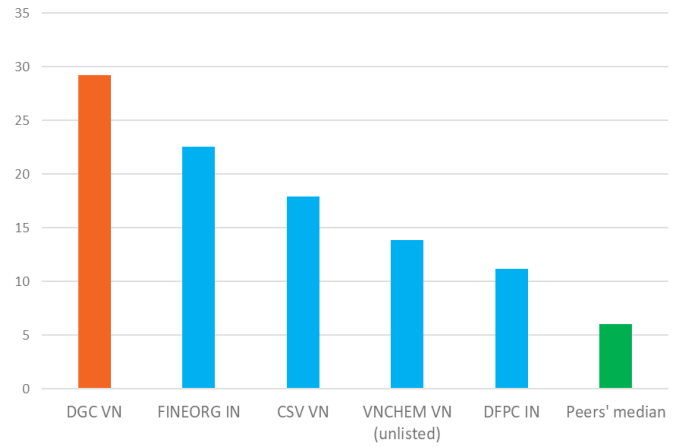
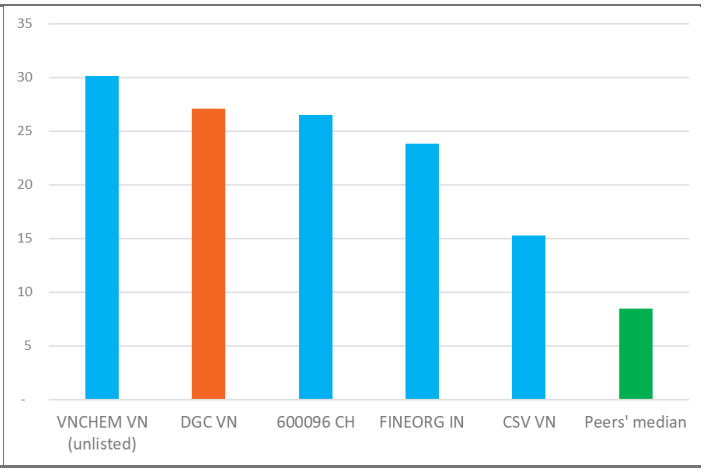


Fig.10: ...and by 2023 ROE (%).



Source: Fiinpro-X, Bloomberg, Yuanta Vietnam

P4 – Key driver of future growth. P4 is currently DGC's highest-revenue product, and we expect it to remain the key driver of income growth going forward due to robust demand and opportunities in the semiconductor industry, as detailed below.

Bright Prospects for Vietnam's P4 Industry

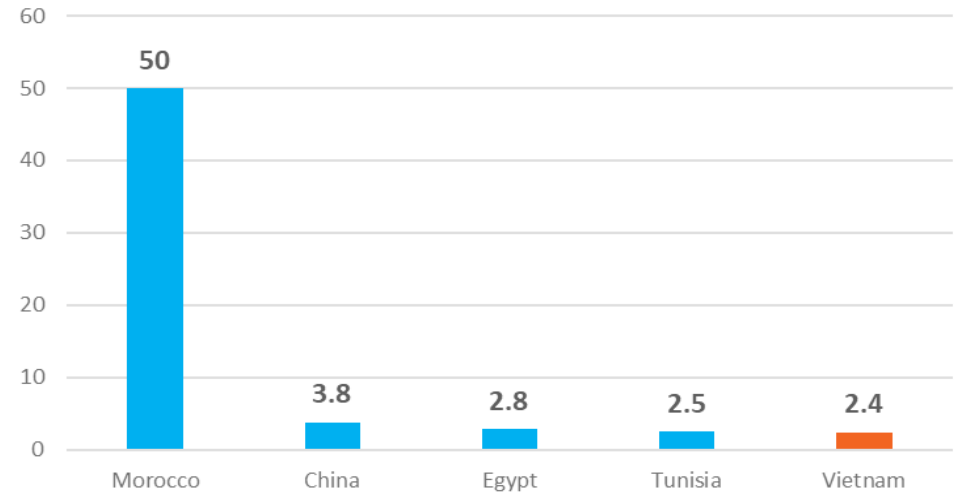
Vietnam's yellow phosphorus (P4) industry is poised for strong growth driven by geological advantages, production capacity, and market/geopolitics-driven constraints on alternative global suppliers.

This section details several factors contributing to the promising future of Vietnam's P4 industry and DGC's position in the domestic and international markets.

Vietnam's strategic position on the global apatite map

Vietnam ranks 5th globally in apatite ore reserves... with a total of 2.5bn tons across 17 discovered mines (Source: Vietnam Geological Department). Apatite is a key raw material for producing P4 and WPA.

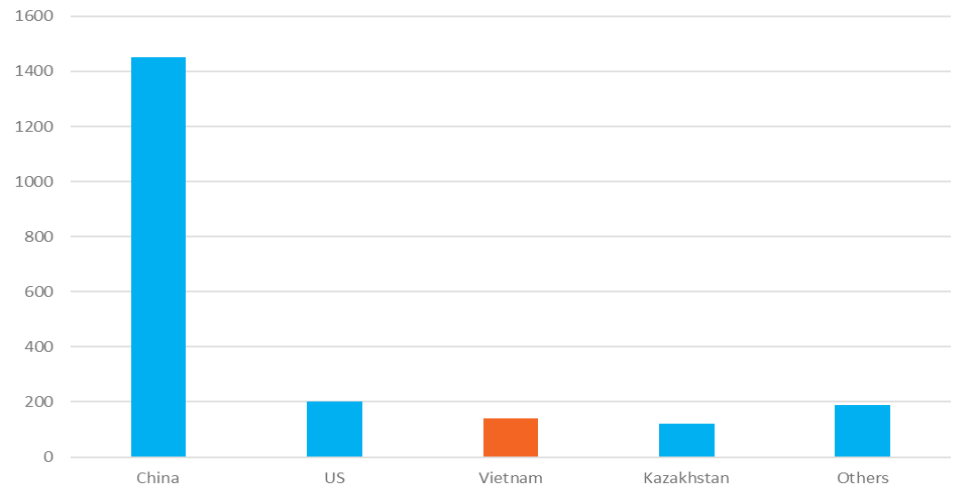
Fig.11: Top 5 countries by apatite ore reserves (tons bn)



Source: USGS, Vietnam Geological Department, Yuanta Vietnam (Data as of Jan 09, 2025)

...and 3rd globally for apatite ore production capacity. Vietnam accounts for 7% of worldwide industry output, behind only China[2] (69%) and the United States (10%).

Fig.12: Top 5 countries by apatite production capacity (tons bn)



Source: Statista, HDIN Research, echemi.com, Yuanta Vietnam

[2] **Historically, the global price of yellow phosphorus has been dependent on the Chinese market.** China is by far the world's largest P4 producer, and our analysis of the data reveals a historical correlation coefficient between China's P4 price and global P4 prices of 0.8. However, China has nearly ceased exports of this product entirely in recent years, and is now primarily producing it for domestic use. As such, future pricing trends in China may not immediately and directly impact global prices to the same extent.

Vietnam's geological advantages

Impact of ore classification & purity on production and applications. The classification of ore determines production efficiency, while impurities determine chemical applications. Fertilizers require relatively low purity; whereas electronics, industry, and food input materials demand higher purity.

Lao Cai apatite ore quality is very high. Apatite ore from Lao Cai (which holds almost all of Vietnam's apatite reserves, including the two DGC mines) has very low levels of radioactive elements and impurities such as rare earth elements and vanadium.

According to Vinachem, the natural radioactive isotope content of apatite ore from Lao Cai is just 6% of Morocco's (the country with the largest reserves) and 4% of that of the U.S (which is the world's second largest producer).

As a result, Lao Cai's apatite ore is ideal for high-value products and offers a quality advantage over global competitors.

Vietnam's P4 export supremacy

Vietnam has established a dominant position in global P4 exports, particularly in Asia. In terms of production capacity, Vietnam ranks third in the world, after China and the United States. However, the U.S. primarily uses the P4 it produces as an input for higher-value-added products; and China has nearly ceased exporting P4 since 2018 due to concerns over environmental pollution and domestic supply shortages.

Vietnam also has advantages in the form of 1) low electricity costs (average electricity price is 7.5 cents per kWh, about 41% lower than the global average), and 2) low export taxes (5% vs. the global average of 10%).

The result is that Vietnam has become the largest exporter of P4 in the world, accounting for 48% of global export value in 2023.

Notably, Vietnam-produced P4 represents 100% of Japan's 2023 imports and 88% of South Korea's. Moreover, Vietnam supplied 47% of P4 imports to India, which is now the world's largest P4 importer (accounting for 27% of the total import value).

Fig.13: Global P4 imports market share by value in 2023 (%)

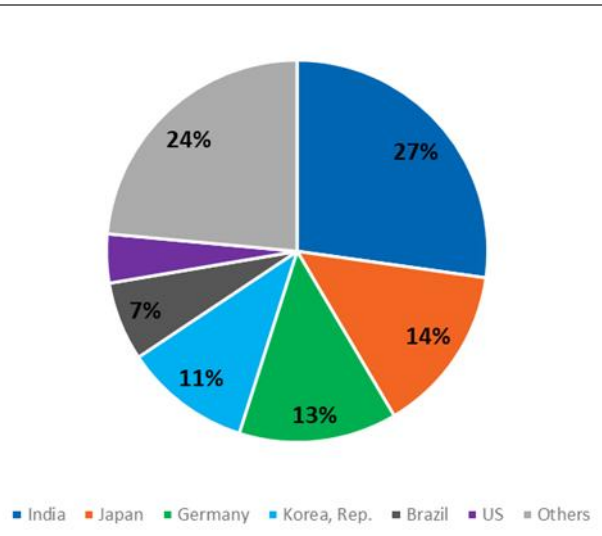
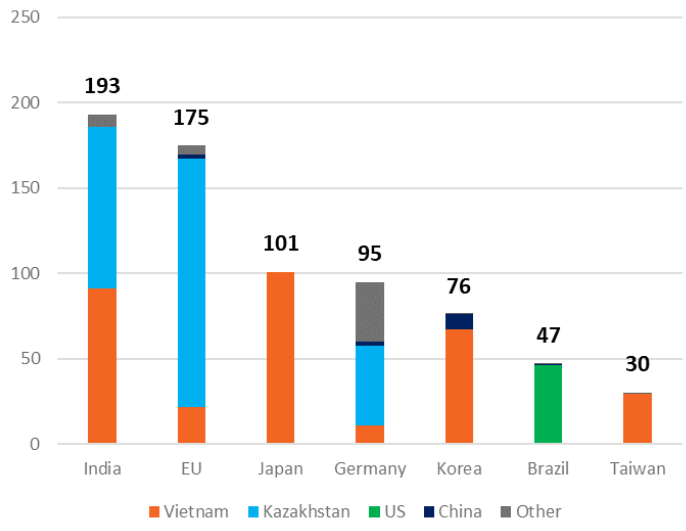


Fig.14: Top importers of P4 and their suppliers in 2023 (USD mn)



Source: International Trade Centre (ITC), Yuanta Vietnam

Rising demand for yellow phosphorus (P4) and wet-processed phosphoric acid (WPA)

The demand for P4 and WPA is experiencing substantial growth. Cognitive Market Research estimates the global yellow phosphorus market, valued at USD 4.2bn in 2023, will grow at a compound annual growth rate (CAGR) of 3.90% from 2023 to 2030. This is primarily due to the material's crucial applications in electronics and agriculture.

Proxy on growth momentum of semiconductor manufacturing. P4 is a vital raw material in the production of electronic circuits, semiconductors, and lithium batteries.

According to Gartner, global semiconductor revenue is expected to rise by +16.8% to reach US$624bn in 2024 and +15.5% to reach US$721bn in 2025. Gartner's expectation is slightly more optimistic than our in-house forecast for global semiconductor industry growth of +14% in 2025E.

During her visit in July 2023, U.S. Treasury Secretary Janet Yellen emphasized that Vietnam will be a crucial hub in the global semiconductor supply chain. We believe that this is already the case for P4 supply, given its vital role in IC manufacturing.

Automotive is also a key driver. With the rise of electric vehicles (EVs) and the integration of advanced electronic systems in traditional vehicles, the demand for semiconductors and lithium batteries has surged. Our tech team in Taiwan has muted expectations for automotive demand for semiconductors in 2025, but this segment is still likely to be a growth driver in the longer term.

Additionally, industrial electronics used in automation, robotics, and industrial control systems are further fuel for demand growth momentum. The automation industry alone is projected to grow at a 6-year CAGR of +9.3%, reaching USD 307.7bn by 2030 (source: engineering.com), which will also contribute to the strong growth in P4 demand.

Benefiting from population growth. Apatite is a key raw material for producing WPA, which is then used to make various phosphate fertilizers, including MAP, DAP, and NPK, which are essential for improving soil fertility and crop yields.

UN projections are for the global population to reach 9.7bn by 2050 (+21% from 2023). The resulting significant increase in food demand should lead to higher demand for fertilizers and, consequently, WPA.

DGC's position in the domestic and international P4 markets

DGC is Vietnam's dominant supplier in the domestic yellow phosphorus market... a position that is supported by high barriers to market entry and DGC's superior production capacity. In our view, these factors serve as a substantial competitive advantage, limiting the entry of new competitors and enabling DGC to effectively capitalize on the strong demand for P4.

High barriers to entry represent a competitive moat. As of Jan 2025, Vietnam has only eight companies involved in production and trading of P4.

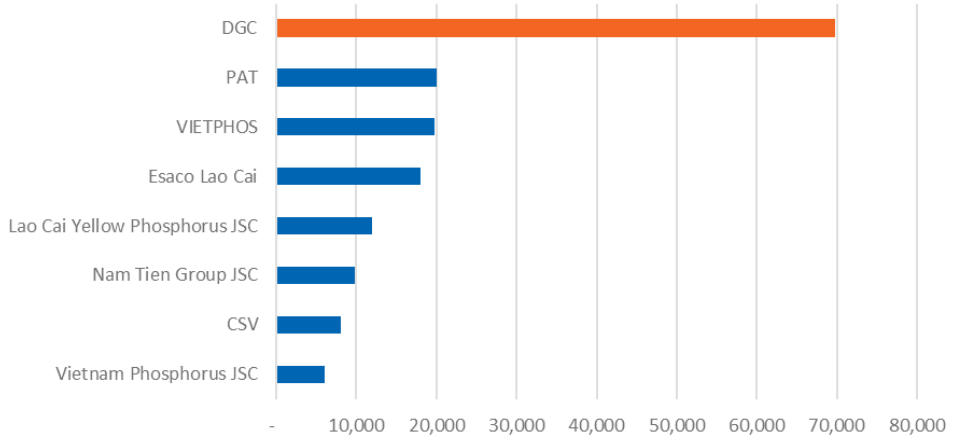
The number of suppliers is likely to remain low because P4 production is highly hazardous due to its toxicity and flammability, which pose significant environmental and safety risks.

Consequently, obtaining permits for ore extraction, plant construction, and P4 production is extremely challenging, creating substantial barriers to entry.

DGC's design capacity is the largest of Vietnam's eight P4 suppliers... at 69,800 tons per year, accounting for around 43% of Vietnam's total design capacity of 163,400 tons per year in 2023 (source: company data). This far exceeds its closest third-party competitor, Vietnam Yellow Phosphorus Co., Ltd. (19,800 tons/year).

Notably, Vietnam Apatite Phosphate JSC (PAT VN - Not rated, 20,000 tons/year), which holds the second-largest P4 designed capacity in Vietnam at 20,000 tons per year, is itself a 51%-owned subsidiary of DGC. Also, DGC's chairman, his son Dao Huu Duy Anh (who is DGC's CEO), and other family members collectively own an additional 18.7% stake in PAT VN.

Fig.15: Design capacity of P4 production companies in Vietnam

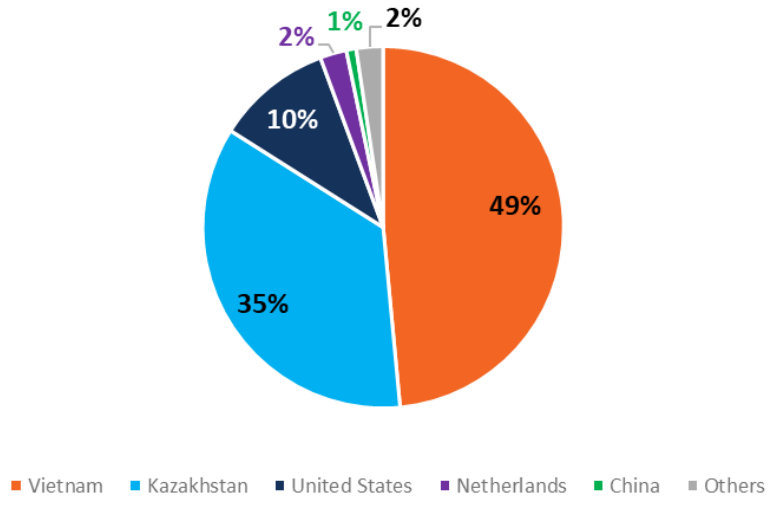


Source: Company data, Yuanta Vietnam

...and it is also a leader in the global export market for P4. As discussed earlier, Vietnam is the world's largest exporter of P4, and DGC holds a dominant position, accounting for 43% of the country's total P4 production capacity.

This strategic advantage places DGC at the forefront of the global P4 export market.

Fig.16: Global P4 export market share by value in 2023



Source: International Trade Centre (ITC), Yuanta Vietnam

Poised for Multi-Year Growth

In our view, DGC offers significant potential for growth in revenues and profits in the years ahead. We expect its robust core businesses, the development of ambitious projects, and expansion into new market segments to pave the way for substantial growth in 2025 and beyond.

Core Revenue Outlook 2024-2025

Yellow phosphorus (P4) is fundamentally the core growth driver for DGC, in our view.

Yellow phosphorus (P4) is the key long-term growth driver, in our view. P4 contributed 38% of DGC's revenue in 2023, and we expect its contribution to expand in the coming years to reach c.45% in 2024-30E driven by positive demand prospects and the expansion of the semiconductor industry.

DGC shares our positive outlook on P4 demand. Management anticipates a surge in phosphorus demand in the near term as battery and chip manufacturers in East Asia and North America expand their production while diversifying their supply chains beyond China. Additionally, management states that chipmakers and EV battery manufacturers with plants currently under construction in Japan and South Korea have indicated interest in DGC's P4 products.

Despite this optimistic outlook, DGC's ASP for P4 likely declined slightly (by -9% YoY) in 2024 to around VND 95,495/kg (USD 3.9/kg) as supply recovered faster than demand. However, we still expect production to have risen by +33% YoY, with a net +21% YoY increase in 2024 revenue to reach VND 4.5tn.

Looking ahead to 2025, we forecast a +5% YoY increase in P4 ASP to reach VND 100,270/kg (USD 4.1/kg) driven by sustained robust demand for P4, which should also result in a +20% YoY increase in production.

Net-net, these factors result in our forecast for 2025E revenue to rise +26% YoY to reach VND 5.6tn (45% of total 2025E revenue).

Fig.17: P4 price forecast for 2024-2025 (USD/kg)

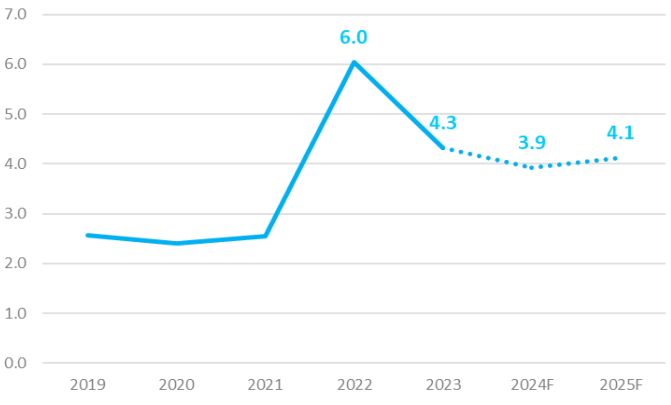
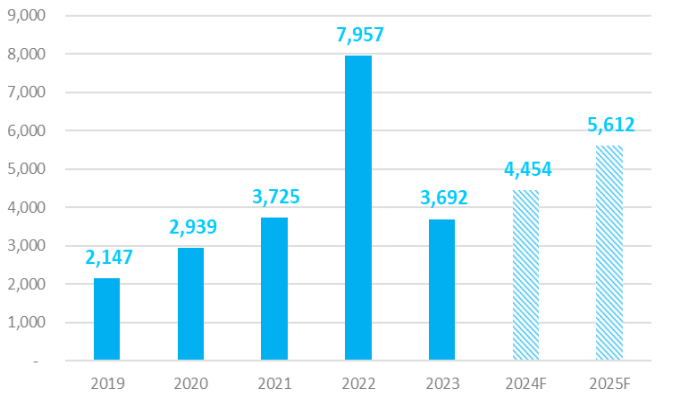


Fig.18: P4 revenue forecast for 2024-2025 (VND mn)



Source: DGC, Yuanta Vietnam

Thermal phosphoric acid (TPA/H3PO4): A critical input for electronics.

P4 serves as the primary raw material for producing Thermal Process Acid (TPA). The TPA production process begins with combusting P4 with air to generate phosphorus pentoxide (P2O5), which is then hydrated to form phosphoric acid. The process of burning phosphorus consumes a significant amount of electricity (accounting for 30% COGS). But this is necessary for production of high-purity TPA with concentrations exceeding 85%, because most impurities are eliminated during this process.

In 2023, TPA 85% accounted for 22% of DGC's revenue. It can be categorized into two types: Food-grade phosphoric acid (F-HPO) and electronic-grade phosphoric acid (E-HPO).

F-HPO is used in beverages, food processing, flavor enhancement, and washing powder; while E-HPO is essential in manufacturing electronic circuits, semiconductors, and lithium batteries. Because P4 is the primary raw material for TPA, fluctuations in TPA prices closely follow changes in P4 prices.

DGC launched its electronic-grade phosphoric acid (E-HPO) production plant in mid-2022, with a capacity of 50,000 tons per year. The company primarily uses this product in the screen and electronics manufacturing sectors, which only accounts for about 20% of the plant's capacity. DGC's E-HPO does not yet meet the semiconductor industry's purity requirements, which are typically above 99%. As a result, the remaining capacity is dedicated to producing food-grade phosphoric acid (F-HPO).

Vietnam's TPA faces competition from China in the export market, as both countries are leading global producers due to substantial P4 production capacities.

China imposes a 20% export tax on P4 in an effort to restrict exports, as discussed earlier. However, China's exports of TPA, which has a higher value-added, do not face similar restrictions. Consequently, Vietnam does not have the same export tax advantages for TPA that it enjoys with P4.

TPA revenue forecast for 2024-2025. We forecast that DGC's ASP for TPA will decline by -5% YoY to VND 25,305/kg (USD 1.0/kg), following the downward trend in P4 prices. We also forecast production volume to drop by -27% YoY, as DGC is prioritizing P4 sales over using it for TPA production as P4 demand has picked up this year. Consequently, we forecast TPA revenue to decrease by -30% YoY in 2024, reaching approximately VND 1.5tn.

However, the selling price for TPA is still on a positive trajectory, in our view, given the solid prospects of the semiconductor industry and the trend of diversifying supply away from China among other East Asian and North American companies.

Therefore, we anticipate that DGC's ASP for TPA will increase by +6% YoY to reach VND 26,823/kg (USD 1.1/kg) in 2025. We also expect production volume to grow by +20% YoY, driven by stronger demand and improved operational efficiency. These assumptions drive our projection for 2025E TPA revenue to rise by +27% YoY to reach around VND1.9tn (15% of total revenues).

Fig.19: TPA price forecast for 2024-2025 (USD/kg)

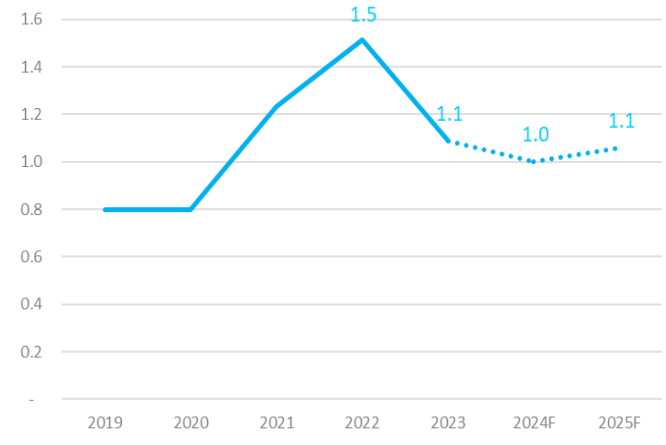
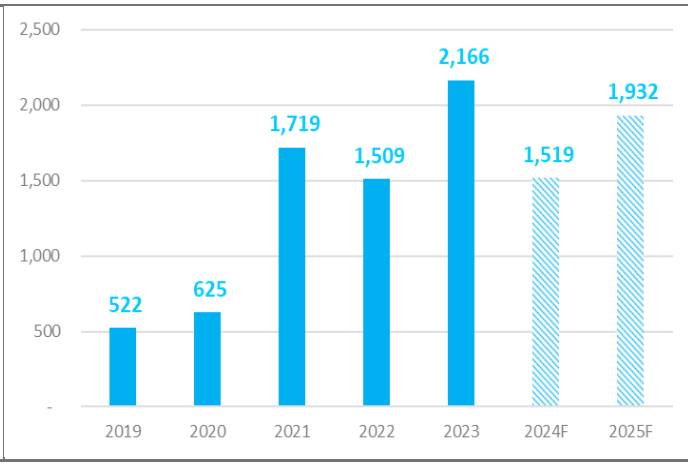


Fig.20: TPA revenue forecast for 2024-2025 (VND mn)



Source: DGC, Yuanta Vietnam

Wet-process phosphoric acid (WPA)

WPA is produced by using H2SO4 (accounting for 10% of COGS) to decompose apatite ore, with the majority of the H2SO4 sourced from imports. While WPA has a lower purity than TPA, its production is both lower cost and generates no CO2 emissions.

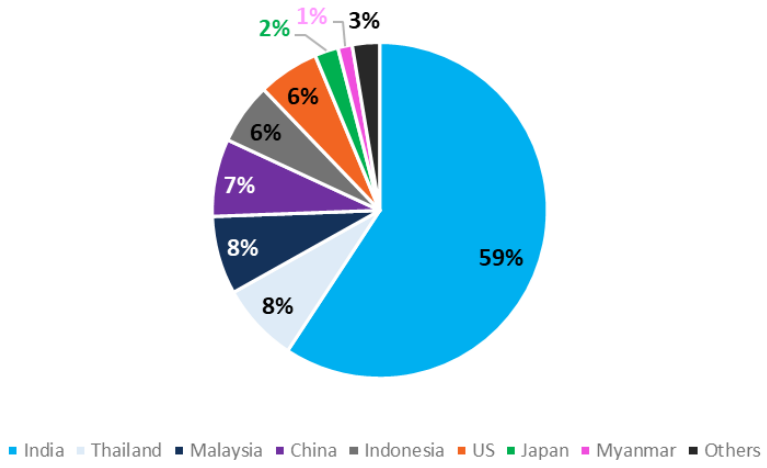
WPA is also more widely used, primarily in the production of fertilizers and feed additives.

P4 is an upstream product, so the price of WPA tends to fluctuate in line with that of P4 (similar to TPA price trends). In 2023, WPA accounted for 13% of DGC's revenue.

DGC allocates its WPA production for two main purposes: (1) exports and (2) internal use for manufacturing agricultural products. The company adjusts the allocation ratio flexibly, based on market conditions. For example, when the WPA market is favorable and prices are high, DGC prioritizes exporting WPA. Conversely, when the market is challenging and prices are low, DGC prioritizes WPA for its own fertilizer and animal feed additive production.

India is currently the largest export market for Vietnam's phosphoric acid, accounting for 59% of its export volume in 2023. According to techsciresearch.com, India's demand for phosphoric acid is projected to grow at a CAGR of 5.96% from 2019 to 2030, reaching 8.8mn tons per year by 2030. India primarily imports phosphoric acid for fertilizer production due to its vast agricultural land needed to meet food demand for its large population, while facing a shortage of domestic apatite ore resources.

Fig.21: Top export markets for Vietnam-manufactured phosphoric acid in 2023



Source: International Trade Centre (ITC), Yuanta Vietnam

Phosphoric acid market set to surge to US$54bn by 2032. The global phosphoric acid market size was valued at US$35bn in 2023, and Fortune Business Insights projects it to reach US$54 bn by 2032, implying +4.9% CAGR from 2023 to 2032.

This growth expectation is primarily driven by increasing demand from the fertilizer and food & beverage industries, as well as the rising use of phosphoric acid in fuel cells.

Our forecasts for DGC's WPA revenue. DGC has prioritized P4 exports and fertilizer production in 2024, driven by increased fertilizer demand (details below) and strong P4 demand.

Additionally, because of the (planned) maintenance of the WPA plant in 1Q24 and the expiration of mining licenses in 2H24 (see details on page 23), we expect full-year

WPA production to decline by -80% YoY in 2024. That substantial decline is slightly offset by our expectation for WPA ASP to edge up by +5% YoY to VND 10,756/kg (USD 0.4/kg). Net-net, we expect a -79% YoY decline in total WPA revenue to VND 265bn for 2024E.

However, in 2025, we forecast DGC's WPA production to increase by +60% YoY. Segment ASP should rise by +6% YoY to VND 11,401/kg (USD 0.5/kg), but volumes should soar as management expects licensing issues to be resolved in 2024.

Additionally, both WPA demand and market size are projected to grow positively, as mentioned earlier. These assumptions drive our segment revenue growth forecast of +70% YoY in 2025E, reaching VND 449bn (4% of total revenues).

Fig.22: WPA price forecast for 2024-2025 (USD/kg)

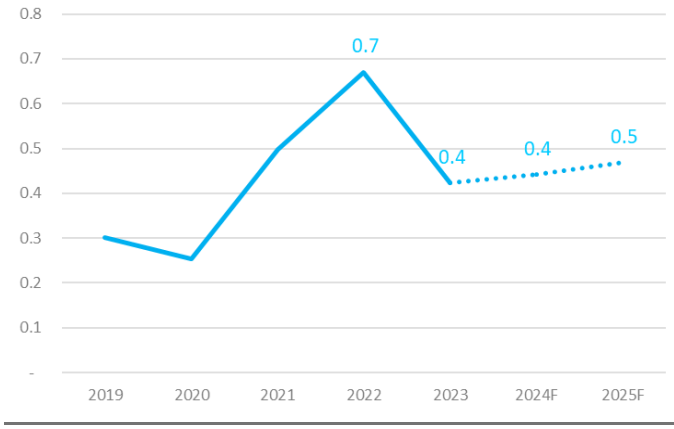
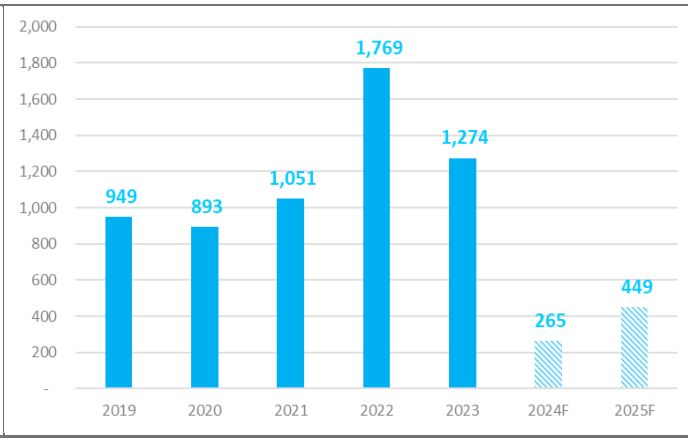


Fig.23: WPA revenue forecast for 2024-2025 (VND mn)



Source: DGC, Yuanta Vietnam

Fertilizers

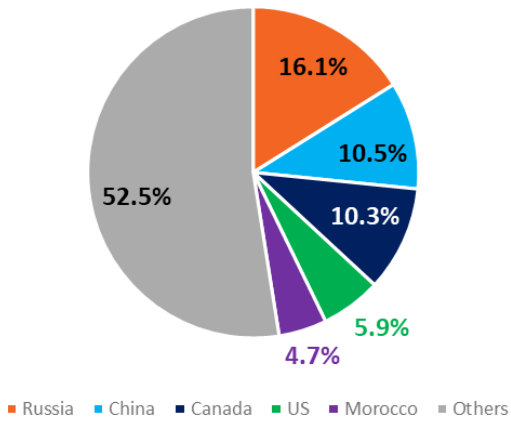
WPA and apatite ore are essential raw materials for producing fertilizers such as Super Phosphate, MAP, DAP, and NPK. In 2023, fertilizers accounted for 14% of DGC's total revenue.

Fertilizer Supply Fluctuations: Russia Eases, China Restricts. Russia, the world's leading fertilizer exporter by value, implemented a six-month export restriction on fertilizers from November 2023 to May 2024 to protect its domestic market. This restriction has now been lifted, which has helped to ease the pressure on global fertilizer supply.

However, China has implemented measures including imposing export quotas and extending inspection requirements for fertilizer components since 2021 to reduce domestic prices. This is meaningful given China's position as the world's second-largest exporter of fertilizer, accounting for one-third of the global supply of nitrogen fertilizer (source: Vinachem).

In September 2023, China directed major urea producers to suspend exports to stabilize domestic prices, cut agricultural costs, and enhance food security. We are aware of no indication that these restrictions will be lifted any time soon.

Fig.24: Top 5 exporters of global fertilizers by export value in 2023



Source: World's Top Exports, Yuanta Vietnam

Fertilizer demand is growing at 4-5% in 2024. The International Fertilizer Association (IFA) forecasts that global fertilizer consumption will increase by +4% YoY in 2024 to reach 192.5mn tons. Rabobank is slightly more optimistic, predicting that with lower fertilizer prices should drive usage up by +5% YoY in 2024.

Fertilizer Price and revenue forecast for DGC for 2024-2025. We forecast DGC's fertilizer (i.e., Super Phosphate, MAP, DAP, and NPK) ASPs will increase by +6% YoY in 2024, driven by supply that, although easing, is still somewhat constrained while demand is rising.

Additionally, DGC should benefit from export restrictions imposed by Russia and China, and in 2H24, its focus on using WPA for fertilizer production amid the shortage of ore, as discussed above.

Consequently, we anticipate that fertilizer production will grow by around +29% YoY, resulting in a revenue increase of +74% YoY to reach VND 2.4tn in 2024.

In 2025, we forecast fertilizer segment ASPs to increase by another +6% YoY amid sustained demand growth. However, we expect DGC's production of fertilizer to decline by -13% YoY as the prioritization of WPA for fertilizer production concludes, resulting in a -20% YoY decrease in revenue to approximately VND 1.9tn (15% of total revenues).

Feed additives

WPA and apatite ore are also key raw materials for producing two feed additives: Dicalcium Phosphate (DCP) and Monocalcium Phosphate (MCP). While DCP is used as a general feed additive, MCP is primarily utilized in aquaculture and holds a higher economic value. This positions DGC to tap into Vietnam's aquaculture export industry further.

In 2023, feed additives contributed 8% to DGC's total revenue.

Leading the pack in Vietnam's DCP and MCP production. DGC stated that it is currently the largest producer of DCP and MCP in Vietnam, with a total production capacity of 150,000 tons per year. The company serves as the primary supplier for major domestic animal feed manufacturers, including Cargill, Newhope, and De Heus.

Vietnam and global feed additives market growth outlook. Vietnam's mixed animal feed market is forecast to grow from USD 11.54bn in 2023 to USD 15.30bn by 2028, with a CAGR of 5.80% (2023-2028), according to Mordor Intelligence. Additionally, Mordor Intelligence estimates the animal feed additives global market is expected to reach USD 36.2bn by 2024 (+4.7% YoY) and expand to USD 45.8bn by 2029,

reflecting a CAGR of 4.86% (2024-2029). This growth should be driven by higher feed production, rising livestock product demand, and a growing pet population.

We assume that APSs of DGC's animal feed additives will decrease by an average -1% YoY in 2024, following the YTD downward trend in feed prices, although we believe demand growth will remain positive.

According to our understanding, as of the end of 2024, the ASPs of animal feed in Vietnam were down by about 5.0% YoY due to cooling prices of imported raw materials such as wheat, soybeans, and corn.

In 2025, we forecast that demand will continue to be favorable, leading to a projected moderate rebound of around +3% YoY in DGC's average feed additive prices.

In addition, we expect that DGC's animal feed additives production will increase by +8% in 2024 and by +8% in 2025, in line with the growing market.

Net-net, we expect total revenue of feed additives to grow +16% YoY to VND 919bn in 2024 and +11% YoY to VND 1,023bn in 2025 (8% of total revenues).

Optionality on explosive growth potential from other projects

Bold Steps into lithium battery and ethanol production

Expansion into lithium battery production... In March 2023, DGC acquired a 51% stake in Tia Sang Battery JSC (TSB VN - Not Rated) for VND 135bn. Tibaco primarily produces lead-acid batteries for automobiles and motorcycles. This battery segment accounted for 2% of DGC's total revenue in 2023, reaching VND 157bn.

This acquisition supports DGC's strategic goal of entering the lithium battery market, with plans to begin selling lithium iron phosphate (LFP) batteries by 2025. Product samples have already been sent to potential customers in South Korea, Japan, and the EU as of March 2024.

... could open a new chapter for DGC. DGC believes that the LFP battery market offers significant potential. This is primarily because c.90% of global LFP battery production capacity is currently located in China, while MNCs are seeking to diversify their suppliers away from sole reliance on China.

Therefore, successful commercial production of LFP batteries could usher in a new chapter for DGC's growth.

However, the management has not yet provided detailed updates on the progress of its strategy. Thus, we have excluded lithium batteries from our model, instead focusing solely on DGC's current lead-acid battery products.

The global lead-acid battery market, valued at USD 45.8bn in 2023, is expected to reach USD 71.68bn by 2032 (CAGR 5.1%), driven by rising energy storage device demand in automotive, commercial vehicles, motorcycles, and passenger cars industries, according to Fortune Business Insights.

We assume that DGC's lead-acid battery segment revenue expanded by 17% YoY in 2024. But we conservatively assume 2024-30E sales CAGR of 5% for this segment, which represents just c.1-2% of our revenue forecasts for this period.

More tangibly, the ethanol plant commenced commercial operations in October 2024, following DGC's acquisition of the plant from Dai Viet Co., Ltd. in Dak Nong Province for VND 253bn.

The facility has a designed capacity of 50,000 tons of 96% ethanol per year, primarily produced from cassava and corn for use in domestic food-grade and medical alcohol (in contrast to the 99% ethanol used in E5 gasoline). Initially, DGC will source raw materials domestically, with plans to cultivate its own feedstock in the future.

We estimate this new business segment will contribute VND 47bn to 2024 revenue, achieving 5% of its designed capacity in this early stage, as the plant temporarily suspended operations in November 2024 for quality adjustments and resumed in December 2024.

However, management anticipates the plant will reach 100% capacity in 2025, and we forecast ethanol revenue to reach VND 1.1tn over the next 12 months (8% of total revenues).

Chlor-Alkali-Vinyl project (CAV) - Strategic move to reduce dependency

CAV project: A strategic step that should help to diversify revenue sources. DGC's management has announced that the company is focused on expanding production capacity and diversifying beyond apatite ore-based products. As part of this strategy, the company has launched the Duc Giang Chemicals Nghi Son Complex project (CAV) with three phases as outlined below:

Table 2. Chlor-Alkali-Vinyl project:

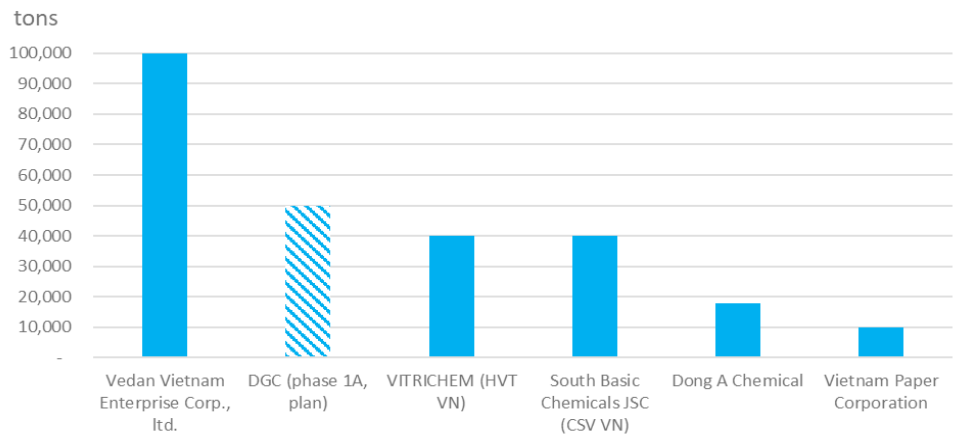
	Phase 1A		Phase 1B		Phase 2	
Total investment	VND 2.4tn		will be disclosed later		will be disclosed later	
Expected usable area	30ha		50ha			
Total capacity	151,000 ton/year		100,000 ton/year		150,000 ton/year	
Products	•NaOH (100%)	: 50,000 ton/year	•NaOH (100%)	: 100,000 ton/year	•Polyvinyl clorua (PVC)	: 150,000 ton/year
	•Hydrochloric acid (HCl, 31%)	: 15,000 ton/year				
	•Javel (10%)	: 10,000 ton/year				
	•PAC	: 30,000 ton/year				
	•$Ca(OCl)_2$	: 20,000 ton/year				
	•Chloramine B	: 1,000 ton/year				
	•Phosphorous acid (H3PO3)	: 10,000 ton/year				
	•Liquid Cl2	: 5,000 ton/year				
	•CaCl2	: 10,000 ton/year				

Source: DGC, Yuanta Vietnam

The CAV project should enable DGC to become the largest commercial caustic soda producer in Vietnam. Currently, the total production capacity for caustic soda (NaOH) in Vietnam is around 188,000 tons, with Vedan Vietnam's plant leading at 100,000 tons per year.

However, both Vedan and Bai Bang Paper primarily use caustic soda for in-house production. Therefore, once Phase 1A of DGC's Nghi Son project becomes commercially operational, DGC should surpass all its competitors to become the largest supplier of commercial caustic soda in Vietnam.

Fig.25: DGC to become a leader in Vietnam's caustic soda (NaOH) production



Source:DGC, Yuanta Vietnam

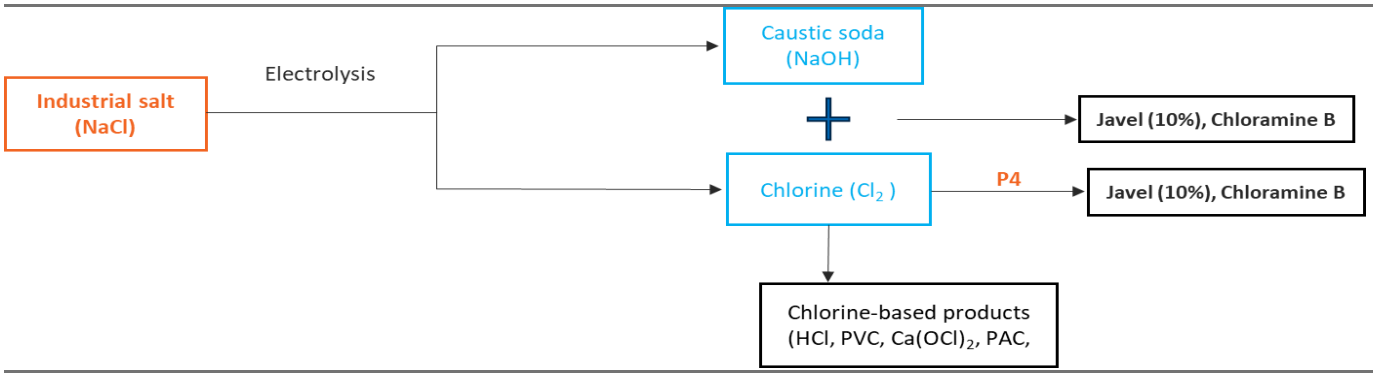
Industrial salt (NaCl) is the primary raw material for the CAV project, chosen for its high purity and concentration compared to table salt. DGC will electrolyze NaCl to

produce NaOH and Cl2, which can be sold or used in downstream products (see Figure 26).

Due to the high energy consumption of the electrolysis process (i.e., approximately 2,200–2,600 kWh per ton of chlorine), DGC expects electricity to account for 32% of COGS in its caustic soda–chlorine project.

Additionally, DGC plans to import industrial salt from India due to domestic salt impurities and unstable production caused by weather. Management estimates that industrial salt (including import duties) will make up about 20% of COGS for its caustic soda–chlorine project.

Fig.26: Cl2–NaOH production process



Source: DGC, Yuanta Vietnam

NaOH is a crucial raw material for various essential industries, such as paper production, detergent production, aluminum production, dyeing, and oil refining. Additionally, it is used in the treatment of manufacturing input water, drinking water, and wastewater.

Meanwhile, Cl2 is used in the production of PVC, bleaching, cleaning, and disinfection. It is also applied in the paper, textile, water treatment, sanitation, and petrochemicals industries.

NaOH production in Vietnam faces challenges because chlorine and caustic soda are co-products of NaCl electrolysis. A drop in demand for one product directly reduces the output of both, requiring producers to carefully balance production.

Caustic soda–chlorine production in Vietnam also faces significant challenges despite high demand. In 2023, Vietnam imported approximately 207,000 tons of caustic soda, which accounted for 48% of domestic demand (source: ITC). The import tax rates are 5% for solid caustic soda and 20% for the liquid form.

Although domestic manufacturers benefit from low electricity costs and high consumption, they still encounter major obstacles in increasing production capacity.

The challenges in expanding caustic soda–chlorine production are due to two main factors: (1) Chlorine, a co-product, is hard to store, forcing domestic producers to lower prices to sell the product quickly, resulting in intense competition; and (2) frequent chlorine surpluses in Vietnam lead to reduced caustic soda output when demand for chlorine-based chemicals drops.

The latter issue stems from the reliance of chlor-alkali plants on chlorine demand, which is strongly tied to PVC production. Globally, 35–40% of chlorine is used for PVC, which is made by combining ethylene, a petrochemical byproduct, with chlorine.

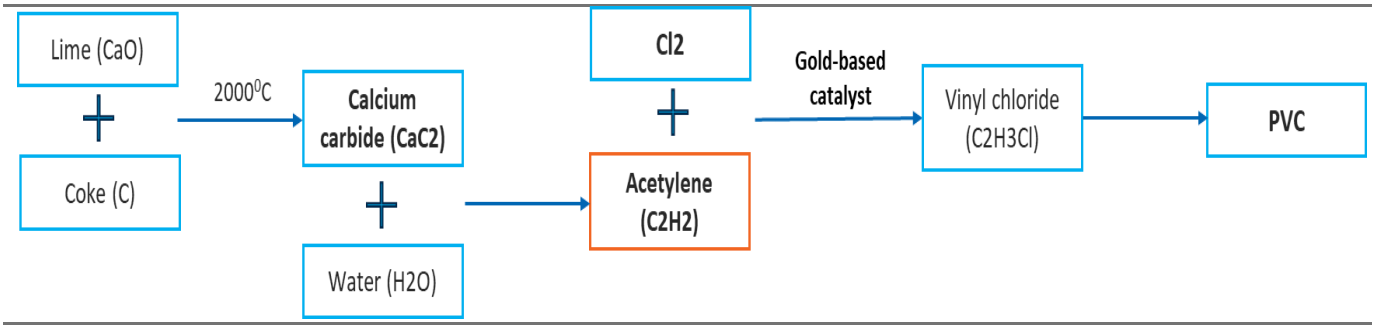
In Vietnam, the underdeveloped petrochemical sector limits PVC production, which thus reduces chlorine demand.

Solving the chlorine surplus with value added products. To address the problem of the chlorine surplus, DGC plans to use Cl2 to manufacture chlorine-based products such as Ca(OCl)2, Chloramine B, and HCL.

Notably, in phase 2 of the project, DGC plans to use limestone and coke to produce PVC, replacing ethylene. As discussed earlier, vinyl chloride, a combination of chlorine and ethylene, is commonly used worldwide to produce PVC. However, due to Vietnam's underdeveloped petrochemical sector, importing ethylene would be very costly. Therefore, DGC has opted for the less common process of using acetylene (C2H2) from limestone and coke to produce vinyl chloride (please see fig. 27).

To advance sustainability in PVC production, DGC plans to replace the mercury catalyst that has traditionally been used to produce vinyl chloride from acetylene with a gold-based catalyst. This change should reduce the environmental impact, as the mercury catalyst is harmful and banned in PVC production due to its toxicity.

Fig.27: DGC's PVC production process



Source: DGC, Yuanta Vietnam

However, Phase 2 is on hold. The company said that they need to conduct more tests on the new gold catalyst technology, and the current market conditions are not ideal for PVC production. Management says that Phase 2 will proceed once market conditions have improved and the technology proves feasible.

Optimizing the value chain through integration with P4. DGC also plans to integrate Cl2 with P4 to produce phosphorus trichloride (PCl3), which is used in flame retardants for plastics and textiles; and phosphorus pentoxide (P2O5), which is used in fire extinguishers. PCl3 can also be converted into phosphorous acid (H3PO3) for detergents, plastics, and fertilizers.

This strategy could eventually help to strengthen DGC's value-add in the supply chain, but details have not yet been disclosed.

CAV project's location addresses the challenges of chlorine storage. The CAV project's location in the Nghi Son Industrial Zone should be positioned it well to service numerous potential clients including paper mills, metallurgical plants, gas production facilities, and the Nghi Son petrochemicals refinery. DGC can also access potential customers in nearby areas such as Formosa's steel plant in Ha Tinh province and the Thai Binh 2 and Nam Dinh thermal power plants.

Additionally, DGC benefits from the project's proximity to the deep-water Nghi Son Port and National Route 1A, which should reduce transportation time and costs for chlorine-based products. The Nghi Son economic zone also provides access to

limestone quarries in Thanh Hoa province. These advantages should help DGC to optimize operations and enhance the CAV project's market competitiveness.

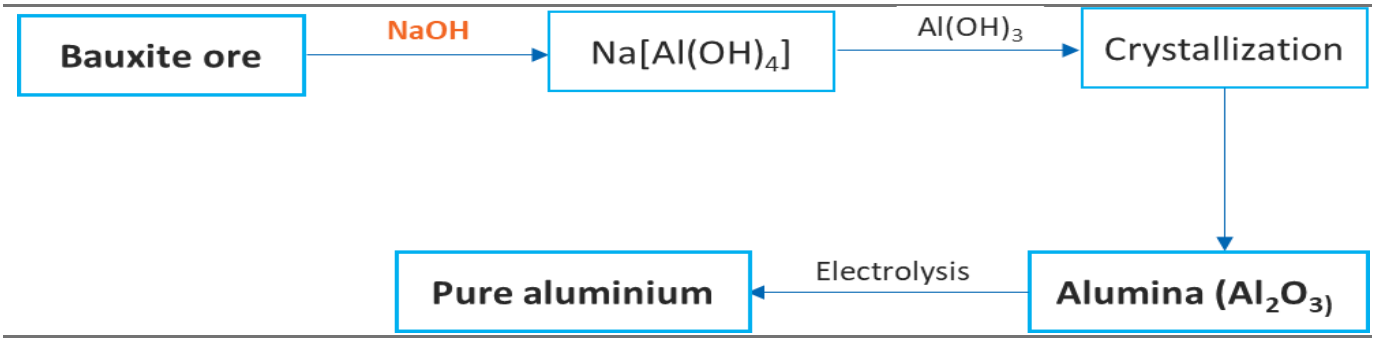
Management stated that the project is expected to begin construction in Feb 2025, and we anticipate it will commence commercial operations in 2Q26. We assume the CAV plant will reach 70% capacity utilization in its first year, contributing VND 944bn to total revenue in 2026. This works out to 6% of our 2026E revenue forecast, and an increase of +9% on total revenue in 2024E, prior to the startup of the CAV project's operations.

We further assume it will achieve maximum capacity utilization by 2028, contributing VND 1.5tn to 2028 revenue (+17% YoY). This works out to 8% of our forecast for Group revenues in 2028, and it represents an increase of +15% on total revenue in 2024E.

We forecast the project will achieve profit of VND 142bn in 2026, increasing to VND 226bn by 2028. Additionally, DGC states that after Phase 1A has reached maximum NaOH capacity utilization, it will move on to develop Phase 1B of the project which will expand capacity to 150,000 tons.

CAV project will also complete the production value chain ahead of the potential Bauxite-Aluminum megaproject in the future. NaOH is a crucial chemical in aluminum production from bauxite ore (please see fig. 28). As such, DGC's management emphasizes that the CAV project serves as a foundational step toward integrating the production value chain for the potential Bauxite-Aluminum megaproject discussed below.

Fig.28: Aluminum production process



Source: DGC, Yuanta Vietnam

Bauxite-Aluminum Megaproject: Ambition to Drive DGC into the Billion-Dollar Ranks

Longer term, DGC is applying for investment approval for the Bauxite-Aluminum project in Dak Nong, with a total project investment of 57tn VND (2.3bn USD) divided into three phases:

- **Phases 1 and 2:**
  - Extracting bauxite ore at a scale of approximately 14.4mn tonnes per year.
  - Processing bauxite into alumina by constructing three processing plants with a capacity of 5.8 mn tonnes of refined ore per year and an alumina production plant with a capacity of 2 mn tonnes per year.
- **Phase 3:** Constructing a plant to process alumina into aluminum with a capacity of 300,000 tons per year.

The Bauxite-Aluminum project could become a major growth driver in the longer term. Management estimates potential annual revenues of VND 16tn from the alumina plant and another VND14tn from the aluminum plant when both are operating at full capacity. This would bring the annual revenue of the entire project to approximately VND 30tn, equivalent to USD 1.2 bn.

DGC to Lead Vietnam's Alumina and Aluminum Production. Vietnam currently has only two alumina plants, Tan Rai and Nhan Co, each with a capacity of 650,000 tons per year. Both are operated by Vinacomin.

However, the country lacks facilities for producing pure aluminum from alumina. Therefore, once DGC's Bauxite-Aluminum megaproject is operational, the company should become Vietnam's largest alumina producer and the first to produce pure aluminum from alumina.

DGC has completed site surveys for bauxite mines in Tuy Duc and Dak Song districts and signed a Memorandum of Understanding (MOU) with the Dak Nong Provincial People's Committee. DGC is now the second-largest investor in the bauxite sector in the province, following only Hoa Phat Group (HPG VN – Not Rated).

We believe that DGC's financial strength and technical edge should improve the approvals process. As of 3Q24, DGC held VND 249bn in cash and cash equivalents, along with VND 11,118bn in term deposits. Additionally, management disclosed that Vietcombank has committed to lending the company VND 14,500bn.

Of course, approvals are not guaranteed, but DGC's financial strength and advanced technical capabilities should be key advantages in securing project approvals, in our opinion.

Bauxite-aluminum project: Results will only come in the very long-term. Management emphasizes that the Bauxite-Aluminum project requires at least 2 years for administrative approvals followed by another 2 years for construction. In other words, it won't contribute to DGC's revenue for at least the next 4 years. Thus, we do *not* factor this project into our valuation model.

Duc Giang Residential Project

DGC plans to build the Duc Giang Residence project on its office land in Thuong Thanh Ward, Long Bien District, Hanoi, with an investment of VND 1.4tn. Spanning 54,312 m², the company's plans for the project include a high school, 53 townhouse lots, and three high-rise buildings totalling 831 apartments, along with amenities such as a conference hall, restaurant, and sports fields.

The project's location is attractive at just about 9 km from downtown Hanoi, 4 km from the Vinhomes Riverside urban complex in Long Biên District, and 25 km from Nội Bài Airport.

DGC is seeking an investment license for the project, and management hopes to begin construction in 2025. However, the timeline of approvals is highly uncertain, and the project implementation plan having undergone multiple adjustments. As such, we have not factored this project into our valuation model either.

Financial analysis: Soft 2024

Business performance was (expectedly) weak in 9M24...

DGC's revenue in 9M24 increased by a mere +1.2% YoY to reach VND 7.4bn, which admittedly has failed to excite market participants. However, this weak growth was primarily due to maintenance work on the P4 and WPA production lines in 1Q, which limited output.

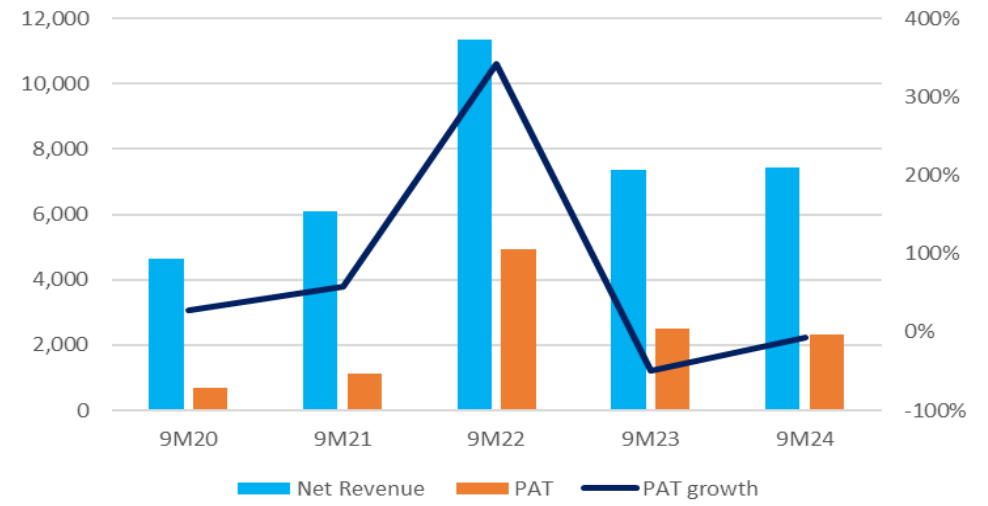
Thus, the soft growth momentum in 2024 should not be a surprise. 9M24 revenue reached 73% of DGC's full-year target for this year.

Another near-term headwind stems from the simultaneous expiration of the operating licenses for all of DGC's mines in 3Q24, which has interrupted its apatite ore supply. DGC states that it is applying for license extensions and expects the ore shortage to be resolved shortly.

However, DGC has temporarily reduced WPA production to prioritize its raw apatite ore for higher-margin P4 and fertilizer products.

9M24 PAT decreased by -7% to reach VND 2.3tn, which is 75% of the company's annual target. The decline was mainly due to a +3% YoY increase in COGS, driven by a +4.5% YoY rise in electricity costs (accounting for 30% of COGS) and a +20% YoY increase in sulfur prices (10% of COGS). Sulfur is a key raw material in the production of sulfuric acid (H2SO4), which is used in WPA manufacturing.

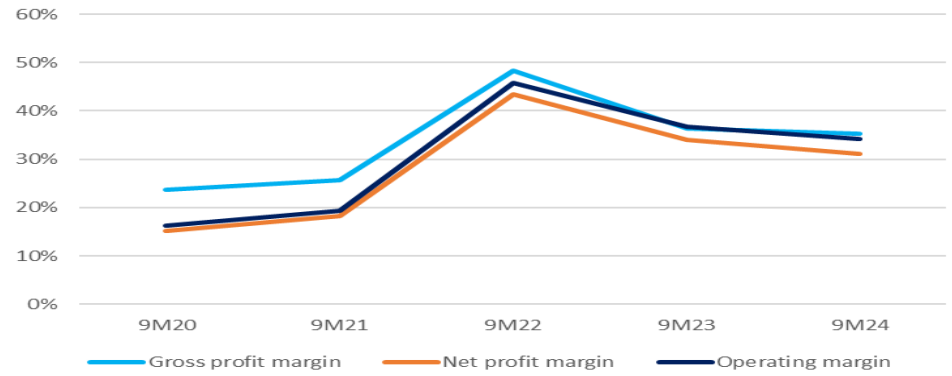
Fig.29: Net revenue and PAT growth falter in 9M24 (VND bn)



Source: DGC, Yuanta Vietnam

These weak YTD results led to a -1ppt YoY decline in gross profit margin (GPM) and a -3ppt YoY decrease in net profit margin (NPM) in 9M24. GPM in 9M24 was 35%, while NPM was 31%.

Fig.30: Decline in GPM and NPM Amid Weak Results in 9M24

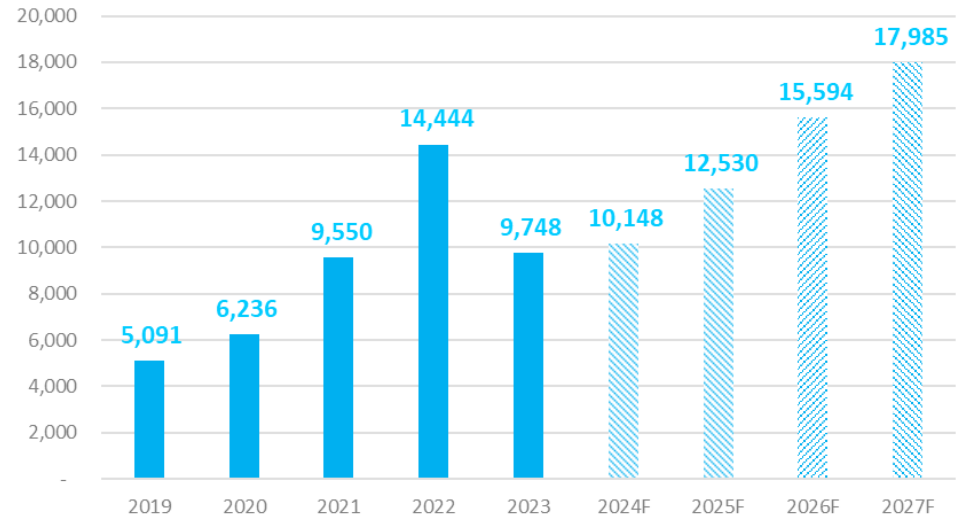


Source: DGC, Yuanta Vietnam

… but better things await in 2025E and beyond

We forecast total net revenue to reach VND 12.5tn (+23% YoY) in 2025E, a substantial increase from our assumption of VND10.1tn (+4% YoY) in 2024E. Medium-term revenue growth should be driven by positive performance across the key existing business segments over the next two years. Additionally, we assume the ethanol plant will reach full capacity by 2025.

Fig.31: We expect positive revenue growth momentum to resume going forward



Source: DGC, Yuanta Vietnam

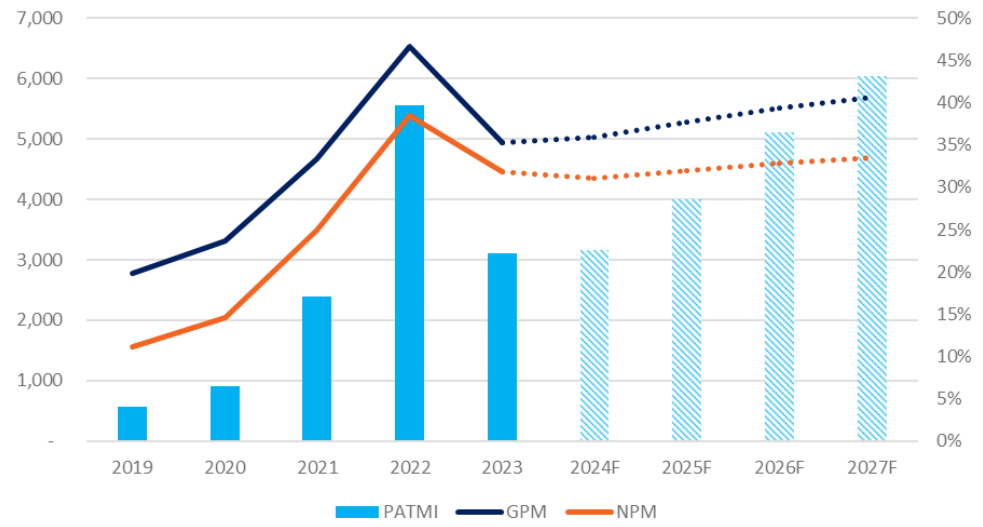
Margins to recover from 2025E… We forecast a slight +60bps YoY increase in GPM to 36% in 2024, driven by a +2% YoY rise in ASPs as supply recovers faster than demand. Meanwhile, we assume COGS increases by 3% YoY on the higher electricity and sulfur costs as experienced in 9M24.

However, we expect demand expected to remain strong in 2025E and project ASPs to increase by +5% YoY, leading to a +2ppt GPM recovery to 38% for 2025E.

Similarly, we anticipate NPM to drop by -1ppt to 31% in 2024, then recovery by the same magnitude to reach 32% in 2025.

…with PATMI following the same trend. We forecast PATMI to grow just slightly by +2% YoY to reach VND 3.2tn in 2024, followed by a strong recovery of +27% YoY to reach VND 4.0tn in 2025.

Fig.32: PATMI growth is flat in 2024 but should rebound by +27% YoY in 2025



Source: DGC, Yuanta Vietnam

Likewise, our expectations for DGC's profitability ratios show the same trend. We forecast a slight decline in 2024 ROA to reach 19% (-2ppt YoY) and ROE to reach 24% (-3ppt YoY), with the +3% YoY increase in COGS assumption as the primary driver. However, we expect 2025E ROA to reach 22% (+3ppt YoY) and ROE to reach 27% (+3ppt YoY).

Notably, the company's financial position is strong, with a low net debt-to-equity ratio reflecting low leverage and ample balance sheet liquidity. For in 2025, we expect the quick and current ratios to decline as DGC's short-term debt increases to fund the Nghi Son project, while long-term debt remains at zero.

Fig.33: Slight decline in ROA and ROE...

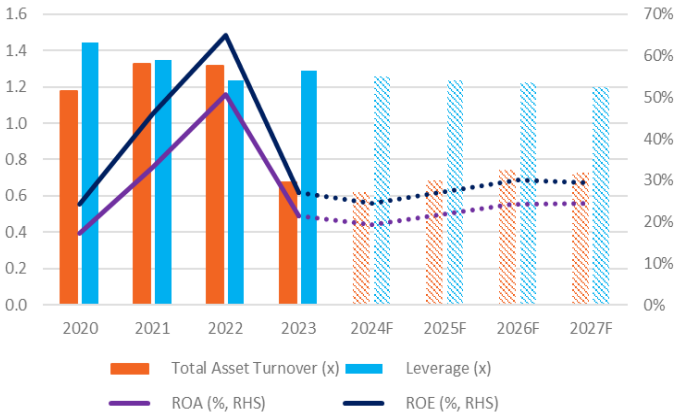
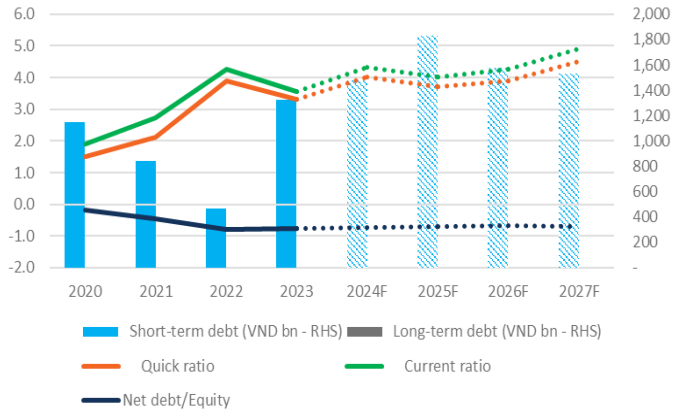


Fig.34: ...but liquidity strengthens



Source: DGC, Yuanta Vietnam

We forecast DGC's cash conversion cycle to slightly increase to 62.8 days in 2024 from 61.8 days in 2023, driven by a modest rise in days of sales outstanding. However, this ratio should improve in 2025 given rising demand and a more favorable economic environment.

Fig.35: Shorter sales and inventory turnover…

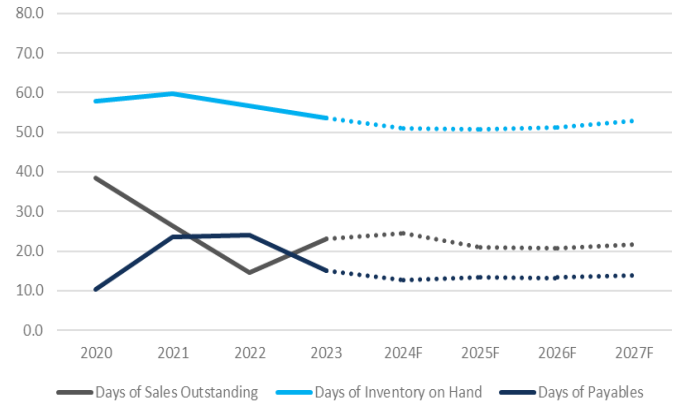
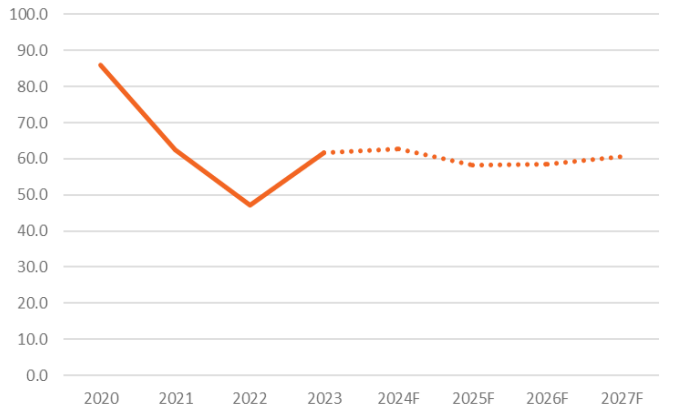


Fig.36: …reduce DGC's cash conversion cycle.



Source: DGC, Yuanta Vietnam

Yuanta vs the Street. Overall, our forecasts are not substantially out of line with the Consensus. We think that our expectation for the ethanol plant to reach full capacity by 2025 and the CAV project to begin contributing to revenue in 2026 probably aligns with the view of most of our competitors on the sell side.

However, our forecasts for revenue and PATMI in 2024-25E are modestly below the Consensus mean (source: Bloomberg). The difference may be due to our cautious view that ASPs will not recover quickly and that COGS will remain high, as we anticipate electricity and sulfur prices to remain elevated through 2025E.

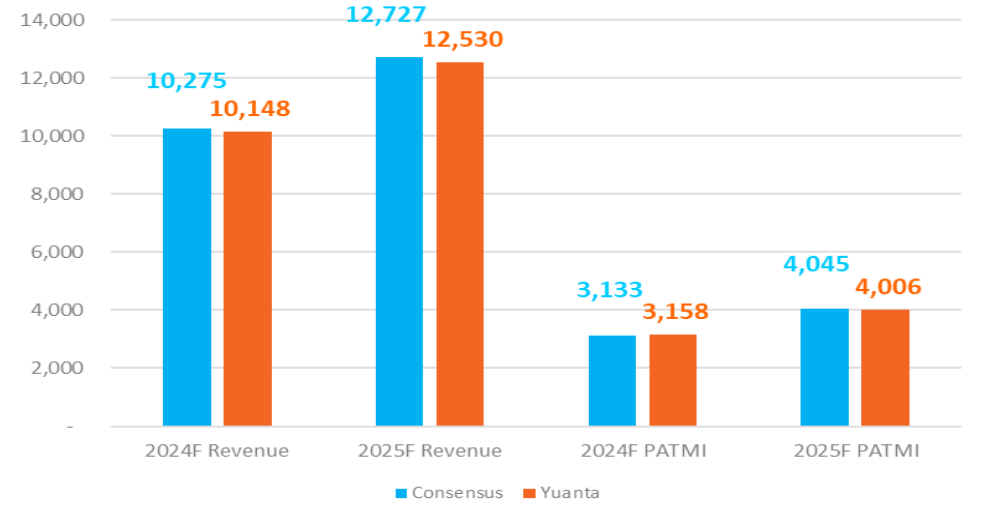
Why is our target price higher than the Street's? Despite our slightly below-consensus near-term P&L forecasts, our fair value-based target price is 3% higher than the Consensus median of 12 sell side analysts, according to Bloomberg (VND130,343, as of Jan 09).

Leaving aside potential differences in discount rates, our above-consensus fair value estimate may reflect our DCF approach, which by its nature tends to apply a higher weighting to the asset's longer-term cashflows rather than near-term price multiples.

If so, the difference may reflect our more positive take on the long-term outlook for the P4 business, which represents roughly half of projected revenues out to 2030E.

By contrast, we have not factored in excessive growth for batteries (just 1-2% of revenues through 2030) or anything at all (zero revenues) for the bauxite/aluminum business or the residential property project.

Fig.37: Yuanta vs the Street



Source: Bloomberg, Yuanta Vietnam

Our View on the stock price. DGC's stock price has risen +24% YoY, outperforming the VNIndex by 15ppt over the same period. We believe this strong performance is justified by the company's solid fundamentals and positive growth potential across its core businesses and consideration of its future large-scale projects.

However, the stock is currently trading at +1 standard deviation above its 5-year historical mean PE ratio, which could indicate some short-term risk that the stock may be overheated. However, this likely reflects the soft earnings momentum of 2024; the stock's forward 2025E P/E ratio is far more reasonable at just 11.3x especially considering our +27% YoY forecast EPS growth, which results in a 2025E PEG ratio of just 0.4x.

Fig.38: Historical 5-years P/E band

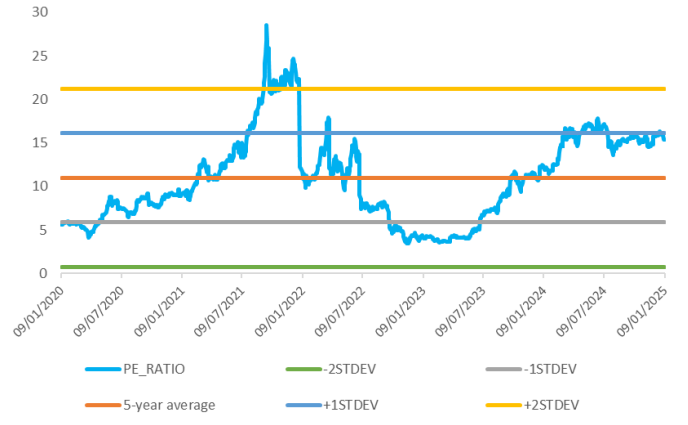
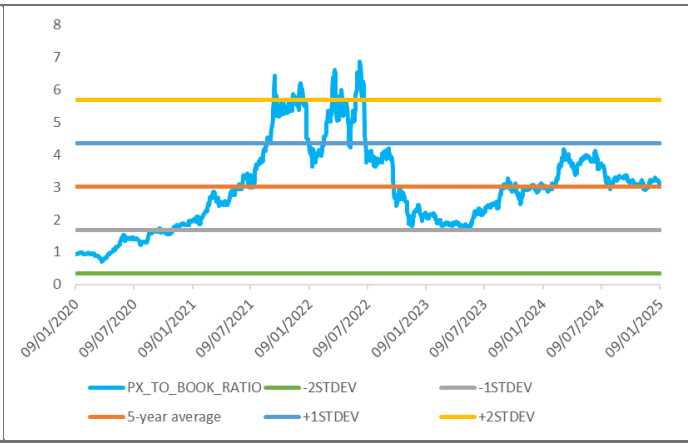


Fig.39: Historical 5-years P/B band



Source: Bloomberg, Yuanta Vietnam

Valuation and Risks

We initiate coverage with a BUY recommendation and target price of VND 134,074 based on a weighted approach comprising FCFF (70%) and PER multiple (30%), implying 12-month TSR of 22% comprising share price appreciation of 19.5% and an additional 2.7% cash dividend yield.

Valuation

Our target price of VND 134,074 is based on a weighted approach comprising our FCFF model (70%), and comparable PER multiples (30%).

Table. 3. Valuation

Valuation methods	Target Price	Weight	Upside
FCFF	138,169	70%	23.1%
PER Multiple	124,519	30%	11.0%
Overall	134,074	100%	19.5%

Source: Yuanta Vietnam

Our valuation assumptions include WACC of 11.7%, which is conservatively based on 3.7% cost of debt and 13.7% cost of equity. We apply a modest terminal growth assumption of 3%.

Table. 4. FCFF Valuation

FCFF	2023E	2024E	2025E	2026E	2027E	2028E	2029E	2030E	2031E	2032E
EBIT	2,846	3,025	3,962	5,188	6,211	7,157	7,958	8,404	9,069	9,801
Less: Tax	(247)	(251)	(319)	(408)	(484)	(553)	(865)	(913)	(984)	(1,061)
add: Depreciation	358	388	462	492	524	557	592	628	666	706
less: FCInvestment (Cape	(250)	(690)	(1,680)	(680)	(189)	(199)	(209)	(219)	(230)	(242)
less: WCInvestment	(24)	(485)	(102)	(103)	(85)	(77)	(46)	(14)	(30)	(31)
Free cash flow	2,682	1,987	2,323	4,489	5,977	6,885	7,429	7,886	8,491	9,174
Present value	**2,682**	**1,785**	**1,868**	**3,233**	**3,855**	**3,977**	**3,843**	**3,654**	**3,523**	**3,409**
Present value FCF 2024E-	21,243	22,215	23,953							
Terminal value	45,704	43,447	41,895							
PV of terminal value	23,643	20,129	17,383							
Total present value	44,886	42,343	41,336							
less: debt	(1,328)	(1,478)	(1,828)							
Add: cash	10,403	11,722	12,966							
Equity value	53,961	52,587	52,474							
Outstanding shares (000)	380	380	380							
Intrinsic value/share	**142,085**	**138,468**	**138,169**							

Source: Yuanta Vietnam

We believe DGC presents investors with a chance to engage in a positive long-term growth story given its leadership in Vietnam's phosphorus industry and boosted by additional businesses such as the CAV and (potentially, in the very long term) bauxite-aluminum projects.

This optimistic outlook is incorporated into our valuation model with cashflow projections extending to 2032. The table below provides sensitivities of our FCFF-based valuation to various WACC and terminal growth assumptions.

Table. 5. Sensitivity analysis

		Terminal growth				
	138,169	2.0%	2.5%	3.0%	3.5%	4.0%
	9.7%	166,191	171,243	177,050	183,792	191,718
	10.7%	147,120	150,548	154,422	158,833	163,903
WACC	11.7%	133,033	135,461	138,169	141,209	144,645
	12.7%	121,089	122,804	124,695	126,792	129,130
	13.7%	111,895	113,146	114,515	116,017	117,674

Source: Yuanta Vietnam

In addition, we apply a target PER multiple of 12.6x for 2025, which is the median valuation among DGC's regional peers. Again, we believe this approach to be

conservative given that our forecast ROE for the company (i.e., 24.3% in 2024 and 27.2% in 2025) is significantly higher than Street estimates for industry peers in the region (12.1% for 2024E and 13.3% for 2025E, according to Bloomberg).

Once again, we believe this valuation is justified given the positive outlook from future mega projects and DGC's leading industry position.

Table. 6. Regional peers' PER multiples

Ticker	Country	Name	Market Cap (USD)	Gross Margin (%)	Operating Margin (%)	Est 2024E P/E (x)	Est 2025E P/E (x)	5 Year AVR P/E	Est 2024E ROE (%)	Est 2025E ROE (%)	Current Net debt/ Equity
600141	CHINA	HUBEI XINGFA CHEMICALS GRP-A	3,264	16.2	6.9	13.2	10.8	15.8	8.3	9.5	48.2
688005	CHINA	NINGBO RONBAY NEW ENERGY T-A	1,963	8.6	4.2	54.5	24.2	75.2	3.0	6.8	67.5
000422	CHINA	HUBEI YIHUA CHEMICAL INDUS-A	1,749	12.7	4.7	12.8	10.4	16.4	14.3	15.8	74.7
DFPC	INDIA	DEEPAK FERTILISERS & PETRO	1,700	--	11.2	15.5	13.8	8.5	15.9	15.6	64.8
FINEORG	INDIA	FINE ORGANIC INDUSTRIES LTD	1,579	--	22.5	30.0	28.3	38.5	21.5	19.7	Net cash
688779	CHINA	MINMETALS NEW ENERGY MATERIA	1,324	4.4	(1.5)	--	29.6	--	1.8	3.9	19.1
002539	CHINA	CHENGDU WINTRUE HOLDING CO-A	1,271	10.2	4.8	10.7	8.6	13.6	9.9	11.0	88.1
RCF	INDIA	RASHTRIYA CHEMICALS & FERT	1,082	--	1.7	--		12.6	--	--	63.9
002386	CHINA	YIBIN TIANYUAN GROUP CO -A	787	3.3	0.2	--	--	56.9	--	--	68.5
DCM	VIETNAM	PETROVIETNAM CA MAU FERTILIZ	719	16.2	5.4	12.4	10.4	11.6	14.7	16.4	Net cash
DPM	VIETNAM	PETROVIETNAM FERT & CHEMICAL	540	12.2	2.2	18.8	14.0	13.8	6.9	9.1	Net cash
CSV	VIETNAM	SOUTH BASIC CHEMICALS JSC	192	25.8	15.7	--	--	7.3	--	--	Net cash
Median			**1,324**	**12.4**	**4.8**	**14.4**	**12.6**	**14.3**	**12.1**	**13.3**	**66.1**
DGC	VIETNAM	DUC GIANG CHEMICALS JSC	1,776	35.3	29.2	14.4	11.3	14.8	24.3	27.2	Net cash

Source: Bloomberg, Yuanta Vietnam (Data as of Jan 09, 2025)

Risks to our call

A sharp decline in P4 prices. As discussed, P4 is DGC's core product, and we expect it to contribute about 45% of 2024-30 annual revenues. P4 is also a key input for the production of H3PO4, which accounted for 22% of revenue in 2023 but is likely to be a low-teens percentage contributor going forward. A sharp drop in demand and/or decline in P4 prices is thus the key risk to revenue and profit forecasts, as well as Street fair value estimates for the stock.

Exchange rate volatility. 78% of DGC's revenue is generated from exports, which are mainly priced in USD. However, fluctuations in the USD exchange rate can affect the company's financial performance in both positive and negative ways. However, we do not view this as a structural risk. Additionally, DGC's balance sheet exposure to FX volatility is mitigated by its holdings of foreign currency-denominated cash (USD3.7mn as at end-2Q24).

Delays in CAV project timeline. We expect the CAV project to begin construction in Feb 2025, with profit recognition starting in 2Q26. Thus, any delays in the project's schedule, similar to those that may occur with the ethanol plant, could impact DGC's revenue and profit outlook in the medium to long term.

Upside catalysts. We haven't factored in any value / earnings / cashflow for the lithium battery plan, the residential property project or the bauxite/aluminum business. We think of these businesses as providing free optionality on the possible (albeit uncertain) early administrative approvals, both of which would very likely boost DGC's shares.

PROFIT AND LOSS (VND bn)					
FY Dec 31 (VND'bn)	2023E	2024E	2025E	2026E	2027E
Revenue	**9,748**	**10,148**	**12,530**	**15,594**	**17,985**
Yellow phosphorus	*3,692*	*4,454*	*5,612*	*6,869*	*8,058*
Thermal phosphoric acid (HPO)	*2,166*	*1,519*	*1,932*	*2,253*	*2,627*
Wet-processed phosphoric acid (WPA)	*1,274*	*265*	*449*	*547*	*638*
Fertilizers	*1,353*	*2,358*	*1,895*	*2,147*	*2,399*
Feed additives	795	919	1,023	1,125	1,178
Others	*468*	*633*	*1,619*	*2,652*	*3,085*
Cost of goods sold	(6,308)	(6,507)	(7,805)	(9,454)	(10,677)
Gross profits	**3,440**	**3,641**	**4,726**	**6,139**	**7,308**
Operating expenses	(594)	(615)	(764)	(951)	(1,097)
Operating profits	**2,846**	**3,025**	**3,962**	**5,188**	**6,211**
Net interest expenses	641	528	551	584	626
Net investments income/(loss)	-	-	-	-	-
Net other incomes	(1)	(1)	(2)	(2)	(3)
Pretax profits	**3,485**	**3,552**	**4,511**	**5,770**	**6,834**
Income taxes	(243)	(251)	(319)	(408)	(484)
Minority interests	142	143	186	241	314
Net profits	**3,100**	**3,158**	**4,006**	**5,120**	**6,037**
EBITDA	3,204	3,414	4,424	5,680	6,735
EPS (VND)	**7,673**	**7,816**	**9,916**	**12,672**	**14,942**

KEY RATIOS					
	2023A	2024E	2025E	2026E	2027E
Growth (% YoY)					
Sales	-32.5%	4.1%	23.5%	24.4%	15.3%
Yellow phosphorus	*-53.6%*	*20.6%*	*26.0%*	*22.4%*	*17.3%*
Thermal phosphoric acid (HPO)	*43.5%*	*-29.9%*	*27.2%*	*16.6%*	*16.6%*
Wet-processed phosphoric acid (WPA)	*-28.0%*	*-79.2%*	*69.6%*	*21.9%*	*16.6%*
Fertilizers	*-29.1%*	*74.3%*	*-19.6%*	*13.3%*	*11.7%*
Feed additives	*-17.8%*	*15.5%*	*11.4%*	*9.9%*	*4.8%*
Others	*40.5%*	*35.3%*	*155.6%*	*63.8%*	*16.3%*
Operating profit	-52.6%	6.3%	30.9%	31.0%	19.7%
EBITDA	-49.0%	6.6%	29.6%	28.4%	18.6%
Net profit	-44.3%	1.9%	26.9%	27.8%	17.9%
EPS (VND)	-44.3%	1.9%	26.9%	27.8%	17.9%
Profitability ratio (%)					
Gross margin	35.3	35.9	37.7	39.4	40.6
Operating margin	29.2	29.8	31.6	33.3	34.5
EBITDA margin	32.9	33.6	35.3	36.4	37.4
Net margin	31.8	31.1	32.0	32.8	33.6
ROA	21.4	19.3	21.9	24.4	24.5
ROE	27.1	24.3	27.2	30.0	29.3
Stability					
Net debt/equity (%)	-75.5	-73.6	-71.4	-66.0	-68.6
Int. coverage (x)	89.1	53.9	59.9	76.2	99.9
Int. &ST debt coverage (x)	3.3	2.2	2.5	3.2	4.2
Cash conversion days	61.8	62.8	58.0	58.6	60.5
Current ratio (X)	3.6	4.3	4.0	4.3	4.9
Quick ratio (X)	3.3	4.0	3.7	3.9	4.5
Net cash/(debt) (VND mn)	9,075	10,244	11,138	12,262	15,535
Efficiency					
Days receivable outstanding	23.1	24.4	20.9	20.8	21.5
Days inventory outstanding	53.7	51.0	50.5	51.1	52.8
Days payable outstanding	14.9	12.6	13.4	13.3	13.8

Source: Company data, YSVN

BALANCE SHEET (VND bn)					
FY Dec 31 (VND'bn)	2023E	2024E	2025E	2026E	2027E
Total assets	**15,536**	**17,111**	**19,433**	**22,502**	**26,788**
Cash & cash equivalents	1,061	1,550	2,255	2,561	5,190
ST Investment	9,342	10,172	10,711	11,279	11,877
Accounts receivable	1,130	1,062	1,217	1,415	1,570
Inventories	855	963	1,197	1,450	1,638
Other current assets	80	79	79	79	79
Net fixed assets	2,144	2,362	2,978	4,631	5,279
Others	926	923	995	1,087	1,155
Total liabilities	**3,509**	**3,198**	**3,836**	**3,933**	**4,145**
Current liabilities	3,493	3,198	3,835	3,933	4,145
Accounts payable	190	260	312	378	427
ST debts	1,328	1,478	1,828	1,578	1,532
Long-term liabilities	16	0	0	0	0
Long-term debts	-	-	-	-	-
Others	16	0	0	0	0
Shareholder's equity	**12,027**	**13,912**	**15,598**	**18,568**	**22,643**
Share capital	3,798	3,798	3,798	3,798	3,798
Treasury stocks	(0)	(0)	(0)	(0.0)	(0.0)
Others	123	415	668	972	1,336
Retained earnings	5,989	7,566	8,964	11,593	15,261
Minority interest	**330**	**347**	**381**	**420**	**462**

CASH FLOW (VND bn)					
FY (VND'bn)	2023E	2024E	2025E	2026E	2026E
Operating cash flow	**4,523**	**3,494**	**3,570**	**4,856**	**5,946**
Net income	3,100	3,158	4,006	5,120	6,037
Dep, & amortisation	358	388	462	492	524
Change in working capital	(24)	(485)	(102)	(103)	(85)
Others	1,089	432	(796)	(653)	(530)
Investment cash flow	**(4,719)**	**(2,015)**	**(2,076)**	**(3,160)**	**(2,132)**
Net capex	(816)	(250)	(690)	(1,680)	(680)
Change in LT investment	(287)	3	(72)	(91)	(68)
Change in other assets	(3,616)	(1,767)	(1,313)	(1,389)	(1,383)
Cash flow after invt.	(196)	1,479	1,494	1,696	3,814
Financing cash flow	**(279)**	**(989)**	**(789)**	**(1,389)**	**(1,186)**
Change in share capital	-	-	-	-	-
Net change in debt	860	150	350	(250)	(46)
Change in other LT liab.	(1,139)	(1,139)	(1,139)	(1,139)	(1,139)
Net change in cash flow	**(475)**	**489**	**705**	**306**	**2,629**
Beginning cash flow	1,535	1,061	1,550	**2,255**	**2,561**
Ending Cash Balance	**1,061**	**1,550**	**2,255**	**2,561**	**5,190**

KEY METRICS					
	2023E	2024E	2025E	2026E	2027E
PE (x)	14.6	14.4	11.3	8.9	7.5
Diluted PE (x)	14.6	14.4	11.3	8.9	7.5
PB (x)	3.5	3.1	2.7	2.3	1.9
EBITDA/share	8,436	8,989	11,649	14,957	17,733
DPS	3,000	3,000	3,000	3,000	3,000
Dividend yield (%)	2.7	2.7	2.7	2.7	2.7
EV/EBITDA (x)	10.5	9.5	7.1	5.3	4.0
EV/EBIT (x)	11.8	10.7	7.9	5.8	4.4

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