

DUCCIANG CHEMICALS GROUP (DGC) – INITIATION

Market Price	Target Price	Dividend Yield	Rating	Sector
VND187,000	VND233,200	0.93%	ADD	BASIC MATERIALS

10 March 2022

Outlook – Short term: **Positive**
Outlook – Long term: **Positive**
Valuation: **Positive**

Consensus*: Add:2 Hold:0

Target price/consensus: 14,5%

Key changes in the report



Price performance



Source: VND RESEARCH

Key statistics

52w high (VND)	189,900
52w low (VND)	58,174
3m Avg daily value (VNDmn)	187,690
Market cap (VNDbn)	32,334
Free float (%)	47
TTM P/E (x)	13.3
Current P/B (x)	5.28

Ownership

Dao Huu Huyen	18.5%
Vinachem	8.9%
Ngo Thi Ngoc Lan	6.8%
Others	65.80%

Source: VND RESEARCH

Analyst(s):



Hao Nguyen Duc

hao.nguyenduc@vndirect.com.vn

The tailwind is blowing

- Ranked 1st in Vietnam in terms of capacity and technology in phosphorus production, with 48% national market share.
- We forecast DGC's NP to reach a CAGR of 21.9% in FY21-23F thanks to increased demand for semiconductors.
- We initiate coverage on DGC with an ADD rating and TP of VND233,300.

Vietnam's leading phosphorus producer

DGC is the leader in both capacity and technology in phosphorus and derivatives production. The company accounts for ~48% of Vietnam's yellow phosphorus (P4) capacity and is currently the only feed additive producer in the country. DGC is also Vietnam's largest producer and sole exporter of thermal and extracted phosphoric acid. DGC's revenue mainly comes from exports (accounts for 79%) of which India is the main export market, accounting for 25% of DGC's total revenue in 2021.

The tailwind is blowing

We expect DGC's net profit (NP) and revenue in FY22F to grow by 48.4%/73.3% yoy due to 1) P4's revenue surge 70.5% yoy as DGC will keep focusing on selling this product to take benefit from supply shortage in China and Russia-Ukraine conflict and 2) 57.9% yoy increase in phosphoric acids sales (TPA and WPA) thanks to 2 new TPA production lines are expected to run at 80% capacity in 2022. We forecast DGC's revenue and NP in FY23F to decrease by 4.0%/14.1%, respectively, due to the retreat of phosphorus prices since 4Q22F.

CAV project is the key driver of DGC's revenue growth in FY25F-28F

DGC's BOD has approved the construction of Nghi Son Chlor-alkali-vinyl (CAV) project with an investment cost of VND10,000bn, funding with 45% from debt and 55% from owned equity. We expect the plant to be completed and tested in 4Q24F before launching commercial at 50% capacity in FY25F. We believe the project will be the company's long-term growth engine due to the current Chlorine deficiency situation in Vietnam. Therefore, we forecast CAV project's revenue to reach VND5,500bn, contributing 25.5% of DGC revenue in FY25F.

Initiate ADD recommendation with a target price of VND233,200/share

With a stellar FY22F ahead and the long-term potential from CAV project, we believe that DGC is still attractive despite a 211% price increase in 2021. The target price is based on an equal weighted combination of two valuation methods: DCF (WACC 10.8%, COE 13.0%) and P/E with a target P/E of 9.5x. The upside potential including a rise in yellow phosphorus price, could last until FY23F as China may continue to tighten restrictions on the production of environmental pollution products. Downside risks include 1) selling price of P4 correcting stronger than expected, 2) P4's export tax risk plus an increase in input material prices (sulfur, coke) which could put pressure on DGC's gross margin.

Financial summary (VND)	12-20A	12-21A	12-22E	12-23E
Net revenue (bn)	6,236	9,567	14,200	13,633
Revenue growth	22.5%	53.4%	48.4%	(4.0%)
Gross margin	23.7%	33.4%	39.4%	35.7%
EBITDA margin	13.1%	25.7%	31.6%	27.0%
Net profit (bn)	907	2,405	4,164	3,579
Net profit growth	60.0%	165.3%	73.1%	(14.1%)
Recurring profit growth	65.9%	167.0%	73.1%	(14.1%)
Basic EPS	5,302	14,066	24,350	20,928
Adjusted EPS	4,847	13,662	22,813	19,607
BVPS	22,871	35,396	60,445	76,322
ROAE	25.1%	48.3%	50.8%	30.6%

Source: VND RESEARCH

THE TAILWIND IS BLOWING

Investment thesis

We like DGC for:

- DGC is Vietnam's leading producer of phosphorus and phosphorus-based products, a group of "hot" materials used in semiconductor manufacturing technology and in the food and beverage industry, strengthening DGC's competitive pricing advantage compared to domestic competitors.
- Two new electronics thermal phosphoric acid (TPA) lines are expected to run at 80% capacity in FY22F as 5G equipment and semiconductors demand continue to soar in FY22F. We expect electronic TPA to contribute respectively 13.9%/22.7% of DGC's revenue in FY22F/23F.
- DGC's NP achieved a CAGR of 21.9% in FY21F-23F thanks to improved products portfolio and contribution from the electronic TPA segment.
- The Chlor-alkali-vinyl (CAV) project's phase 1 completion in 1Q25F will become the main revenue growth driver; contributing 25% of annual revenue and making DGC's sodium hydroxide factory number 1 in commercial capacity in Vietnam. Given that currently CAV manufacturers in Vietnam are mainly small or non-commercial and it requires large capital investment, we believe that DGC will maintain its leading position in the industry in FY25-28F period.

We initiate coverage on DGC with ADD rating

Our target price is VND233,200/share, based on an equal weighted combination of 2 valuations approach: DCF (WACC: 10.8%; long-term growth: 1.0%) and target P/E for FY22F is 9.5x. Target P/E for 2022 is based on DGC's 3-year average P/E. Upside potential comes from the increase in gold phosphorus price could last until 2023 as China may continue to tighten restrictions on the production of environmental pollution products. Downside risks include 1) a stronger-than-expected adjustment in P4's selling price and 2) P4's export tax risk plus an increase in input material prices (sulphur, coke) which could put pressure on DGC's gross profit margins.

Figure 1: Blended target price

Method	Price	Weight	Weight price (VND)
FCFF	235,215	50%	117,607
P/E	231,222	50%	115,611
Average price (vnd)			233,219
Target price (rounded)			233,200

SOURCE: VNDIRECT RESEARCH

Figure 2: Discounted cash flows - future cash flows to firm (FCFF) approach

Present value of Free Cash Flow to Firm	19,310
Present value of Terminal value (VNDbn)	17,998
Enterprise Value (VNDbn)	37,308
Net debt (VNDbn)	2,914
Equity value (VNDbn)	40,222
No. of Outstanding Share 2021 (million)	171
Equity value per share (VND/share)	235,215
WACC	10.8%
Cost of equity	13.0%
Long term growth	1.0%

SOURCE: VNDIRECT RESEARCH

Figure 3: Peer comparison

			Target	Market cap	P/E (x)		3 year EPS growth		P/B (x)		EV/EBITDA		ROE (%)		
Company	Ticker	Recom.	price	US\$m	2021	2022	CAGR	2021	2022	2021	2022	2021	2022	2021	2022
Hubei Xingfa Chemicals Group Co Ltd	600141 CH	na	na	7,670	13.2	9.2	40.3	2.8	2.3	7.2	7.6	31.0	32.2		
Yunnan Yuntianhua Co Ltd	600096 CH	na	na	9,402	11.4	7.5	18.0	3.4	2.5	7.0	7.6	45.1	40.0		
Hubei Yihua Chemical Industry Co Ltd	000422 CH	na	na	4,660	10.6	7.3	na	na	na	na	na	26.1	na		
Hongda Xingye Co Ltd	002002 CH	na	na	3,927	11.4	8.2	-3.3	na	na	na	na	17.2	na		
Anhui Sierte Fertilizer Industry Ltd Co	002538 CH	na	na	1,218	14.5	14.0	39.4	1.9	1.8	9.1	8.8	12.0	12.2		
Kunming Chuan Jin Nuo Chemical Co Ltd	300505 CH	na	na	765	13.0	9.8	-10.9	3.1	2.4	na	na	8.1	15.0		
China General Plastics Corp	1305 TT	na	na	2,953	7.1	10.6	37.6	1.7	1.6	4.4	6.5	30.4	25.0		
Petrovietnam Fertilizer and Chemical Cor	DPM VN	Non rate	46,600	889	10.6	16.3	15.9	3.6	3.3	4.8	7.3	30.7	17.8		
Petrovietnam Camau Fertilizer JSC	DCM VN	na	na	904	9.5	14.0	17.5	2.5	2.2	4.7	6.8	29.9	17.6		
Average						11.6	10.8	20.2	2.6	2.1	6.9	7.6	24.3	24.9	
Median						11.4	9.8	27.8	2.8	2.3	7.1	7.6	26.1	25.0	
Duc Giang Chemicals Group JSC	DGC VN	Add	233,200	1,091	13.5	8.5	9.5	4.9	3.5	9.3	7.1	28.1	45.6		

SOURCE: VNDIRECT RESEARCH, BLOOMBERG

Figure 4: Multiples (P/E)

Method	Price	Weight	Weight price (VND)
FCFF	235,215	50%	117,607
P/E	231,222	50%	115,611
Average price (vnd)			233,219
Target price (rounded)			233,200

SOURCE: VNDIRECT RESEARCH

Vietnam's leading phosphorus producer

Starting from a state-owned enterprise (SOE) with a strong technical expertise leading team

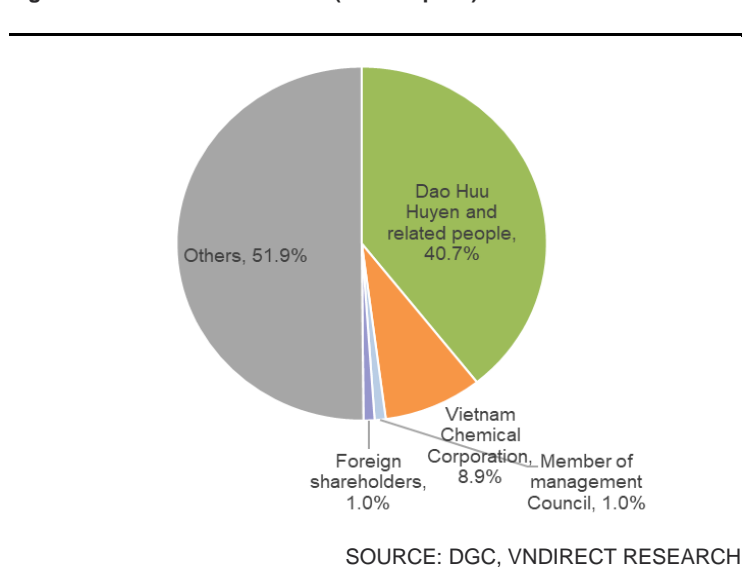
DGC - established in 1963 in Hanoi is an SOE operating in the chemical and detergent industry. In 2004, Mr. Dao Huu Huyen - Chairman of the DGC's BOD and his family bought the stake from Vietnam Chemical Industry Group (Vinachem - Unlisted). DGC became a public company in 2007, listed on HNX in 2014 and moved to HOSE in July 2020. As of Mar 20, Mr. Dao Huu Huyen - General Director, Dao Huu Duy Anh (son of Mr. Dao Huu Huyen) and related parties own more than 40% of DGC stake. Vinachem currently holds a 9% stake in DGC.

Figure 5: The BOD has adequate experience in the chemical manufacturing industry

	Experiences
Dao Huu Huyen - Chairman of the Board	Possess a bachelor's degree in chemistry and more than 25 years of experience in trading and manufacturing chemicals, especially phosphorus chemicals
Dao Huu Duy Anh - General manager	Has a master's degree in chemistry. Joined DGC since 2012 and became General Director in March 2020
Pham Van Hung - Deputy General Manager	Is a mechanical engineer working at DGC since 2009 - is a member of the Board of Directors of Duc Giang Lao Cai Chemical Co., Ltd (of DGC).
The Pearl of Christmas - representative of Vinachem	Deputy Director of Investment and Construction Department - Vietnam Chemical Industry Group (Vinachem)
Dao Thi Mai - Chief accountant	Working for DGC since 2007. Used to work as chief accountant at Van Min Co., Ltd

SOURCE: DGC, VNDIRECT RESEARCH

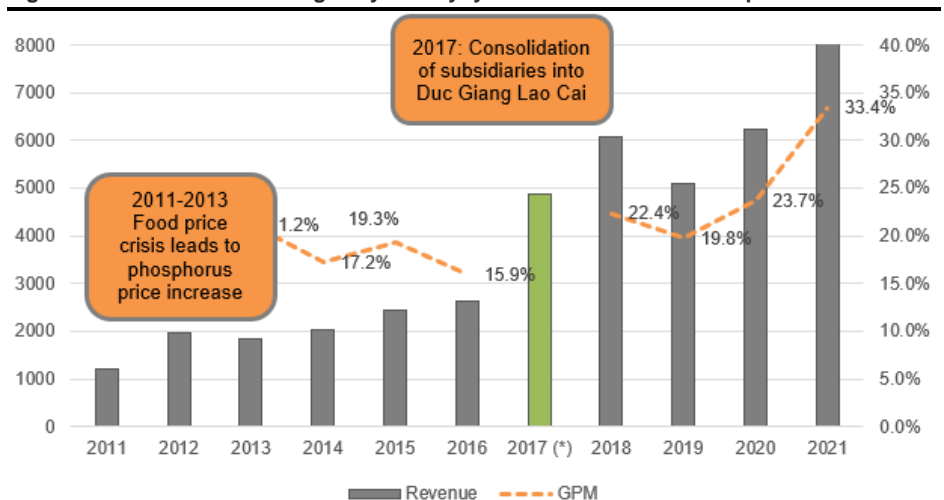
Figure 6: Shareholder structure (as of Sep. 21)



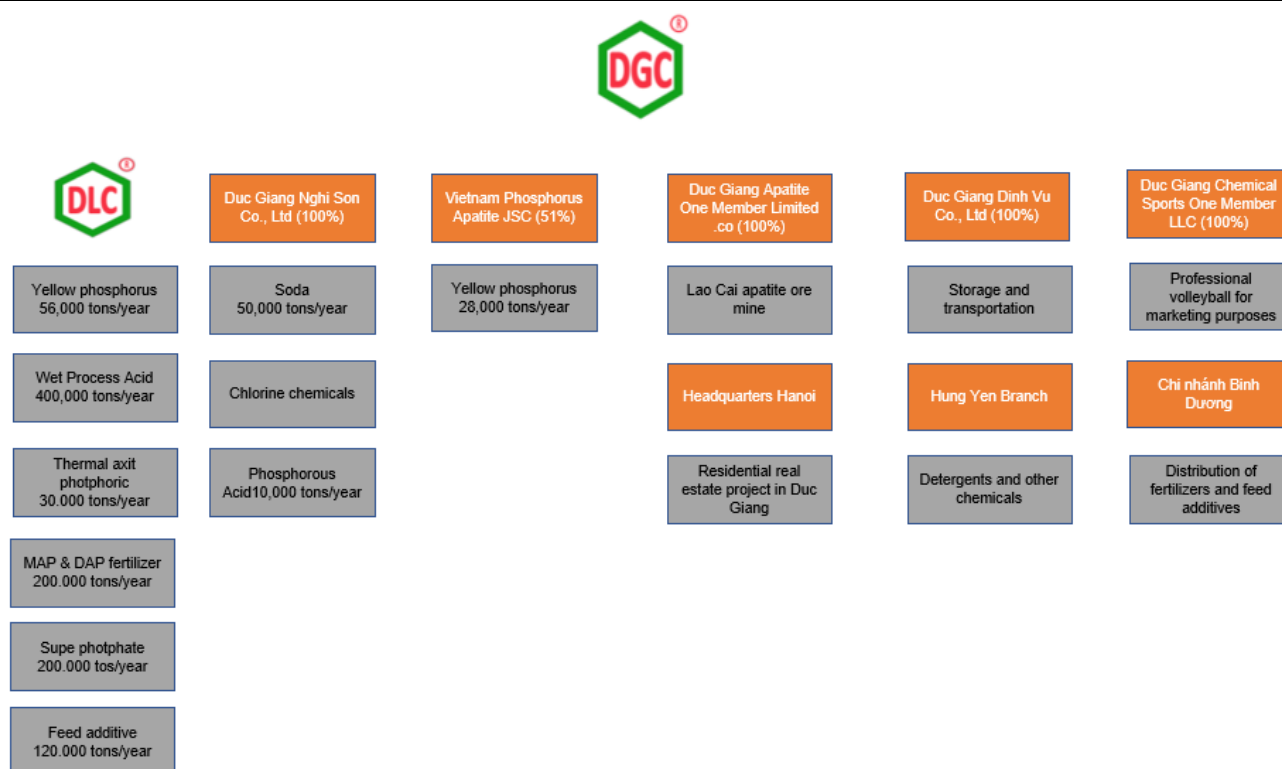
Revenue spiked in FY18 thanks to the consolidation of Duc Giang Lao Cai (DGL) with 100% ownership

Before 2016, the business segments of DGC were allocated to a number of associated companies and subsidiaries, including Duc Giang Lao Cai. During FY16-18, the company swapped shares between these units for consolidation. In 2018, DGL became a subsidiary of DGC with 100% ownership.

Figure 7: Revenue in FY18 surged by 873% yoy thanks to 100% ownership of DGL



2017* Duc Giang Lao Cai's ownership ratio temporarily fell below 51% due to DGC's unfinished restructuring business in 2017. For an equivalent comparison, we estimate the revenue of Duc Giang Lao Cai which is considered to be incorporated into DGC in 2017.

Figure 8: DGC's organizational structure


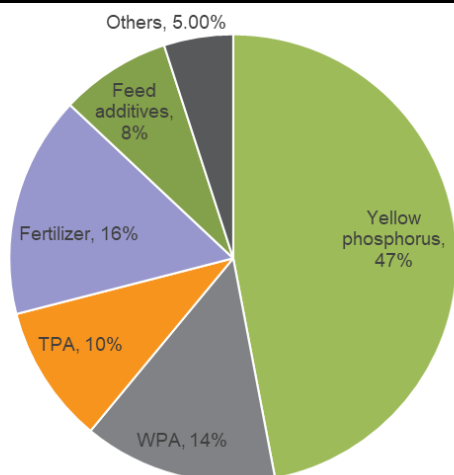
SOURCE: VNDIRECT RESEARCH, Company Report

After the merge of subsidiaries in Lao Cai into the parent company, DGC plan to develop new projects, aiming to complete the value chain of phosphorus and expand other chemical production. The outstanding projects that DGC has been implementing in 2021 and 2022 are the Apatit ore mining project in Lao Cai and the Duc Giang - Nghi Son chemical project to develop the chemical segment.

Vietnam's leading phosphorus manufacturer

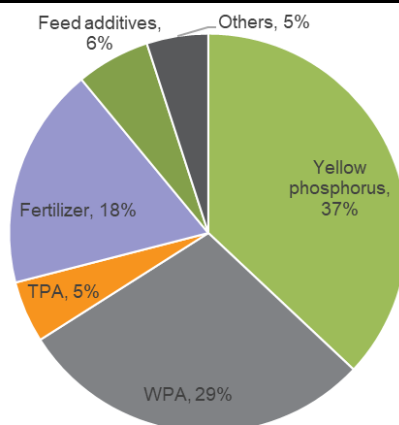
DGC mainly produces phosphorus chemicals, diverse applications in agriculture and industry. DGC's value chain begins with apatite ore as the primary input material. Yellow phosphorus - a derivative of apatite ore - has many uses in electronics, herbicides, plastics, and fire retardants, among other products. Yellow phosphorus revenue achieved a compound growth rate of 13.1% during 2017-21. Meanwhile, food-grade thermal phosphoric acid (food grade TPA) - a derivative of yellow phosphorus, contributed 10% to total sales in 2021. This acid is used in the sugarcane industry, metal processing, and food & beverages. For agricultural products, extracted phosphoric acid (WPA) constituted 14% of revenue in 2021. Derivatives of this acid and apatite ore - such as fertilizers and feed additives - accounted for the rest of the DGC's revenue structure in 2021.

Figure 9: Yellow phosphorus comprised the highest proportion of DGC's revenue structure in 2021



SOURCE: VNDIRECT RESEARCH, COMPANY REPORT

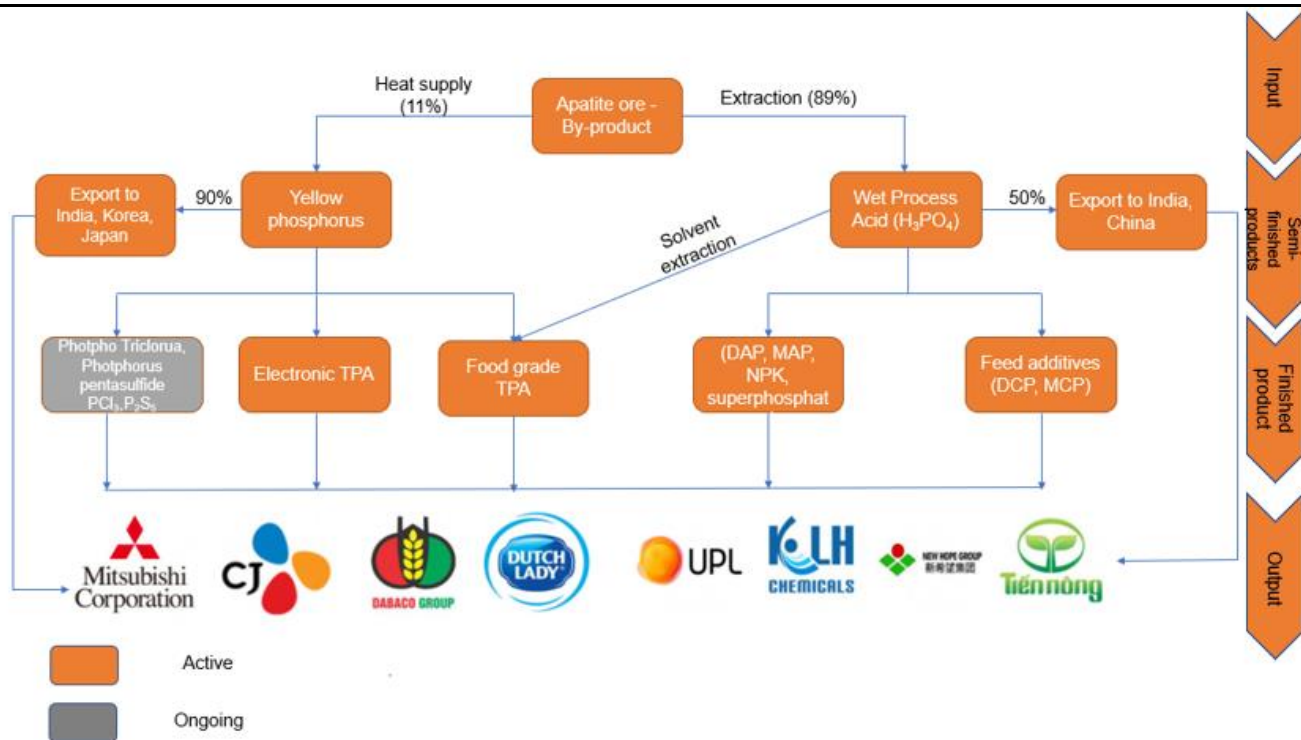
Figure 10: DGC's gross profit structure in 2021



SOURCE: VNDIRECT RESEARCH, COMPANY REPORT

DGC is currently the only domestic phosphate feed additive manufacturer. The company is also Vietnam's largest manufacturer and sole exporter of WPA and TPA. We believe that DGC's dominant position is partly underpinned by the fact that DGC is a private company (while most domestic companies are state-owned), allowing for more efficient management and investment in technology. DGC is a pioneer in the production of yellow phosphorus, phosphoric acid, monoammonium phosphate (MAP) fertilizer and phosphate feed additive while meeting the high product standards of the export market. The company has also invented separate technologies to use cheap input materials and recycle useful chemicals in waste for a cost advantage.

Figure 11: DGC's product value chain



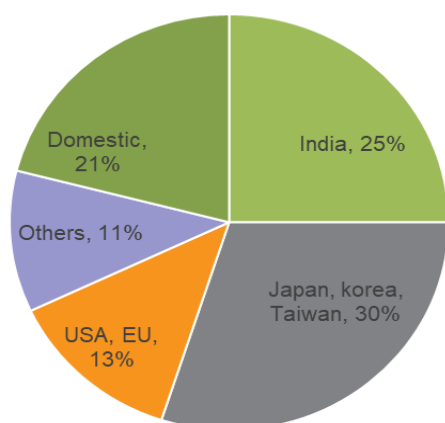
SOURCE: VNDIRECT RESEARCH, COMPANY REPORTS

DGC's products mainly serve the export market

The export market made up 79% of DGC's total revenue in 2021. Of which, India is the primary export market of DGC, accounting for 25% of revenue in 2021. India imports yellow phosphorus and related products to produce herbicides for the country's agricultural sector. Due to a shortage of apatite ore, while agricultural demand is high, India is the world's largest importer of yellow phosphorus, mainly imported from Vietnam, Kazakhstan, and Russia. Products exported to India belong to the low segment.

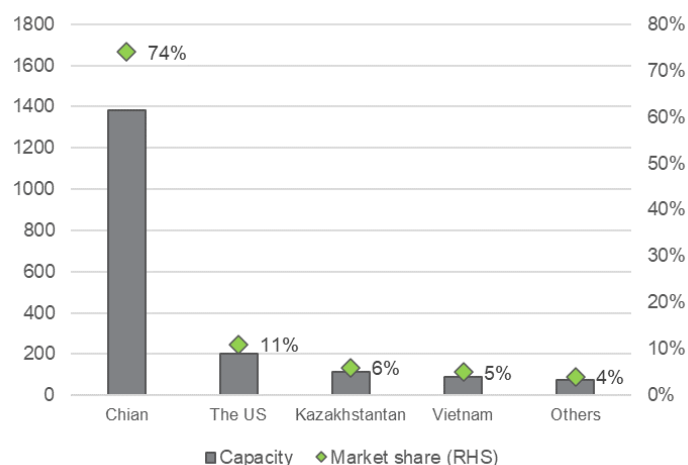
Meanwhile, Asian countries (Japan, Korea, Taiwan – contributing 30% of total revenue in 2021) import yellow phosphorus and related to serve other industrial purposes (automobiles, electronic). According to the management, DGC's market share in Korea is nearly 100% and in Japan is 40%. The products produced to the Asian market belong to the high-end segment.

Figure 12: India is DGC's main export market



SOURCE: VNDIRECT RESEARCH, COMPANY REPORT

Figure 13: China is the world's largest phosphorus producer (unit: thousand tonnes)

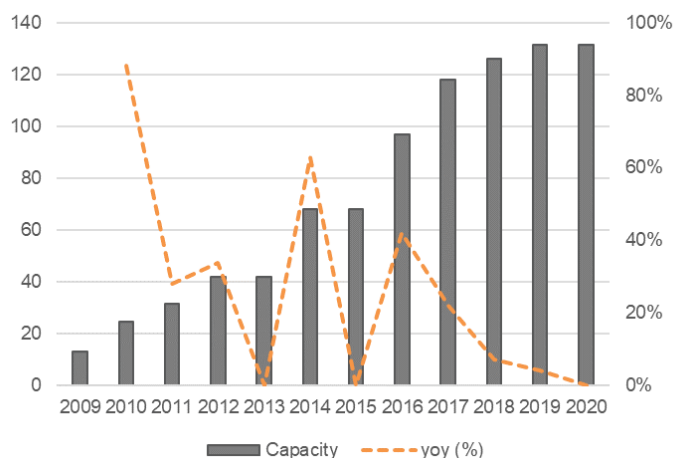


SOURCE: VNDIRECT RESEARCH, COMPANY REPORT

DGC also exports to the US and EU countries, with a share of about 13% of revenue to produce fire retardants, plastics, and mobile lubricants. With the EVFTA taking effect from August in 2020, the tax rate applied to yellow phosphorus has been adjusted from 5.5% to 0.0%, thus supporting DGC be more competitive than its main competitor (Kazakhstan) in the EU market. Products exported to the US and EU are in the middle segment.

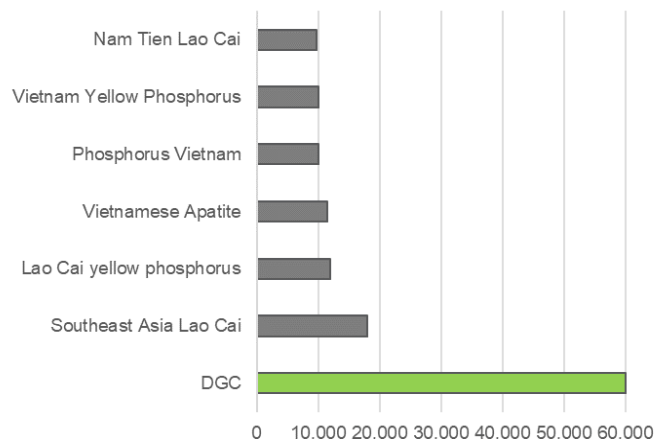
In the domestic market, DGC has a total design capacity of 60,000 tonnes of yellow phosphorus per year (including 40,000 tonnes from Duc Giang Lao Cai and 20,000 tonnes from Vietnam Phosphorus Apatite). DGC accounts for about 48% market share of yellow phosphorus in the domestic market by design capacity (the total design capacity of yellow phosphorus manufacturing companies in Vietnam is about 124,000 tonnes).

Figure 14: Vietnam reached a total capacity of 124,000 tonne of phosphorus per year in 2020 (unit: thousand tonnes/year)



SOURCE: VNDIRECT RESEARCH, COMPANY REPORT

Figure 15: DGC has the largest phosphorus factory capacity in Vietnam (unit: tonnes/year)



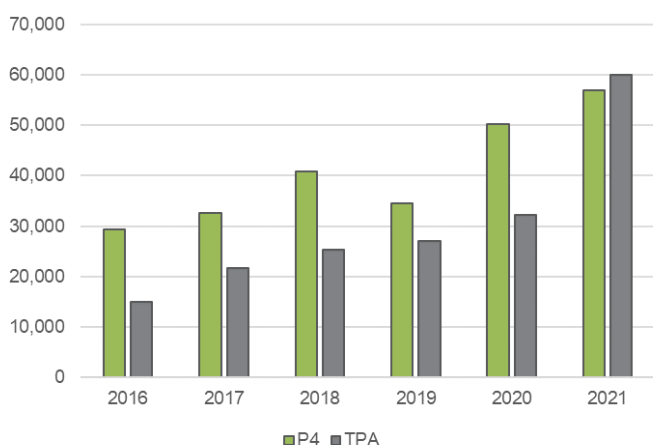
SOURCE: VNDIRECT RESEARCH, COMPANY REPORT

Yellow phosphorus and phosphorus products – On track for a robust FY22F

Revenue from DGC's yellow phosphorus and phosphorus products (TPA) grew significantly in FY21

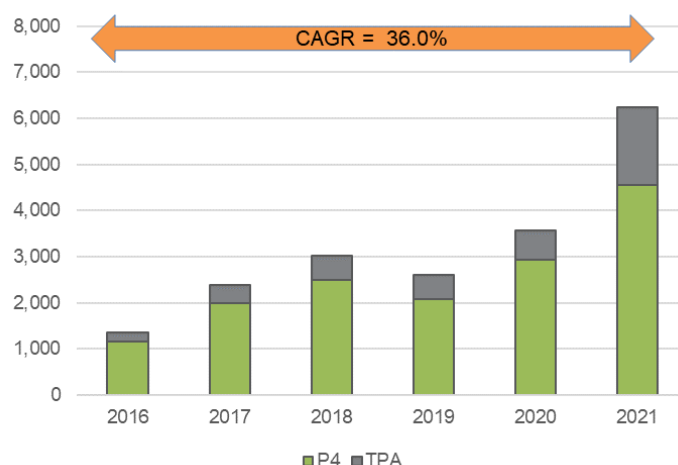
Thanks to the enormous increase in yellow phosphorus price in 2021, DGC's revenue from the yellow phosphorus and TPA saw a recorded growth, reaching VND5,524bn (+55% yoy). In which, besides the rise of 67% yoy in TPA's selling price, the strong growth in this segment also came from the expansion of the first electric TPA line's capacity from 30,000 tonnes/year to 50,000 tonnes/year and the second electronic TPA line with a capacity of 50,000 tonnes/year that officially started commercial operation in Sep-21.

Figure 16: TPA volume surpassed yellow phosphorus in 2021, reaching 60,000 tonnes (unit: tonnes)



SOURCE: VNDIRECT RESEARCH, COMPANY REPORT

Figure 17: Revenue from yellow phosphorus and TPA achieved CAGR of 36% in 2016-21 (unit: VNDbn)



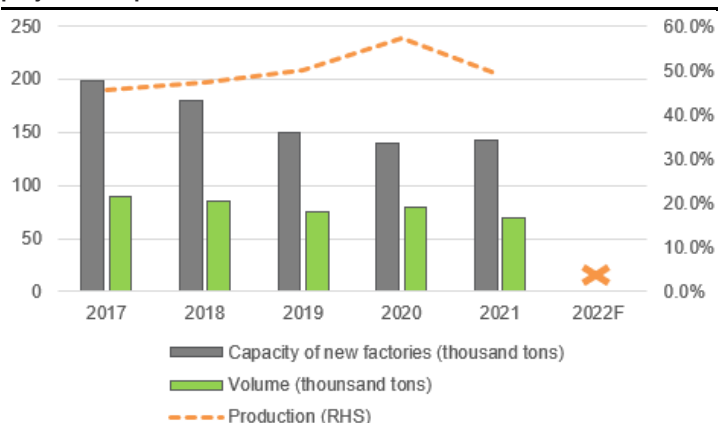
SOURCE: VNDIRECT RESEARCH, COMPANY REPORT

We believe the supply shortage in China and the Russia – Ukraine conflict will continue to push up phosphorus prices in FY22F

According to Financial Associated Press (FAP), China will continue to implement the policy of limiting energy consumption in FY22-23F. Combined with the pressure of environmental protection policies, the operating capacity ratio of the

yellow phosphorus industry in China may only reach 50% by FY22F. FAP forecasts total yellow phosphorus production capacity in China will only reach 1.14m tonnes, as new factories cannot be completed in FY22F. In addition, the supply of phosphate rock (the raw material for P4) in China will continue to be tight in FY22F due to environmental protection policies. We expect phosphate rock processing factories to remain at only 40% capacity in FY22F. Therefore, we expect yellow phosphorus production and inventories in China to remain relatively low and China will continue to have to import yellow phosphorus in FY22F.

Figure 18: There will be no more new yellow phosphorus production projects completed in 2022



SOURCE: Longzhong Information, VNDIRECT RESEARCH

Figure 19: New projects are expected to be completed in FY23-24F

Projects	Capacity (Tons/year)	Expected operation
Wengfu Group	50,000	2023
Guizhou Longma	50,000	2023
Longtai Phospho Power	100,000	2024
MaBian Infinite	50,000	2024
Kunming Shenghong	36,000	2023

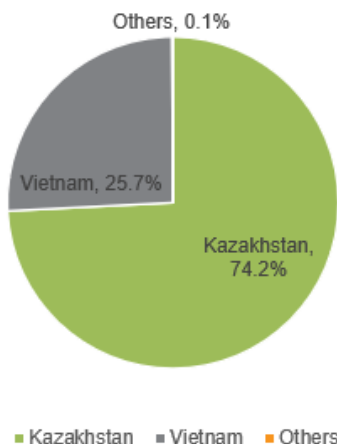
SOURCE: FAP, VNDIRECT RESEARCH

In addition, the Russia – Ukraine conflict situation may continue to push yellow phosphorus prices higher in 2022 due to supply chain bottlenecks. Currently, Kazakhstan - Vietnam's main competitor in the export market is having difficulty in transporting yellow phosphorus to the Polish and Chinese markets when it has to go through Russia and Ukraine. Therefore, we expect DGC to gain more market share from Poland and China which will prioritize Vietnam's yellow phosphorus imports in FY22F. We forecast DGC's selling price of yellow phosphorus will continue to increase by 35.8% yoy in FY22F.

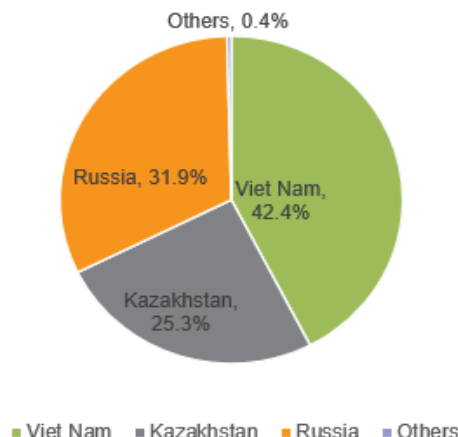
Figure 20: Transport of yellow phosphorus by rail from Kazakhstan to Warsaw (Poland) and Lanzhou (China) is restricted due to having to move through the war zone



SOURCE: United Chemical Company, VNDIRECT RESEARCH

Figure 21: Proportion of Poland's yellow phosphorus imports in 2021


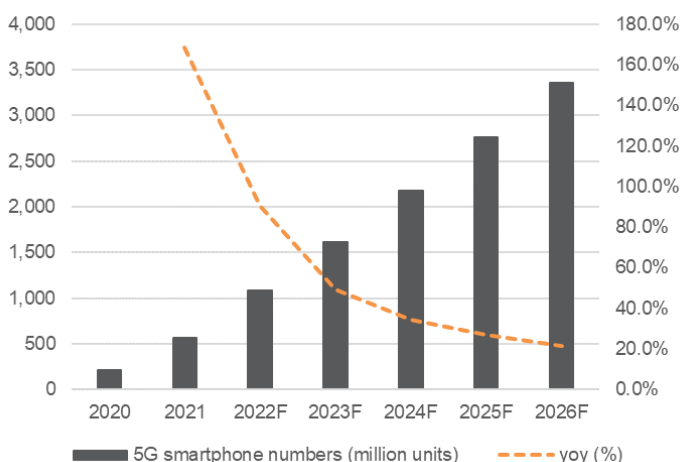
SOURCE: OEC, VNDIRECT RESEARCH

Figure 22: Proportion of India's yellow phosphorus imports in 2021


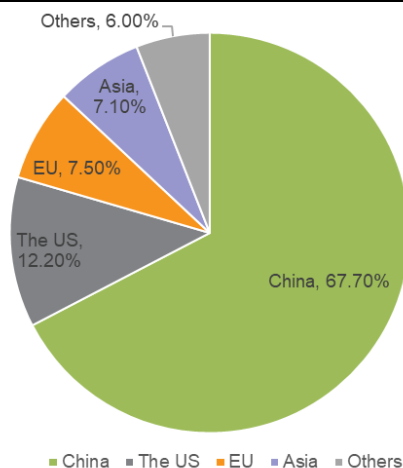
SOURCE: OEC, VNDIRECT RESEARCH

Taking advantage from the growing world demand for 5G devices

Phosphorus is a chemical element used in many fields of electronics, semiconductors, medicine, and animal feed. In particular, in the field of semiconductor manufacturing, phosphorus is added to increase the electrical conductivity of electronic components. Therefore, the production of semiconductors (chips) will be proportional to the amount of phosphorus used. We expect chips production to continue to grow as demand for 5G devices continues to grow strongly, replacing 3G/4G devices. On the other hand, 5G devices will need 30-40% more chips than 4G devices. According to Ericsson Mobility Report, worldwide 5G smartphone registrations are forecasted to surpass 1 billion units in FY22F, two years faster than 4G devices did post-launch.

Figure 23: Ericsson forecasts that 5G devices will reach 1bn units in 2022F (unit: million)


SOURCE: Ericsson Mobility Report, VNDIRECT RESEARCH

Figure 24: China will be the country using the most 5G equipment in the world in 2022F


SOURCE: IDC, VNDIRECT RESEARCH

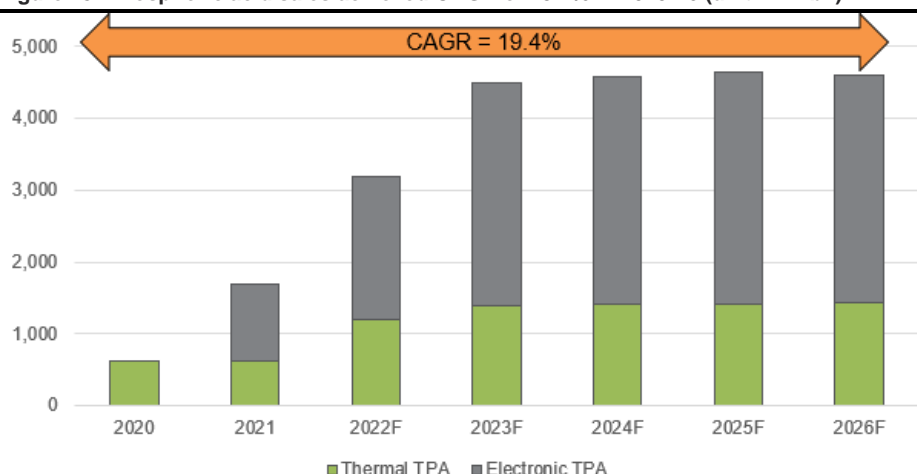
In addition, to solve the problem of global semiconductor shortage, semiconductor chip manufacturers will break ground on 29 semiconductor manufacturing factories in 2022F to meet the global need. Among the above 29 semiconductor factories, China and Taiwan will build the largest number of factories with 8 factories each, followed by the US (6 factories) and Europe,

Middle East (3 factories). Korea and Japan will also start building 2 factories in each country. We expect DGC's export revenue of yellow phosphorus and electronic phosphoric acid (TPA) to Japan, South Korea and Taiwan to increase by 40% yoy in 2022F as DGC has almost a monopoly on phosphor and phosphorus derivatives in Korea as well as a 40% market share in Japan.

Electronic TPA line is expected to operate at 80% capacity in 2022F

In FY21, DGC put into operation the production line of electronic TPA with a capacity of 90,000 tonnes/year (total investment of VND66bn). In 4Q21, DGC successfully tested the line and put it into commercial operation. Electronic TPA is the highest-grade phosphoric acid, has the highest GPM and requires the purest feedstock. This product is used in the production of electronic circuits, semiconductors and LCD screens. Therefore, the demand for electronic TPA is estimated to grow with the increasing momentum of the telephone and electronics industries. However, DGC's products will have to compete quite fiercely with products from China. Despite the competition, we believe that Asian countries (Korea, Indonesia, Japan, China) gradually becoming a producer and assembler of electronic products along with the growth momentum of this industry will help increasing demand for Electronic TPA in the future. According to management committee, this factory can operate at 80% capacity right in 2022F thanks to the order from a partner in Korea.

Figure 25: Phosphoric acid sales achieved CAGR of 19.4% in 2020-26 (unit: VNDbn)



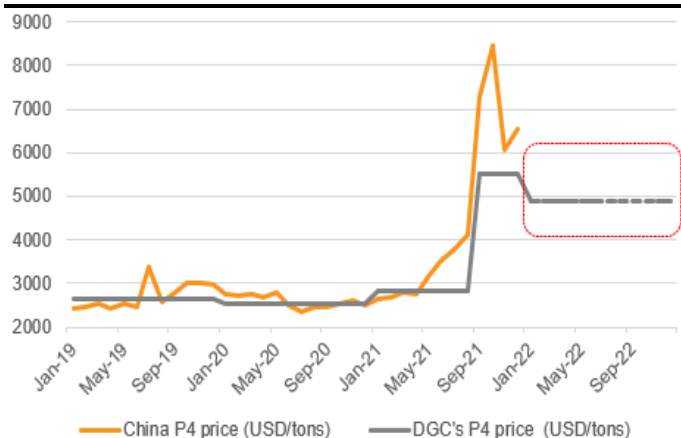
SOURCE: VNDIRECT RESEARCH, COMPANY REPORT

We forecast yellow phosphorus and TPA sales to grow 68.3% yoy in FY22F before slumping in FY23F

We forecast DGC's revenue from yellow phosphorus and TPA segments in FY22F to reach 8,736VNDbn, up 68.3% yoy thanks to 1) yellow phosphorus price to continue to increase 35.8% yoy due to supply shortage in China and other countries and 2) the new electronic-grade TPA line is expected to operate at 80% capacity in FY22F thanks to the high demand for using semiconductor chips and 5G equipment.

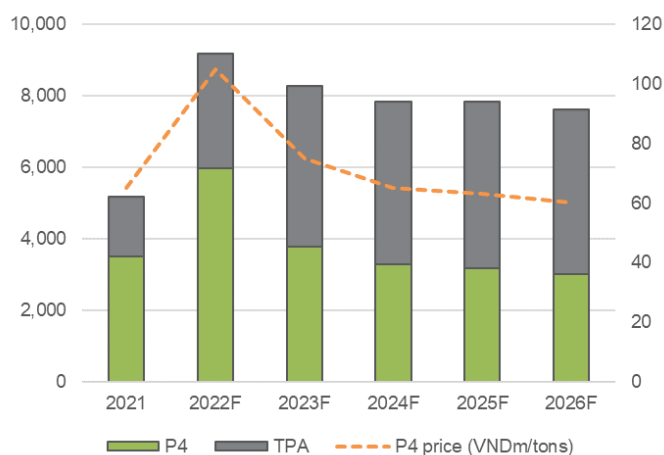
We expect yellow phosphorus prices to decline 20.3% yoy in FY23F as factories in China gradually resume operations as well as semiconductor factories go into operation in FY23F. We forecast yellow phosphorus and TPA revenues to decrease by 8.1% yoy and 2.1% yoy in FY23F and FY24F, respectively.

Figure 26: We expect DGC's yellow phosphorus price to reach USD4,900/tonnes in FY22F



SOURCE: VNDIRECT RESEARCH, COMPANY REPORT

Figure 27: P4 revenue is expected to increase by 70.5% yoy in FY22F (Unit: VNDbn)



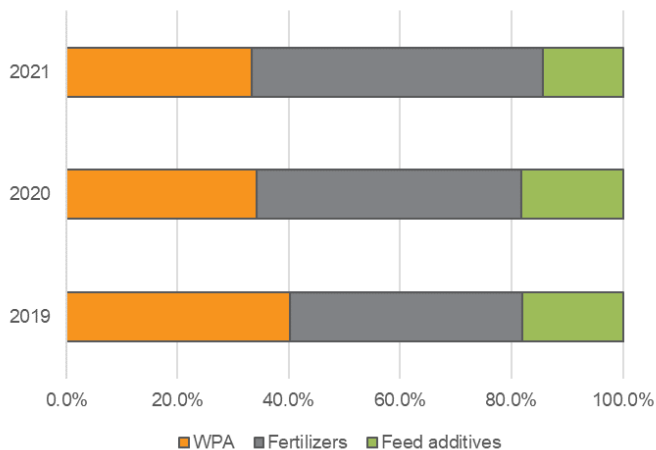
SOURCE: VNDIRECT RESEARCH, COMPANY REPORT

The Wet Process Acid (WPA), fertilizer and feed additives – taking benefit from the Government's protection tax

The first Vietnam enterprise produces MAP complex fertilizer

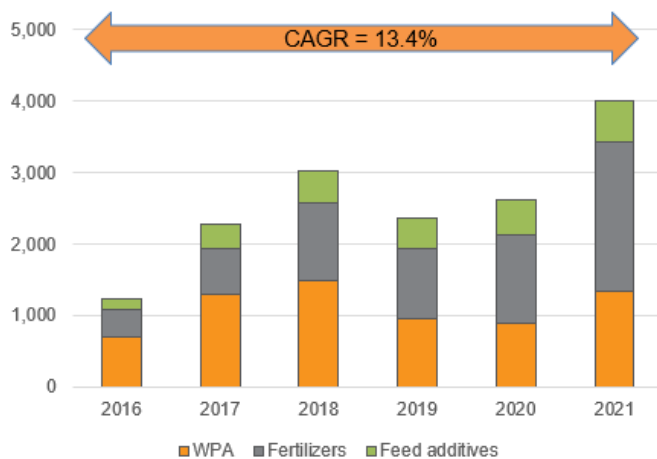
DGC mainly exports WPA to nearby Asian markets such as India and the Philippines due to its high shipping costs and difficulty competing with countries in North Africa. Domestic revenue only accounts for about 10-15% of WPA revenue with large customers being chemical fertilizer manufacturers. DGC will flexibly adjust the production structure between WPA and the company's agricultural derivative products based on market conditions. WPA is the main input material for fertilizers such as MAP, DAP and NPK chemical fertilizers as well as feed additives. Currently, more than 50% of the company's annual WPA volume is now processed on-site into fertilizers and feed additives. DGC is currently the only Vietnam enterprise that produces MAP complex fertilizer (12%N, 61%P). This is a fertilizer containing high phosphorus content, which must be imported annually to make up for the shortage of domestic demand.

Figure 28: Fertilizers account for the largest share of revenue in WPA



SOURCE: VNDIRECT RESEARCH, COMPANY REPORT

Figure 28: WPA and derivatives revenue in 2021 increased by 79.1% yoy (unit: VNDbn)



SOURCE: VNDIRECT RESEARCH, COMPANY REPORT

WPA, fertilizer and feed additives revenue achieved a CAGR of 13.4% in FY16-21, of which the main contribution came from the WPA segment, accounting for 45%-50% in FY18-20. However, the revenue of the fertilizer segment has grown dramatically in 2021, reaching VND1,831bn (+79.1% yoy) thanks to the strong demand for fertilizers from both domestic and export markets and the revenue contribution of new DAP fertilizer segments that have been put into operation since 4Q20.

DAP fertilizer is the main growth driver of the fertilizer segment in FY22-26F thanks to taking benefit of the Government's protection tax

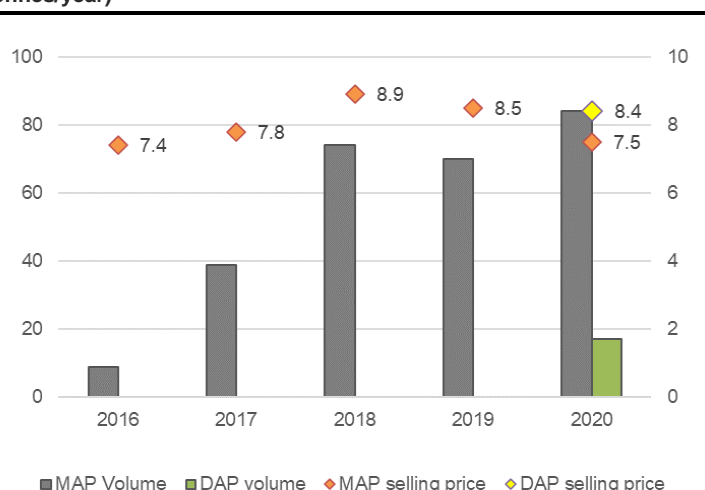
DGC usually produces MAP and phosphate supe manure. However, in 4Q20, the company spent VND80bn to invest in new NPK and DAP fertilizer capacity. DGC's MAP manure and supe phosphate are mainly used by fertilizer manufacturers to produce NPK. Multi-nutrient fertilizers such as NPK and DAP are "instant" fertilizers, which are more convenient than MAP and supe phosphate because they do not need further stirring to use. The design capacity of this line is up to 100,000 tonnes/year and can be converted between DAP and NPK. DGC will focus on producing DAP manure thanks to the domestic DAP and MAP markets that are imposing import protection tax. Domestic DAP and MAP fertilizers are more difficult to compete with imported products from China due to higher selling prices. From 2017, protection tax is applied to the fertilizers to protect the domestic manufacturing industry.

Figure 30: MOIT's protection tax on DAP and MAP fertilizers

Stage	Protection tax
19/03/17-06/03/18	1,128,531 VND/tons
07/03/18-06/03/19	1,128,531 VND/tons
07/03/19-06/03/20	1,072,104 VND/tons
07/03/20-06/03/21	1,050,662 VND/tons
07/03/21-06/03/22	1,029,219 VND/tons
07/03/22-06/09/22	1.007.778 VND/tons

SOURCE: MOIT, VNDIRECT RESEARCH

Figure 31: MAP and DAP production reached 84 million tonnes (+20% yoy) and 17 million tonnes respectively in 2020 (unit: million tonnes/year)



SOURCE: DGC, VNDIRECT RESEARCH

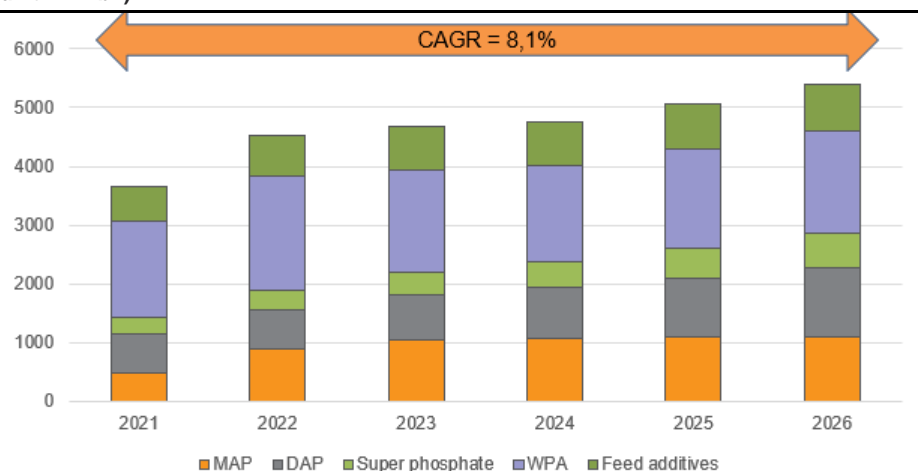
According to the Board of Directors, DGC will focus on the high-end DAP segment. DGC's DAP has a higher ratio of N-P nutrition per kg (18%-46%) than domestically produced DAP (up to 15%-45%). As of now, DAP with such quality comes only from imports. With this quality advantage and DAP's much larger market size compared to MAP, we expect DAP is the key driver of the fertilizer and feed additives segment in FY22-26F.

We expect fertilizers and feed additives to achieve a CAGR of 8.1% in FY21-26F

We expect DGC's fertilizers revenue to grow at a CAGR of 14.2% in FY21-26F thanks to a greater contribution from the DAP fertilizer segment. We believe that the DGC will expand the DAP market share in the domestic and Indian markets due to better product quality and fewer competitors in this market. Meanwhile, the feed additives segment is expected to maintain an expected revenue growth of 5-7% in FY22-26F thanks to stable orders from large customers such as CP

and Newhope. We expect that revenue from WPA will go sideways in FY22-26F when DGC will prioritize the use of WPA to produce DAP and MAP manure.

Figure 32: Fertilizer and feed additives is expected to achieve CAGR of 8.1% in FY21-26F (unit: VNDbn)



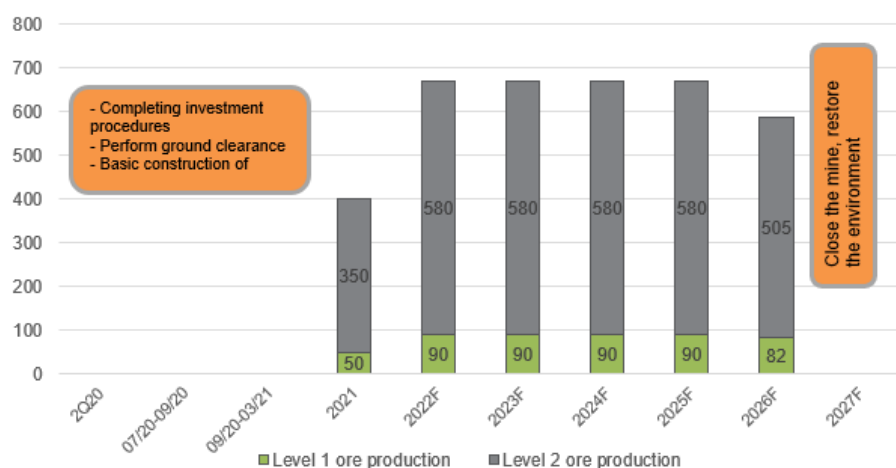
SOURCE: VNDIRECT RESEARCH, COMPANY REPORT

New investment projects will promote long-term profit growth

25 Khai Truong project helps DGC to be able to autonomously own Apatit ore for 6 years from 2021

In Jan-20, DGC was approved by Lao Cai province to invest in the Apatit ore mining project at Bat Xat, Lao Cai. The project has a total investment capital of VND210bn from development investment capital. The 25 Khai Truong project - phase 1 covers an area of 36.5ha with a total reserve of Apatit ore explored about 3.67 million tonnes. The duration of the project is 7 years from the date of basic construction of the mine, in which: mine construction (0.5 years), stable mining (5.5 years), mine closure and environmental restoration (1 year). When the project is put into operation, DGC has the ability to self-control enough raw materials for production in 6 years from 2021. We estimated that ~70% of Apatit ore production is used in the production of yellow phosphorus and phosphorus products. The remaining ore production is sold to domestic chemical manufacturing enterprises. We expect that the autonomy of Apatit ore instead of buying from other companies in Vietnam will help DGC save 20-30% of the cost of buying ore, thereby improving the DGC's GM in FY22-26F.

Figure 33: 25 Khai Truong project supports DGC save 20-30% of the cost of buying ore (unit: thousand tonnes)



SOURCE: DGC, VNDIRECT RESEARCH

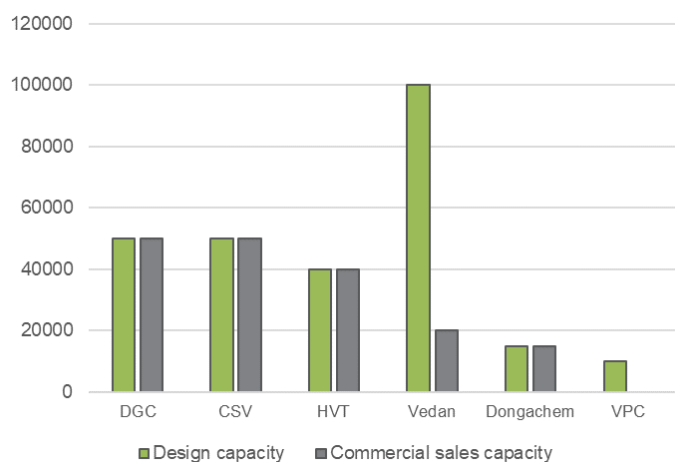
Chlor-alkali-vinyl megaproject – Nghi Son is a long-term growth driver for DGC

The domestic supply of caustic soda only provides more than 40% of the demand for consumption

Vietnam's total caustic production capacity of 189 thousand tonnes per year currently only provides about 40-50% of domestic demand (according to CSV). In recent years, Vietnam has depended on many imported caustic sodas (mainly from China and Taiwan). Caustic soda is widely applied during the paper industry, textiles, detergents, aluminum, water treatment.

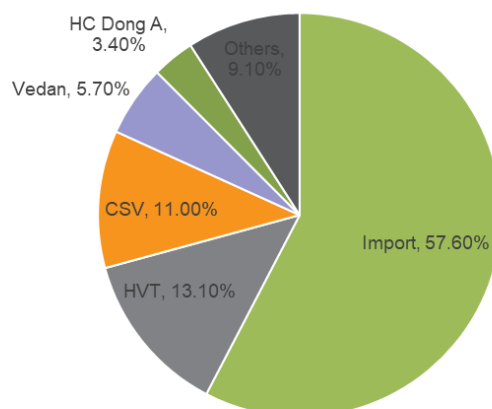
In the domestic market, incumbent companies include SOEs with limited capacity sizes or private manufacturers with small commercial output in the South, of which Vedan Vietnam Co., Ltd. (Taiwanese food spice manufacturer) and South Basic Chemicals JSC (CSV VN) are the only producers of Chlor-alkali-vinyl chemicals. While Vedan has a greater production capacity, the majority of Vedan's production is used internally. CSV - a subsidiary of Vinachem, has been operating at full capacity. The same goes for Viet Tri Chemical JSC (HVT VN), which is the largest manufacturer in the North and another subsidiary of Vinachem.

Figure 33: DGC becomes the largest commercial Chlor-alkali-vinyl producer in Vietnam by 2025 (unit: tonnes/year)



SOURCE: CSV, VNDIRECT RESEARCH

Figure 34: Most Chlor-alkali-vinyl products are imported from China



SOURCE: VNDIRECT RESEARCH, COMPANY REPORT

DGC's Chlor-alkali-vinyl (CAV) project will position the company in the forefront of Vietnam's chlor-alkali-vinyl sector.

The Nghi Son project is scheduled to be completed in two stages over a six-year period from 2022 to 2028, totaling VND12,000bn in capital construction.

- The group's own capital for the next phase 1 is about VND5,500bn, representing for 55% of the investment capital for phase 1, of which VND3,000bn will be contributed from retained earnings next year. The remaining VND2,500bn will be raised via retained profits or new issue to current shareholders.
- When Phase 1 is completed, DGC will be the market leader in Vietnam's chlor-alkali-vinyl sector in terms of commercial capacity and integration. Additionally, this will allow DGC to gain from the Vietnamese building sector by manufacturing PVC. At the moment, Vietnam's most

integrated PVC producers can only create PVC using foreign monomer ingredients. According to DGC, when fully operational, the Nghi Son CAV project would generate VND8,700bn in revenue and VND1,800bn in yearly net profit.

- Phase 2, with a VND2,000bn investment, focuses on the production of PVC powder and CaCO₃ light powder.

Figure 35: DGC's plan of Chlor-alkali-vinyl Nghi Son project

Stage 1	Plan
09/20-12/21	Prepare procedures for investment license, EIA, fire prevention, approval of basic design
1Q22	Starting construction
1Q22-Jun-23	Construction of workshops and ancillary works
Jun-23/Sep-24	Installation of complete plant equipment
Oct-24/Dec-24	Factory test run and factory handover
2025	Commercial run operation

SOURCE: DGC, VNDIRECT RESERCH

Figure 36: DGC's plan for Phase 1 of Nghi Son project

Products	Design capacity (tons/years)	Application
100% concentrated NaOH caustic soda	150,000	Paper, textile dyeing, water treatment
PVC plastic	150,000	Metal finishing
PAC	30,000	Water treatment
Javel	10,000	Bleaching
Ca(Ocl) ₂ , Bleaching Powder	34,000	Water treatment, sterilization, bleaching
chloramine	1,000	Sterilize
Hydrochloric Acid - HCl 31%	15,000	Production of plastic, herbicides

SOURCE: DGC, VNDIRECT RESEARCH

We expect that phase 1's operating efficiency will reach 50% and 75% in FY25F and FY26F, respectively. According to DGC, the project's first manufacturing lines might operate commercially at 1Q25F. In FY25/26F, we forecast Phase 1 revenue to reach VND3,400/4,500bn, accounting for 25.1%/30.1% of total revenue. We expect that GPM for chlor-alkali-vinyl will reach 25% in FY25/26F, which is comparable to the gross margin for CSV and HVT (27%) at full capacity.

FY22-23F earnings forecast

We forecast DGC's revenue and NP growth of 48.0%/73.1% yoy in FY22F thank to:

- Yellow phosphorus revenue climb by 70.5% yoy as we expect DGC will continue to emphasize selling this product in FY22F, benefitting from the continued high selling price.
- Phosphoric acid sales (TPA and WPA) increased by 55.1% yoy as electronic TPA switching lines are expected to run at full capacity in FY22F as semiconductor demand promises to continue to grow strongly in FY22F.
- Fertilizers and feed additives revenue climb by 27.5% yoy in FY22F, boost by the new 50,000-ton DAP fertilizer facility (which contributed 24.7% of this segment's revenue) and robust fertilizer demand in domestic market.
- Gross profit margins increase by 6% pts in FY22F thanks to lower cost of buying apatite ore from 25 Khai Truong project and increase in selling price of yellow phosphorus

We forecast DGC's revenue and net profit to decline by 2.7%/11.7% yoy respectively in FY23F due to:

- Yellow phosphorus sales will decline 36.6% yoy in FY23F, as we believe yellow phosphorus prices will fall to VND70mn/ton in FY23F as the semiconductor shortage is resolved. The new factory is scheduled to

open in late FY22F, and China's phosphorus facilities will reopen in 3Q22F.

- Fertilizers and feed additives revenue climb 13.8% yoy due to growth in the instant fertilizer segment (DAP and MAP) (+ 12.5% yoy) as a result of the benefit from the Government's protection tax.
- Other business divisions will grow by 28.5%, owing to the participation of the Duc Giang Residence real estate segment. DGC is expected to generate income of VND400bn in FY22-23F.
- In 2023, gross profit margins declined by 3.1% as the price of yellow phosphorus price decreased.

Figure 37: VNDirect's forecast for DGC in FY22-23F

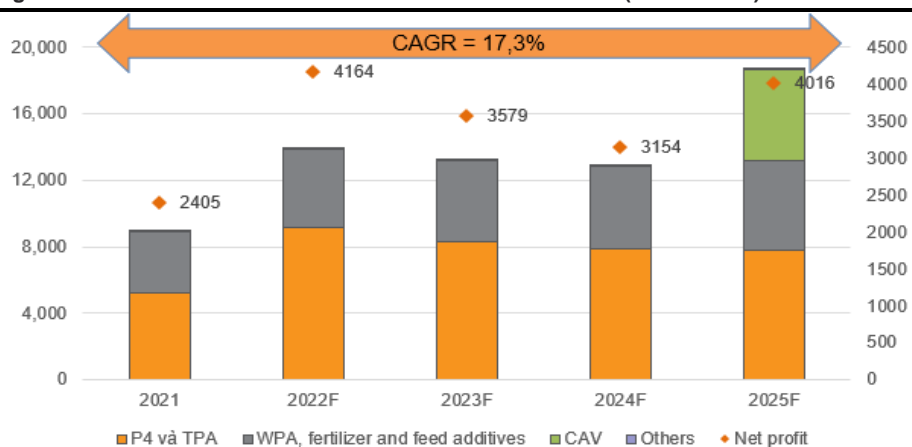
Unit (VNDbn)	2020	2021	2022F	2023F
Volume (thousands tons)				
P4	50	54	63	50
Axit photphoric (TPA)	32	60	104	133
WPA	145	160	162	158
Net revenue	6,236	9,567	14,200	13,633
% yoy	23%	53%	48%	-4%
P4	2,939	3,510	5,985	3,780
Axit photphoric (TPA)	625	1,680	3,192	4,492
WPA , fertilizers and feed additives	2,393	3,713	4,646	4,876
Others	279	664	377	485
% revenue				
P4	47.1%	36.7%	42.1%	27.7%
Axit photphoric	10.0%	17.6%	22.5%	33.0%
WPA , fertilizers and feed additives	38.4%	38.8%	32.7%	35.8%
Others	4.5%	6.9%	2.7%	3.6%
Gross margin	1141	1453	1755	1964
Gross profit margin	23.7%	33.4%	39.4%	35.7%
SG&A	(493)	(640)	(1065)	(1023)
SG&A/revenue	7.9%	6.7%	7.5%	7.5%
PBT	1001	2654	4627	3977
Tax	(53)	(123)	(245)	(211)
Net profit	907	2405	4164	3579
EPS	6,095	14,059	24,339	20,920
% yoy	-30%	131%	73%	-14%

SOURCE: VNDIRECT RESEARCH

FY23-24F serve as a springboard for DGC's breakthrough in FY25F

We expect a significant shift in DGC's revenue and net profit in FY25F, when the super project CAV begins commercial operations in 1Q25. DGC's revenue and net profit are expected to climb by 51.3% yoy and 35.6% yoy, respectively, to VND18,148bn and VND4,016bn.

Figure 41: DGC's revenue will reach CAGR 17.3% in FY21-25F (unit: VNDbn)

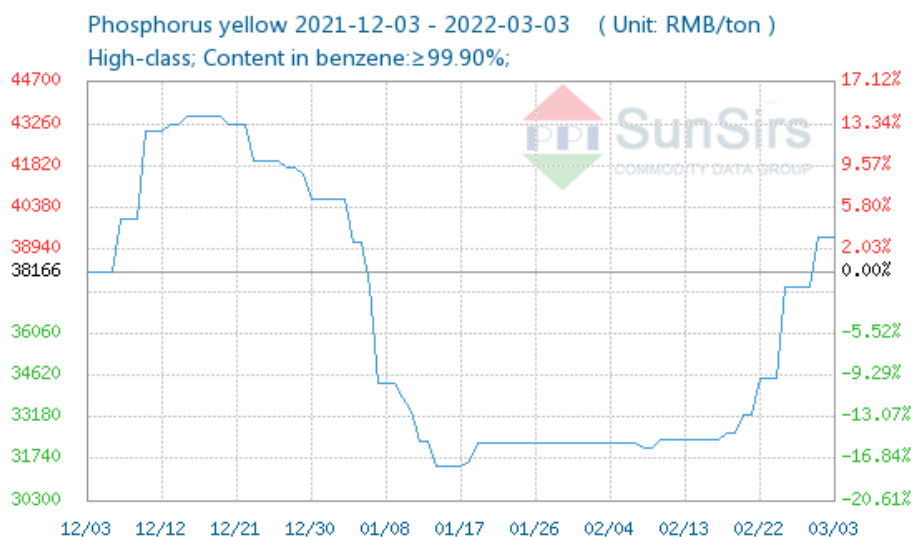


SOURCE: VNDIRECT RESEARCH, COMPANY REPORT

Investment risk

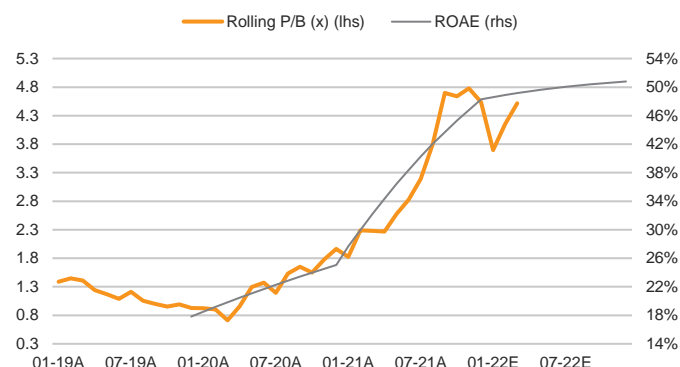
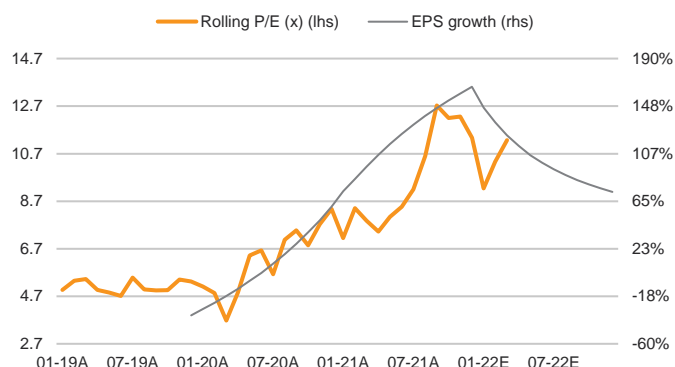
Yellow phosphorus prices fluctuate significantly in response to the tensions between Russia and Ukraine. We believe that if the conflict between the two countries calms down and supply chain disruptions can be resolved, the price of yellow phosphorus could stabilize and be lower than our forecast. DGC's stock price may face short-term selling pressure due to Vietnam Chemical Group's (Vinachem) registration to sell 6 million shares from 03-Mar-22 to 21-Mar-22, representing 3.53% of charter capital.

Figure 42: The price of yellow phosphorus in China is increasing again since February 2022 (RMB/ton)



SOURCE: VNDIRECT RESEARCH, COMPANY REPORT

Valuation



Income statement

(VNDbn)	12-21A	12-22E	12-23E
Net revenue	9,567	14,200	13,633
Cost of sales	(6,369)	(8,611)	(8,771)
Gen & admin expenses	(137)	(185)	(177)
Selling expenses	(503)	(880)	(845)
Operating profit	2,559	4,524	3,840
Operating EBITDA	2,345	4,322	3,476
Depreciation and amortisation	213	202	364
Operating EBIT	2,559	4,524	3,840
Interest income	171	205	246
Financial expense	(68)	(130)	(137)
Net other income	(7)	28	27
Income from associates & JVs	0	0	0
Pre-tax profit	2,654	4,627	3,976
Tax expense	(123)	(245)	(211)
Minority interest	(126)	(217)	(187)
Net profit	2,405	4,164	3,579
Adj. net profit to ordinary	2,405	4,164	3,579
Ordinary dividends	(237)	(302)	(355)
Retained earnings	2,169	3,862	3,224

Balance sheet

(VNDbn)	12-21A	12-22E	12-23E
Cash and equivalents	124	1,093	2,337
Short term investments	3,632	2,179	1,307
Accounts receivables	781	1,713	1,645
Inventories	1,208	1,812	2,174
Other current assets	81	168	161
Total current assets	5,825	6,965	7,625
Fixed assets	2,145	6,612	8,931
Total investments	0	0	0
Other long-term assets	368	450	432
Total assets	8,339	14,027	16,988
Short-term debt	842	2,045	1,963
Accounts payable	505	172	175
Other current liabilities	659	776	996
Total current liabilities	2,006	2,993	3,134
Total long-term debt	0	800	900
Other liabilities		(429)	(534)
Share capital	1,711	1,711	1,711
Retained earnings reserve	2,923	6,593	9,461
Shareholders' equity	6,053	10,336	13,051
Minority interest	280	326	436
Total liabilities & equity	8,339	14,027	16,988

Cash flow statement

(VNDbn)	12-21A	12-22E	12-23E
Pretax profit	2,654	4,627	3,976
Depreciation & amortisation	202	364	650
Tax paid	(123)	(245)	(211)
Other adjustments	0	0	0
Change in working capital	(136)	(1,027)	(182)
Cash flow from operations	2,597	3,718	4,233
Capex	(217)	(4,178)	(3,178)
Proceeds from assets sales	0	0	0
Others	49	205	246
Other non-current assets changes	(2,039)	1,732	279
Cash flow from investing activities	(2,207)	(2,241)	(2,653)
New share issuance	0	0	0
Shares buyback			
Net borrowings	(301)	(738)	(247)
Other financing cash flow	(11)	532	546
Dividends paid	(237)	(302)	(355)
Cash flow from financing activities	(548)	(508)	(56)
Cash and equivalents at beginning of period	282	124	1,093
Total cash generated	(158)	969	1,524
Cash and equivalents at the end of period	124	1,093	2,617

Key ratios

	12-21A	12-22E	12-23E
Dupont			
Net profit margin	25.1%	29.3%	26.3%
Asset turnover	1.35	1.27	0.88
ROAA	33.8%	37.2%	23.1%
Avg assets/avg equity	1.43	1.36	1.33
ROAE	48.3%	50.8%	30.6%
Efficiency			
Days account receivable	24.0	39.9	39.9
Days inventory	69.2	76.8	90.5
Days creditor	28.9	7.3	7.3
Fixed asset turnover	4.39	3.24	1.75
ROIC	33.5%	30.8%	21.9%
Liquidity			
Current ratio	2.9	2.3	2.4
Quick ratio	2.3	1.7	1.7
Cash ratio	1.9	1.1	1.2
Cash cycle	64.3	109.4	123.1
Growth rate (yoy)			
Revenue growth	53.4%	48.4%	(4.0%)
Operating profit growth	159.3%	76.8%	(15.1%)
Net profit growth	165.3%	73.1%	(14.1%)
EPS growth	165.3%	73.1%	(14.1%)

Source: VND RESEARCH

DISCLAIMER

This report has been written and distributed by Research Department, VNDIRECT Securities Corporation. The information contained in this report is prepared from data believed to be correct and reliable at the time of issuance of this report. Unless otherwise stated, this report is based upon sources that VNDIRECT considers to be reliable. These sources may include but are not limited to data from the stock exchange or market where the subject security is listed, or, where appropriate, any other market. Information on the company(ies) are based on published statements, information disclosure and announcements of the company(ies), and information resulting from our research. VNDIRECT has no responsibility for the accuracy, adequacy or completeness of such information.

All estimates, projections, forecasts and expression of opinions contained in this report reflect the personal views and opinions of the analyst(s) responsible for the production of this report. These opinions may not represent the views and position of VNDIRECT and may change without notice.

This report has been prepared for information purposes only. The information and opinions in this report should not be considered as an offer, recommendation or solicitation to buy or sell the subject securities, related investments or other financial instruments. VNDIRECT takes no responsibility for any consequences arising from using the content of this report in any form.

This report and all of its content belongs to VNDIRECT. No part of this report may be copied or reproduced in any form or redistributed in whole or in part, for any purpose without the prior written consent of VNDIRECT.

RECOMMENDATION FRAMEWORK

Stock Ratings

Definition:

Add	The stock's total return is expected to reach 15% or higher over the next 12 months.
Hold	The stock's total return is expected to be between negative 10% and positive 15% over the next 12 months.
Reduce	The stock's total return is expected to fall below negative 10% over the next 12 months.

The total expected return of a stock is defined as the sum of the: (i) percentage difference between the target price and the current price and (ii) the forward net dividend yields of the stock. Stock price targets have an investment horizon of 12 months.

Sector Ratings

Definition:

Overweight	An Overweight rating means stocks in the sector have, on a market cap-weighted basis, a positive absolute recommendation.
Neutral	A Neutral rating means stocks in the sector have, on a market cap-weighted basis, a neutral absolute recommendation.
Underweight	An Underweight rating means stocks in the sector have, on a market cap-weighted basis, a negative absolute recommendation.

Hien Tran Khanh – Research Director

Email: hien.trankhanh@vndirect.com.vn

Hao Nguyen Duc – Analyst

Email: hao.nguyenduc@vndirect.com.vn

VNDIRECT Securities Corporation

1 Nguyen Thuong Hien Str – Hai Ba Trung Dist – Ha Noi

Tel: +84 2439724568

Email: research@vndirect.com.vn

Website: <https://vndirect.com.vn>