

# BBGI BBGI TB

## THAILAND / OIL & GAS

# BUY

### จากไบโอดีเซลสู่ไบโอเทค

- ในฐานะที่เป็นหนึ่งในผู้ผลิตเชื้อเพลิงชีวภาพที่ใหญ่ที่สุดรายหนึ่งในประเทศไทย การเติบโตของกำไรสุทธิของ BBGI มีสมมติฐานจากผลิตภัณฑ์มูลค่าสูง (HVP) ในตลาดสุขภาพและความเป็นอยู่ที่ดี (The health and well-being market)
- ปัจจัยขับเคลื่อนสำคัญอยู่ที่ผลิตภัณฑ์มูลค่าสูง อัตรากำไร และกำลังการผลิตที่เพิ่มขึ้น ในขณะที่จุดแข็งอยู่ที่ต้นทุนต่ำ ความต้องการที่แน่นอนและพอร์ตที่มีกระจายความเสี่ยง
- ราคาเป้าหมายที่ 15 บาท (SOTP) คิดจากค่า 2022E P/E ที่ 20-21x

TARGET PRICE	THB15.00
CLOSE	THB10.50
UP/DOWNSIDE	+42.9%
TP vs CONSENSUS	n/a

### KEY STOCK DATA

YE Dec (THB m)	2021	2022E	2023E	2024E
Revenue	14,095	13,545	14,971	15,311
Net profit	960	836	1,175	1,309
EPS (THB)	0.66	0.58	0.81	0.91
vs Consensus (%)	-	-	-	-
EBITDA	1,168	1,647	2,094	2,302
Core net profit	348	836	1,175	1,309
Core EPS (THB)	0.24	0.58	0.81	0.91
Chg. In EPS est. (%)	nm	nm	nm	nm
Core EPS growth (%)	(60.3)	140.1	40.5	11.4
Core P/E (x)	43.6	18.2	12.9	11.6
Dividend yield (%)	3.8	2.9	3.8	4.3
EV/EBITDA (x)	16.1	9.6	8.1	7.9
Price/book (x)	2.4	1.4	1.3	1.2
Net debt/Equity (%)	45.6	1.1	9.1	16.2
ROE (%)	5.6	9.5	10.1	10.6

### ผลิตภัณฑ์มูลค่าสูง อัตรากำไร และกำลังการผลิตที่เพิ่มขึ้นเป็นกุญแจสำคัญ

ในฐานะที่เป็นหนึ่งในผู้ผลิตเชื้อเพลิงชีวภาพที่ใหญ่ที่สุดรายหนึ่งในประเทศไทยด้วยกำลังการผลิต Methyl ester (ME) ที่ 1mpld และเอทานอลที่ 0.6mpld BBGI เป็นบริษัทย่อยของ BCP บริษัทฯ เกิดจากการกลืนกินของบริษัทย่อยในธุรกิจเชื้อเพลิงชีวภาพของ BCP และ KSL โดยได้เริ่มดำเนินงานมาตั้งแต่ปี 2017 เราคาดว่ากำไรสุทธิของ BBGI จะโตในอัตรา 44% CAGR ในช่วงปี 2020-24 จาก 3 ปัจจัยขับเคลื่อนสำคัญประกอบด้วย: การเติบโตของกำลังการผลิต การขยายเข้าสู่ Specialty Business และแนวโน้มอุปสงค์อุปทานที่เกือบทันของอุตสาหกรรม เราคาดว่าอัตรากำไรของ BBGI จะเพิ่มในปี 2022-24 โดยคาดว่าอัตรากำไรสุทธิจะเพิ่มจาก 7.0% ในปี 2020 เป็น 8.5% ในปี 2024 จากการเติบโตของกำไรจากผลิตภัณฑ์มูลค่าสูงที่มีอัตรากำไรที่โตในธุรกิจสุขภาพและความเป็นอยู่ที่ดี ซึ่งให้อัตรากำไรขั้นต้นที่กว่า 30-50% เทียบกับที่เพียง 14-17% ของธุรกิจเชื้อเพลิงชีวภาพในปัจจุบัน BBGI อาจสามารถเพิ่ม EBITDA จากธุรกิจผลิตภัณฑ์มูลค่าสูงที่เริ่มขึ้นใหม่เป็น 50% ของ EBITDA รวมภายในปี 2026 จากที่เป็นศูนย์ในปี 2020

### 3 ปัจจัยขับเคลื่อนและ 3 จุดแข็งหนุนแผนงานเพื่อการเติบโต

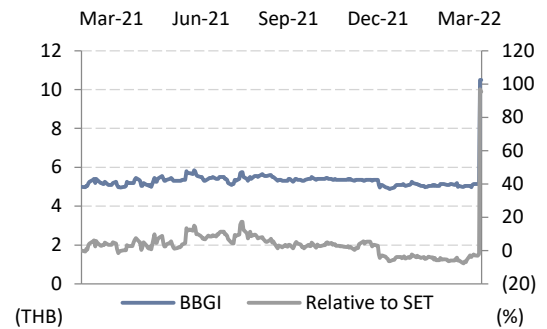
เราเชื่อว่า BBGI มีคุณลักษณะอันเป็นเอกลักษณ์หลายประการที่ทำให้บริษัทฯ แตกต่างจากคู่แข่งในประเทศ ซึ่งช่วยให้บริษัทฯ สร้างมูลค่าที่ได้อย่างยั่งยืนให้แก่ผู้ถือหุ้น จุดแข็ง 3 ประการอยู่ที่: 1) ความเสี่ยงในด้านความต้องการที่ต่ำ; 2) โครงสร้างต้นทุนที่สามารถแข่งขันได้; และ 3) พอร์ตผลิตภัณฑ์ที่มีการกระจายความเสี่ยงที่ดี ในขณะที่เราคาดว่าปัจจัยขับเคลื่อนสำคัญ 3 ประการประกอบด้วยธุรกิจผลิตภัณฑ์มูลค่าสูงที่เริ่มขึ้นใหม่ อัตรากำไรที่เพิ่มขึ้น และการเติบโตของกำลังการผลิตจะช่วยเพิ่มอัตราการเติบโตของกำไรสุทธิจากการดำเนินงานของ BBGI ได้ 140.1% y-y ในปี 2022, 40.5% y-y ในปี 2023, และ 11.4% y-y ในปี 2024

### การแย่งชิงความต้องการระหว่างเชื้อเพลิงชีวภาพและยานยนต์ไฟฟ้าในนโยบายของรัฐ

ในขณะที่การเติบโตของความต้องการเอทานอลและ ME ดุติตั้งแต่ปี 2022 เป็นต้นไปเนื่องจากรัฐบาลตั้งเป้าเพิ่มการบริโภค E20 เป็น 99% ภายในปี 2037 รัฐบาลกลับวางแผนยานยนต์ที่ปล่อยมลภาวะเป็นศูนย์เพื่อเพิ่มความต้องการยานยนต์ไฟฟ้าเป็น 402k ในปี 2025 โดยจะเพิ่มเป็น 2 ล้านในปี 2030, และ 6.4 ล้านในปี 2035, ซึ่งสร้างอุปสรรคในด้านความต้องการให้แก่เอทานอลและ ME

### ราคาเป้าหมายอยู่ที่ 15 บาทจากการประเมินมูลค่าด้วยวิธี SOTP

เราได้ราคาเป้าหมายของ BBGI จากการประเมินมูลค่าโดยใช้วิธี SOTP จากค่า Forward P/E 1 ปีรวมถึงความเสี่ยงในด้านกฎระเบียบต่าง ๆ อุปสงค์ อุปทาน ราคา และราคาวัตถุดิบ ราคาเป้าหมายของเราที่ 15 บาทประกอบด้วย: 1) ธุรกิจไบโอดีเซล 6.7 บาทซึ่งคิดเป็น 20-22x ของค่า 2022E P/E; 2) ธุรกิจเอทานอล 7.2 บาทซึ่งคิดเป็น 21x ของค่า 2022E P/E; 3) ธุรกิจผลิตภัณฑ์มูลค่าสูง 0.5 บาท; และ 4) การลงทุนใน UBE ที่ 0.8 บาท



Share price performance	1 Month	3 Month	12 Month
Absolute (%)	n/a	n/a	n/a
Relative to country (%)	n/a	n/a	n/a
Mkt cap (USD m)			458
3m avg. daily turnover (USD m)			n/a
Free float (%)			30
Major shareholder			BCP (42%)
12m high/low (THB)			n/a
Issued shares (m)			1,446.00

\*Currently only covered by FSSIA

Sources: Bloomberg consensus; FSSIA estimates



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PREPARED BY FSS INTERNATIONAL INVESTMENT ADVISORY SECURITIES CO LTD (FSSIA). ANALYST CERTIFICATION AND IMPORTANT DISCLOSURES CAN BE FOUND AT THE END OF THIS REPORT

บทวิเคราะห์ฉบับนี้แปลมาจากบทวิเคราะห์ของ FSSIA ฉบับวันที่ 18 มีนาคม 2022

## Investment thesis

After realising synergies from the merger with KSL group to form BBGI, with strengths in competitive upstream feedstock costs from Khon Kaen Sugar Industry (KSL TB, not rated) and downstream captive demand for biofuel with Bangchak Corporation (BCP TB, BUY, TP THB38), BBGI is now aiming to grow not only into a more specialised HVP product segment vs its current commodity biofuel products, but also into a fast-growing, sunrise health & well-being industry vs its current energy industry.

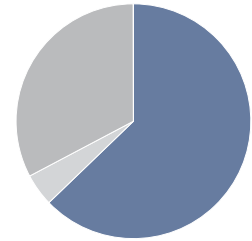
## Company profile

Formed via a merger between Bangchak Corporation's biofuel arm with Khon Kaen Sugar Industry's biofuel unit, BBGI is one of the largest producers of biofuels in Thailand, with a 1mlpd capacity of ME and a 0.6mlpd capacity of ethanol, which could increase by 0.2mlpd to 0.8mlpd by end-2022. BBGI has a well-diversified product portfolio and production locations and is one of the only biofuel producers of both ethanol and ME.

[www.bbgigroup.com](http://www.bbgigroup.com)

## Principal activities (revenue, 2021)

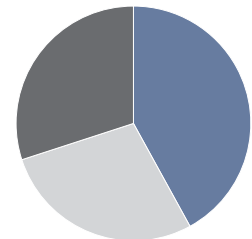
- Biodiesel - 62.8 %
- Refined glycerin - 4.5 %
- Ethanol - 32.7 %
- HVP - 0.0 %



Source: BBGI

## Major shareholders

- BCP - 42.0 %
- KSL - 28.0 %
- Others - 30.0 %



Source: BBGI

## Catalysts

Higher biodiesel and ethanol prices, rising production volumes, and lower-than-expected feedstock costs are all key potential catalysts.

## Risks to our call

Our target price is based on an SOTP valuation. Downside risks include: 1) a sharp rise in crude palm oil and molasses prices; and 2) changes in the government's policy for biodiesel from the current B7.

## Event calendar

Date	Event
May 2022	1Q22 result announcement

## Key assumptions

	2022E	2023E	2024E
Selling Price - ME (THB/litre)	30.4	30.4	30.4
Cost of Feedstock - CPO (THB/kg)	28.0	28.0	28.0
Ethanol price - Fuel (THB/litre)	24.0	24.0	24.0
Cost of feedstock - Molasses (THB/kg)	3.8	3.6	3.6
Utilisation - Biodiesel (%)	80	80	80
Utilisation - Ethanol	95	90	90

Source: FSSIA estimates

## Earnings sensitivity

- Ceteris paribus, for every 1% rise in average biodiesel price, we project 2022 EPS to rise by 5.98%, and vice versa.
- Ceteris paribus, for every 1% rise in CPO feedstock cost, we estimate 2022 EPS to drop by 5%, and vice versa.
- Ceteris paribus, for every 1% rise in molasses feedstock cost, we estimate 2022 EPS to drop by 2.36%, and vice versa.

Source: FSSIA estimates



## Executive Summary

Formed via a merger between Bangchak Corporation (BCP TB, BUY, TP THB38)'s biofuel arm with Khon Kaen Sugar Industry (KSL TB, not rated)'s biofuel unit, BBGI is one of the largest producers of biofuels in Thailand, with a 1mlpd capacity of ME and a 0.6mlpd capacity of ethanol, which could increase by 0.2mlpd to 0.8mlpd by end-2022. BBGI has a well-diversified product portfolio and production locations and is one of the only biofuel producers of both ethanol and ME.

After realising synergies from the merger with KSL group to form BBGI, with strengths in competitive upstream feedstock costs from KSL and downstream captive demand for biofuel with BCP, BBGI is now aiming to grow not only into a more specialised HVP product segment vs its current commodity biofuel products, but also into a fast-growing, sunrise health & well-being industry vs its current energy industry.

**HVP is BBGI's key growth driver.** Starting in 2020, BBGI entered into the health and well-being industry via an investment in Manus Bio, a US-based research & development-driven company with a strength in producing biochemical products. In Nov-20, BBGI and Manus formed WIN as a distribution arm to market Manus' products.

There are two key business segments under BBGI's HVP unit – advanced biotech (an integrated production and sales value chain for synthetic biology) and a trading business to distribute HVP through business-to-business (B2B) and business-to-consumer (B2C) platforms.

BBGI's own brand of "B Nature Plus" food and health supplement products will be marketed via B2C directly to consumers via both online and offline channels. The gross margin for B2C is expected to be around 55%, according to management.

BBGI plans to sell bio-ingredients from top-tier producers via B2B with a projected gross margin of 40% in 2022-24.

B2B Premium will mainly sell high-margin products such as astaxanthin, a red pigment that belongs to a group of chemicals called carotenoids. It occurs in certain algae and causes the pink-red colour in salmon.

**Three strengths.** We believe BBGI has a set of unique characteristics that differentiate it from local peers which can help it create sustainable and strong shareholder value. The three strengths are: 1) low demand risk; 2) competitive cost structure; and 3) a well-diversified product portfolio.

**Growth outlook.** We project BBGI's net profit to grow at a 44% CAGR from 2020-24, driven by three key drivers: capacity growth, expansion into specialty businesses, and the industry's favourable demand-supply outlook.

We expect BBGI's margins to expand in 2021-24, with the net margin rising from 7.0% in 2020 to 8.5% in 2024 due to the earnings growth from its high-margin HVP ventures in the health and well-being business, which command gross margins of over 30-50% vs only 14-17% for the existing biofuel business.

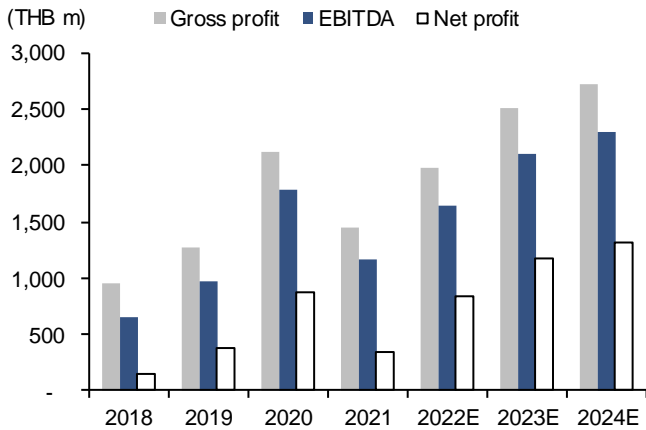
With a strategic growth plan to expand into the HVP and health & well-being industry, BBGI's management targets EBITDA growth from the new HVP ventures of 50% of total EBITDA by 2026, up from zero in 2020.

**SOTP-based target price of THB15.** We apply the sum-of-the-parts (SOTP) valuation methodology as we think the values of each asset in different industries should have different risk-reward profiles. We employ a one-year forward P/E for all businesses given their low earnings visibility due to the risks from regulations, demand, supply, price, and feedstock price and availability, given the unpredictable nature of sugarcane, cassava, and palm production.

## From biofuel rags to biotech riches

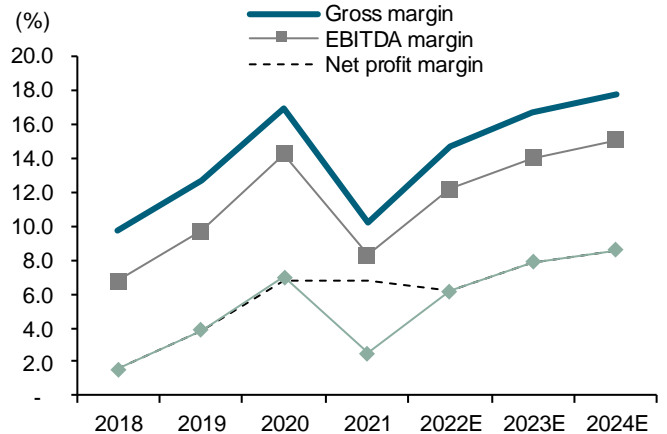
As one of Thailand's leading producers of biofuels and a subsidiary of BCP, BBGI has seen uptrends in its gross profit, EBITDA, and net profit since 2018-21, despite the impact of the Covid-19 pandemic during 2020 to date. We believe three key competitive advantages have sustained BBGI's financial performance throughout the difficult period of poor demand (from Covid-19 impact) and chronic industry oversupply (flip-flopping government policy for biofuel).

**Exhibit 1: Gross profit, EBITDA, and core net profit projections**



Sources: BBGI; FSSIA estimates

**Exhibit 2: Gross profit margin, EBITDA margin, and net profit margin**



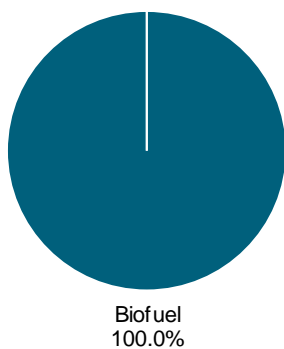
Sources: BBGI; FSSIA estimates

We project BBGI's net profit to grow at a 44% CAGR from 2020-24, driven by three key drivers: capacity growth, expansion into specialty businesses, and the industry's favourable demand-supply outlook.

We expect BBGI's margins to expand in 2021-24, with the net margin rising from 7.0% in 2020 to 8.5% in 2024 due to the earnings growth from its high-margin HVP ventures in the health and well-being business, which command gross margins of over 30-50% vs only 14-17% for the existing biofuel business.

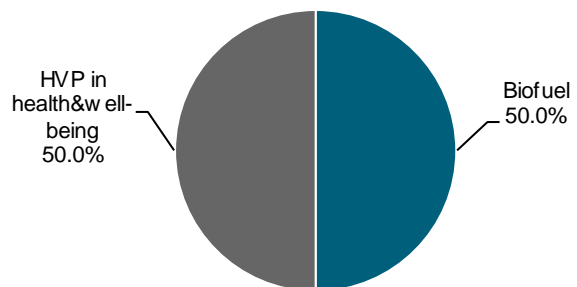
With a strategic growth plan to expand into the HVP and health & well-being industry, BBGI's management targets EBITDA growth from the new HVP ventures of 50% of total EBITDA by 2026, up from zero in 2020.

**Exhibit 3: EBITDA breakdown in 2021**



Source: BBGI

**Exhibit 4: Targeted EBITDA proportions by 2026**

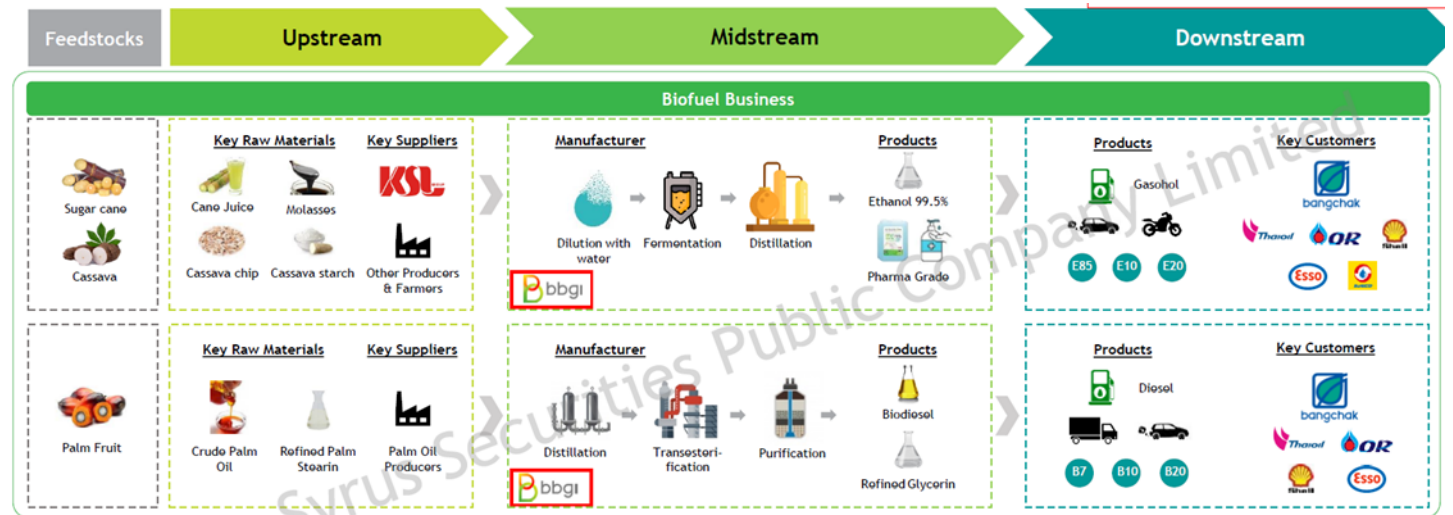


Source: BBGI

### Three key competitive strengths to support business expansion

We believe BBGI has a set of unique characteristics that differentiate it from local peers which can help it create sustainable and strong shareholder value. The three strengths are: 1) low demand risk; 2) competitive cost structure; and 3) a well-diversified product portfolio.

Exhibit 5: Value chain of BBGI's biofuel business



Source: BBGI

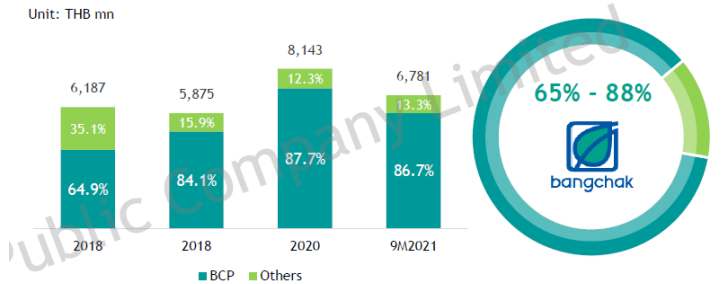
**Strength #1: Low demand risk.** First, BBGI has a low demand risk for both ethanol and ME, or B100, thanks to the fully captive demand from its parent company BCP, which is one of Thailand's six refinery companies with a total capacity of 120,000 barrels per day. However, while BCP could fully accommodate the entire ethanol and ME production, BBGI diversifies its client portfolio to other non-related parties, mostly from other major fuel distributors who have long-standing relationships with KSL.

Exhibit 6: BCP as a key off-taker for BBGI's ethanol sales



Source: BBGI

Exhibit 7: BCP as a key off-taker for BBGI's biodiesel sales

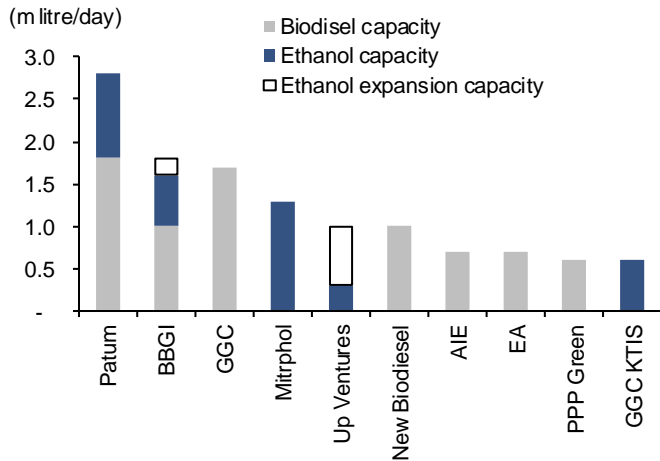


Source: BBGI



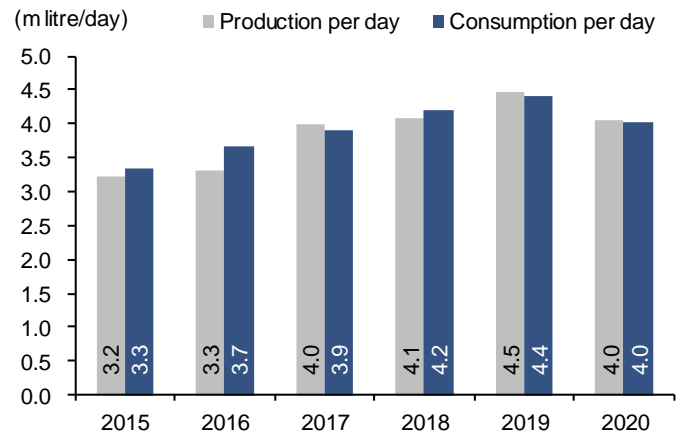
**Strength #2: Competitive cost structure.** BBGI has competitive cost structures for both ethanol and ME, thanks to the reliable supply of the raw material molasses from KSL, one of Thailand’s leading sugar producers and exporters. In addition, the conversion cost structure of BBGI’s ethanol and ME are among the most competitive in the industry in Thailand, thanks to its integration with the upstream feedstock source and the downstream refinery and food and beverage companies.

**Exhibit 8: Biofuel players in Thailand**



Source: Department of Alternative Energy Development and Efficiency (DEDE)

**Exhibit 9: Biodiesel and ethanol production in Thailand**



Source: BBGI

We estimate that BBGI’s competitive cost structure is due to 1) its economies of scale benefit as BBGI ranks as one of the Thailand’s largest producers of biofuels with a current total capacity of 1.6m litres per day (mlpd) (#2 in Thailand for ethanol with 0.6mlpd (potentially expanding to 0.8mlpd) capacity, #3 for ME with 1mlpd capacity); and 2) competitive feedstock costs for molasses from KSL (fourth largest producer of sugar and by-products in Thailand) with a first right to purchase all molasses from KSL group at an arm’s length market price.

**Strength #3: A well-diversified product portfolio.** After the amalgamation of Bangchak Biofuel Business (BBH) and KSL in Oct-17 to form BBGI, with BCP owning a 60% stake and KSL owning 40%, BBGI has since become an integrated company with a well-balanced product portfolio of two biofuels, ethanol and ME, and an integrated business value chain with both an upstream feedstock supplier of molasses from KSL and downstream refinery off-takers, including its parent company BCP.

**Exhibit 10: A wide range of ethanol grade products**

Company	KGI (Bo Ploy)	KGI (Nam Phong)	BBE
Location	Kanchanaburi	Khon Kaen	Chachoengsao
Capacity	300,000 LPD	150,000 LPD <sup>1</sup>	150,000 LPD
Products	Ethanol Fuel & Pharma Grade <sup>2</sup> (#1 in Thailand)	Ethanol Fuel Grade	Ethanol Fuel Grade
Raw Material	Molasses	Molasses	Molasses, Cassava

Note: <sup>1</sup> 200,000 LPD expansion is currently under construction, bringing the total capacity to 350,000 LTD  
<sup>2</sup> Best quality grade of ethanol

Source: BBGI

**Exhibit 11: Large-scale ME and glycerin value-added plants**

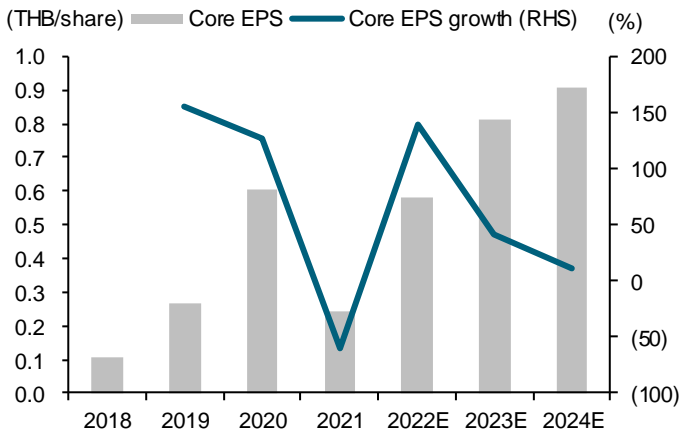
Company	BBF1	BBF2	Refined Glycerin
Location	Phra Nakhon Si Ayutthaya		
Capacity	410,000 LPD	590,000 LPD	80 TPD
Products	Biodiesel		Refined Glycerin
By Product	Crude Glycerin		-
Raw Material	CPO/ RPS/ PFAD		Crude Glycerin

Source: BBGI

## Catalysts to crystallise into a great growth step

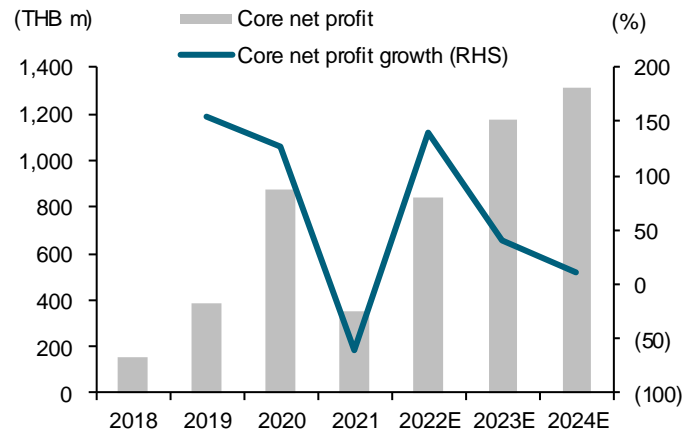
With its set of unique characteristics, we project BBGI's net profit to grow at a 44% CAGR from 2020-24, driven by three key drivers: earnings additions from the new HVP ventures, margin expansion, and capacity growth. While we project BBGI's core net profit growth to accelerate in 2022-24 – by 140.1% y-y in 2022, 40.5% y-y in 2023, and 11.4% y-y in 2024 – core EPS growth could recover from -60.3% y-y in 2021 to +140.1% y-y in 2022, due to the higher number of shares outstanding from the capital increase, before jumping to 40.5% y-y in 2023 and 11.4% y-y in 2024.

Exhibit 12: Core EPS and core EPS growth projections



Sources: BBGI; FSSIA estimates

Exhibit 13: Core net profit and core net profit margin projections



Sources: BBGI; FSSIA estimates

After realising synergies from the merger with KSL group to form BBGI, with strengths in competitive upstream feedstock costs from KSL and downstream captive demand for biofuel with BCP, BBGI is now aiming to grow not only into a more specialised HVP product segment vs its current commodity biofuel products, but also into a fast-growing, sunrise health & well-being industry vs its current energy industry.

Exhibit 14: Key growth drivers



Source: BBGI



### Driver #1: From commodity biofuels to specialty HVP

BBGI has been moving into a new product segment via 1) an investment in a 5.6% stake in Apr-20 in Manus Bio; 2) establishing the JV WIN with Manus in Nov-20 as a distribution arm to market the products manufactured by Manus; and 3) signing a memorandum of understanding (MOU) with Bio Om in Jan-21.

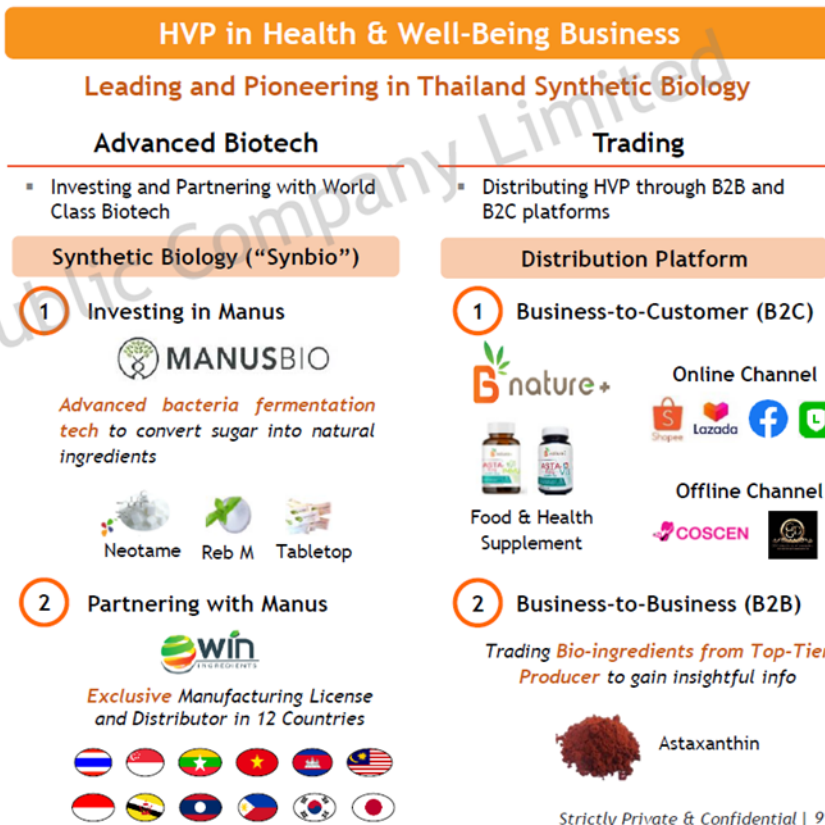
Exhibit 15: Key milestones for the development of BBGI’s business growth and diversification



Source: BBGI

There are two key business segments under BBGI’s HVP unit – advanced biotech (an integrated production and sales value chain for synthetic biology) and a trading business to distribute HVP through B2B and B2C platforms.

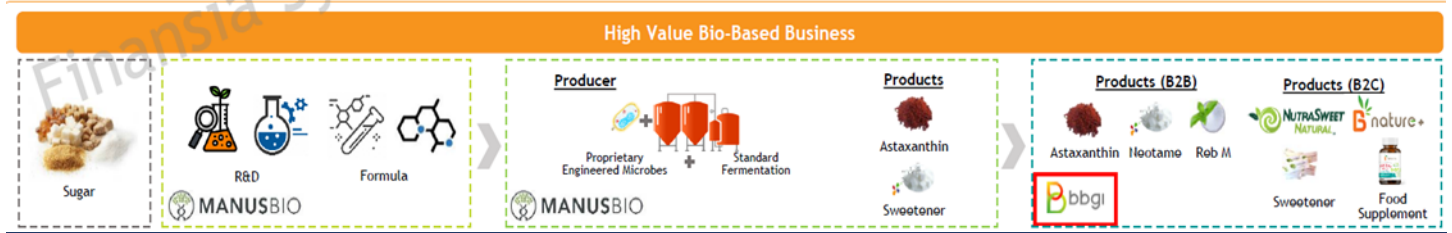
Exhibit 16: BBGI’s growth plan in the HVP market



Source: BBGI

**HVP #1: Advanced biotech industry.** As the first step to enter the high-growth, high-margin biotech industry, focusing on the synthetic biology (synbio) segment, BBGI joined hands with Manus, a leading US-based producer of several natural ingredients by using sugar as a feedstock with advanced bacteria fermentation technology.

**Exhibit 17: Value chain of BBGI's HVP business (from sugar feedstock to B2B and B2C marketing channels)**



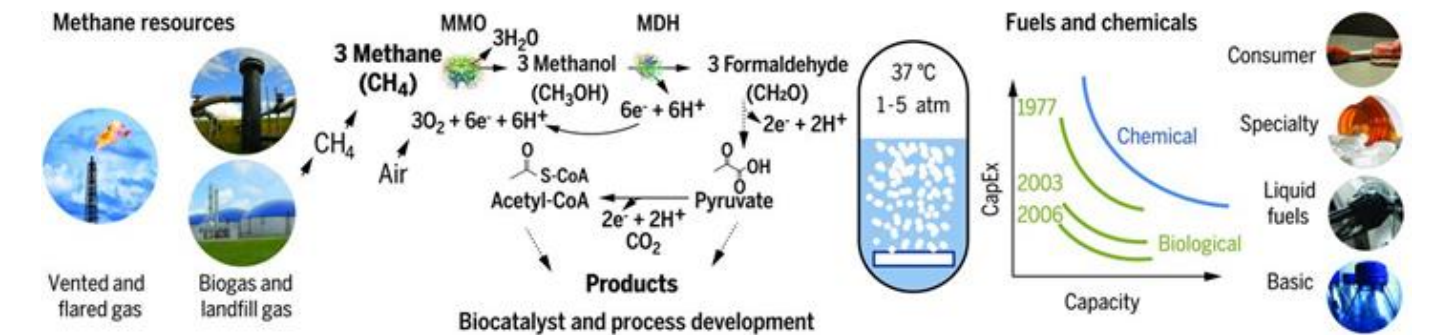
Source: BBGI

**Who is Manus?** Founded in 2011 and named after the Massachusetts Institute of Technology (MIT)'s motto "Mens et Manus" or "Mind and Hand", Manus was founded by two MIT chemical engineering professors with the vision to "disrupt traditional chemical manufacturing to grant sustainable and equitable access to Nature's most precious products", according to [Manus' website](#).

In other words, Manus uses its patented innovative biomanufacturing platform and technology using enzyme engineering for cell factory design via fermentation to achieve modular and scaled-up production volumes to achieve economies of scale, commercial feasibility and competitiveness.

**What is industrial biotechnology?** According to [Science.org](#), industrial biotechnology with commercial-scale manufacturing of chemical products using cellular or molecular biocatalysts has long been academically successful but had a low success rate of translating such research into commercially successful production and manufacturing processes.

**Exhibit 18: Industrial biomanufacturing: the future of chemical production**

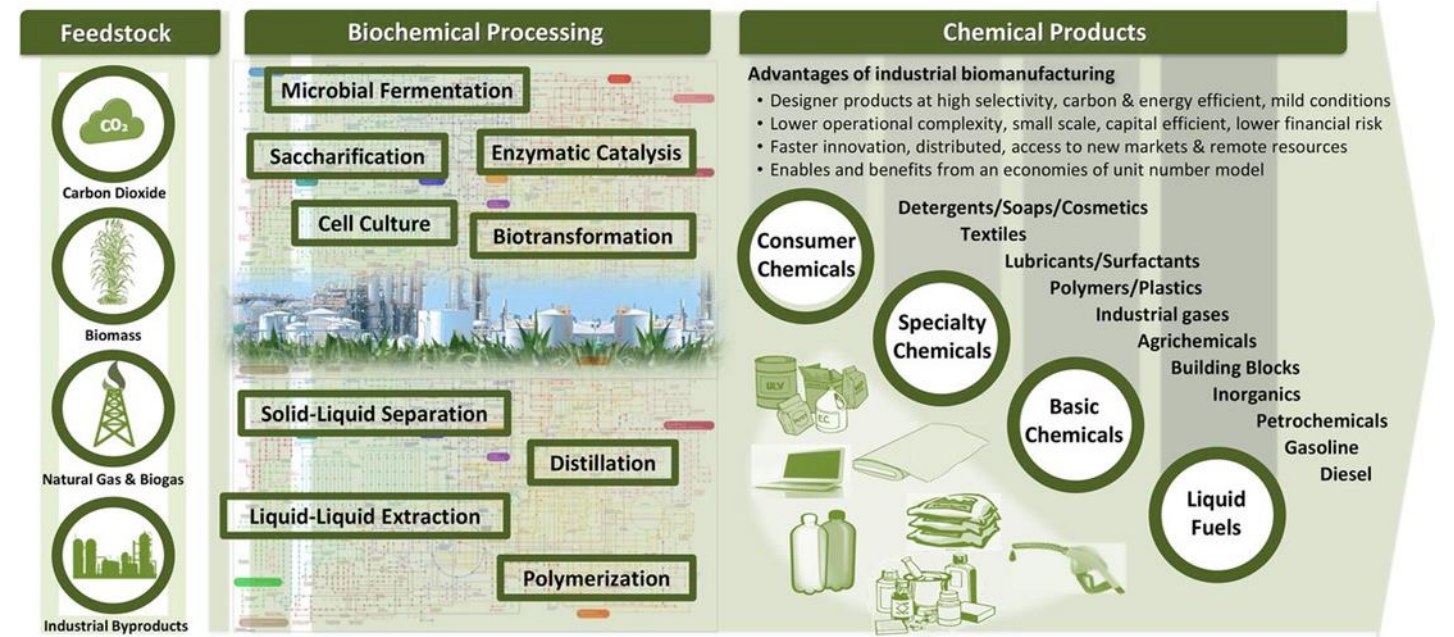


Source: [Science.org](#)

Industrial biotechnology competes with chemical processing, a multitrillion-dollar industry with strong patent protection, a well-trained workforce, economies of scale, and depreciated facilities. Environmental sustainability, a main advantage of industrial biotechnology, is commonly undervalued by society and regulators.

If valuation does not incorporate the ecological impact of the approach to chemical or biochemical synthesis, the products manufactured using industrial biotechnology will be simply unaffordable and economically uncompetitive. High-volume, low-margin products such as polymers, industrial chemicals, and fuels will continue to be produced through traditional chemical processing, forfeiting the sustainability benefits of industrial biotechnology.

**Exhibit 19: Biochemical process**



Source: [Science.org](http://Science.org)

While most emerging biotechnologies could not reach the commercialisation phase due to the lack of funding to transform the initial academically successful technologies into full commercial production, Manus is one of the few exceptions with its synthetic biology and metabolic engineering process to scale up the production volume and achieve commercial scale production for cost competitiveness and more environmentally friendly and healthy substitute products such as Reb M.

Manus' current product portfolio includes a zero-calorie sweetener (Reb M) that tastes like sugar, insect repellents that are safe to drink, drugs that save lives, and prevent disease, according to [Manus' website](#). Its product segment embraces food ingredients, consumer products, beauty and wellness, pharmaceuticals and biotech, bio-agrochemicals, and sustainable materials.

**Exhibit 20: BBGI intends to diversify and grow from biofuel to HVP**



Source: BBGI

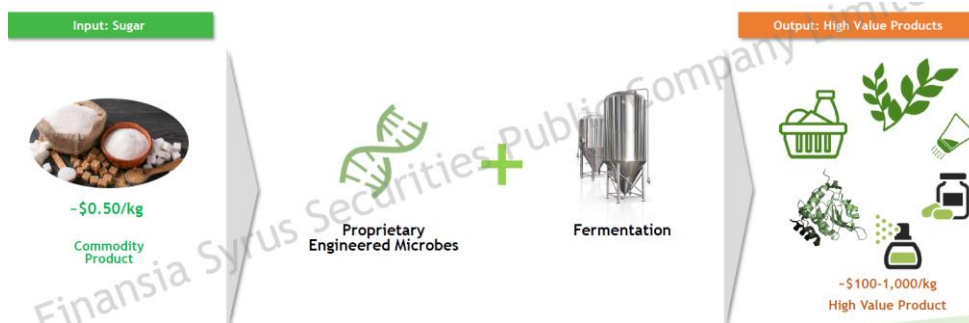


**Manus’ proven success in biotechnology to produce Reb M goes back to its inception in 2017.** According to the article, “[Microbial manufacturing: Engineered bacteria produce rare and commercially useful compounds in large quantities](#)” dated 3 Feb-17 by Rob Matheson, MIT News, Manus succeeded in recreating a natural plant process in microbes to cheaply produce mass quantities of a coveted stevia plant compound for a zero-calorie sweetener, called Rebaudioside M (Reb M), which is much sweeter than the current commercial sweetener alternatives.

In nature, only 0.01% of the compound can be extracted from the stevia plant but Manus, on the other hand, has engineered bacteria to mimic the stevia plant’s metabolic pathway, producing a new sweetener with a more refined flavour in a more cost-effective way.

This indicates that Manus’ success in reaching commercial-scale production with a competitive cost and better quality should open the door for net profit growth in the highly promising but competitive health and well-being market.

**Exhibit 21: HVP product value chain**

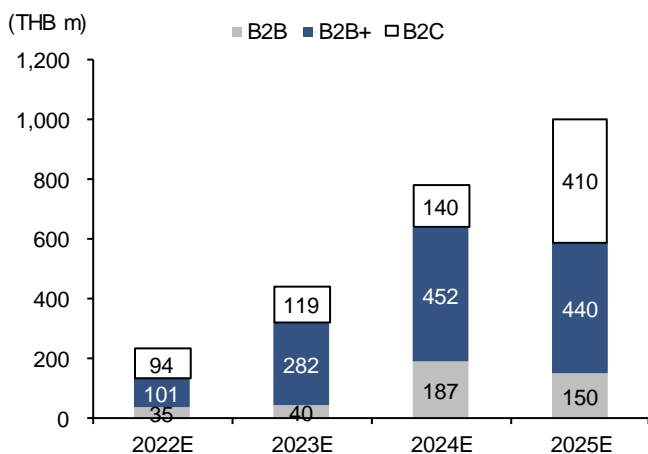


Source: BBGI

While Manus plans to produce a number of natural ingredient products, BBGI plans to launch and grow Manus’ Reb M, a non-caloric artificial sweetener similar to Neotame, one type of aspartame or artificial non-saccharide sweetener made by Manus’ competitor, NutraSweet Company. WIN, the JV owned 51% by BBGI and 49% by Manus, will be the sole distribution arm in ASEAN, South Korea, and Japan to market Manus’ products, including Reb M.

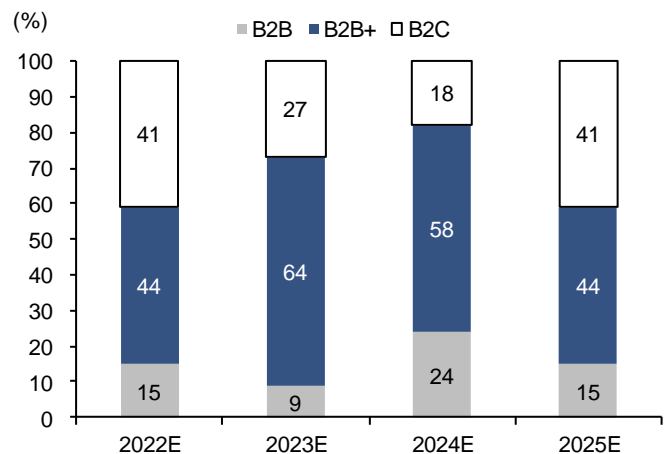
**HVP #2: Trading unit (TU) to sell HVP via B2B and B2C.** In order to capitalise on the full potential of marketing HVPs to the fast-growing health and well-being industry, BBGI also plans to grow its earnings from its trading arm to market and sell HVP via three channels.

**Exhibit 22: Revenue projections for TU – breakdown by channel**



Sources: BBGI; FSSIA estimates

**Exhibit 23: Revenue projections for TU – breakdown by channel (%)**



Sources: BBGI; FSSIA estimates

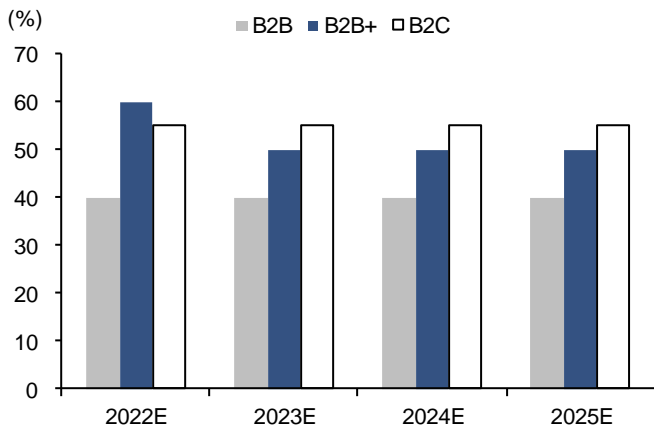
**B2C:** BBGI’s own brand of “B Nature Plus” food and health supplement products will be marketed via B2C directly to consumers via both online and offline channels. The gross margin for B2C is expected to be around 55%, according to management.

**B2B:** BBGI plans to sell bio-ingredients from top-tier producers via B2B with a projected gross margin of 40% in 2022-24.

**B2B Premium (B2B+):** This channel will mainly sell high-margin products such as astaxanthin, a red pigment that belongs to a group of chemicals called carotenoids. It occurs in certain algae and causes the pink-red colour in salmon. Astaxanthin is a keto-carotenoid with various uses including dietary supplements and food dyes. It belongs to a larger class of chemical compounds known as terpenes and is an antioxidant, which might protect cells from damage and also improve the way the immune system functions, according to [Wikipedia](https://en.wikipedia.org/wiki/Astaxanthin).

BBGI’s management expects a high gross margin of up to 50-60% for the sales of astaxanthin, and the revenue generated from this product is expected to account for 44% to 64% of the TU’s total revenue generated in 2022-24.

**Exhibit 24: Gross margin assumptions for TU by distribution channel**



Sources: BBGI; FSSIA estimates

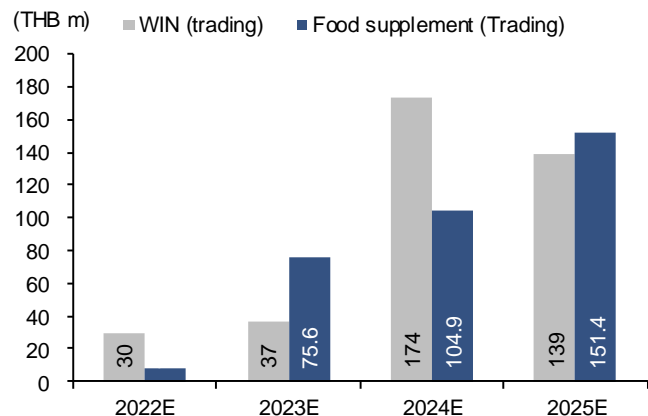
**Exhibit 25: Advertisement for BBGI’s astaxanthin product (Asta-Imm) under “B Nature Plus” brand**



Sources: BCP; FSSIA estimates

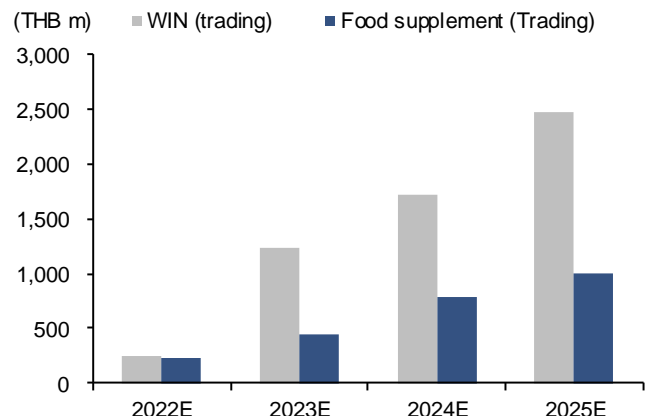
**Financial projections for HVP.** Based on the industry and market size, we project that Manus’ Reb M could generate up to a 40% gross margin and a 12% net profit margin in 2022-24, while the weighted gross margin of the TU could range from 49% to 55% in 2022-24, based on our TU revenue assumption of THB230m in 2022, rising to THB1b in 2024. We project that WIN (51% stake owned by BBGI) and TU (100%) will generate net profits of THB30m and THB7.6m in 2022, growing to THB139m and THB151.4m in 2024, respectively.

**Exhibit 26: Net profits of HVP – WIN (Reb M) and trading**



Sources: BBGI; FSSIA estimates

**Exhibit 27: Revenue of HVP – WIN (Reb M) and trading**



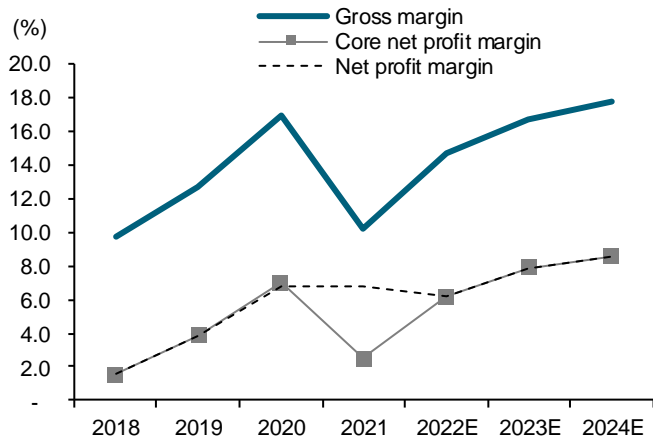
Sources: BBGI; FSSIA estimates

### Driver #2: Margin expansion underpinned by HVP growth

We project BBGI’s gross and core net profit margins to expand gradually from 10.2% and 2.5% in 2020 to 14.7-17.7% and 6.2-8.5% in 2022-24, driven by the high-margin earnings growth from the HVP venture.

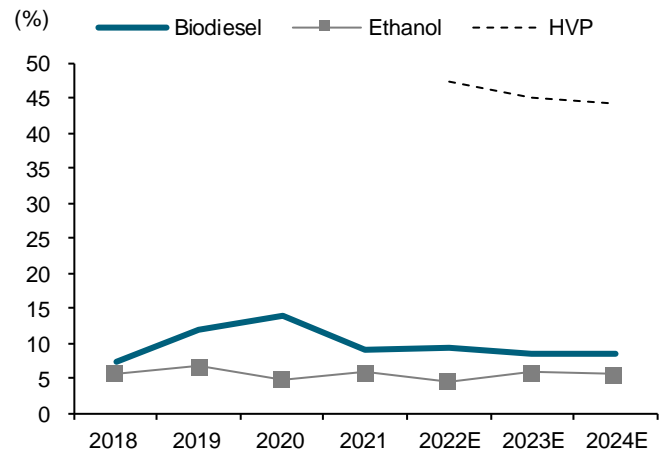
In addition, the synergy added with the business integration of both KSL for the molasses feedstock and BCP as a captive customer, allowed BBGI to run its ethanol plants at a high utilisation rate of 97.74% in 2021.

Exhibit 28: Gross margin, core net margin and net margin



Sources: BBGI; FSSIA estimates

Exhibit 29: Gross margin by business segment



Sources: BBGI; FSSIA estimates

For biodiesel, BBGI has run its two ME plants at a lower utilisation rate of 72.31% as of 2021, down from 78.2% in 2020 and 97.6% in 2019, due mainly to the sharp drop in demand for ME as a result of the change in the ME blending formula of standard biodiesel from B10 (10% ME and 90% diesel) to B7 (7%) and the temporary ban on the alternative B20 (20%) in order to curb the price of biodiesel sold to consumers at oil stations.

Exhibit 30: Biodiesel B7 price structure as of 19 January 2022

		Unit
Dubai crude oil price	81.0	USD/bbl
Singapore GRM + import parity cost	15.0	USD/bbl
THB/USD exchange rate	34.0	THB/USD
Marketing margin	0.1	THB/litre
Crude ex-refinery	21.8	THB/litre
Tax	6.1	THB/litre
<b>Retail oil price</b>	<b>28.0</b>	<b>THB/litre</b>

Source: EPPO

The main reason is the price hike for the global crude oil price to above USD80/bbl, which has in turn driven the biodiesel price up in Thailand. A THB28/litre biodiesel price cap has been implemented by the government under pressure from truck drivers, the major consumers of biodiesel in Thailand.

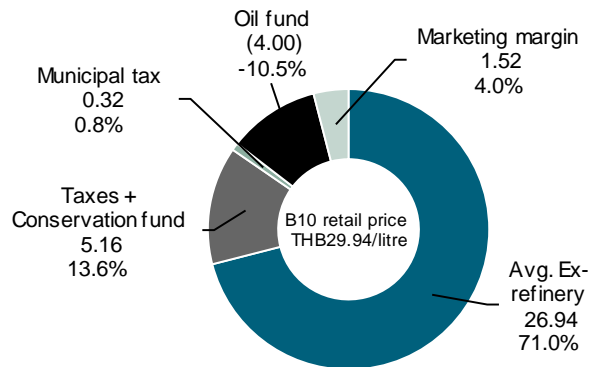
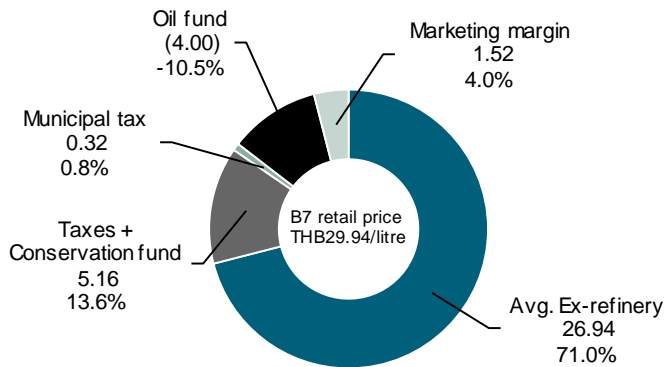
According to the Energy Planning and Policy Office (EPPO), the price of standard biodiesel B7 is THB29.84/litre, higher than the capped price of THB28/litre due to the higher Dubai crude oil price of USD85/bbl. To maintain the retail B7 price at THB28/litre, the Dubai crude oil price needs to be lower than USD81/bbl, as the retail price of B7 in Thailand includes a marketing margin of THB0.1/litre, total taxes of THB6.1/litre, and a refining margin which includes import parity expenses for freight, import duty, and other related expenses required for the import of B7 into Thailand.



In Thailand, around two-thirds of the retail price of fuel sold to consumers at gas stations is made up of the ex-refinery price, 20-26% for the total taxes, and a 4.0% marketing margin for biodiesel and 11% for gasohol 95, based on the price structures as of 17 Mar-22. However, given that biodiesel is a mass fuel used for transportation in Thailand, its retail price has a much more significant impact on the public than gasohol, which is regarded by the government as a “luxury” fuel rather than a necessary fuel.

**Exhibit 31: B7 biodiesel price structure as of 17 March 2022**

**Exhibit 32: B10 biodiesel price structure as of 17 March 2022**



Source: EPPO

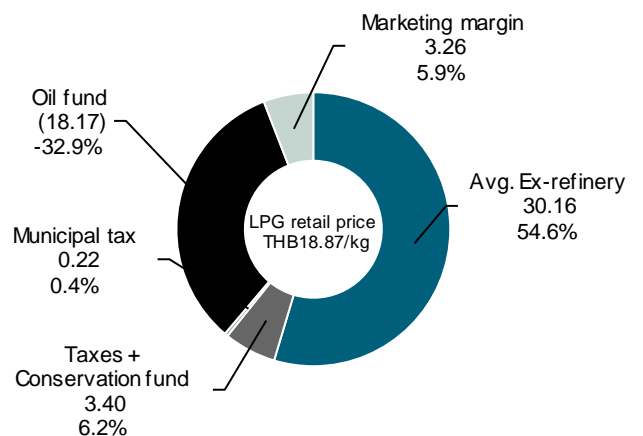
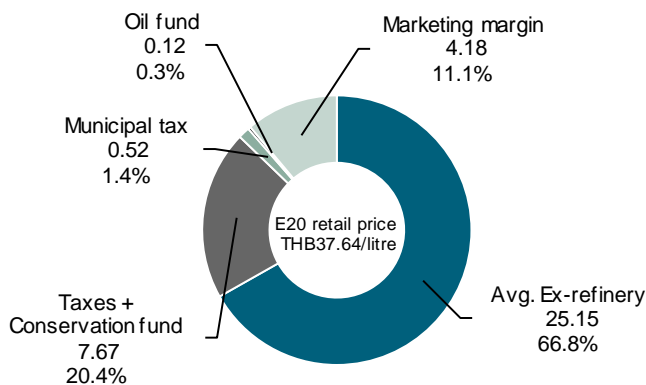
Source: EPPO

Hence, the government has employed the oil fund as a key tool to control the price of each fuel. In essence, when the global crude oil price rises too high and too fast, similar to the current situation, the government will cut the oil fund tax and instead change to a subsidy (THB-4.00/litre for B7), while collecting a higher tax for gasohol.

For LPG, since it is used mostly as a cooking gas for households and restaurants, the government normally will subsidise it via the oil fund (THB-18.17/kg) and impose smaller taxes on the LPG price, resulting in the capped price level of LPG at THB18.87/kg as of 17 Mar-22.

**Exhibit 33: Gasohol 95 price structure as of 17 March 2022**

**Exhibit 34: LPG price structure as of 17 March 2022**



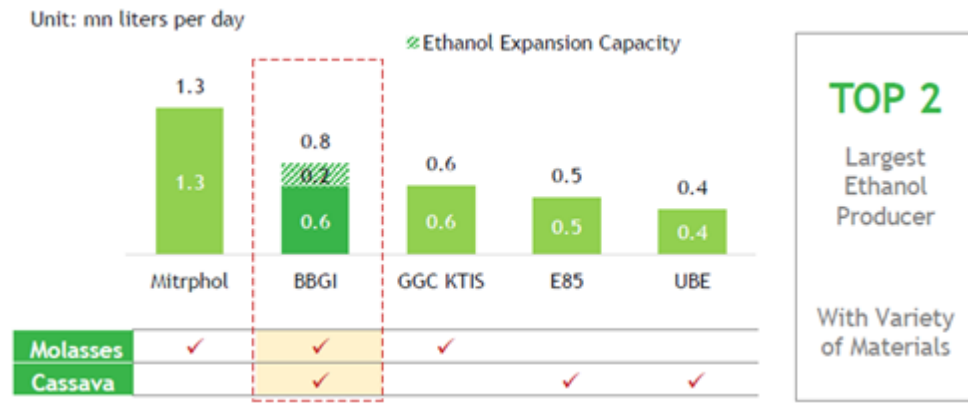
Source: EPPO

Source: EPPO

### Driver #3: Capacity growth for ethanol

BBGI plans to expand the capacity of its molasses-based ethanol plant at Nam Phong, Khon Kaen, increasing the capacity by 0.2mlpd to 0.35mlpd. This would bring BBGI's total capacity for ethanol to 0.8mlpd from three plants, and total biofuel capacity to 1.8mlpd, including a 1mlpd capacity for ME.

**Exhibit 35: BBGI is one of the largest ethanol producers in Thailand by capacity**

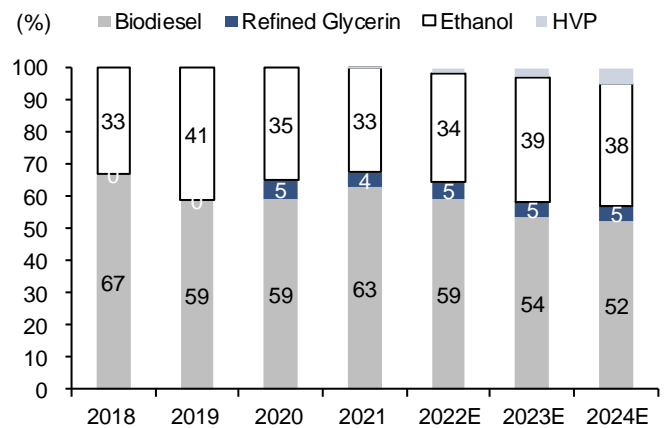
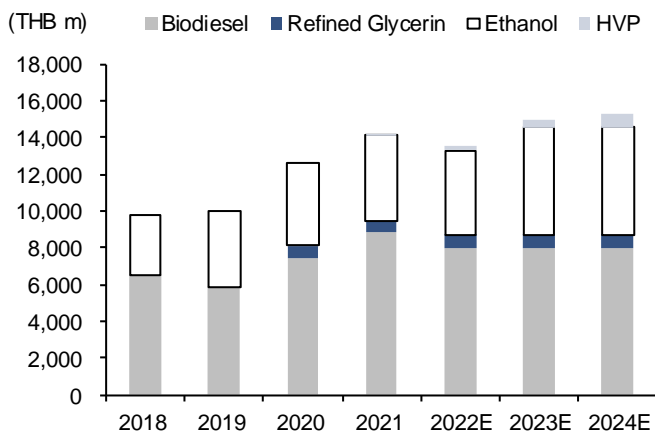


Sources: DEDE (September 2021)

**Strong earnings growth and sustainability in 2022-24.** Based on BBGI's three strengths – low demand risk, competitive cost structure, and a diversified product portfolio – and three drivers – HVP earnings growth, margin expansion, and capacity growth – we think BBGI's net profit growth will be visibly strong, with the key drivers coming from the HVP business.

**Exhibit 36: Revenue breakdown by business**

**Exhibit 37: Revenue breakdown by business (%)**

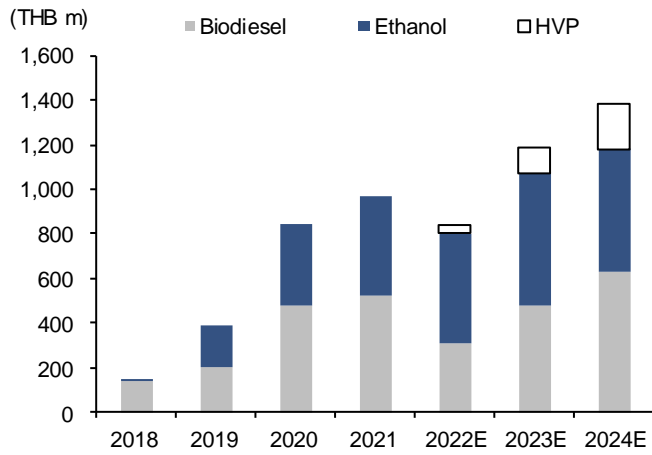


Sources: BBGI; FSSIA estimates

Sources: BBGI; FSSIA estimates

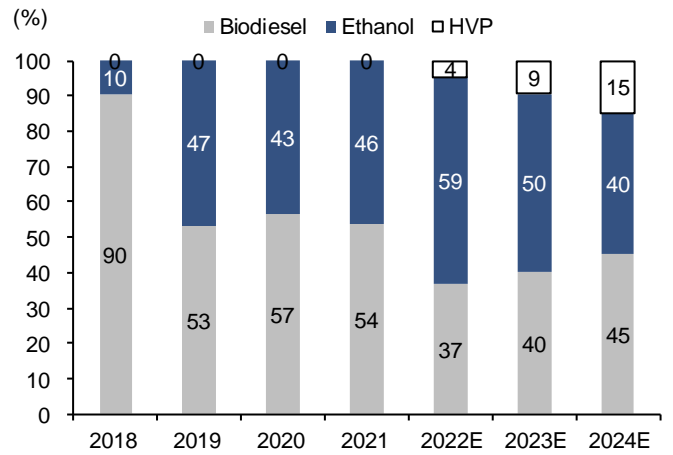
While we project HVP to contribute a small portion of BBGI's revenue, as BBGI will take equity income from its 51%-owned WIN, HVP (WIN and TU) should be a key net profit catalyst for BBGI in 2022-24, with the net profit proportion rising from zero in 2021 to 15% in 2024, based on our estimate.

**Exhibit 38: Net profit breakdown by business**



Sources: BBGI; FSSIA estimates

**Exhibit 39: Net profit breakdown by business (%)**

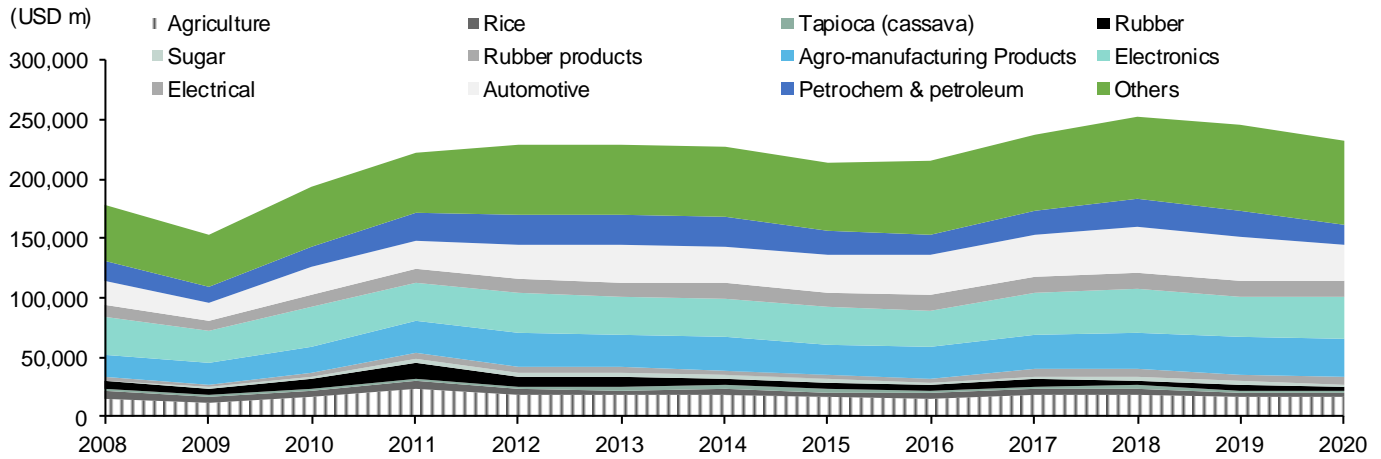


Sources: BBGI; FSSIA estimates

## Agricultural products are Thailand's key exports

Thailand has long been one of the leading countries in biofuel products, consuming crude palm oil (CPO)-based biodiesel or ME (B100) to be blended with the oil-based diesel produced from refineries to become biodiesel and ethanol as a key blending ingredient with the oil-based gasoline produced from refineries.

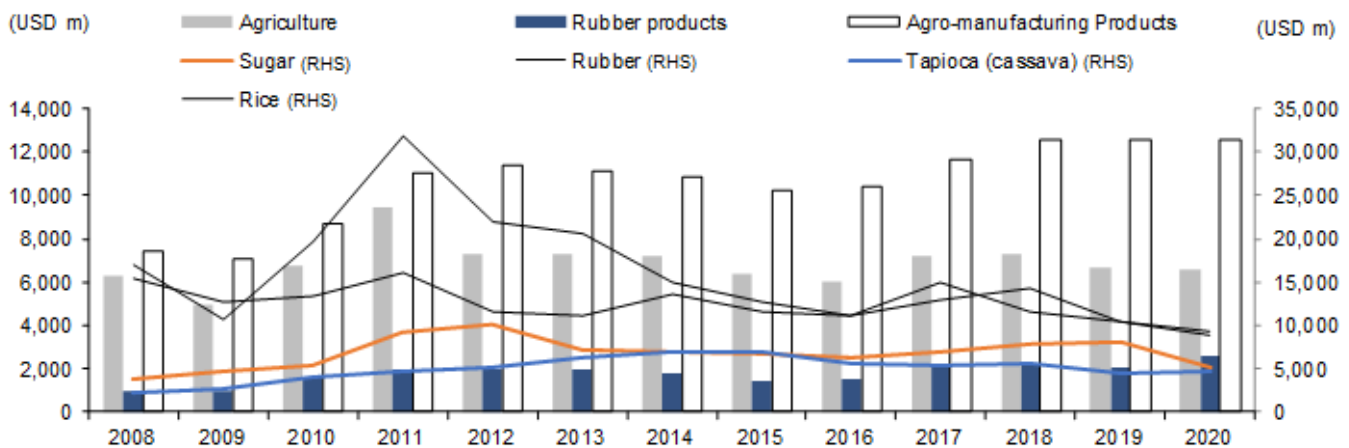
**Exhibit 40: Thailand's export revenue by industry**



Source: Bank of Thailand (BoT)

As one of the global leading exporters of agricultural products, including rubber (#1 as of 2021), cassava (#1), sugar (#2), and rice (#3), the revenue from the exports of agricultural products has been relatively stagnant since 2008 in the range of USD12b to USD18.2b, accounting for 6-8% of the total export value, based on data from the Bank of Thailand (BoT).

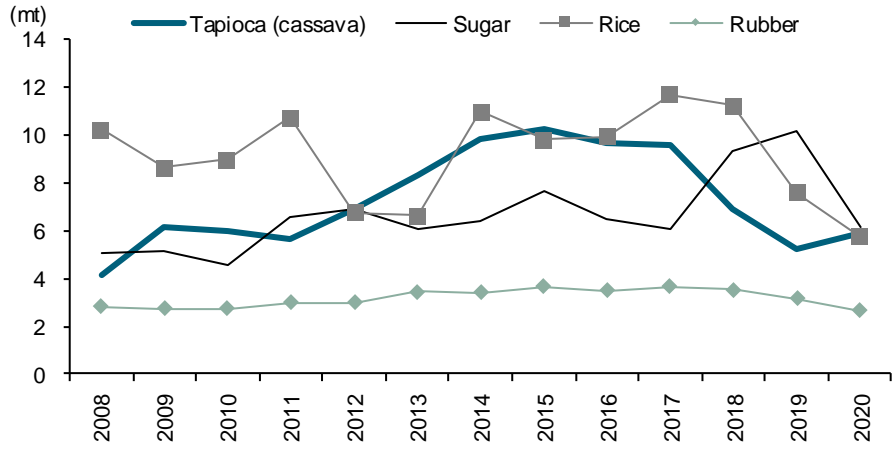
**Exhibit 41: Thailand's export revenue by key agricultural products**



Source: BoT

In terms of export volume, rice is Thailand's largest agricultural export, but in terms of export value, rubber is the largest agricultural export due to its higher selling price. Tapioca starch's (cassava product) export volume has been highly volatile due to the high dependency on China's export market to be used as a key feedstock for animal feed and alcohol, competing directly with other substitutional products such as corn and soybeans imported from the US and Brazil.

**Exhibit 42: Export volume of Thailand's key agricultural products**



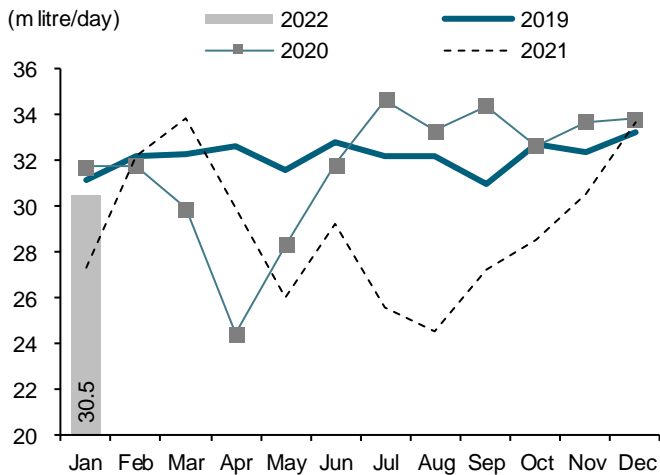
Source: BoT

## Industry: more sanguine post-Covid demand outlook from 2022

Thailand is one of the most successful countries in substituting fossil-based oil & gas with biofuel as a key fuel for transportation. The country has long mandated the use of gasohol (a blend of ethanol and gasoline) and biodiesel (a blend of ME or B100 and diesel) as a key fuel for transportation.

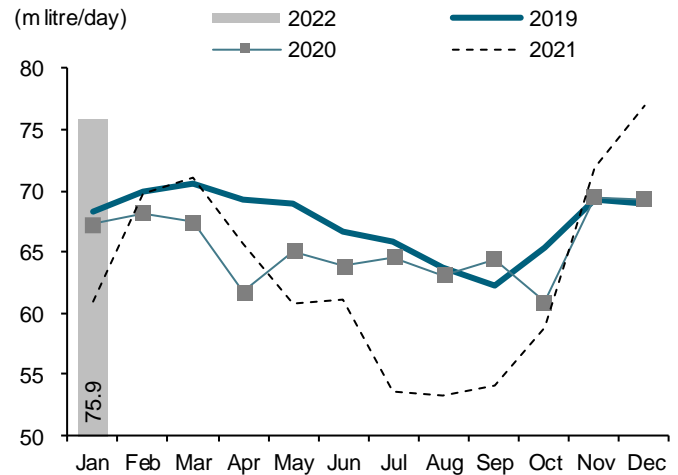
In the past four years, Thailand had seen rising demand for both gasoline and gasohol (GG) and diesel and biodiesel (DD) until the Covid-19 pandemic hit the country. The demand for GG and DD plunged in 1H20 before recovering, but at a lower rate than the pre-Covid level in 2019, given the sharp drop in tourist arrival numbers and the multiple lockdowns in 2020-21.

**Exhibit 43: Gasoline and gasohol consumption in Thailand**



Source: Department of Energy Business (DOEB)

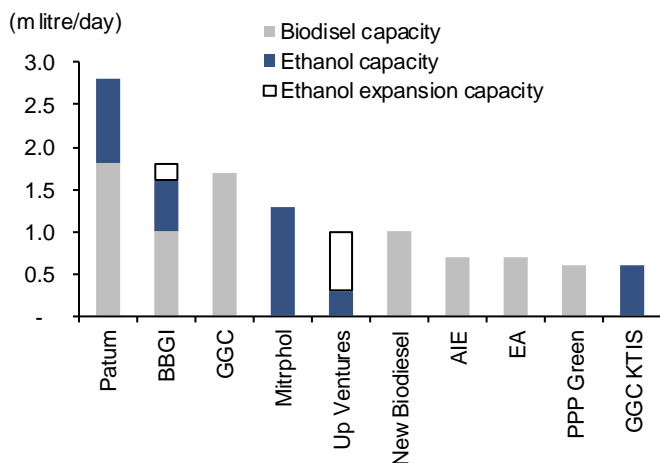
**Exhibit 44: Diesel and biodiesel consumption in Thailand**



Source: DOEB

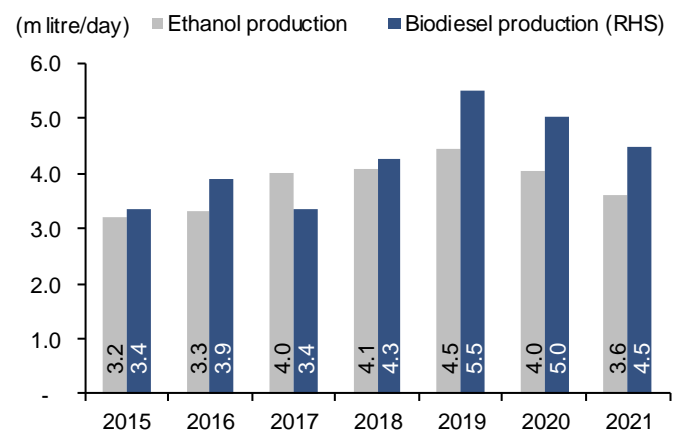
As of 2021, Thailand has about 10 leading producers of biofuels, with the largest producer Patum Oil (not listed) having a total capacity of 2.7mlpd, followed by BBGI (1.8mlpd including its planned 0.2mlpd ethanol capacity expansion), Global Green Chemicals (GGC TB, TP THB13.5), and Energy Absolute (EA TB, TP THB122).

**Exhibit 45: Biofuel players in Thailand**



Source: DEDE

**Exhibit 46: Biodiesel and ethanol production in Thailand**



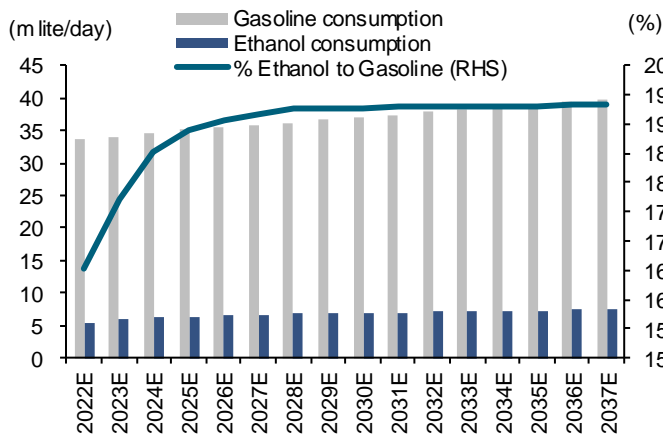
Source: BBGI



### Ethanol: a key energy source from agricultural products

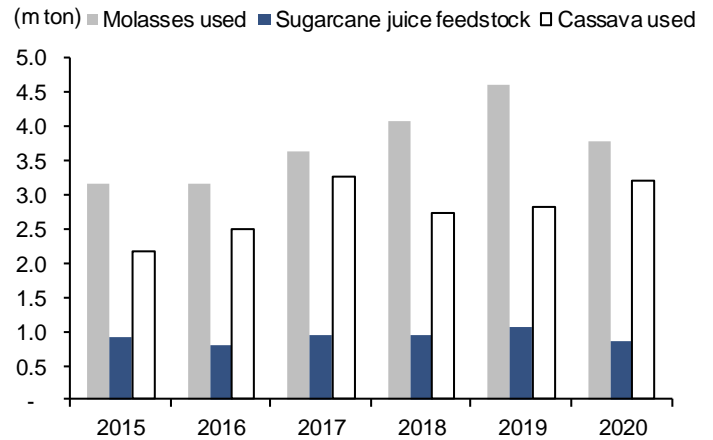
Ethanol, or ethyl alcohol, is produced either directly from sugary or carbohydrate-rich plants, or from cellulose or hemicellulose-rich plant waste that is left over from other agricultural processes.

**Exhibit 47: Gasoline consumption vs ethanol consumption**



Source: DEDE

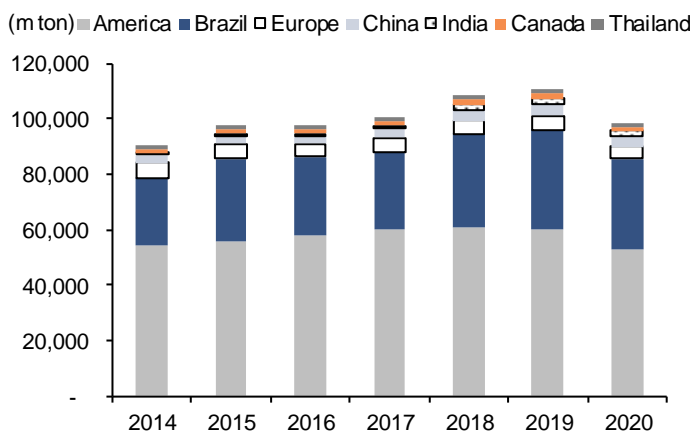
**Exhibit 48: Ethanol feedstock breakdown**



Source: DEDE

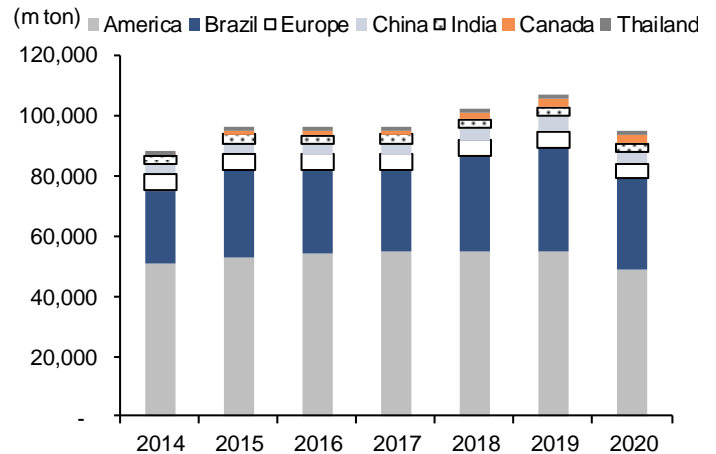
These raw materials, mostly sugarcane, rice, straw, corn and cassava, are fermented to produce 99.5% pure ethanol, and will be used as a liquid fuel (directly or mixed with gasoline) or an ingredient to produce a number of other products in the food and beverage and pharmaceutical industries, and particularly for the beer and alcoholic drinks industry in Thailand.

**Exhibit 49: Global ethanol production**



Source: ISO Ethanol 2019

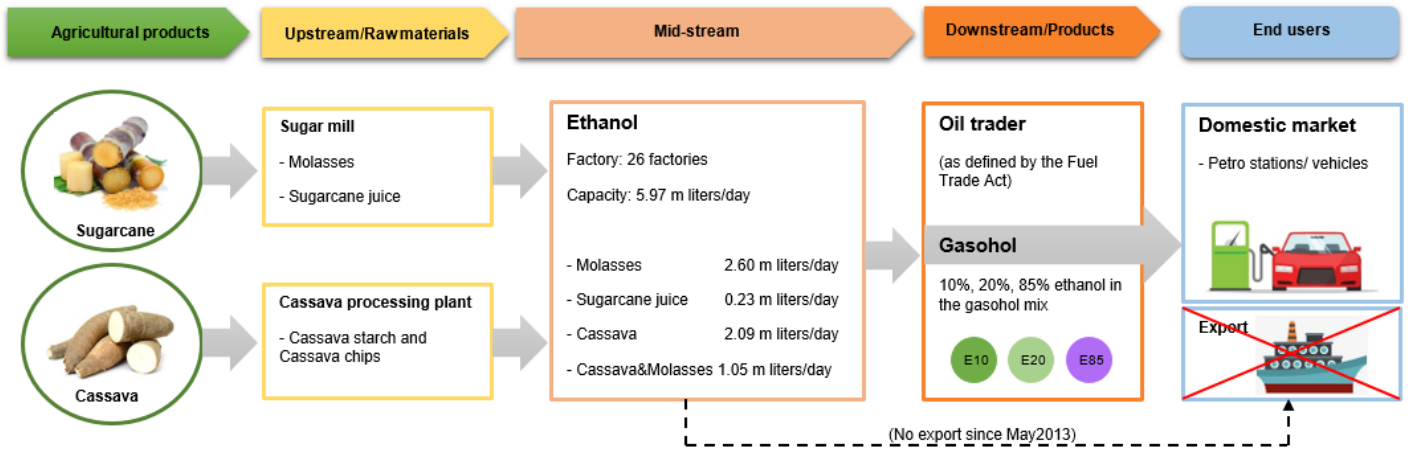
**Exhibit 50: Global ethanol consumption**



Source: ISO Ethanol 2019

Unlike other major producers of ethanol like the US and Brazil, countries that produce ethanol mainly from corn, ethanol in Thailand is produced from two key agricultural products – sugarcane and cassava – both being among the top 10 agricultural products for export.

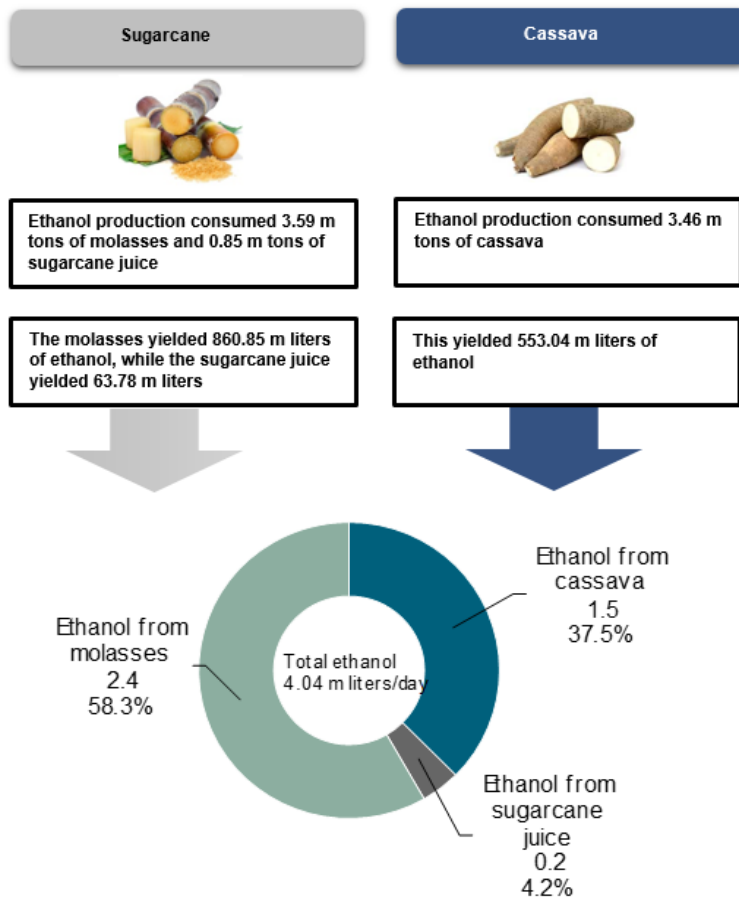
**Exhibit 51: Ethanol supply chain**



Sources: EPP0; DEDE

Thanks to its competitive cost as a raw material (as a by-product) and conversion cost (due to the shorter process and energy consumed to convert sugar to ethanol vs cassava from starch to sugar and then ethanol), molasses accounts for over 50% of Thailand’s total ethanol production volume, while another raw material for ethanol production comes from cassava, which normally has a higher price and conversion cost structure than the ethanol produced from molasses or even cane juice.

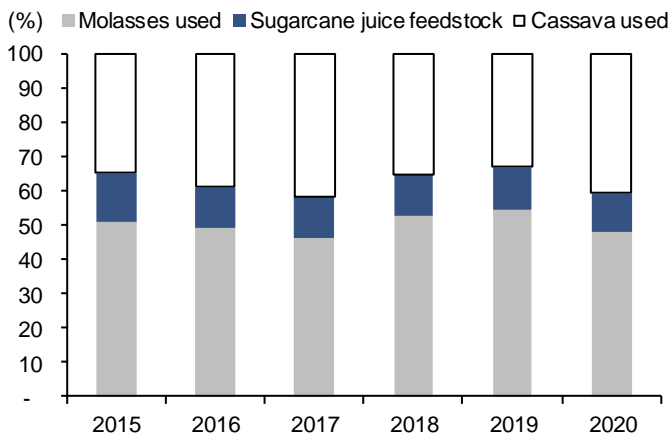
**Exhibit 52: Ethanol production value chain**



Source: FSSIA's compilation

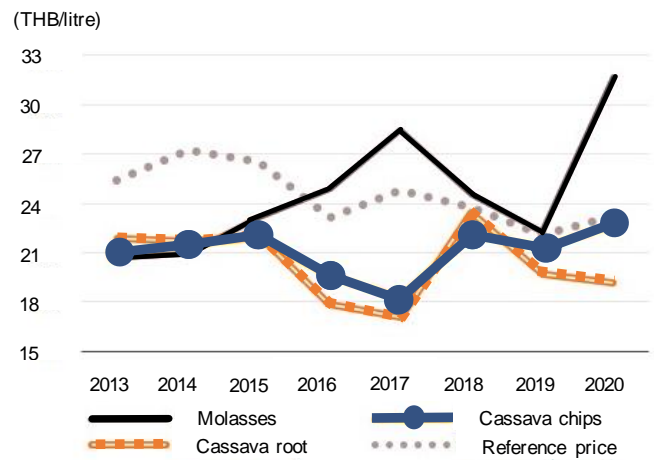
Since 2011, the ethanol produced from sugarcane and cassava has fluctuated, mainly due to the price volatilities of sugarcane and cassava caused by demand and supply fluctuations each year. In general, the cost to produce ethanol from cassava will be THB2-4/litre higher than the production cost to produce ethanol from sugarcane.

**Exhibit 53: Feedstock used for ethanol in Thailand**



Source: DEDE

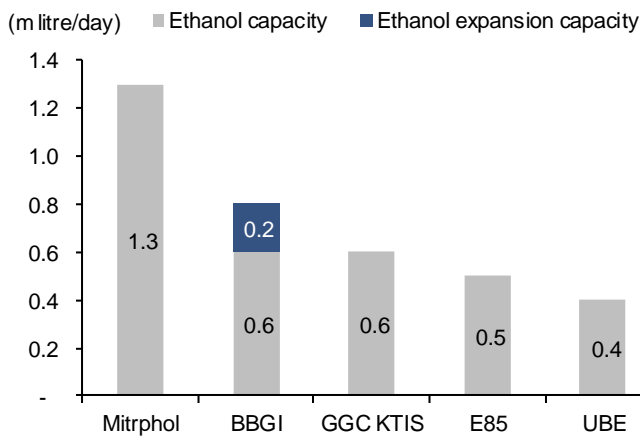
**Exhibit 54: Cost of ethanol production vs reference price**



Sources: BOT; EPPO

According to the Department of Alternative Energy Development and Efficiency (DEDE), the raw material cost of ethanol produced from molasses will be in the range of 60-70% of the total production cost, with the conversion cost or operating cost accounting for 25-30%, and depreciation and other fixed costs combining to 5-10%.

**Exhibit 55: Top 5 ethanol producers in Thailand by capacity**



Source: DEDE

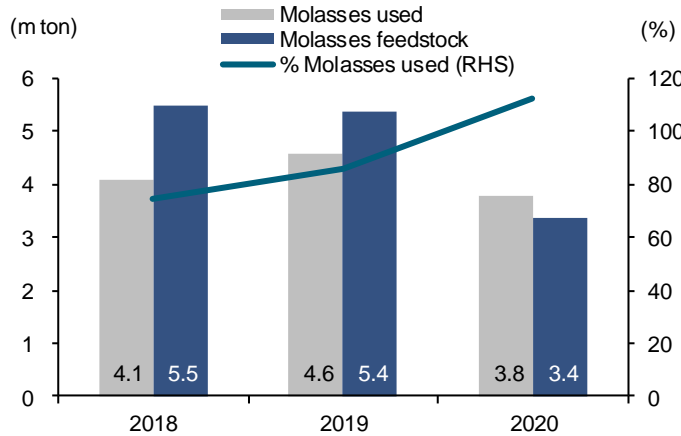
**Exhibit 56: Top 5 ethanol producers in Thailand**

	Molasses	Cassava
Mitrphol	/	
BBGI	/	/
GGC KTIS	/	
E85		/
UBE		/

Source: DEDE

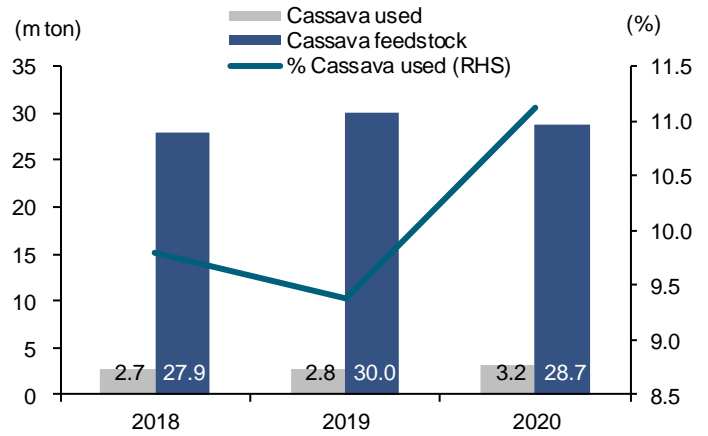
For cassava-based ethanol, the production cost will comprise 55-60% for the raw material, 35-40% for the conversion cost, and the remaining 5% will be fixed costs. The higher conversion cost for cassava-based ethanol than sugarcane-based ethanol is due to the additional process of converting the cassava starch into sugar before further being processed into ethanol.

**Exhibit 57: Molasses consumption as feedstock for ethanol production in Thailand**



Source: DEDE

**Exhibit 58: Cassava consumption as feedstock for ethanol production in Thailand**

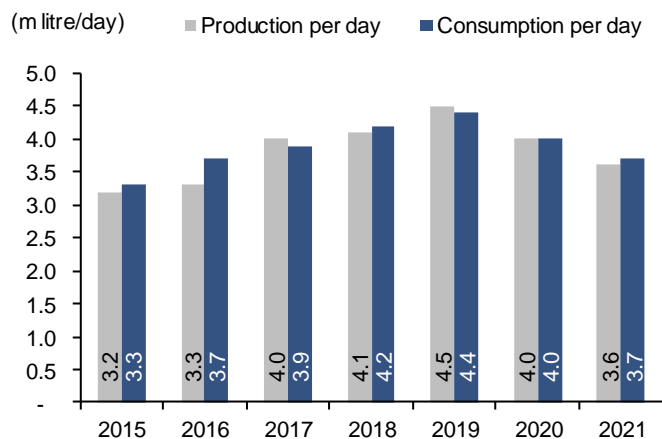


Source: DEDE

Most of the ethanol produced from sugarcane will use the by-product molasses, rather than the sugar juice per se, which will be processed to be sugar for export. Hence, the majority of the ethanol producers using sugarcane-based raw materials are sugar mills, the producers of sugar primarily for export.

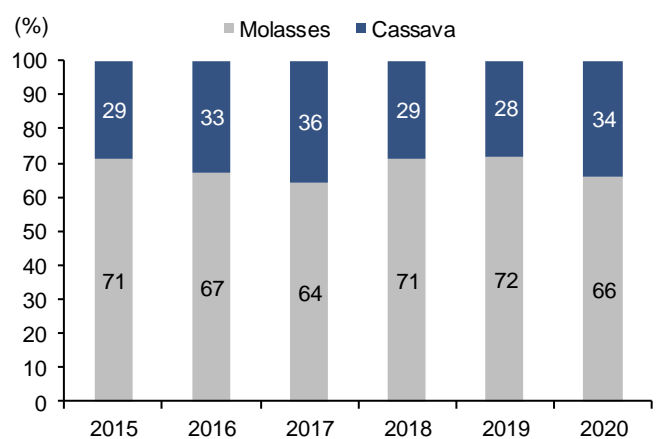
**Ethanol demand and supply in Thailand.** The ethanol market in Thailand is a closed market, with exports being halted since May-13 after the government commenced the biofuel for gasohol (GSH, a blend of ethanol and gasoline) mandate and effectively ended the sales of pure gasoline with 91 octanes. However, the government sometimes permits ethanol exports when the supply is significantly higher than the demand, which occurred in Mar-14 for 4m litres exported and again in Dec-20 for a small amount of 54,000 litres exported.

**Exhibit 59: Ethanol production and consumption in Thailand**



Source: DEDE

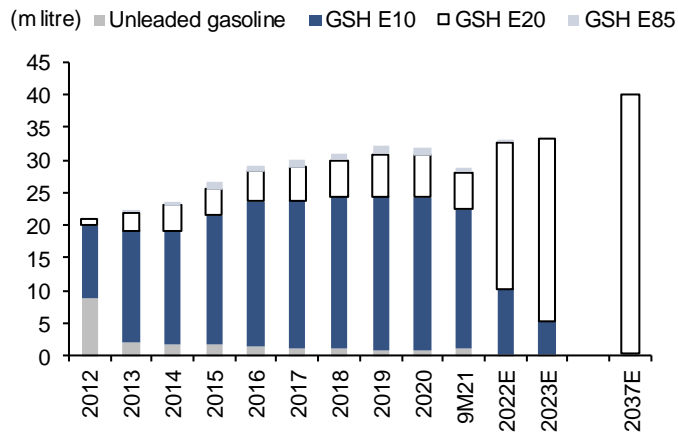
**Exhibit 60: Ethanol production breakdown by raw material**



Source: DEDE

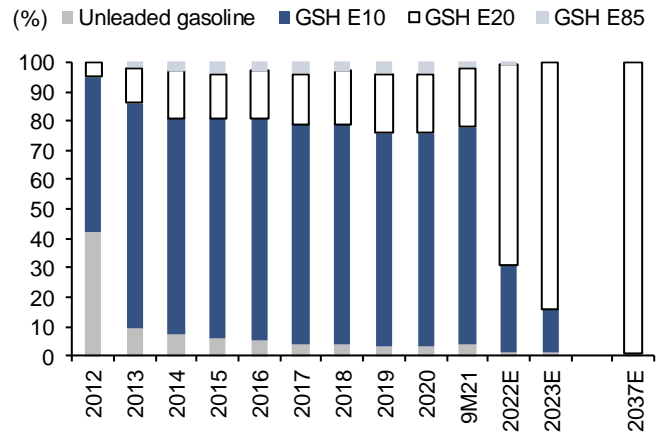
As the government attempted to promote the price of both sugarcane and cassava by boosting the demand for ethanol via the requirement for ethanol to be blended with the gasoline produced from the six refinery plants in Thailand, the demand for ethanol rose from 3.3mlpd in 2015 to its peak at 4.4mlpd in 2019 before the Covid-19 pandemic hit the country's demand for gasohol and ethanol.

**Exhibit 61: Ethanol consumption in Thailand**



Source: DEDE

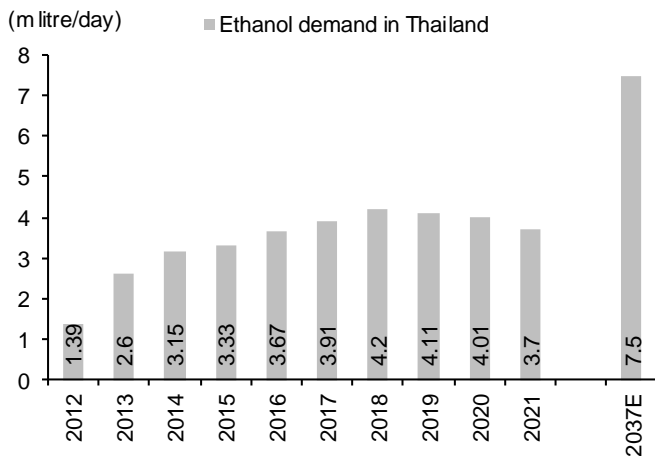
**Exhibit 62: Ethanol consumption in Thailand (%)**



Source: DEDE

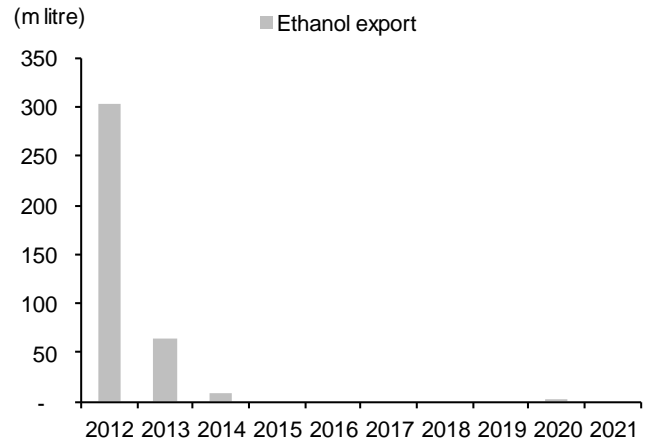
Since 2015, the ethanol market in Thailand has been an oversupplied market with an installed capacity of over 5mlpd vs only 3.7mlpd demand as of 2021. In addition, the selling price of ethanol for all producers is linked to the government's monthly benchmark price, which is calculated from a formula using a combination of ethanol cost structures produced from both sugarcane and cassava.

**Exhibit 63: Ethanol demand in Thailand**



Source: DEDE

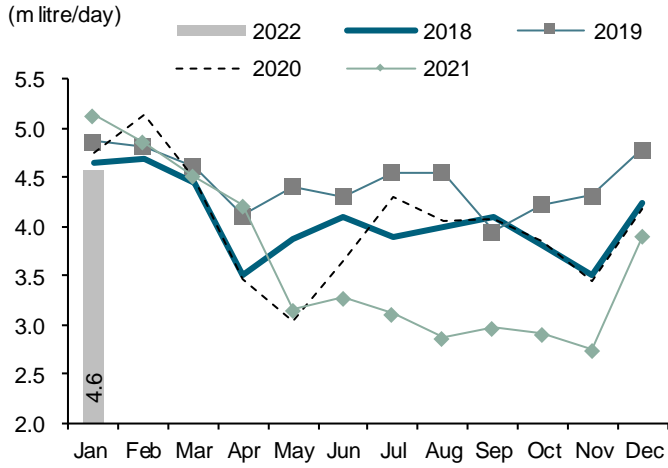
**Exhibit 64: Ethanol export volume**



Source: DEDE

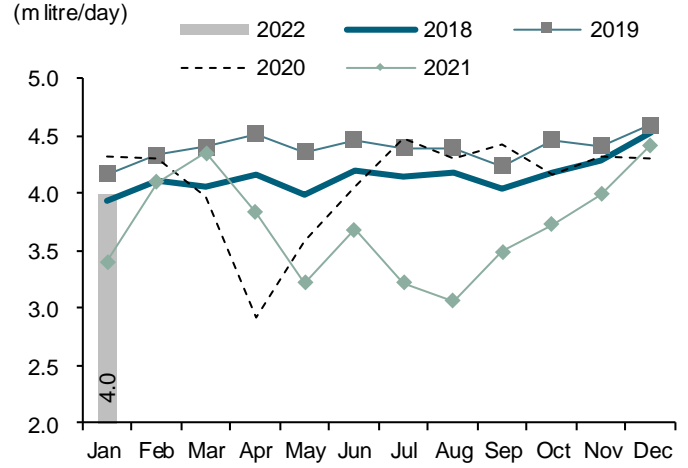
The supply and demand for ethanol is determined under the Alternative Energy Development Plan (AEDP), which sets the demand target for gasohol, biodiesel, and electric vehicles (EVs) to achieve the country’s zero emissions target. Currently, there are four types of gasoline fuel types in Thailand available at oil stations, including unleaded gasoline (zero ethanol blend), and three types of gasohol – E10 (10% ethanol blend), E20 (20%), and E85 (85%).

**Exhibit 65: Domestic ethanol production**



Source: DOEB

**Exhibit 66: Domestic ethanol consumption**



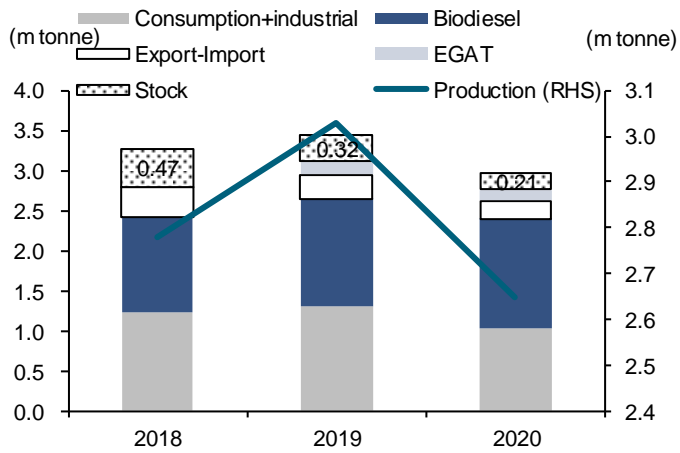
Source: DOEB



### Methyl ester: a key energy source from agricultural products

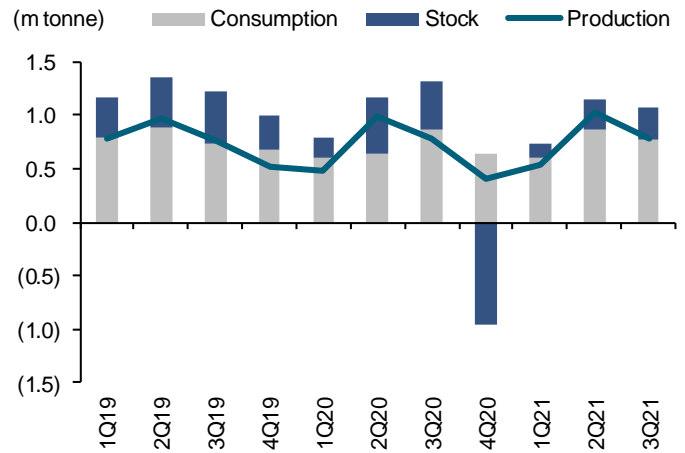
Biodiesel (ME) is a clean alternative fuel which can be produced from many renewable resources. Palm oil, like other vegetable oils, can be used as a feedstock for biodiesel production. It is processed through transesterification to produce palm oil methyl ester.

**Exhibit 67: Thailand biodiesel situation breakdown**



Source: GGC

**Exhibit 68: Thailand biodiesel situation**



Source: GGC

**ME applications range from fuel (a blend with diesel) to hygiene, cleansing, cosmetics and healthcare products.** ME, which is commonly known as pure biodiesel fuel or “B100”, is a clean burning renewable fuel made from natural plant oils such as palm oil, rape seed oil, and soybean oil.

ME is intended to be used as a replacement for petroleum diesel, or it can be blended with petroleum diesel fuel in any proportion – so-called “biodiesel” – and is generally regarded as being more environmentally friendly, according to [Global Green Chemical \(GGC\)’s website](http://www.ggcplc.com).

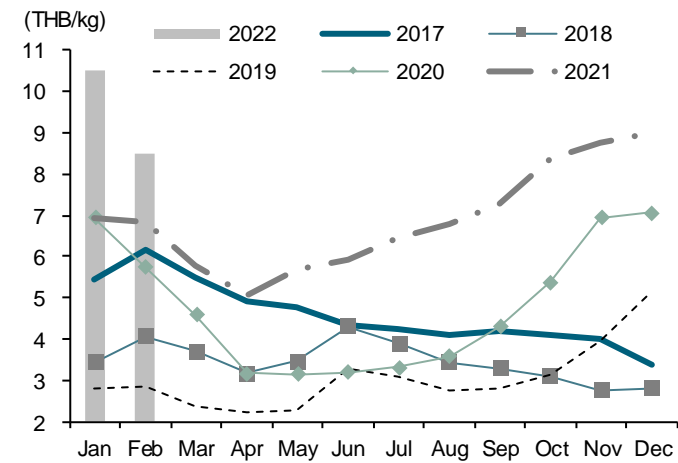
**Exhibit 69: Key applications of methyl ester**



Source: [GGCplc.com](http://GGCplc.com)

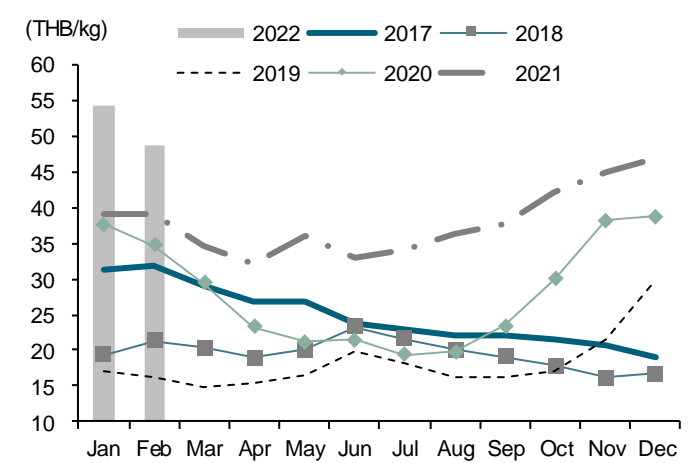
As one of the world's top producers of palm, Thailand has long exploited palm to produce CPO which is then used either as an edible palm oil or as a blend with diesel to produce biodiesel.

**Exhibit 70: Palm price in Thailand**



Source: DOEB

**Exhibit 71: CPO price in Thailand**

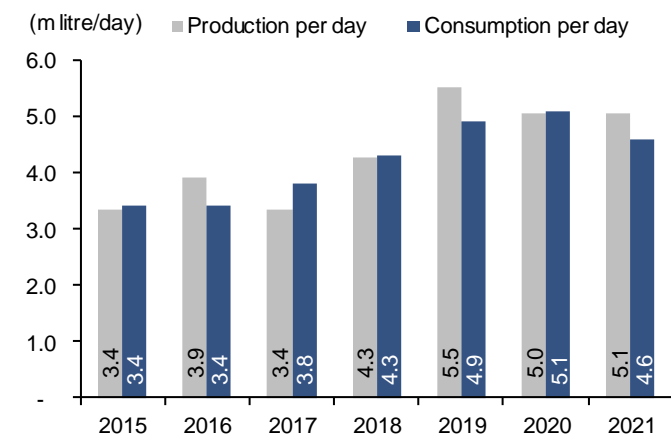


Source: DOEB

While the supply is controlled via the export quota, the prices of CPO and palm have been highly volatile due to the changes in the government policy for biodiesel (B3 to B10) and the production yields.

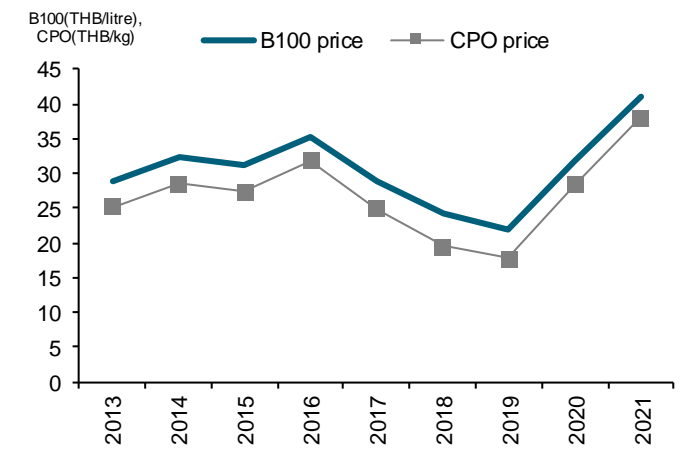
In 2021, the demand for ME dropped y-y due to the government's policy to change from B10 to B7 as a standard biodiesel due to the high price of ME vs the crude oil price.

**Exhibit 72: Biodiesel production and consumption in Thailand**



Source: DEDE

**Exhibit 73: B100 price vs CPO price**

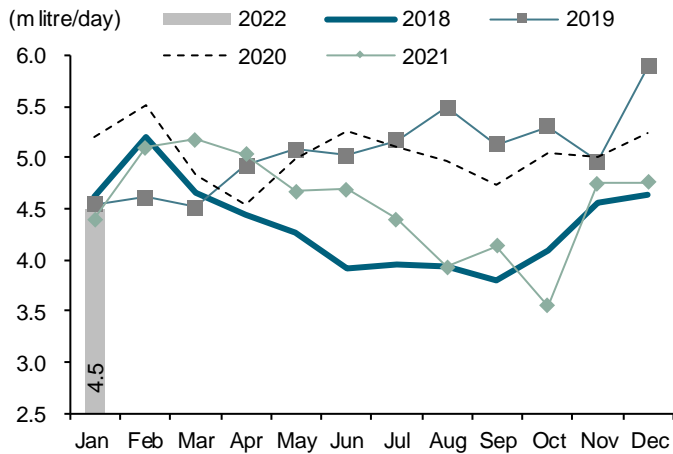


Source: DEDE

As a result of the Covid-19 pandemic that led to several lockdowns and a plunge in tourist numbers, the demand for biodiesel in Thailand has highly fluctuated since 2020, depending on the lockdown period and level of economic activities.

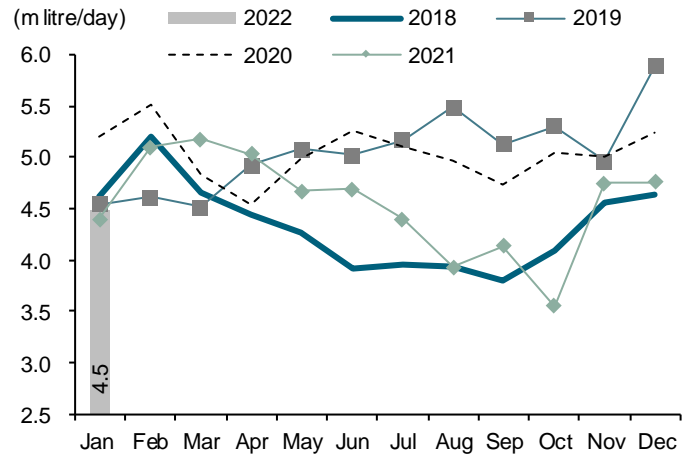
We believe that by 2H22, the demand for both ethanol and ME should rebound meaningfully and return to pre-Covid levels by end-2022, and is likely to surpass the pre-Covid 2019 levels in 2023 onward as we expect the number of tourist arrivals to gradually improve, while domestic economic activities should return to full swing in 2023.

**Exhibit 74: Domestic biodiesel production**



Source: DOEB

**Exhibit 75: Domestic biodiesel consumption**



Source: DOEB

## Plant sites and capacity

Currently, BBGI has a total capacity of 1.6mlpd of biofuel, comprising 0.6mlpd of ethanol and 1mlpd of ME. Its ethanol plants, mostly using molasses as feedstock, are located in three locations near sugarcane fields, a key feedstock for sugar mills to produce sugar and its by-product molasses.

For ME, BBGI has two production plants located in Phra Nakhon Si Ayutthaya, a suburb province near Bangkok and close to BCP's refinery plant in Bangkok.

**Exhibit 76: KGI – Nam Phong ethanol plant**



Source: BBGI

**Exhibit 77: KGI – Bo Ploy ethanol plant**



Source: BBGI

**Exhibit 78: BBE ethanol plant**



Source: BBGI

**Exhibit 79: Glycerin plant**



Source: BBGI

**Exhibit 80: BBF1 biodiesel plant**



Source: BBGI

**Exhibit 81: BBF2 biodiesel plant**



Source: BBGI

## EVs are a long-term threat to the biofuel industry in Thailand

Under the most recent AEDP, the Thai government aims to increase the consumption of E20 and E85 and eventually achieve almost 100% E85 as the only major type of gasohol consumed in Thailand by 2037. This policy is intended to boost the demand for ethanol produced from cassava and sugarcane. despite the government's aggressive plan to increase the number of EVs by 2030.

### Exhibit 82: ZEV targets for Thailand's EV industry

	2022E	2025E	2030E	2035E	Unit
<b>Usage</b>					
No. of EVs	30,000	225,000	440,000	1,154,000	EV
% of total vehicles in use	4	30	50	100	%
<b>Production</b>					
No. of EVs	30,000	225,000	725,000	1,350,000	EV
Accumulated	50,000	400,000	2,935,000	8,265,000	EV
% of total vehicles produced	2	10	30	50	%

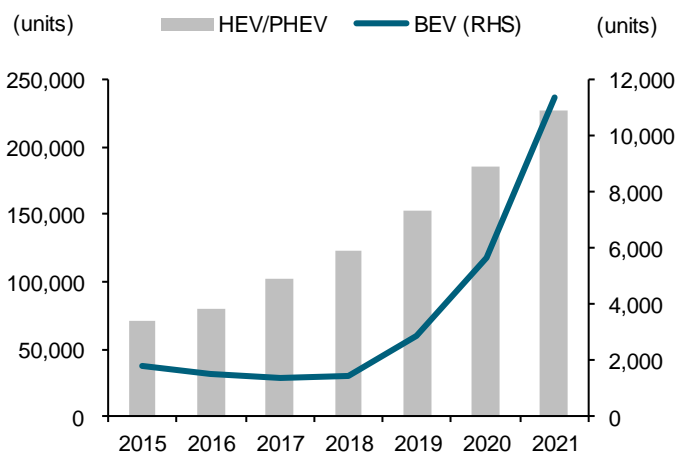
Source: National Electric Vehicle Policy Committee

However, under the government's current zero-emission vehicle (ZEV) plan, Thailand's demand growth for EVs is projected to increase to 402k in 2025, rising to 2m in 2030, and 6.4m by 2035 (vs 10m total passenger cars as of 3Q21).

The number of new commercial vehicles for the e-truck and e-bus category is expected to grow from 31k in 2025 to 430k in 2035. The number of charging stations is forecast to rise to 2,460 in 2025, 13,450 in 2030, and 40,500 in 2035, up from a mere 693 stations as of Sep-21.

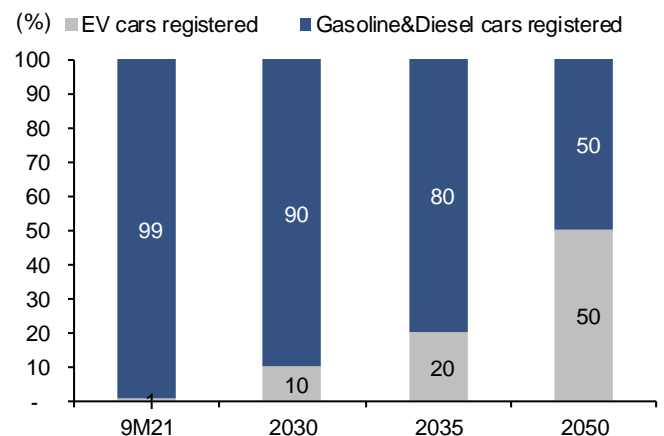
Battery demand for EVs is expected to grow to 20GWh in 2025, 38GWh in 2030, and 100GWh in 2035, as the Thai government aims to promote the EV industry in the Eastern Economic Corridor which includes the battery manufacturing plants as a key source of materials for EVs.

### Exhibit 83: Accumulated number of xEVs registered



Source: EVAT

### Exhibit 84: Number of registered vehicles, breakdown by fuel type (EV vs ICE gasoline and diesel)

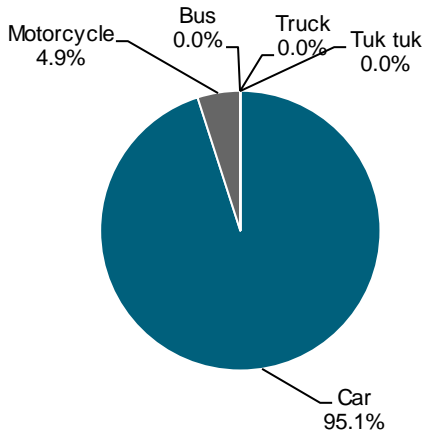


Source: EVAT

While as of 2021, the number of EVs remains low, accounting for only 1% of total registered vehicles in Thailand, the Thai government is targeting a higher proportion of EVs to total registered vehicles to 20% by 2035 and 50% by 2050.

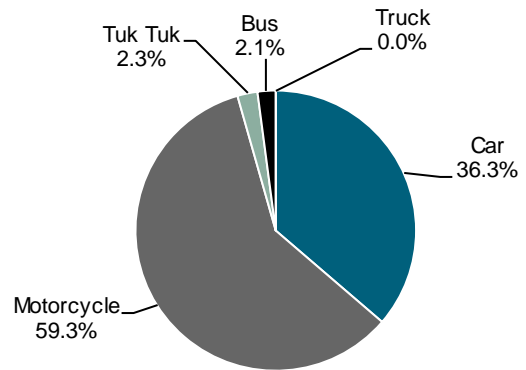
According to the Electric Vehicle Association of Thailand (EVAT), Thailand is now ahead of its ASEAN peers in transitioning its automotive industry from an ICE-based industry to an EV industry. The number of battery EVs (BEVs) remains low, with registered BEVs from 2018 to Dec-21 totalling 11,382 – comprising 6,749 e-bikes, 4,132 EV cars, 238 e-buses, and 263 e-tricycles (Tuk-Tuks) with no BEV e-trucks. Hybrid EVs (HEVs) and plug-in hybrid EVs (PHEVs) amounted to 227,727, comprising 219,121 cars, 11,382 motorbikes, one bus and one truck.

**Exhibit 85: Breakdown of accumulated HEVs/PHEVs registered as of 2021**



Source: Department of Land Transportation (DLT)

**Exhibit 86: Breakdown of accumulated BEVs registered as of 2021**

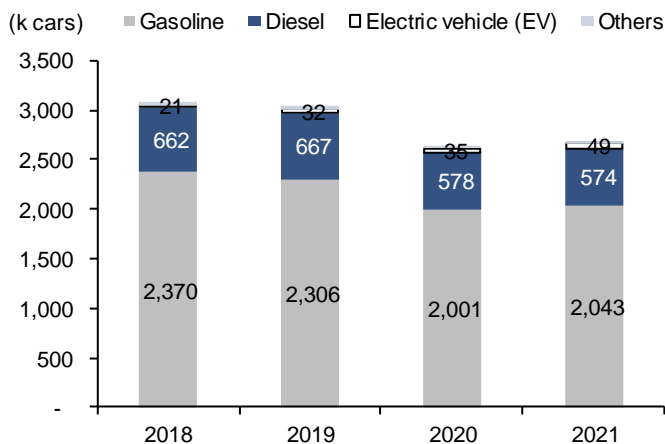


Source: DLT

We believe the government’s clear target to reduce carbon emissions by increasing the number of EVs in 2022-50 could pose a long-term threat to the demand for ethanol and ME, given that the higher amount of EVs used would directly reduce the amount of internal combustion engine (ICE) or oil-based vehicles in use.

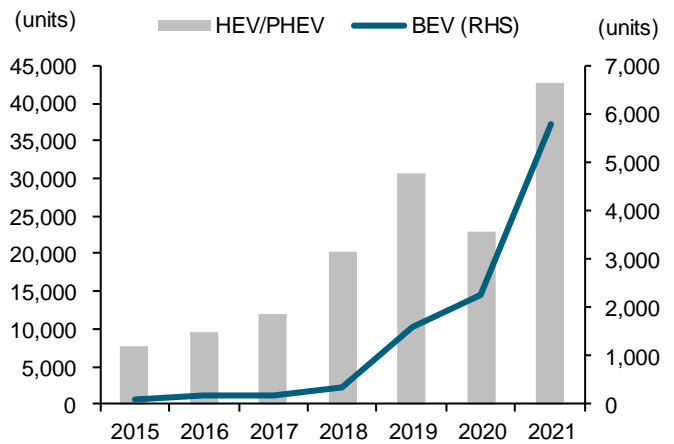
While the number of new EV registrations has grown at a higher rate at 85% y-y in 2021 vs 3.5% y-y in 2020, most consumers still await the government’s plan to subsidise the price of EVs and offer multiple tax incentives for producers in the EV value chain (batteries, EVs, charging stations). We believe that in 2022, assuming the government’s incentive plan for EVs is announced within 1Q22, the number of new EV registrations should jump markedly to over 10,000 – up over 4x from a mere 2,267 and 2x from 5,781 new BEVs in 2020 and 2021, respectively.

**Exhibit 87: New registered cars in Thailand by fuel type**



Source: DLT

**Exhibit 88: New number of xEVs registered**

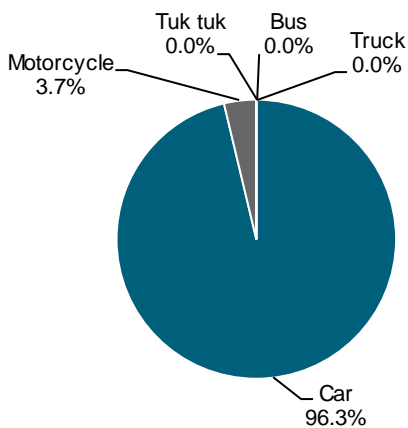


Source: EVAT



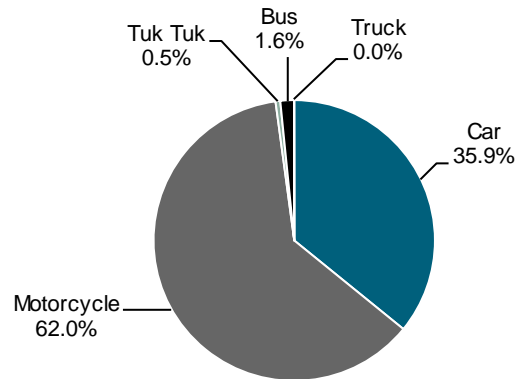
In 2020-9M21, we have already seen the number of new EVs increase at the expense of the number of new ICE vehicles.

**Exhibit 89: Breakdown of new number of HEVs/PHEVs registered as of 2021**



Source: EVAT

**Exhibit 90: Breakdown of new number of BEVs registered as of 2021**



Source: EVAT

**Government’s incentive package for EVs could jeopardize the demand for ethanol and ME.** On 15 Feb-22, the cabinet finally approved two plans related to the energy sector. First, the excise tax for the retail diesel price will be cut by THB3/litre for three months, bringing the excise tax down from THB5.99/litre currently to THB2.99/litre. The second is the EV package to promote three types of battery EVs (BEVs), namely passenger cars, motorcycles, and pick-up trucks. We believe these will lead to improving marketing margins for oil station firms and higher demand for EV producers, which should lead to a demand boom for EVs in Thailand, particularly for imported passenger EVs from China and Europe thanks to the potential price cuts of up to 20-30% from excise and import tax cuts, based on our estimates.

The upcoming EV promotion plan supplements previous policies issued by Thailand’s Board of Investment (BOI), offering incentives covering all major aspects of the EV supply chain, with a focus on BEVs, the local production of critical parts, and the inclusion of commercial vehicles of all sizes, as well as ships.

At present, the price of imported EVs, despite benefitting from zero import tax under the bilateral free trade agreement between Thailand and China, remains high thanks to the excise tax, value-added tax (VAT), and other taxes, that together account for over 25% of the final retail selling price.

**Exhibit 91: EV promotion plan for passenger BEVs and motorbike BEVs with retail selling prices under THB2m**

Policy	Beneficiary	Amount	Effective promotion duration
1	Consumers/EV buyers	THB70,000 per EV under 30kWh	1-3 years
		THB150,000 per EV over 30kWh	
2	Producers/EV buyers	From 8% to 2%	2-3 years
3	Producers/EV buyers	From 20-80% to 0-40%	2-3 years
<b>Conditions for eligibility</b>			
1	Must be domestic manufacturers		
2	Must produce EVs at 1.0x to 1.5x the number of imported and subsidised EVs during the promotion’s duration		
3	Must produce and use a domestically produced battery (from cell level) for EVs produced domestically		
4	Must produce the same models as the imported models		

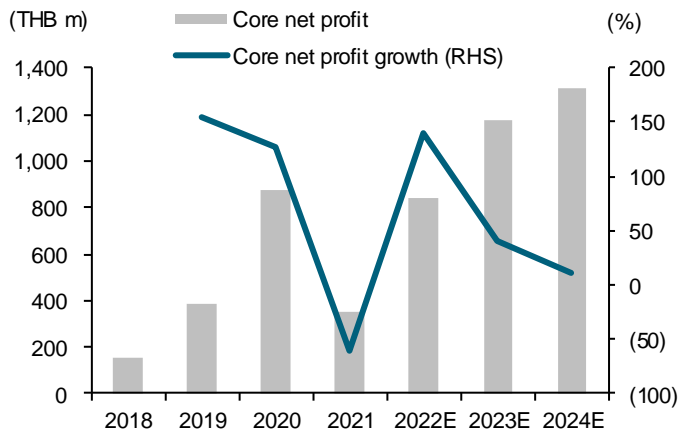
Source: Bangkok Post



## Strong core net profit growth on solid strategic growth roadmap

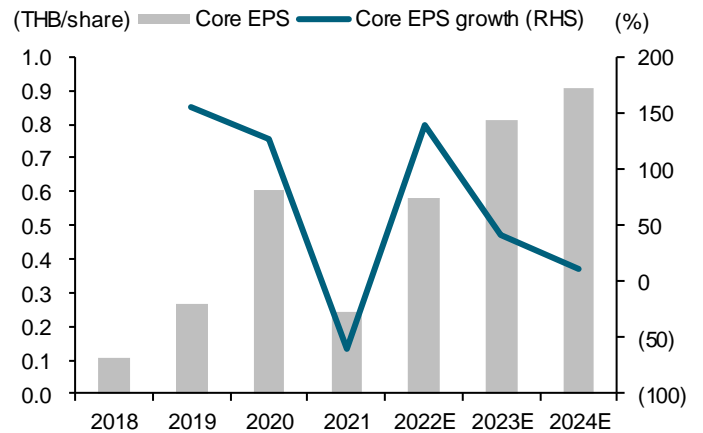
We project that BBGI's core net profit and core EPS growth will accelerate in 2023-24, driven by the net profit growth from its HVP ventures.

**Exhibit 92: Core net profit and core net profit growth**



Sources: BBGI; FSSIA estimates

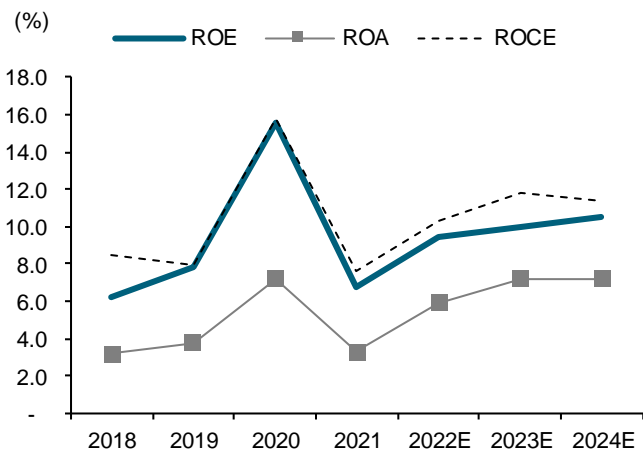
**Exhibit 93: Core EPS and core EPS growth**



Sources: BBGI; FSSIA estimates

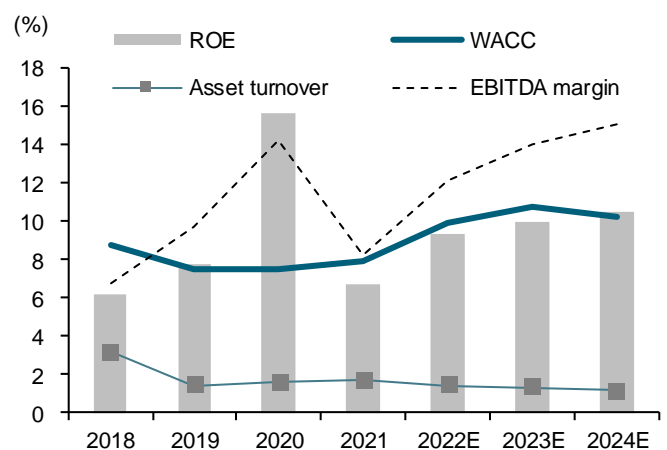
We expect BBGI's ROE, ROA, and ROCE to stay relatively stable in 2022-24 as the higher capital base from the IPO should be gradually offset by higher EBITDA and net profit margins. We project the asset turnover to dip gradually over time, given the absence of revenue contributions from WIN, which will be treated using the equity method and would somewhat deviate from the asset turnover numbers.

**Exhibit 94: ROE, ROA, and ROCE**



Sources: BBGI; FSSIA estimates

**Exhibit 95: ROE, WACC, asset turnover, EBITDA margin**

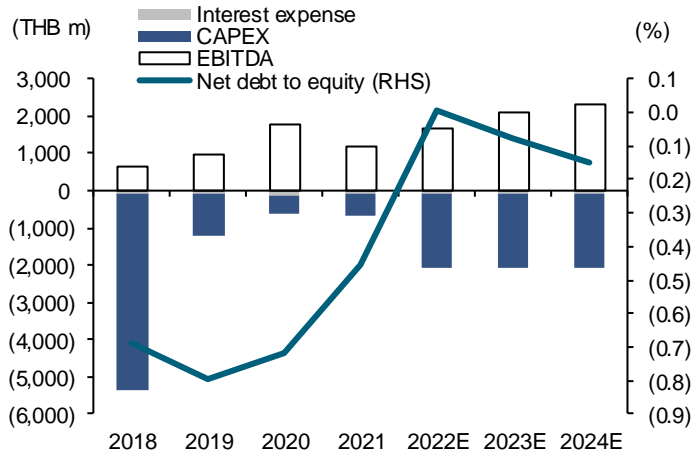


Sources: BBGI; FSSIA estimates

**Balance sheet vs shareholder returns.** We project that BBGI's balance sheet should be strong over time in 2022-24, with the projected net debt to equity ratio returning to a net cash position after jumping in 2022 as a result of the large investment for the new ventures and capacity growth.

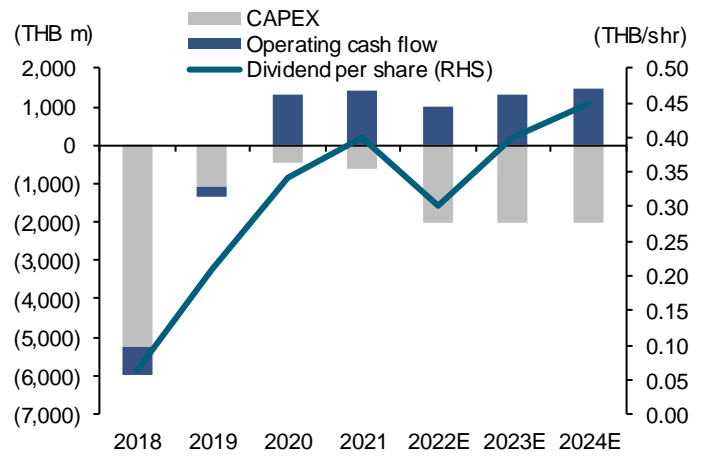
Free cash flows should improve over time despite the rising capex for the business expansion thanks to the higher operating cash flows driven by the higher net profit and rising margins.

**Exhibit 96: Interest expense, capex, EBITDA, and net debt to equity**



Sources: BBGI; FSSIA estimates

**Exhibit 97: Capex, operating cash flow, and dividend per share**



Sources: BBGI; FSSIA estimates

## Valuation

We derive our value of THB15 for BBGI using the SOTP valuation methodology, as we think the values of each asset in different industries should have different risk-reward profiles. We employ a one-year forward P/E for all businesses given their low earnings visibility due to the risks from regulations, demand, supply, price, and feedstock price and availability, given the unpredictable nature of sugarcane, cassava, and palm production.

**Biodiesel (THB6.7):** We apply 20-22x 2022E P/E, a discount to the average 30.8x P/E for local peers, as we think the small net profit growth for BBGI and the lack of diversification into other manufacturing businesses should justify the valuation discounts.

**Ethanol (THB7.2):** We employ 21x 2022E P/E for the ethanol business as we think the current industry environment for the demand and supply is similar to biodiesel with high regulation risks and a long-term demand risk from the EV threat.

**HVP trading (THB0.5):** We also use a one-year forward 2022E P/E of 20x to derive the value of the HVP trading business. While the two units of HVP – WIN and TU – are trading, not manufacturing, we think the high gross margin of over 40-60% for HVP products should justify the high premium P/E.

**Investment in UBE (THB0.8):** After divesting a portion of Ubon Ethanol (UBE TB, not rated)'s shares, BBGI still owns a 12.4% stake in UBE, which we value at THB1.14b based on the THB2.28 share price of UBE.

### Exhibit 98: SOTP-based target price

SOTP valuation estimate	% holding	THB m	P/E (x)	THB/share	Valuation methodology
Biodiesel (BBF1)	70.0	2,281	20	1.6	FY22E 20x P/E, an industry peers' average
Biodiesel (BBF2)	70.0	4,385	20	3.0	FY22E 20x P/E, an industry peers' average
Refined glycerin	70.0	2,963	22	2.1	FY22E 22x P/E, an industry peers' average
<b>Total biodiesel value</b>		<b>9,629</b>		<b>6.7</b>	
Ethanol (KGI - Bo Ploy)	100.0	7,253	21	5.0	FY22E 21x P/E, an industry peers' average
Ethanol (KGI - Nam Phong)	100.0	2,288	21	1.6	FY22E 21x P/E, an industry peers' average
Ethanol (BBE)	85.0	810	21	0.6	FY22E 21x P/E, an industry peers' average
<b>Total ethanol value</b>		<b>10,351</b>		<b>7.2</b>	
WIN (trading)	51.0	153	20	0.1	FY22E 20x P/E, an industry peers' average
Food supplement (trading)	100.0	595	20	0.4	FY22E 20x P/E, an industry peers' average
<b>Total HVP value</b>		<b>748</b>		<b>0.5</b>	
<b>12.4% investment in UBE</b>	<b>12.4</b>	<b>1,136</b>		<b>0.8</b>	<b>At THB2.28/share price and 3.95b shares outstanding</b>
Net debt/(net cash)		(38)		(0.0)	FY22E net cash post IPO
Minorities		(543)		(0.1)	FY22E minority interest
<b>Residual ordinary equity</b>		<b>20,147</b>		<b>15.0</b>	<b>1.446b shares outstanding post IPO</b>

Sources: BBGI; FSSIA estimates

### Exhibit 99: Biofuel local peers' valuation comparison

Company	BBG	Rec	Share	Target	Up	Market	3Y EPS	PE		ROE		PBV		EV/EBITDA	
			Price	price	side	Cap	CAGR	22E	23E	22E	23E	22E	23E	22E	23E
			(LCY)	(LCY)	(%)	(USD m)	(%)	(x)	(x)	(%)	(%)	(x)	(x)	(x)	(x)
<b>Thailand</b>															
Global Green Chemicals	GGC TB	BUY	13.30	13.50	2	411	6.6	23.7	17.0	5.7	7.6	1.3	1.3	10.3	10.2
PTG Energy	PTG TB	BUY	13.60	18.30	35	681	32.5	12.7	10.0	20.3	22.4	2.4	2.1	4.5	3.9
Energy Absolute	EA TB	BUY	89.25	122.00	37	9,922	35.7	31.3	24.6	28.7	28.8	8.0	6.3	23.9	18.6
BBGI	BBGI TB	BUY	10.50	15.00	43	458	55.5	18.2	12.9	9.5	10.1	1.4	1.3	9.6	8.1
Ubon Bio Ethanol	UBE TB	NR	2.18	NA	NA	258	376.7	21.0	16.9	7.3	9.0	1.4	1.3	11.5	10.2
<b>Thailand avg</b>						<b>11,729</b>	<b>35.4</b>	<b>29.2</b>	<b>22.8</b>	<b>26.2</b>	<b>26.5</b>	<b>7.0</b>	<b>5.6</b>	<b>21.5</b>	<b>16.8</b>
<b>Biofuel under coverage</b>						<b>11,471</b>	<b>35.4</b>	<b>29.4</b>	<b>23.0</b>	<b>26.6</b>	<b>26.9</b>	<b>7.2</b>	<b>5.7</b>	<b>21.7</b>	<b>17.0</b>

Prices as of 17 March 2022

Sources: Bloomberg; FSSIA estimates

## Background

Formed via a merger between BCP’s biofuel arm with KSL’s biofuel unit, BBGI is one of the largest producers of biofuels in Thailand, with a 1mlpd capacity of ME and a 0.6mlpd capacity of ethanol, which could increase by 0.2mlpd to 0.8mlpd by end-2022. BBGI has a well-diversified product portfolio and production locations and is one of the only biofuel producers of both ethanol and ME.

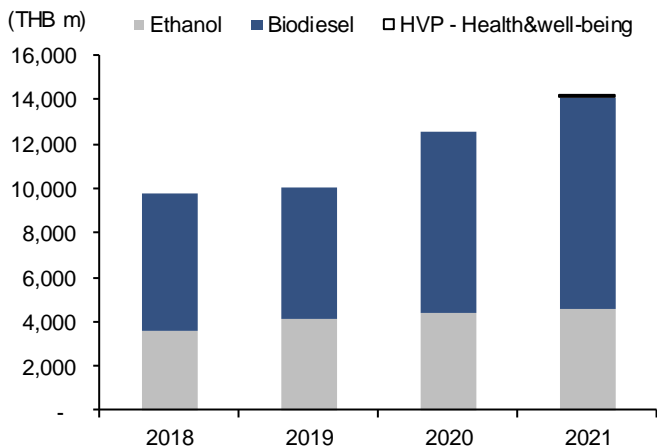
After the amalgamation with KSL group to form BBGI in 2017, the company has since benefited from the highly integrated business value chain with a reliable and competitive cost of molasses feedstock from KSL and a downstream captive customer in BCP for its ethanol and ME, resulting in sustainable margins and more operational cost effectiveness.

**Moving into the high-value product (HVP) market.** Starting in 2020, BBGI entered into the health and well-being industry via an investment in Manus Bio, a US-based research & development-driven company with a strength in producing biochemical products. In Nov-20, BBGI and Manus formed WIN as a distribution arm to market Manus’ products.

In 2021, BBGI signed an MOU with Bio Om to sell HVP products.

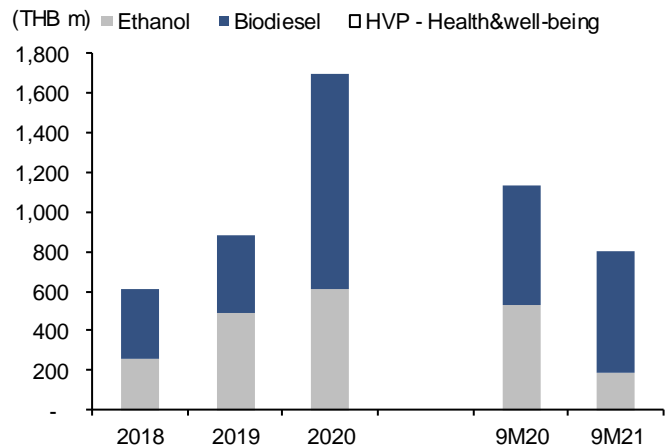
BBGI will also market health supplement products under its own brand “B Nature Plus” via a B2C channel. In addition, BBGI launched an alcohol hand sanitiser product under its B Nature Plus brand.

**Exhibit 100: Revenue breakdown**



Source: BBGI

**Exhibit 101: Gross profit breakdown**

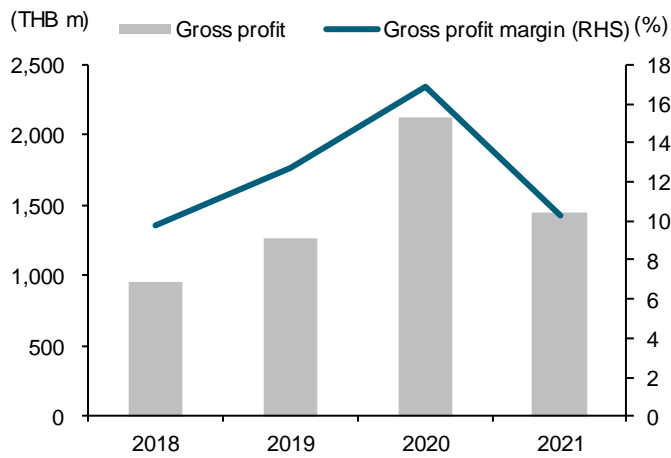


Source: BBGI

**Revenue and gross profit breakdown.** In 2018-20, all revenues were generated from biofuel, with ME being a large contributor for both revenue and gross profit, given the larger capacity of 1mlpd vs the 0.6mlpd capacity of ethanol. Revenue grew steadily in 2018-20 but gross profit declined y-y in 9M21 due to the sharp drop in the gross profit of ethanol as a result of the high feedstock cost of molasses caused by the drought that affected sugarcane production in Thailand.

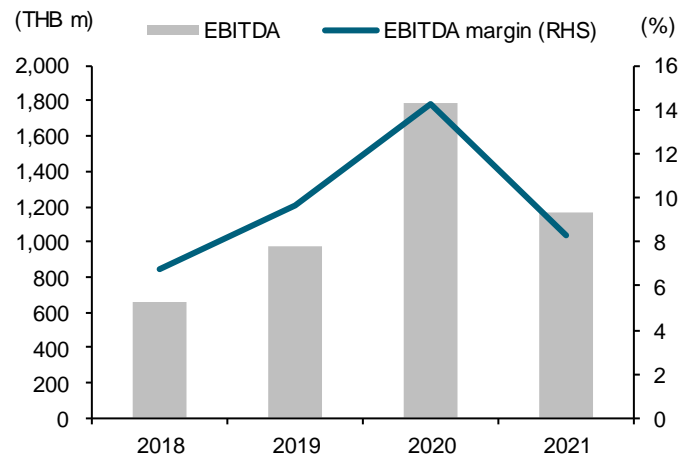
While its gross profit and EBITDA margin declined y-y in 2021 after rising in 2018-20, we think the EBITDA margin will recover in 2022 onward due to BBGI's high operational efficiency and higher utilisation rate due to the strong demand for ethanol and ME after the full reopening of the economic activities in 2H22.

**Exhibit 102: Gross profit vs gross profit margin**



Source: BBGI

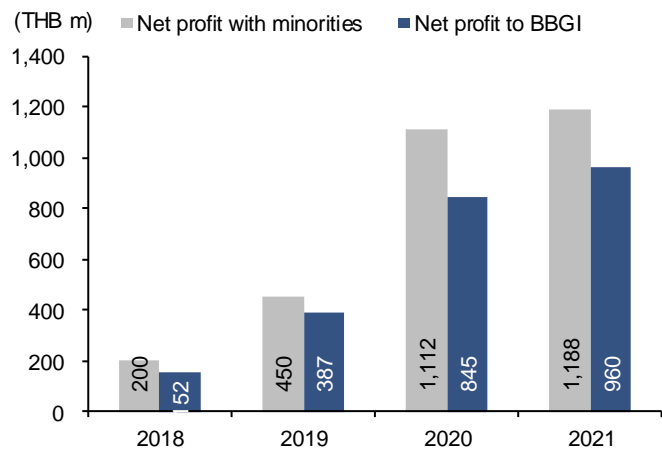
**Exhibit 103: EBITDA vs EBITDA margin**



Source: BBGI

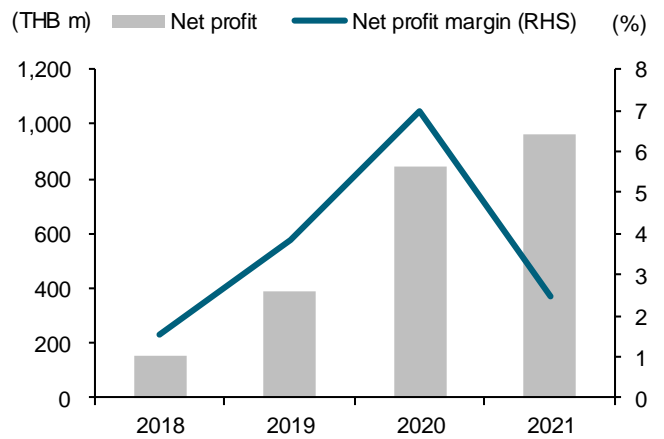
**Net profit and net profit margin.** Net profits have been rising since 2018-20, hitting the THB1b mark in 2020, thanks to higher sales of ethanol for sanitisation. However, its net profit margin dropped from 7% in 2020 to 2.5% in 2021 on the low utilisation rate as demand weakened on the lockdowns in 2021.

**Exhibit 104: Net profit with minorities and net profit**



Source: BBGI

**Exhibit 105: Net profit and net profit margin**

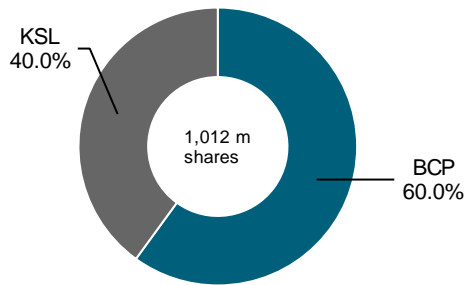


Source: BBGI

**Shareholding structure and the IPO deal.** BBGI offered a total of 433.2m shares, of this 75% for the IPO, 10% for pre-emptive rights for KSL's existing shareholders, and 15% for pre-emptive rights for BCP's existing shareholders.

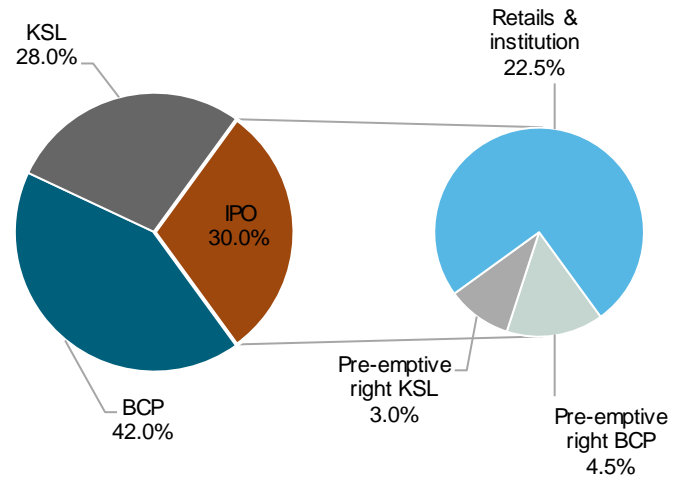
With registered capital of THB3,615m (THB2.5 par value) and current shares outstanding of 1,012.8m, BBGI increased its shares outstanding to 1,446m (THB2.5 par value) post IPO and pre-emptive rights. Around 43.32m shares were for over-allotment (10% of total shares offered). There will be a one-year lock-up period for BCP's and KSL's shareholders after the IPO, excluding the greenshoe option.

**Exhibit 106: Pre-IPO share structure**



Source: BBGI

**Exhibit 107: Post-IPO share structure**

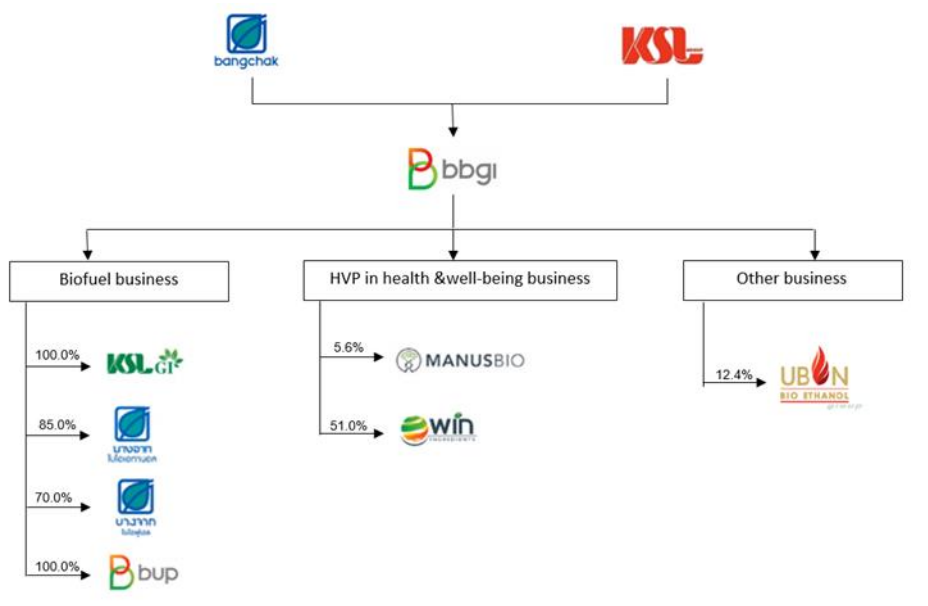


Source: BBGI

BBGI's dividend policy will be "not less than 40% of separated net profit after deducting any reserve funds as required by law and determined by BBGI".

BBGI owns a majority stake in its ethanol and ME plants but has only a 12.4% stake in the recently listed UBE. In HVP units, BBGI owns a small 5.6% stake in Manus but a 51% stake in WIN, aiming to deploy WIN as a marketing arm to sell Manus' products in the health and well-being market.

**Exhibit 108: Current company holding structure**



Source: BBGI

## Corporate Governance - BBGI

### Board structure

Number of Independent Directors (ID)	4/11
Percentage of IDs on the board	36% (vs SEC guideline of at least 1/3)
ID participation/attendance at board meetings	100%
ID participation in audit/remuneration committees	3/3 in audit committee, and 2/3 in remuneration committees
ID terms (years of service, re-election/replacement procedures)	na

Source: BBGI

Additional comments: None

### Audit Practices

Auditor	KPMG
Length of service	Since inception
Reporting incidents	None
Fee track record	na
Policy on change of audit firm	None

Source: BBGI

Additional comments: None

### Compensation and remuneration

Directors' remuneration vs earnings/ROE/share performance	THB52.36m vs 2020 NP of THB877m
Changes/stability in senior management	None
Incidents of termination of senior management	None
Track record on insider sales	None

Source: BBGI

Additional comments: None

### Shareholders' rights

Communication - shareholder participation in AGMs/EGMs	AGM to be held within 4 months after the end of each accounting year and EGM when needed
Related party transactions	None
Voting issues - policies, incidents of rejected proposals	None

Source: BBGI

Additional comments: BBGI was listed on the SET on 17 March 2022



## Financial Statements

BBGI

Profit and Loss (THB m) Year Ending Dec	2020	2021	2022E	2023E	2024E
Revenue	12,571	14,095	13,545	14,971	15,311
Cost of goods sold	(10,451)	(12,652)	(11,559)	(12,469)	(12,595)
<b>Gross profit</b>	<b>2,120</b>	<b>1,443</b>	<b>1,986</b>	<b>2,502</b>	<b>2,716</b>
Other operating income	-	-	-	-	-
Operating costs	(330)	(276)	(339)	(408)	(413)
<b>Operating EBITDA</b>	<b>1,790</b>	<b>1,168</b>	<b>1,647</b>	<b>2,094</b>	<b>2,302</b>
Depreciation	(418)	(414)	(562)	(602)	(602)
Goodwill amortisation	0	0	0	0	0
<b>Operating EBIT</b>	<b>1,372</b>	<b>754</b>	<b>1,085</b>	<b>1,492</b>	<b>1,700</b>
Net financing costs	(123)	(107)	(80)	(60)	(86)
Associates	21	43	0	0	0
Recurring non-operating income	69	80	30	20	22
Non-recurring items	(32)	612	0	0	0
<b>Profit before tax</b>	<b>1,286</b>	<b>1,338</b>	<b>1,035</b>	<b>1,452</b>	<b>1,636</b>
Tax	(174)	(150)	(144)	(191)	(226)
<b>Profit after tax</b>	<b>1,112</b>	<b>1,188</b>	<b>890</b>	<b>1,262</b>	<b>1,410</b>
Minority interests	(267)	(228)	(54)	(87)	(101)
Preferred dividends	0	0	0	0	0
Other items	-	-	-	-	-
<b>Reported net profit</b>	<b>845</b>	<b>960</b>	<b>836</b>	<b>1,175</b>	<b>1,309</b>
<b>Non-recurring items &amp; goodwill (net)</b>	<b>32</b>	<b>(612)</b>	<b>0</b>	<b>0</b>	<b>0</b>
<b>Recurring net profit</b>	<b>877</b>	<b>348</b>	<b>836</b>	<b>1,175</b>	<b>1,309</b>
<b>Per share (THB)</b>					
Recurring EPS *	0.61	0.24	0.58	0.81	0.91
Reported EPS	0.58	0.66	0.58	0.81	0.91
DPS	0.30	0.40	0.30	0.40	0.45
Diluted shares (used to calculate per share data)*	1,446	1,446	1,446	1,446	1,446
<b>Growth</b>					
Revenue (%)	25.5	12.1	(3.9)	10.5	2.3
Operating EBITDA (%)	84.7	(34.8)	41.1	27.2	9.9
Operating EBIT (%)	134.6	(45.1)	43.9	37.5	13.9
Recurring EPS (%)	126.7	(60.3)	140.1	40.5	11.4
Reported EPS (%)	118.4	13.6	(12.9)	40.5	11.4
<b>Operating performance</b>					
Gross margin inc. depreciation (%)	13.5	7.3	10.5	12.7	13.8
Gross margin of key business (%)	-	-	-	-	-
Operating EBITDA margin (%)	14.2	8.3	12.2	14.0	15.0
Operating EBIT margin (%)	10.9	5.3	8.0	10.0	11.1
Net margin (%)	7.0	2.5	6.2	7.8	8.5
Effective tax rate (%)	20.0	20.0	20.0	20.0	20.0
Dividend payout on recurring profit (%)	49.3	166.0	51.9	49.2	49.7
Interest cover (X)	11.7	7.8	14.0	25.4	20.0
Inventory days	45.9	35.0	31.0	28.5	29.4
Debtor days	53.6	43.2	49.1	54.8	64.4
Creditor days	29.7	25.5	30.8	28.3	29.3
Operating ROIC (%)	17.5	9.8	13.0	14.6	14.1
ROIC (%)	13.1	7.2	9.0	10.7	10.7
ROE (%)	15.7	5.6	9.5	10.1	10.6
ROA (%)	10.5	5.3	6.9	8.2	8.3
* Pre-exceptional, pre-goodwill and fully diluted					
<b>Revenue by Division (THB m)</b>					
	2020	2021	2022E	2023E	2024E
Biodiesel	7,461	8,852	8,026	8,026	8,026
Refined glycerin	681	630	697	697	697
Ethanol	4,428	4,611	4,592	5,809	5,809
HVP	0	2	230	440	780

\* Pre-IPO shares outstanding of 1,012.8m, BBGI increased its shares outstanding to 1,446m post IPO and pre-emptive rights

Sources: BBGI; FSSIA estimates

## Financial Statements

BBGI

Cash Flow (THB m) Year Ending Dec	2020	2021	2022E	2023E	2024E
Recurring net profit	877	348	836	1,175	1,309
Depreciation	418	414	562	602	602
Associates & minorities	-	-	-	-	-
Other non-cash items	-	-	-	-	-
Change in working capital	24	643	(408)	(443)	(458)
<b>Cash flow from operations</b>	<b>1,319</b>	<b>1,405</b>	<b>990</b>	<b>1,334</b>	<b>1,453</b>
Capex - maintenance	(380)	(380)	(562)	(602)	(602)
Capex - new investment	-	-	-	-	-
Net acquisitions & disposals	-	-	-	-	-
Other investments (net)	1,746	995	239	716	927
<b>Cash flow from investing</b>	<b>1,366</b>	<b>615</b>	<b>(323)</b>	<b>114</b>	<b>324</b>
Dividends paid	(1,637)	(2,630)	(1,157)	(868)	(1,157)
Equity finance	0	0	4,549	0	0
Debt finance	(376)	1,305	2,532	(1,000)	(1,000)
Other financing cash flows	(583)	(469)	(6,109)	406	355
<b>Cash flow from financing</b>	<b>(2,596)</b>	<b>(1,794)</b>	<b>(185)</b>	<b>(1,462)</b>	<b>(1,802)</b>
Non-recurring cash flows	-	-	-	-	-
Other adjustments	0	0	0	0	0
<b>Net other adjustments</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>
<b>Movement in cash</b>	<b>89</b>	<b>227</b>	<b>482</b>	<b>(13)</b>	<b>(24)</b>
Free cash flow to firm (FCFF)	2,807.52	2,127.26	747.16	1,507.88	1,863.66
Free cash flow to equity (FCFE)	1,725.49	2,856.18	(2,909.58)	854.25	1,132.61

### Per share (THB)

FCFF per share	1.94	1.47	0.52	1.04	1.29
FCFE per share	1.19	1.98	(2.01)	0.59	0.78
Recurring cash flow per share	0.90	0.53	0.97	1.23	1.32

Balance Sheet (THB m) Year Ending Dec	2020	2021	2022E	2023E	2024E
Tangible fixed assets (gross)	7,613	8,102	10,102	12,102	14,102
Less: Accumulated depreciation	(1,917)	(2,231)	(2,793)	(3,395)	(3,997)
<b>Tangible fixed assets (net)</b>	<b>5,696</b>	<b>5,871</b>	<b>7,309</b>	<b>8,707</b>	<b>10,105</b>
<b>Intangible fixed assets (net)</b>	<b>1,602</b>	<b>1,602</b>	<b>1,602</b>	<b>1,602</b>	<b>1,602</b>
Long-term financial assets	-	-	-	-	-
Invest. in associates & subsidiaries	1,659	97	97	97	97
Cash & equivalents	157	384	866	853	829
A/C receivable	1,717	1,617	2,023	2,472	2,932
Inventories	1,402	1,025	936	1,010	1,020
Other current assets	-	-	-	-	-
<b>Current assets</b>	<b>3,277</b>	<b>3,025</b>	<b>3,826</b>	<b>4,335</b>	<b>4,781</b>
Other assets	498	2,311	2,311	2,312	2,312
<b>Total assets</b>	<b>12,731</b>	<b>12,907</b>	<b>15,145</b>	<b>17,053</b>	<b>18,897</b>
Common equity	6,018	6,415	11,222	11,963	12,693
Minorities etc.	487	489	543	630	731
<b>Total shareholders' equity</b>	<b>6,504</b>	<b>6,904</b>	<b>11,765</b>	<b>12,592</b>	<b>13,424</b>
Long term debt	2,061	1,686	500	1,000	2,000
Other long-term liabilities	468	1,377	1,377	1,377	1,377
<b>Long-term liabilities</b>	<b>2,530</b>	<b>3,063</b>	<b>1,877</b>	<b>2,377</b>	<b>3,377</b>
A/C payable	749	1,019	931	1,005	1,015
Short term debt	2,776	1,847	500	1,000	1,000
Other current liabilities	173	74	71	79	81
<b>Current liabilities</b>	<b>3,697</b>	<b>2,940</b>	<b>1,503</b>	<b>2,084</b>	<b>2,096</b>
<b>Total liabilities and shareholders' equity</b>	<b>12,731</b>	<b>12,907</b>	<b>15,145</b>	<b>17,053</b>	<b>18,897</b>
Net working capital	2,198	1,548	1,957	2,399	2,857
Invested capital	11,653	11,430	13,276	15,117	16,973

\* Includes convertibles and preferred stock which is being treated as debt

### Per share (THB)

Book value per share	4.16	4.44	7.76	8.27	8.78
Tangible book value per share	3.05	3.33	6.65	7.16	7.67

### Financial strength

Net debt/equity (%)	72.0	45.6	1.1	9.1	16.2
Net debt/total assets (%)	36.8	24.4	0.9	6.7	11.5
Current ratio (x)	0.9	1.0	2.5	2.1	2.3
CF interest cover (x)	15.1	27.6	(35.4)	15.3	14.2

Valuation	2020	2021	2022E	2023E	2024E
<b>Recurring P/E (x) *</b>	<b>17.3</b>	<b>43.6</b>	<b>18.2</b>	<b>12.9</b>	<b>11.6</b>
<b>Recurring P/E @ target price (x) *</b>	<b>24.7</b>	<b>62.3</b>	<b>25.9</b>	<b>18.5</b>	<b>16.6</b>
Reported P/E (x)	18.0	15.8	18.2	12.9	11.6
Dividend yield (%)	2.9	3.8	2.9	3.8	4.3
Price/book (x)	2.5	2.4	1.4	1.3	1.2
Price/tangible book (x)	3.4	3.2	1.6	1.5	1.4
EV/EBITDA (x) **	11.4	16.1	9.6	8.1	7.9
EV/EBITDA @ target price (x) **	15.0	21.7	13.6	11.2	10.7
EV/invested capital (x)	1.7	1.6	1.2	1.1	1.1

\* Pre-exceptional, pre-goodwill and fully diluted \*\* EBITDA includes associate income and recurring non-operating income

Sources: BBGI; FSSIA estimates

## Corporate Governance report of Thai listed companies 2020

EXCELLENT LEVEL										
AAV	ADVANC	AF	AIRA	AKP	AKR	ALT	AMA	AMATA	AMATAV	ANAN
AOT	AP	ARIP	ARROW	ASP	BAFS	BANPU	BAY	BCP	BCPG	BDMS
BEC	BEM	BGRIM	BIZ	BKI	BLA	BOL	BPP	BRR	BTS	BWG
CENTEL	CFRESH	CHEWA	CHO	CIMBT	CK	CKP	CM	CNT	COL	COMAN
COTTO	CPALL	CPF	CPI	CPN	CSS	DELTA	DEMCO	DRT	DTAC	DTC
DV8	EA	EASTW	ECF	ECL	EGCO	EPG	ETE	FNS	FPI	FPT
FSMART	GBX	GC	GCAP	GEL	GFPT	GGC	GPSC	GRAMMY	GUNKUL	HANA
HARN	HMPRO	ICC	ICI	III	ILINK	INTUCH	IRPC	IVL	JKN	JSP
JWD	K	KBANK	KCE	KKP	KSL	KTB	KTC	LANNA	LH	LHFG
LIT	LPN	MAKRO	MALEE	MBK	MBKET	MC	MCOT	METCO	MFEC	MINT
MONO	MOONG	MSC	MTC	NCH	NCL	NEP	NKI	NOBLE	NSI	NVD
NYT	OISHI	ORI	OTO	PAP	PAP	PCSGH	PDJ	PG	PHOL	PLANB
PLAT	PORT	PPS	PR9	PREB	PRG	PRM	PSH	PSL	PTG	PTT
PTTEP	PTTGC	PYLON	Q-CON	QH	QTC	RATCH	RS	S	S & J	SAAM
SABINA	SAMART	SAMTEL	SAT	SC	SCB	SCC	SCCC	SCG	SCN	SDC
SEAFCO	SEAOIL	SE-ED	SELIC	SENA	SIRI	SIS	SITHAI	SMK	SMPC	SNC
SONIC	SORKON	SPALI	SPI	SPRC	SPVI	SSSC	SST	STA	SUSCO	SUTHA
SVI	SYMC	SYNTEC	TACC	TASCO	TCAP	TFMAMA	THANA	THANI	THCOM	THG
THIP	THRE	THREL	TIP	TIPCO	TISCO	TK	TKT	TTB	TMILL	TNDT
TNL	TOA	TOP	TPBI	TQM	TRC	TSC	TSR	TSTE	TSTH	TTA
TTCL	TTW	TU	TVD	TVI	TVO	TWPC	U	UAC	UBIS	UV
VGI	VIH	WACOAL	WAVE	WHA	WHAUP	WICE	WINNER	TRUE		

VERY GOOD LEVEL										
2S	ABM	ACE	ACG	ADB	AEC	AEONTS	AGE	AH	AHC	AIT
ALLA	AMANAHA	AMARIN	APCO	APCS	APURE	AQUA	ASAP	ASEFA	ASIA	ASIAN
ASIMAR	ASK	ASN	ATP30	AUCT	AWC	AYUD	B	BA	BAM	BBL
BFIT	BGC	BJC	BJCHI	BROOK	BTW	CBG	CEN	CGH	CHARAN	CHAYO
CHG	CHOTI	CHOW	CI	CIG	CMC	COLOR	COM7	CPL	CRC	CRD
CSC	CSP	CWT	DCC	DCON	DDD	DOD	DOHOME	EASON	EE	ERW
ESTAR	FE	FLOYD	FN	FORTH	FSS	FTE	FVC	GENCO	GJS	GL
GLAND	GLOBAL	GLOCON	GPI	GULF	GYT	HPT	HTC	ICN	IFS	ILM
IMH	INET	INSURE	IRC	IRCP	IT	ITD	ITEL	J	JAS	JCK
JCKH	JMART	JMT	KBS	KCAR	KGI	KIAT	KOOL	KTIS	KWC	KWM
L&E	LALIN	LDC	LHK	LOXLEY	LPH	LRH	LST	M	MACO	MAJOR
MBAX	MEGA	META	MFC	MGT	MILL	MITSIB	MK	MODERN	MTI	MVP
NETBAY	NEX	NINE	NTV	NWR	OCC	OGC	OSP	PATO	PB	PDG
PDI	PICO	PIMO	PJW	PL	PM	PPP	PRIN	PRINC	PSTC	PT
QLT	RCL	RICHY	RML	RPC	RWI	S11	SALEE	SAMCO	SANKO	SAPPE
SAWAD	SCI	SCP	SE	SEG	SFP	SGF	SHR	SIAM	SINGER	SKE
SKR	SKY	SMIT	SMT	SNP	SPA	SPC	SPCG	SR	SRICHA	SSC
SSF	STANLY	STI	STPI	SUC	SUN	SYNEX	T	TAE	TAKUNI	TBSP
TCC	TCMC	TEAM	TEAMG	TFG	TIGER	TITLE	TKN	TKS	TM	TMC
TMD	TMI	TMT	TNITY	TNP	TNR	TOG	TPA	TPAC	TPCORP	TPOLY
TPS	TRITN	TRT	TRU	TSE	TVT	TWP	UEC	UMI	UOBKH	UP
UPF	UPOIC	UT	UTP	UWC	VL	VNT	VPO	WIJK	WP	XO
YUASA	ZEN	ZIGA	ZMICO							

GOOD LEVEL										
7UP	A	ABICO	AJ	ALL	ALUCON	AMC	APP	ARIN	AS	AU
B52	BC	BCH	BEAUTY	BGT	BH	BIG	BKD	BLAND	BM	BR
BROCK	BSBM	BSM	BTNC	CAZ	CCP	CGD	CITY	CMAN	CMO	CMR
CPT	CPW	CRANE	CSR	D	EKH	EP	ESSO	FMT	GIFT	GREEN
GSC	GTB	HTECH	HUMAN	IHL	INOX	INSET	IP	JTS	JUBILE	KASET
KCM	KKC	KUMWEL	KUN	KWG	KYE	LEE	MATCH	MATI	M-CHAI	MCS
MDX	MJD	MM	MORE	NC	NDR	NER	NFC	NNCL	NPK	NUSA
OCEAN	PAF	PF	PK	PLE	PMTA	POST	PPM	PRAKIT	PRECHA	PRIME
PROUD	PTL	RBF	RCI	RJH	ROJNA	RP	RPH	RSP	SF	SFLEX
SGP	SISB	SKN	SLP	SMART	SOLAR	SPG	SQ	SSP	STARK	STC
SUPER	SVOA	TC	TCCC	THMUI	TIW	TNH	TOPP	TPCH	TIPIP	TPLAS
TTI	TYCN	UKEM	UMS	VCOM	VRANDA	WIN	WORK	WPH		

## Description

## Score Range

Excellent

90-100

Very Good

80-89

Good

70-79

## Disclaimer:

The disclosure of the survey results of the Thai Institute of Directors Association ("IOD") regarding corporate governance is made pursuant to the policy of the Office of the Securities and Exchange Commission. The survey of the IOD is based on the information of a company listed on the Stock Exchange of Thailand and the Market for Alternative Investment disclosed to the public and able to be accessed by a general public investor. The result, therefore, is from the perspective of a third party. It is not an evaluation of operation and is not based on inside information.

The survey result is as of the date appearing in the Corporate Governance Report of Thai Listed Companies. As a result, the survey results may be changed after that date. FSS International Investment Advisory Company Limited does not confirm nor certify the accuracy of such survey results.

\* CGR scoring should be considered with news regarding wrong doing of the company or director or executive of the company such unfair practice on securities trading, fraud, and corruption SEC imposed a civil sanction against insider trading of director and executive; \*\* delisted

Source: Thai Institute of Directors Association (IOD); FSSIA's compilation

## Anti-corruption Progress Indicator 2020

CERTIFIED										
2S	ADVANC	AI	AIE	AIRA	AKP	AMA	AMANAH	AP	AQUA	ARROW
ASK	ASP	AYUD	B	BAFS	BANPU	BAY	BBL	BCH	BCP	BCPG
BGC	BGRIM	BJCHI	BKI	BLA	BPP	BROOK	BRR	BSBM	BTS	BWG
CEN	CENTEL	CFRESH	CGH	CHEWA	CHOTI	CHOW	CIG	CIMBT	CM	CMC
COL	COM7	CPALL	CPF	CPI	CPN	CSC	DCC	DELTA	DEMCO	DIMET
DRT	DTAC	DTC	EASTW	ECL	EGCO	FE	FNS	FPI	FPT	FSS
FTE	GBX	GC	GCAP	GEL	GFPT	GGC	GJS	GPSC	GSTEEL	GUNKUL
HANA	HARN	HMPRO	HTC	ICC	ICHI	IFS	INET	INSURE	INTUCH	IRPC
ITEL	IVL	K	KASET	KBANK	KBS	KCAR	KCE	KGI	KKP	KSL
KTB	KTC	KWC	L&E	LANNA	LHFG	LHK	LPN	LRH	M	MAKRO
MALEE	MBAX	MBK	MBKET	MC	MCOT	MFC	MFEC	MINT	MONO	MOONG
MPG	MSC	MTC	MTI	NBC	NEP	NINE	NKI	NMG	NNCL	NSI
NWR	OCC	OCEAN	OGC	ORI	PAP	PATO	PB	PCSGH	PDG	PDI
PDJ	PE	PG	PHOL	PL	PLANB	PLANET	PLAT	PM	PPP	PPPM
PPS	PREB	PRG	PRINC	PRM	PSH	PSL	PSTC	PT	PTG	PTT
PTTEP	PTTGC	PYLON	Q-CON	QH	QLT	QTC	RATCH	RML	RWI	S & J
SABINA	SAT	SC	SCB	SCC	SCCC	SCG	SCN	SEAOIL	SE-ED	SELIC
SENA	SGP	SIRI	SITHAI	SMIT	SMK	SMPC	SNC	SNP	SORKON	SPACK
SPC	SPI	SPRC	SRICHA	SSF	SSSC	SST	STA	SUSCO	SVI	SYNTEC
TAE	TAKUNI	TASCO	TBSP	TCAP	TCMC	TFG	TFI	TFMAMA	THANI	THCOM
THIP	THRE	THREL	TIP	TIPCO	TISCO	TKT	TTB	TMD	TMILL	TMT
TNITY	TNL	TNP	TNR	TOG	TOP	TPA	TPCORP	TPP	TRU	TSC
TSTH	TTCL	TU	TVD	TVI	TVO	TWPC	U	UBIS	UEC	UKEM
UOBKH	UWC	VGI	VIH	VNT	WACOAL	WHA	WHAUP	WICE	WIJK	XO
ZEN	TRUE									

DECLARED										
7UP	ABICO	AF	ALT	AMARIN	AMATA	AMATAV	ANAN	APURE	B52	BKD
BM	BROCK	BUI	CHO	CI	COTTO	DDD	EA	EFORL	EP	ERW
ESTAR	ETE	EVER	FSMART	GPI	ILINK	IRC	J	JKN	JMART	JMT
JSP	JTS	KWG	LDC	MAJOR	META	NCL	NOBLE	NOK	PK	PLE
ROJNA	SAAM	SAPPE	SCI	SE	SHANG	SINGER	SKR	SPALI	SSP	STANLY
SUPER	SYNEX	THAI	TKS	TOPP	TRITN	TTA	UPF	UV	WIN	ZIGA

Level	
Certified	This level indicates practical participation with thoroughly examination in relation to the recommended procedures from the audit committee or the SEC's certified auditor, being a certified member of Thailand's Private Sector Collective Action Coalition Against Corruption programme (Thai CAC) or already passed examination to ensure independence from external parties.
Declared	This level indicates determination to participate in the Thailand's Private Sector Collective Action Coalition Against Corruption programme (Thai CAC)

### Disclaimer:

The disclosure of the Anti-Corruption Progress Indicators of a listed company on the Stock Exchange of Thailand, which is assessed by Thaipat Institute, is made in order to comply with the policy and sustainable development plan for the listed companies of the Office of the Securities and Exchange Commission. Thaipat Institute made this assessment based on the information received from the listed company, as stipulated in the form for the assessment of Anti-corruption which refers to the Annual Registration Statement (Form 56-1), Annual Report (Form 56-2), or other relevant documents or reports of such listed company. The assessment result is therefore made from the perspective of Thaipat Institute that is a third party. It is not an assessment of operation and is not based on any inside information. Since this assessment is only the assessment result as of the date appearing in the assessment result, it may be changed after that date or when there is any change to the relevant information. Nevertheless, FSS International Investment Advisory Company Limited does not confirm, verify, or certify the accuracy and completeness of the assessment results.

Note: Companies participating in Thailand's Private Sector Collective Action Coalition Against Corruption programme (Thai CAC) under Thai Institute of Directors (as of June 24, 2019) are categorised into: 1) companies that have declared their intention to join CAC, and; 2) companies certified by CAC.

Source: The Securities and Exchange Commission, Thailand; \* FSSIA's compilation

## GENERAL DISCLAIMER

### ANALYST(S) CERTIFICATION

Suwat Sinsadok, CFA, FRM, ERP FSS International Investment Advisory Securities Co., Ltd

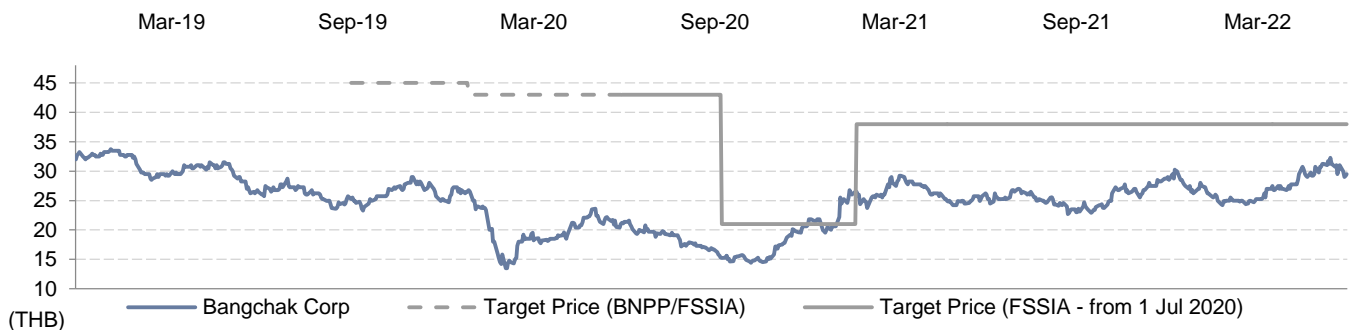
The individual(s) identified above certify(ies) that (i) all views expressed in this report accurately reflect the personal view of the analyst(s) with regard to any and all of the subject securities, companies or issuers mentioned in this report; and (ii) no part of the compensation of the analyst(s) was, is, or will be, directly or indirectly, related to the specific recommendations or views expressed herein.

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### History of change in investment rating and/or target price

#### Bangchak Corp (BCP TB)



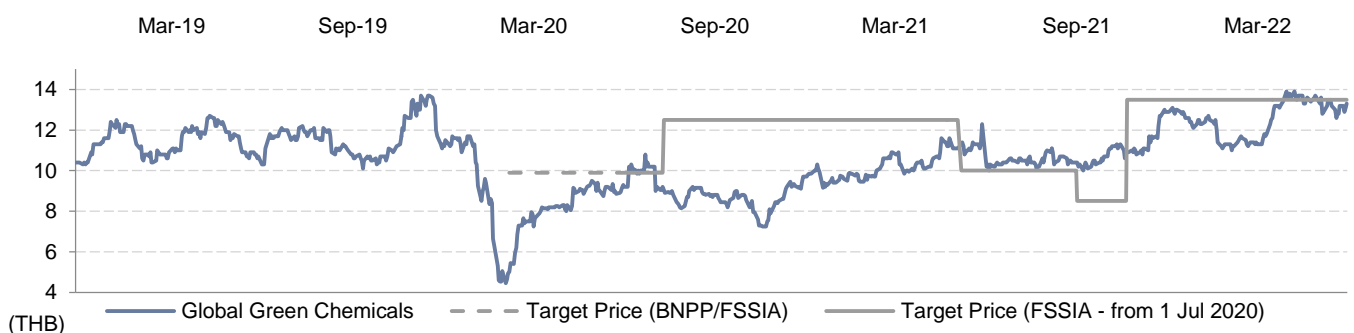
Date	Rating	Target price	Date	Rating	Target price	Date	Rating	Target price
08-Nov-2019	BUY	45.00	24-Sep-2020	BUY	21.00	-	-	-
20-Feb-2020	BUY	43.00	18-Jan-2021	BUY	38.00			

Suwat Sinsadok, CFA, FRM, ERP started covering this stock from 08-Nov-2019

Price and TP are in local currency

Source: FSSIA estimates

#### Global Green Chemicals (GGC TB)



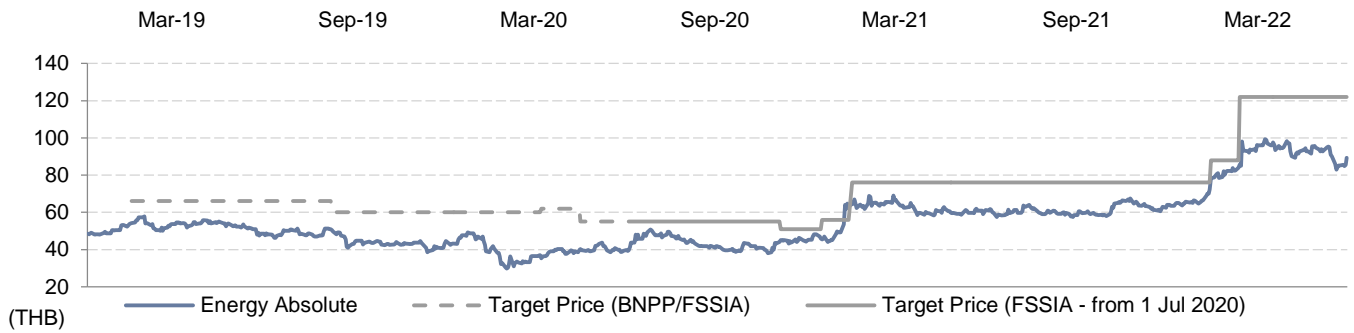
Date	Rating	Target price	Date	Rating	Target price	Date	Rating	Target price
26-Mar-2020	BUY	9.90	16-Apr-2021	REDUCE	10.00	08-Sep-2021	BUY	13.50
05-Aug-2020	BUY	12.50	27-Jul-2021	REDUCE	8.50			

Suwat Sinsadok, CFA, FRM, ERP started covering this stock from 11-Jun-2020

Price and TP are in local currency

Source: FSSIA estimates

**Energy Absolute (EA TB)**



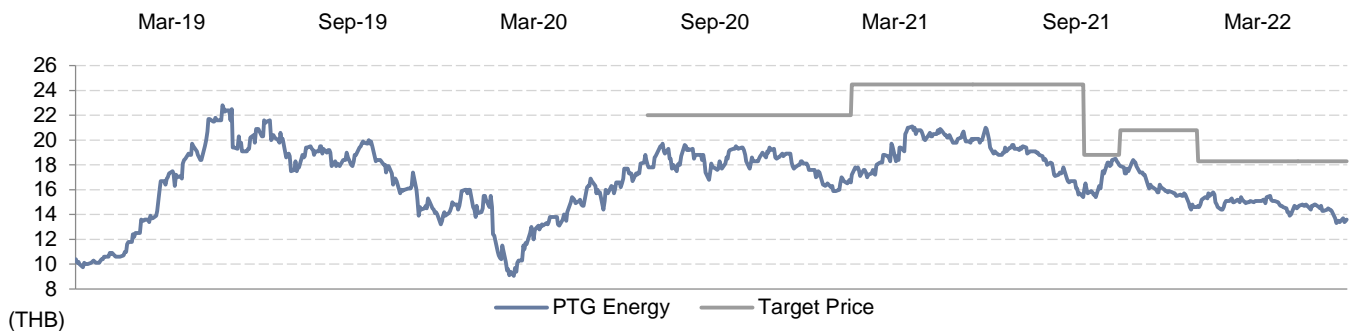
Date	Rating	Target price	Date	Rating	Target price	Date	Rating	Target price
26-Apr-2019	BUY	66.00	20-May-2020	BUY	55.00	08-Jan-2021	BUY	76.00
17-Oct-2019	BUY	60.00	09-Nov-2020	BUY	51.00	18-Nov-2021	BUY	88.00
16-Apr-2020	BUY	62.00	15-Dec-2020	BUY	56.00	13-Dec-2021	BUY	122.00

Suwat Sinsadok, CFA, FRM, ERP started covering this stock from 09-Jul-2020

Price and TP are in local currency

Source: FSSIA estimates

**PTG Energy (PTG TB)**



Date	Rating	Target price	Date	Rating	Target price	Date	Rating	Target price
22-Jul-2020	BUY	22.00	02-Aug-2021	BUY	18.80	08-Nov-2021	BUY	18.30
14-Jan-2021	BUY	24.50	02-Sep-2021	BUY	20.80			

Suwat Sinsadok, CFA, FRM, ERP started covering this stock from 22-Jul-2020

Price and TP are in local currency

Source: FSSIA estimates

Company	Ticker	Price	Rating	Valuation & Risks
BBGI	BBGI TB	THB 10.50	BUY	Our target price is based on an SOTP valuation. Downside risks include: 1) a sharp rise in crude palm oil and molasses prices; and 2) changes in the government's policy for biodiesel from the current B7.
Bangchak Corp	BCP TB	THB 29.50	BUY	The downside risks to our SoTP-based TP include: 1) lower-than-expected demand for petroleum products; 2) higher crude premiums; and 3) unplanned shutdowns of the company's refinery plants.
Global Green Chemicals	GGC TB	THB 13.30	BUY	Downside risks to our EV/EBITDA-based target price include: 1) a sharp decline in crude palm oil price; 2) a change in government policy for biodiesel from the current B7; and 3) a narrower fatty alcohol margin due to the new supply in the US
Energy Absolute	EA TB	THB 89.25	BUY	Downside risks to our SoTP-based TP include: 1) lower-than-expected demand for electricity in Thailand; 2) lower crude prices; and 3) lower-than-expected demand for batteries.
PTG Energy	PTG TB	THB 13.60	BUY	The downside risks to our SoTP-based TP include 1) a government cap on oil prices; and 2) weaker demand for diesel and gasoline.

Source: FSSIA estimates

**Additional Disclosures**

Target price history, stock price charts, valuation and risk details, and equity rating histories applicable to each company rated in this report is available in our most recently published reports. You can contact the analyst named on the front of this note or your representative at Finansia Syrus Securities Public Company Limited

FSSIA may incorporate the recommendations and target prices of companies currently covered by FSS Research into equity research reports, denoted by an 'FSS' before the recommendation. FSS Research is part of Finansia Syrus Securities Public Company Limited, which is the parent company of FSSIA.

All share prices are as at market close on 17-Mar-2022 unless otherwise stated.

## RECOMMENDATION STRUCTURE

### Stock ratings

Stock ratings are based on absolute upside or downside, which we define as  $(\text{target price}^* - \text{current price}) / \text{current price}$ .

**BUY (B).** The upside is 10% or more.

**HOLD (H).** The upside or downside is less than 10%.

**REDUCE (R).** The downside is 10% or more.

Unless otherwise specified, these recommendations are set with a 12-month horizon. Thus, it is possible that future price volatility may cause a temporary mismatch between upside/downside for a stock based on market price and the formal recommendation.

\* In most cases, the target price will equal the analyst's assessment of the current fair value of the stock. However, if the analyst doesn't think the market will reassess the stock over the specified time horizon due to a lack of events or catalysts, then the target price may differ from fair value. In most cases, therefore, our recommendation is an assessment of the mismatch between current market price and our assessment of current fair value.

### Industry Recommendations

**Overweight.** The analyst expects the fundamental conditions of the sector to be positive over the next 12 months.

**Neutral.** The analyst expects the fundamental conditions of the sector to be maintained over the next 12 months.

**Underweight.** The analyst expects the fundamental conditions of the sector to be negative over the next 12 months.

### Country (Strategy) Recommendations

**Overweight (O).** Over the next 12 months, the analyst expects the market to score positively on two or more of the criteria used to determine market recommendations: index returns relative to the regional benchmark, index sharpe ratio relative to the regional benchmark and index returns relative to the market cost of equity.

**Neutral (N).** Over the next 12 months, the analyst expects the market to score positively on one of the criteria used to determine market recommendations: index returns relative to the regional benchmark, index sharpe ratio relative to the regional benchmark and index returns relative to the market cost of equity.

**Underweight (U).** Over the next 12 months, the analyst does not expect the market to score positively on any of the criteria used to determine market recommendations: index returns relative to the regional benchmark, index sharpe ratio relative to the regional benchmark and index returns relative to the market cost of equity.