

## **1. Overview of Business Operation and Policy**

### **1.1) Business Objectives**

Khon Kaen Sugar Industry Public Company Limited has the policy to operate its business ethically and responsibly towards, society, and the environment. It places emphasis on conducting transparent operations, respecting human rights standards, and safeguarding the interests of all stakeholders through the following vision, mission, and quality policy:

#### **Vision**

We are natural energy innovation for all.

#### **Mission**

1. Create income for farmers through efficient processes and high quality agricultural yields.
2. Develop manufacturing process and technology to achieve highest efficiency and effectiveness.
3. Create an environment that mutually benefits our partners of success.
4. Develop down-stream businesses to maximize the usage of raw materials, byproducts, and other resources.

#### **Quality Policy**

To produce high quality sugar, achieve efficient operation, make on-time delivery, ensure customer's satisfaction and consumer's safety.

Long term goal of the company is to be one of the leaders in sugar, by-product, and value added productions which can be shown in company's sugar policy: "production of quality sugar with high efficiency, prompt delivery, winning customers' trust, consumption safety". This policy has encouraged company's 5 sugar factories to be widely accepted as one of the highest efficiency and highest quality sugar production groups in Thailand. In addition, with the goal of being one of leading companies in by-product and value added production and with the vision on the potential growth in related – sugar businesses, such as ethanol business and power business. The company has made continuous investments in these sectors.

The company's short term goal is to be one of the leaders in the industry who excels in cost management and productivity. The goal can be achieved by applying modern technology to the corporate production and management systems. Furthermore, the company is aware that its primary risk is the amount of cane it is able to procure for crushing. The sugar factories and other integrated businesses cannot sustain without adequate cane crushed. The company, hence, aims to reduce the farmers' cane cultivation cost as well as to improve their productivity yields and

efficiency. Its objective is to help the farmers sustain their living and receive higher return on their investment as well as to remain productive farmers to our businesses.

## **1.2) Important Changes and Developments During the Past 3 Years**

In 2016, the Board of Directors No. 7/2015-2016 on September 30, 2016 has approved Initial Public Offering plan for the KSL Green Innovation Public Company Limited or previously named Khon Kaen Alcohol Co., Ltd. by offering newly share to public not more than 30% of total paid-up capital. Later on, in 2017, the Board of Directors No. 6/2016-2017 has approved the Cancellation of the listing of KSL Green Innovation Public Company Limited, a subsidiary of the Company, in the Stock Exchange of Thailand and the merger agreement between the Company's new subsidiary that will be set up and own 99.99% shares of KSL Green Innovation Public Company Limited and Bangchak Corporation Public Company Limited's subsidiaries. Now the new company from amalgamation process has been established in October 2017 under the name, BBGI Company Limited with total paid-up capital of 2,532 million Baht, this company is the holding company which invests in bio-based products business.

In 2018, BBGI Co., Ltd. had transformed into the public company and had a plan to be listed on the Stock Exchange of Thailand (SET). Details are shown on the Company's news which posted on SET's website on 28 February 2018.

## **1.3) Company Overview**

Khon Kaen Sugar Industry Public Company Limited and its subsidiaries, under KSL, are Thailand 4<sup>th</sup> largest sugar producer group. The company has 5 sugar factories in the group, located in three different regions, as follows:

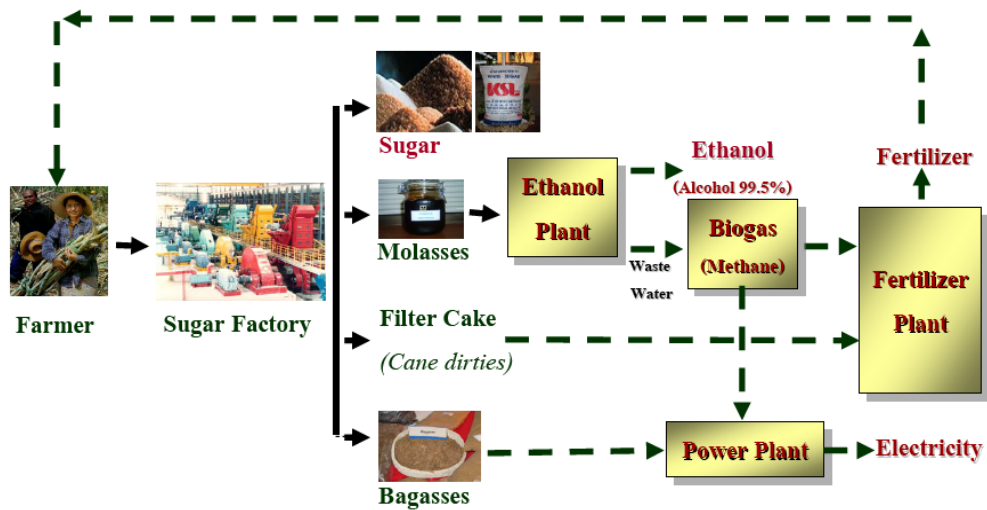
1. Northeastern Region: Khon Kaen Sugar Industry Public Company Limited; Nampong branch in Khon Kaen province and Wangsapung branch in Loei province.
2. Western Region: New Krung Thai Sugar Factory Co., Ltd and Tamaka Sugar Industry Co., Ltd. in Kanchanaburi province
3. Eastern Region: New Kwang Soon Lee Sugar Factory Co., Ltd in Chonburi province

The core products which the company produces are sugar which can be categorized to be 4 types: (a) raw sugar (b) high pol sugar (c) white sugar and (d) refined sugar. The company also has other products related to sugar production process, such as molasses, bagasses and filter cake. According to these kinds of products, the company has a plan to invest in value added projects, as followings: (shown on Figure 1.1)

- (1) Ethanol plant: Ethanol is mixed with gasoline, and the mixture is used as fuel for vehicles. Raw materials used in the Group's ethanol production include molasses and sugarcane juice (Presently, it manages by BBGI Co., Ltd.)

- (2) The biogas plant uses waste water from ethanol production process as a raw material. Biogas produced through fermentation is used as a supplementary fuel for the corporate power plant. (Presently, it manages by BBGI Co., Ltd.)
- (3) The organic fertilizer plant uses waste from the sugar production process (filter cake) and waste water from biogas and ethanol production as raw materials.
- (4) The power plant uses waste from the sugar production process (bagasses) and biogas from the biogas plant as fuel sources for producing electricity and steam sold to plants in the Group and Grid.

**Figure 1.1 : The Relationship between KSL's Existing Sugar Production and KSL's Value Added Project**



As of October 31, 2018, Khon Kaen Sugar Industry Public Company Limited and its subsidiaries have the investment in subsidiaries and affiliates as follows:

<b>Business Unit/Company Name</b>	<b>Paid - Up Capital (THB Million)</b>	<b>Proportion Of Investment</b>	<b>Nature of Business</b>
<i><b>Sugar Business</b></i>			
Tamaka Sugar Industry Co., Ltd.	600.00	90.21%	Produce and distribute sugar
New Krung Thai Sugar Factory Co., Ltd.	1,000.00	95.78%	Produce and distribute sugar
New Kwang Soon Lee Sugar Factory Co., Ltd	500.00	98.61%	Produce and distribute sugar
Savannakhet Sugar Corporation	684.76	98.49%	Sugar cane plantation and Sugar Factory in Laos
Koh Kong Plantation Co., Ltd*	936.98	80.00%	Sugar cane plantation in Cambodia
Koh Kong Sugar Industry Co., Ltd	1,167.66	80.00%	Sugar Factory in Cambodia
<i><b>Supporting Business</b></i>			
Thai Sugar Terminal Public Company Limited** and 5 subsidiaries	191.66	23.82%	Terminal, Warehouses, Real estate, produce and distribute wheat flour and palm oil
KSL Export Trading Co., Ltd.	20.00	79.55%	Sugar and Related products Exporting Activities
KSL Agro and Trading Co., Ltd.	300.00	100.00%	Trading domestic sugar and operating agricultural businesses
Wynn In Trading Co., Ltd	487.497	100.00%	International trading and consulting
<i><b>Energy and Chemical Business</b></i>			
BBGI Public Company Limited ***	2,532.00	40.00%	The holding company which invests in bio-based products business.
Khon Kaen Sugar Power Plant Co., Ltd	800.00	100.00%	Power Plant (SPP)

KSL Material Supply Co., Ltd.	840.00	100.00%	Material Sourcing for sugarcane plantation
<b><i>Other Business</i></b>			
KSL Real Estate Co., Ltd	840.00	91.02%	Real Estate Development and Training Center
WSP Logistics Co., Ltd	0.25	100%	Provide transportation service

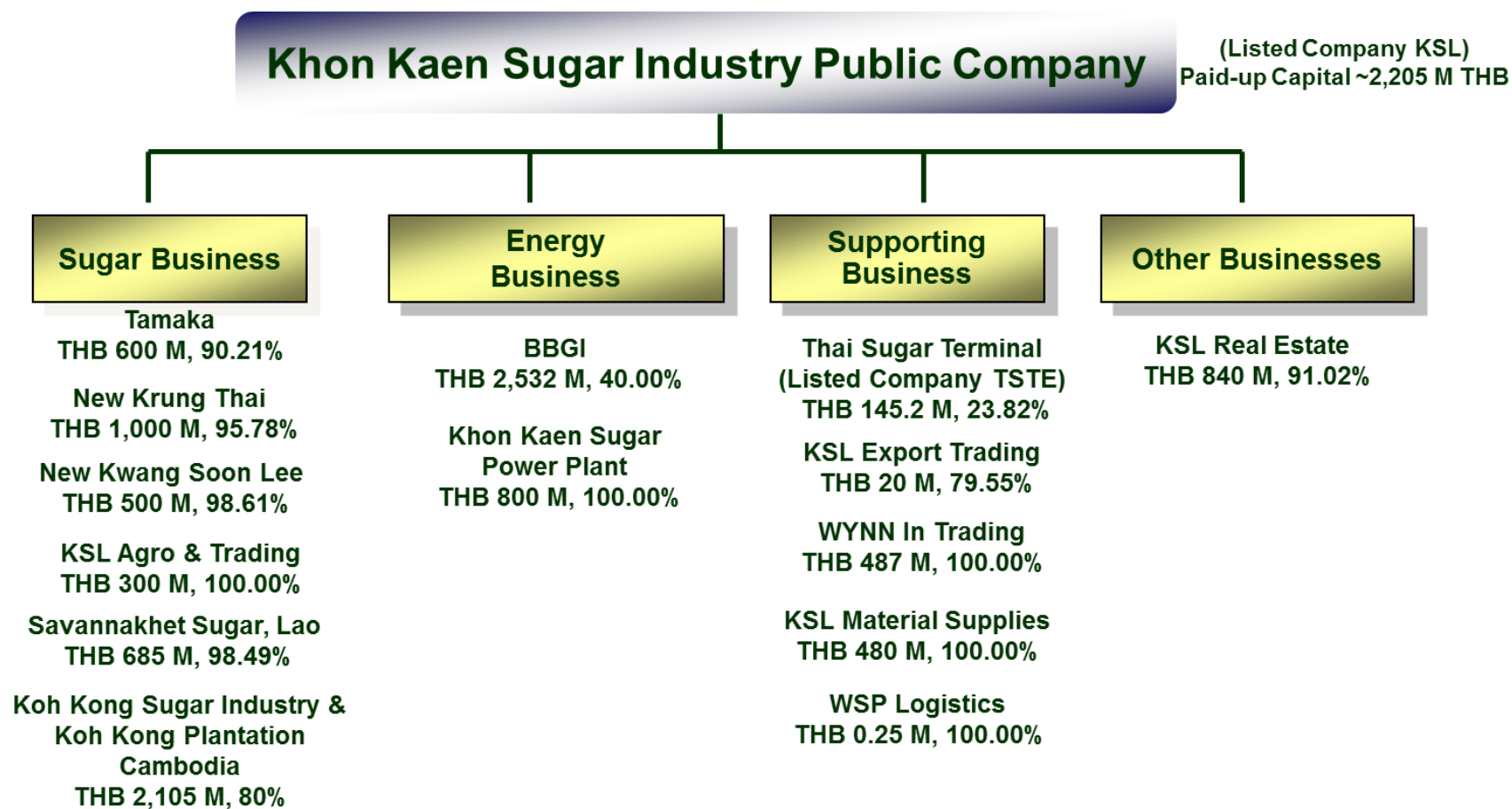
**Note:** Proportion of investment shown above includes both direct and indirect shareholdings

\* Indirect holding by Wynn in Trading Co., Ltd.

\*\* Associated company: Thai Terminal Pcl. and 5 subsidiaries: TS oil industry Co., Ltd., TSG asset Co., Ltd., TS transport and logistics Co., Ltd., TS warehouse, TS flour mill Pcl

\*\*\* Associated company: BBGI Pcl. and 3 subsidiaries 1 associated company: Bangchak bio ethanol Co., Ltd., Bangchak bio fuel Co., Ltd., KSL Green Innovation PCL, (Associated company)-Ubon bio ethanol Co., Ltd., (with 3 subsidiaries)

Business structure of KSL Group on October 31, 2018 shown on the following chart:



The details of Khon Kaen Sugar Industry Public Company Limited, subsidiaries and affiliates are as follows:

### **Sugar Business**

#### **Khon Kaen Sugar Industry Public Company Limited**

The nature of business is to produce and distribute sugar and other by-products. The first branch is located in Nampong district, Khon Kaen province. In 2014, improvements were made to increase its maximum crushing capacity to 35,000 ton cane per day. The second branch is located in Wangsapung district, Loei province with the maximum crushing capacity of 18,000 ton cane per day. Both branches have the capability to produce raw sugar, high pol sugar, white sugar and refined sugar.

#### **Tamaka Sugar Industry Co., Ltd**

The nature of business is to produce and distribute sugar and other by-products. The factory is located in Tamaka district, Kanchanaburi province with the maximum crushing capacity of 22,000 ton cane per day and capable to produce raw sugar, white sugar and refined sugar.

#### **New Krung Thai Sugar Factory Co.,Ltd**

The company produces and distributes sugar and other by-products. The factory, which was originally located in Tamaka district, Kanchanaburi province, was relocated to Bo Ploy district, Kanchanaburi province. The production capacity was expanded to the maximum crushing capacity of 36,000 tons of cane per day. Construction has already completed, the factory is capable of producing raw sugar, white sugar, and refined sugar.

#### **New Kwang Soon Lee Sugar Factory Co.,Ltd**

The enterprise produces and distributes sugar and other by-products. The factory located in Panusnikom district, Chonburi province, has the maximum crushing capacity of 4,000 tons of cane per day. The cane crushing capacity decreased due to the fact that some of the machines had been moved to Laos and Cambodia. The factory is capable of producing raw sugar, high pol sugar, white sugar, and refined sugar.

#### **Savannakhet Sugar Corporation**

The company received sugarcane plantation concession that covers approximately 10,000 hectares (62,500 rai) from the Lao government. Sugarcane cultivation is undertaken by the

company itself. The sugar factory in Savannakhet has the maximum crushing capacity of 3,000 tons of cane per day. Its output includes raw sugar and other byproducts.

*Koh Kong Plantation and Koh Kong Sugar Industry*

The company received sugarcane plantation concession that covers approximately 19,100 hectares (119,375 rai) from the Cambodian government. Sugarcane cultivation is undertaken by the company itself. The sugar factory in Koh Kong has the maximum crushing capacity of 6,000 tons of cane per day. Its output includes raw sugar and other byproducts.

**Energy and Chemical Business**

*BBGI Public Company Limited*

Established in October 2017, it was consequence of merger between bio-based product business of Khon Kaen Sugar Industry Public Company Limited and Bangchak Corporation Public Company Limited. This company invests in following subsidiaries;

- KSL Green Innovation Public Company Limited: Producing and distributing molasses-based ethanol with 350,000 liters/day, in which BBGI Company Limited holds 99.99% shares.
- Bangchak Bio Ethanol (Chachoengsao) Company Limited: Producing and distributing cassava-based ethanol with 150,000 liters/day, in which BBGI Company Limited holds 85% shares. Ubon Bio Ethanol Company Limited: Producing and distributing cassava-based ethanol with 400,000 liters/day, in which BBGI Company Limited holds 21.28% shares.
- Bangchak Bio Fuel Company Limited: Producing and distributing bio-diesel with 810,000 liters/day, in which BBGI Company Limited holds 70% shares.

As a result, this company will be a shareholder of the group companies which are considered Thailand's largest manufacturer and distributor of bio-fuel with the total production capacity of 1,710,000 liters/ day which consists of 900,000 liters/day of ethanol and 810,000 liters/day of bio-diesel. This company will operate as a flagship company for bio-based product business in the future.

*Khon Kaen Sugar Power Plant Co.,Ltd.*

Established late in 2003, the company operates renewable power plants that can produce electricity and steam by using bagasses as raw material. The power produced at the plants can supply the factories within the group and any additional power generated are then sold to EGAT



and PEA (Grid). Currently, the company operates 3 power plants all locating nearby its sugar factories. The first branch is closed to Khon Kaen Sugar Factory in Nampong district of Khon Kaen province. The second branch is closed to New Krung Thai Factory in Kanchanaburi province (part of the Boploy Renewable Energy Project). The third branch is located next to Khon Kaen Sugar Factory in Wangsapung district of Loei province (The Loei Project). Currently, the total capacity of all three branches can produce up to 195 MW of electricity.

*KSL Material Supply Co., Ltd*

KSL Material Supply Co., Ltd. now operate business relating to sourcing and selling raw materials and materials related to agriculture such as organic fertilizers and related services.

**Supporting Business**

*KSL Export Trading Co., Ltd*

Established in 1992, the company performs as a licensed exporting company, according to Cane and Sugar Act 1984, which provides services of exporting activities to the sugar companies in KSL Group and also other sugar factories.

*Thai Sugar Terminal Public Company Limited (TSTE)*

The company is a listed company in the Stock Exchange of Thailand. Its businesses involve warehouse leasing, loading and discharging sea freight, port operations, and freight forwarding. The terminal and warehouse are located in Prapadang, Samutprakarn, on the Chopraya River. Customers are primarily sugar companies in the KSL Group, other sugar factories owned by strategic partners, and general customers. In addition, Thai Sugar Terminal Public Company Limited (TSTE) is the mother company of 5 subsidiaries, which mainly deal with real estate trading and leasing, wheat flour production, plastic sack manufacturing, and palm oil refinery plant operations. (For details, refer to listed company profiles section: Thai Sugar Terminal Public Company Limited (TSTE) and TS Flour Mill Public Company Limited (TMILL)).

*KSL Agro and Trading Co., Ltd.*

Established in 2006, the company trade sugar and related products for domestic customers. It also grow sugar cane on the company's land.

*Wynn In Trading Co., Ltd*

The nature of business is international trading and international investment consulting. Khon Kaen Sugar Industry Public Company holds 100.00% share of Wynn In Trading Co., Ltd.

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**Other Businesses****KSL Real Estate Co., Ltd.**

The company is involved in the business of property rental and resort ownership in Kanchanaburi, near the River Kwai, under the name of “River Kwai Park and Resort” This company provides the accommodation and facilities for holiday vacation and training center for employees of the KSL group and other general customers. Additionally, the company has acquired a commercial rental property, The Liberty Square Building that is located in the heart of Silom Road that is one of the busiest business area of Bangkok with approximately 19,151 sqm of rental space consisting of 22 floors and 6 levels of underground parking.

**WSP Logistics Co., Ltd.**

The nature of business is transporting sugar and other products.

Regarding the policy to regulate and monitor the operation of subsidiaries and affiliates, Khon Kaen Sugar Industry has categorized its subsidiaries and affiliates which have the similar nature of business to be a group together under the same team of management. Four sugar companies are under the same board of executive directors. For supporting business, energy and chemical business and other business, Khon Kaen Sugar Industry will assign its own representatives to join as a position of company directors for policy making or as a position of top management for operation directing, which will make consistency in policies from parent company, subsidiaries and affiliates.

**2. Description of Each Business Operation****2.1) Revenue Structure**

Company	% of Shareholding in 2018	2018 Revenue (Million THB)	%	2017 Revenue (Million THB)	%	2016 Revenue (Million THB)	%
1. Khon Kaen Sugar Industry Public Company	Mother Company	9,819	38%	8,416	33%	9,864	37%
2. Tamaka Sugar Industry Co., Ltd	90.21%	2,888	11%	3,006	12%	2,499	9%
3. New Krung Thai Sugar Factory Co., Ltd	95.78%	4,274	17%	3,631	14%	3,285	12%
4. New Kwang Soon Lee Sugar Factory	98.61%	562	2%	664	3%	534	2%
5. KSL Export Trading Co., Ltd	79.55%	17	0%	13	0%	15	0%
6. KSL Green Innovation PCL*	40.00%	0	0%	2,148	8%	2,144	8%
7. Khon Kaen Sugar Power Plant Co., Ltd	100.00%	3,643	14%	2,386	9%	2,525	10%
8. KSL Material Supplies Co., Ltd	100.00%	382	1%	362	1%	29	0%
9. KSL Real Estate Co., Ltd	91.02%	193	1%	188	1%	175	1%
10. KSL Agro and Trading Co., Ltd.	100.00%	3,420	13%	3,806	15%	4,169	16%
11. Koh Kong Plantation Co., Ltd**	80.00%	45	0%	77	0%	153	1%
12. Koh Kong Sugar Co., Ltd	80.00%	366	1%	264	1%	673	3%
13. Savannakhet Sugar Corporation	98.49%	199	1%	419	2%	241	1%
14. Wynn In Trading Co., Ltd	100.00%	0	0%	0	0%	0	0%
15. WSP Logistics Co., Ltd.	100.00%	0	0%	0	0%	0	0%
<b>Total</b>		25,809	100%	25,379	100%	26,307	100%
<b>Minus Interrelated items</b>		-7,996		-9,756		-9,396	
<b>Total Revenues</b>		17,813		15,623		16,911	

\*As of October 2017, the Company holds shares indirectly in KSL Green Innovation PCL via Associated company named BBGI PCL. KSL holds 40% of total shares.

\*\* Indirect shareholding through Wynn In Trading Co., Ltd.

(Explanation of change in revenue and earnings stated in Part 3 Financial Position and Operating Performance)

## 2.2) Description of each products

### **Sugar: Product Characteristic**

The company is a group of sugar manufacturers whose quality management system is certified by SQF 2000, ISO 9001: 2000, and Hazardous Analysis and Critical Control Point (HACCP) accreditations. Sugar produced by the KSL group can be divided into four categories according to their types and levels of purity as follows:

Raw sugar – Raw sugar has a color index higher than 1,500 ICUMSA. It is dark brown, and has a high dirt index and a low purity index. Transfer is done in bulk without the use of sacks. This type of sugar cannot be consumed until it is refined or purified, turning into white sugar or refined sugar.

High pol sugar - High pol sugar has a color index between 1,000 - 1,500 ICUMSA. It can be consumed without any further process needed. Generally, the sugar is put in sacks before being transported. It is priced lower than white sugar and refined sugar.

White sugar - White sugar has a color index between 46 – 200 ICUMSA with a degree of polarization not lower than 99.50. It is widely consumed among households and used as a raw material in food industries where moderate purity is required.

Refined sugar – Refined sugar has a color index that does not exceed 45 ICUMSA. It is especially high in purity. The sugar is used in certain industries where highly pure sugar is needed, such as pharmaceutical industry, carbonated beverage industry, and energy drink industry.

After sugar manufacturing there is a residue called “molasses” that its sugar content is so low that any further sugar extracting is uneconomical. Molasses is a valuable by-product obtained from sugar production. It contains 20% water, 30% sucrose, 32% invert sugar, 12% non-sugar organic substance, and 6% ash. From one ton of sugarcane, the corporate sugar factories have capacity to manufacture between 45-50 kilograms of molasses. An amount of molasses produced in a year depends on a quantity of sugarcane crushed in the year. Molasses can be widely used in such biochemistry industries as alcohol and distilling industry, yeast industry, monosodium glutamate industry, animal food industry (where molasses is mixed with cassavas and bagasse), vinegar industry, and soy sauce and seasoning sauce brewing industry.

Other residues from sugar manufacturing process that are also useful include bagasse and filter cake. Bagasse is the fibrous material remaining after the last extraction of juice from sugarcane. Now the company uses burned bagasse as a source of energy for electricity and steam generation used in sugar manufacturing process. Part of the electricity generated is sold to the Grid. Filter cake is a residue from vacuum filtration. It can be used as a raw material for general-purpose fertilizer. In the past, the company gives away filter cake to sugarcane farmers to promote sugarcane plantation in nearby areas.

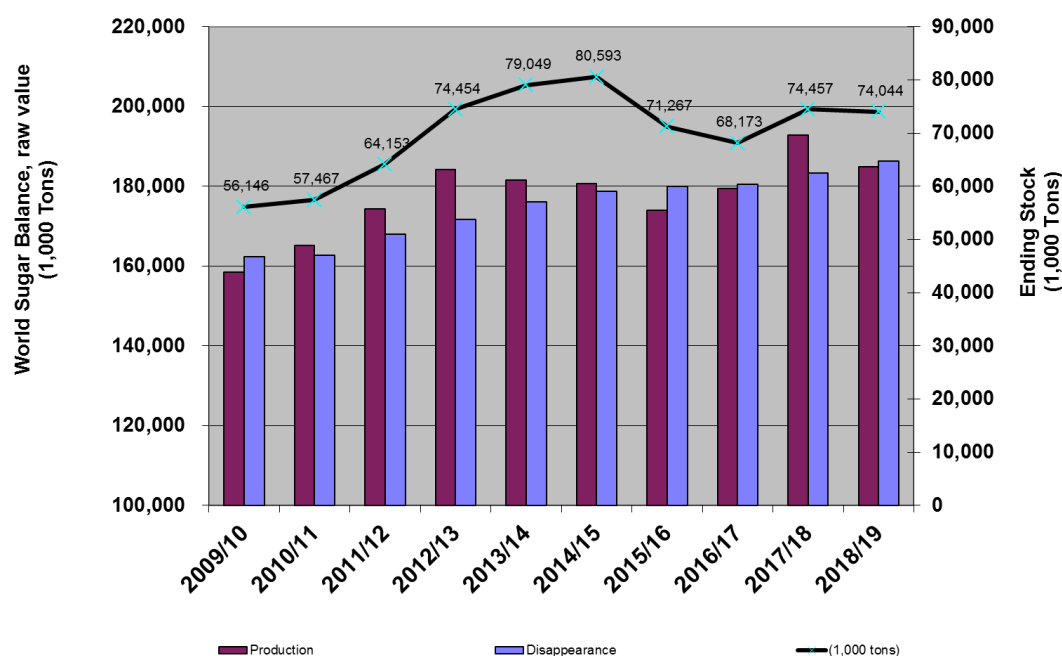
After the company's subsidiary has continuously operated alcohol and chemical production, wastewater from the factory can be mixed with filter cake and bio-decomposed to produce organic fertilizer that is suitable for sugarcane plantation. This completes the corporate value-added product ranges.

## **Sugar: Market and Competition**

### International Market and Industry Overview

The world sugar market: In 2017/2018 approximately 192.8 million tons of raw sugar was produced worldwide, representing an increase of 13.2 million tons or 7.4% from the 2016/2017. The world's total consumption demand rose to 183.3 million tons, a 2.7 million tons increase or about 1.5% growth compared to 2016/2017. However, the ending stock increases from 68.2 million tons in 2016/2017 to 74.5 million tons in 2017/2018. The stock represented 41% of the total demand, or an equivalent of 4.9 months sugar consumption. Estimated production over the world is over supplied. In the beginning of 2018, a world sugar price decreased to 12-13 cents/lbs. from 17-18 cents/lbs. in 2017.

Chart 2.1: World Sugar Balance (1000 Tons, centrifugal sugar, raw value, OCT/SEP)



Note: 2018/2019 is forecasted number

Source: F.O. Licht, updated 20-12-2018

In a mid of 2018, the estimated sugar cane production in 2017/2018 will be back to normal because Thailand and India would gain more production. As a result, the price went down from 14-15 cent/lbs. at the beginning of year to 10-13 cent/lbs. at the end of year. According to F.O. Licht's forecast on December 20, 2018, the 2018/2019 output will decrease 4.1%, from 192.8 million tons to 185 million tons. Consumption will increase by 1.6% from 183.3 million tons to 186.3 million tons. Consequently, the world sugar supply will be deficit, with ending stock for the year 2018/2019 decreasing from 74.5 million tons to 74 million tons. Sugar stock per consumption 40 % compared to normal level at 45%.

Last 2-3 years, the sugar price is volatile because of climate change, flooding, drought, or severe cold which impact on the availability of sugar in the market. Also, the quantity of world sugar stock, production and consumption of ethanol, sugar hedging, government policy of producer and consumer countries are all consequently affected on the sugar price.

Chart 2.2: World Sugar Price (NYBOT#11) during Last 10 Years



Furthermore, export channels of Thai sugar manufacturers are divided into:

1. Thai sugar manufacturers sell their sugar through major traders such as Wilmar, Cofco, Alvean, Sucden, etc. The traders then sell the sugar to other overseas buyers. Risk of failure to collect payments and complications in export management are minimized. Thai sugar manufacturers' only responsibility is to transport their sugar to ports of exports, such as FOB ports of Bangkok and Lamchabang.
2. Thai sugar manufacturers export their products to neighboring countries, such as Laos and Cambodia, through borders. A small amount of sugar is sold to vendors at borders.
3. Thai sugar manufacturers sell to manufacturers who use sugar in production of their exports. When domestic sugar prices are higher than those in international markets, the export manufacturers who use sugar as a production material lose their competitiveness in the world market. To promote investment in the food industry and competitiveness, the government allows those who manufacture exports to buy sugar at the world' market prices conditionally.

#### Domestic Marketing and Industry Overview

In 2018, Thailand encountered a situation of changes of sugar cane and sugar industry system, thereby resulting in there having been no quota system and no fixing of local sugar selling prices, which led to the free market system. Eventually, the sugar price in the country would be floating and fluctuating according to the world sugar price. And coupled with the Thai sugar premium system, the overall picture of the sale of sugar in the country as well as the exportation of sugar for sale were directed by the marketing mechanism and the production capability of each seller. The details of the proportion of sale of sugar of the group of companies were as shown in Table 2.3. Nevertheless, the significance of Thailand's Sugar Cane and Sugar Act in regard to benefits sharing with the sugar cane farmers remained the same

### Competition Situation and Competitors

In 2018, there are 54 operating sugar factories (exclude non-operating and new license sugar factories which is not yet constructed) in Thailand with sugarcane crushing capacity of 135 million tons per year and sugar manufacturing capacity of 14.7 million tons per year (depending on yearly sugarcane amounts in the crushing process and sugarcane quality). The crushing process lasts about 4 - 5 months each year due to small amounts of sugarcanes entering the process. It begins in November till the beginning of April. The numbers of sugar factories are under government control. Licenses from Office of the Cane and Sugar Board and Department of Industrial Works, Ministry of Industry, are required for sugar factories in increasing capacity, moving factories, or operating new sugar factories.

In 2018, all 54 sugar factories are opened for operation. Most of these factories are part of the six major groups of sugar manufacturers and only a handful of small manufacturers operate independently. The KSL Group is the 4<sup>th</sup> largest sugar producer in Thailand, with 8 % market share. It has 5 factories located in three regions: Northeast (2 factories), Western (2 factories), and Eastern (1 factory). Table 2.3 shows sales of different types of sugar in the past 3 years as well as ratios of sales in export markets to domestic markets.

Table 2.3: Sales of Different Types of Sugar and Ratio of Domestic Sugar to Total Sugar Sales in the Past 3 Years

Sale Volume & Price	2018			2017			2016		
	Volume Unit	Avg. Price THB / unit	Value M THB	Volume Unit	Avg. Price THB / unit	Value M THB	Volume Unit	Avg. Price THB / unit	Value M THB
Sugar	1,091,228	12,526	13,668	687,046	17,362	11,928	875,841	14,939	13,084
Domestic	199,876	17,553	3,508	199,091	19,526	3,887	219,304	19,532	4,284
Export	891,352	11,398	10,160	487,955	16,479	8,041	656,537	13,405	8,801
% Domestic Sale/Total Sale	18%			29%			25%		

### **Sugar: Product and Service Provision**

#### Raw Material Provision Policy

Providing raw materials for manufacturing is a vital process for sugar producers. As the total capacity of the Thai sugar industry exceeds domestic sugarcane produce, all the sugar factories need to ensure that the maximum amount of cane is provided for their production in order to reduce their fixed cost per unit. The main solution employed by most sugar manufacturers is providing financial support to farmers, which is known as the “Geaw” system. Agreements of the sugar producers’ advance purchase of sugarcanes from the supported farmers are made, allowing the farmers to apply for loans from the sugar manufacturers. The loans are used for sugarcane cultivation. Harvested sugarcanes, then, are delivered to the factories and the sugarcane costs are deducted from the loans.



The company's strategy is giving long-term benefits as incentives to the sugarcane farmers providing their crops to the corporate factories. This promotes both the growth of the farmers' incomes and the company. The main policy "Prosperity of farmers is prosperity of the factory", especially employed in the northeast, emphasizes creating and promoting a sustainable way to make a living for sugarcane farmers, as well as eliminating middlemen known as "Quota Heads". This effort allows the company to learn about problems experienced by the farmers and provide them suitable assistance. Also, the company provides the farmers equipment, knowledge and production support, such as providing loans for purchasing trucks; giving them filter cakes for making fertilizers free of charge; and providing experts in sugarcane cultivation, and prevention and elimination of crop pests. The support enhances good relationships between the farmers and the company, as well as systematic growth.

#### Production policy

The company focuses on maximizing the volume of white sugar and refined white sugar manufactured, as the two products have the highest selling prices with the highest profit. It also focuses on the improvement of production efficiency. Production efficiency that is higher than the average of the industry will help reduce unit cost. As a result, the company will be more competitive.

#### Marketing policy

The company emphasizes direct sale to industries with product quality and on-time delivery promises. Most customers are in business of beverage and confectionary industries.

The company, moreover, emphasizes the sale of its sugar products to food product re-exporters, as it allows the sale of C quota sugar which yields better profit than regular exports while requires lower transport cost.

#### Environmental effects

The sugar manufacturing process causes wastewater and dust from ash in the steamer's burning process. The company is well aware of such effects and has employed appropriate measures to prevent environmental problems, in compliance with standards issued by Ministry of Industry.

#### **Sugar: Works Not Submitted**

- None –

### Electricity and Steam: Product Characteristic

The project has been undertaken by Khon Kaen Sugar Power Plant Co., Ltd who sells electricity and steam to factories within the group as well as selling any excess electricity produced to Electricity Generating Authority of Thailand (EGAT) and Provincial Electricity Authority (PEA). Currently, the group operates 3 power plants. The first power plant is located near to Khon Kaen Sugar Factory in Nampong district of Khon Kaen province. It can produce up to 65 Megawatt (MW), 20 Megawatt (MW) of which is sold to EGAT. The second power plant is located near to New Krungthai Sugar Factory in BoPloy, Kanchanaburi. It can produce up to 90 MW, 30 MW of which is sold to EGAT. The third power plant is located near to Khon Kaen Sugar Factory in Wangsapung, Loei province. It has the capacity to produce 40 Megawatt (MW).

### Electricity and Steam Market and Competition

The electricity and steam generated is first sold to the KSL Group's plants so that it can be used to produce sugar and ethanol. The excess electricity produced is then sold to Electricity Generating Authority of Thailand (EGAT) and Provincial Electricity Authority (PEA) through long-term contract and therefore has limited number of competitor and reliable customer. A 100% of electricity and steam produce is sold domestically.

Table 2.7 Sales Volume and Average Selling Price of Electricity in the Past 3 Years

	2018	2017	2016
Sale Volume (MW-hour)	346,894	268,893	275,456
Avg. selling price (THB/MW-hour)	2,940	2,795	2,935

### Electricity and Steam: Product and Service Provision

#### Raw material provision policy

Raw material procurement is crucial in operating the electricity generating business. The corporate power plant is mainly fueled by bagasse. Each year, the Group crushed sugarcane fluctuates. A limited amount of crushed sugarcane may affect the fuel amount available for the power plant's electricity generating. Thus, Khon Kaen Sugar Power Plant has prepared purchasing biomass fuel sources, such as bagasse from nearby plants.

#### Production policy

##### (1) Cost Management

Khon Kaen Sugar Power Plant committed to minimize its production cost. Costs of electricity generating and steam energy production include fuel and depreciation. Fuel efficiency is, hence, crucial. The company also ensures economy of scale to reduce its unit cost.

## (2) Improving and Developing Production Effectiveness

The quality of fuel is effectively controlled, as the company uses its own bagasse. Fuel efficiency is ensured by controlling moisture in bagasse using such methods as bagasse dryer system and setting up roofs to protect the material from the rain.

## Marketing policy

The long-term agreement between the company and EGAT allows the electricity produced to be priced based on natural gas prices and exchange rates. The sale unit price increases at the time when EGAT's demand for electricity is high. Electricity sold to the companies in the KSL Group is priced at the same rate as that sold to EGAT.

## Environmental effects

Extensive Environmental Impact Assessment (EIA) has been carried out. The facilities in Khon Kaen province has been registered with CDM Executive Board as a CDM project (under the Kyoto Protocol) which help carbon reduction.

## **Electricity & Steam: Works Not Submitted**

- None -

### **3. RISK FACTORS**

Significant risk factors in the operation of the sugar business of the company, which may effect on the return on investment by the shareholders, can be summarized as follows.

#### **Risks from Raw Material Supply – Sugarcane**

Khon Kaen Sugar Industry Public Company Limited produces sugar which use sugarcane as raw material. The company has also invested in other related projects, which use by products and wastes generated from the sugar manufacturing process, to create added value. Therefore, the quantity of sugarcane available for crushing is the most important factor affecting the operations of the company.

There are two main reasons that cause fluctuations in the quantity of sugarcane, viz. (1) changes in the acreage under sugarcane plantation which may depend on the price agreed for the cane and whether it is worthwhile for the farmers to grow sugarcane compared to other agricultural crops as well as the promotional policies of the Government and (2) changes in the yield of sugarcane (ton(s) of cane per rai) which may occur due to climate change conditions, such as drought and flood, caused by global warming.

When the quantity of sugarcane crushed reduces, the effect on the company is that the quantity of sugar produced goes down, the unit cost, especially the fixed cost per unit, goes up, the profit per unit reduces and the company's overall profit is reduced. In addition, in those years when the sugarcane crushed is low, there is increased competition among sugar factories to purchase the sugar cane locating in the neighborhood area.

To reduce above risk, the company offers assistance to sugarcane farmers, such as loans for planting sugarcane crop, support in procuring inputs for farming, providing irrigation systems, introducing technology to increase yields and efficiency in cultivation, and reducing the influence of middle men in sugarcane sales and purchase deals. All the assistance is provided for the farmers in an attempt to help them improve their lives.

#### **Risks from Fluctuation of World Sugar Price**

While considering sugar trade in the world markets, it can be said that sugar has high price fluctuations when compared with other agricultural products. The world sugar prices depend on several factors, such as demand and supply of countries that are producers, consumers, exporters and importers. Traders' speculations are in relation to climatic conditions facilitating cultivation in each of the respective countries. Government policies on promoting, interfering, exporting and importing sugar, particularly in developed countries also determine pricing in the industry. At present, sugar prices are also interrelated to oil prices. Both sugarcane and molasses can be used

to produce a type of alcohol called ethanol. Ethanol can be blended with gasoline to produce fuel. All the above factors cause high fluctuations in the world sugar prices.

Generally, sugar companies in Thailand are bound to meet the domestic demand first. The balance sugar can be exported. Every year, the Office of the Cane and Sugar Board estimates the quantity of domestic demand for sugar, called Quota A, and allocates this Quota to all the sugar factories based on their respective sugar production. The ratio of domestic sales to exports of all sugar factories is therefore quite similar, usually in the range of 20:80 to 30:70 depending on the sugarcane available for crushing all over the country. The sales of the sugar industry fluctuate according to world sugar prices in the 70 – 80% range. However, regarding on the cost of production, the cane price is the major cost, calculated by the formula based on the revenue sharing system 70:30. This means that when the sugar price has decreased 100 THB, the farmer should get the 70% impact in term of lower sugar cane price and the sugar factory should get 30% impact.

During the past 3-4 years, the world sugar price was very volatile. It can be seen from the average future price around 32 cents/lb and it decreased to 25, 20, and 15 cent/lb. Sugar price has fallen to its lowest at 10-12 cent/lb in the mid of year 2018. With severe price fluctuations, because the world sugar production has been increased and the domestic sugar floating price is the same direction as the world sugar price. If the company was not able to establish a selling price that was higher than the price level for setting cane prices, the corporate operating results would have been severely affected. To prevent the risk posed by sugar price volatility in the world market, the company entered into a sugar futures contract with a financial institution. The risk hedging procedure would allow the company to minimize the dependency of its profitability on the risk posed by sugar price volatility. However, this could affect profit and loss account recording, and there was a risk that the amount hedged through the sugar futures contract could exceed the actual volume of sugar exported. This oversold condition could result in a loss.

However, at present the Company reduced its reliance of main revenue on sugar alone, whereby the Company had expanded its business of ethanol by joining hands with potential allies that had energy expertise, and it also could successfully and efficiently build on and extend its operations to energy business, resulting in the overall operations having made some profits, despite facing sugar price fluctuation and severe reduction of sugar price.

### **Risks from Government Policy**

The sugarcane and sugar industry in Thailand is under the supervision and control of the Office of the Cane and Sugar Board under the Cane and Sugar Act 1984. The Board regulates the amount of sugar produced by a quota system (Quota A for domestic sales, Quota B and C for sugar exports), controls the domestic price, regulates on the ratio of distribution of revenue from the sugar business between the farmers and sugar factories, with the revenues sharing in the ratio of 70:30, controls on the entry of new players in the sugar business etc. It is evident that the rules

and regulations enacted by the Cane and Sugar Board have an impact on the production costs and the operations of the company. For example, the revenues sharing system 70:30 ratio determines the sugar cane price which the sugar factories must pay to the farmers. In case, changes in the domestic sugar prices or changes in regulation of entire sugar industry, it will have a definite impact on the operations of the company. The policy to promote the planting of oil palm trees or price guarantees for cassava have negative impact on the company since the area under sugar cane plantation will reduce and farmers will switch to growing alternative crops with better returns.

In May 2016, the Brazilian Government filed a petition to the World Trade Organization (WTO) accusing the Thai Government of having imposed subsidies to the Thai Sugar Cane and Sugar Industry to an extent that it affected the sugar industry of Brazil. Throughout 2017, the Thai Government urgently negotiated and clarified with the Brazilian Government of Thailand's rectification measures, such as, restructuring of sugar cane and sugar industry, floating of sugar selling price to be in with market mechanisms, abrogation of granulated sugar quota and reservation of granulated sugar according to designated quantity to meet the consumption demands within the country, etc. Later, in April 2018, the Brazilian Government slowed down its consideration on measures against Thailand, by asking the Thai Government to hold a clarification meeting of the progress of the situation regularly until the Thai Government would have completed the restructuring of sugar cane and sugar industry and the amendment of the Sugar Cane and Sugar Act, including related regulations and laws.

However, regulation and procedure of sugar industry reformation plan is in a process. The Company continues updating this risk in order to set the relating work plan.

#### **Risks from Bad Debts from Credit System Provided to Farmers (Advanced Credit)**

In the operation of a sugar factory, the factories provide loans or other kinds of financial support to sugarcane farmers as working capital to plant sugarcane crop, or what is called "advanced credit", thereby reserving the sugarcane for crushing. After the sugarcane crop is ready for harvesting and the sugar factories are ready to start crushing the cane, the farmers harvest the cane and send it to the sugar factories and receive payment for the value of the cane supplied after the loans and other financial support given is deducted. The risks that are generated from such credit can come from reduced volume of sugarcane in any year due to drought conditions, losses from crop disease and pestilence, farmers refusing to send the cane to the sugar factories etc. Such liabilities, arising from sugarcane credit, can adversely affect the company's operations requiring higher amounts of provisioning for bad debts.

However, the Company was well aware of said risks and therefore developed the sugar cane subsidies system to be more efficient, by using GPS in inspecting and surveying sugar cane plantation areas to reduce the problem of claiming of right of ownership of certain farmers, and it was also used for sugar cane supply planning. The Company also developed a program for use

in a tablet to monitor sugar cane and debts of each farmer efficiently, as well as the development of database of farmers in regard to the growing ability, the creation of debts, the security data, the ability to pay debts, which would help analyze suitable credit extent in line with the ability to pay debts and the value of property placed as security. This readily reduced the farmers' bad debts to be at a rather low level.

### **Risks from Exchange Rate**

The volatility of exchange rate poses a significant risk to the company's operation. The company exports about 70-80% of its total sugar sales. The company also imports tools and machinery, and conduct operations in neighboring country. The company tries to reduce its exchange rate risks by making currency forward contracts. The company has natural hedging mechanism.

Under the 70:30 revenue sharing scheme, it links the sugar price (revenue) and cane price (cost) together, thus making both prices move in the same direction and exposing both to the same exchange rate fluctuation. Moreover, the company closely monitors exchange rate fluctuation to be able to react to changes in a timely manner.

### **Risks of unapproved the proposed agenda by the Shareholders' meeting**

The Chinthammit and its company hold more than 60% of total paid up share capital of the company. Therefore, the Chinthammit Group and its company can control all the proceedings of the shareholders meetings except for special agendas which, by law or by the articles of association of the company, require 75% vote in shareholders' meetings. Therefore, the risk that the Shareholders' meeting might disagree with the proposed agenda would relieve.

However, for the equitable treatment of shareholders and transparency and power balancing, the company has appointed the board of directors which consists of 7 independent directors who are qualified as required by law and 4 Audit Committee members who have duty and act as required by law and Charter of Audit Committee. Thus, power balancing for operation in the company is reasonable. In addition, the company also has also set up an independent internal control team which reports directly to the audit committee.

### **Risks from Investment Project in Laos and Cambodia**

The investment projects of sugar business in both countries were initiated by the Company, whereby the Company had obtained concession areas from the governments for sugar cane plantation and it was also licensed to construct sugar factories. The Company then managed its key risks in this issue as follows:

1. The quantity of sugar cane was insufficient to the production owing to climate change, natural disasters, outbreak of pests, including deteriorated soil conditions at the concession areas, thereby causing a fluctuation of sugar cane supply in each year, and thus resulting in production per area to have been insufficient to cover the break-even point.
2. Management problems, such as, lack of sugar cane growing technology in large areas, lack of infrastructure, namely road, transport system, including plantation labour shortage and capable personnel, etc., and it would take longer than expected to solve these problems and to improve the development in this regard.
3. Control from governments, especially investment projects in Cambodia where the Company faced problems of concession areas, unclear concession areas and areas of plantation of local farmers, policy on taxes, including ambiguity of local rules and regulations which had been revised and changed and which may cause disputes with the communities. Nevertheless, the said issues were given much importance by the Company and the Company was prepared to manage or rectify such problems suitably.

In 2018, projects abroad still suffered a loss and the Company readily slowed down its operations in Cambodia, while the operations in Laos the Company managed the risks by 1) budget control, 2) providing loans to farmers, partners, in order to expand the plantation areas, and 3) continuous development of deteriorated soil conditions.

### **Risks from Selection and Maintaining Personnel in Organization for Sustainable Growth**

The business operations of the group of companies must rely on personnel mainly, and there must be sufficient and quality personnel, especially at executive level, whereby the executives must be of a number that meets the demand of the business, so as to support and implement the Company's strategies to a success. Hence, the Company found it necessary to upgrade the process of selection, maintaining, and development of potential of its staff to cope with the changed circumstances, by reducing personnel risks by imposing various measures emphasizing on individual development planning, career planning, succession planning, and leadership development program.

Besides, the Company also attached importance to human resources, by arranging training courses, whereby attendants would learn from actual performance for the development of personnel at both executive and operation levels, so that they would regularly learn new things and that it be in the same direction. Reviews were made on the providing of remuneration from working which was related to accomplishment and ability of the staff at attractive level and of international standards according to the market condition in order to create a work security for the staff, which would help reduce risks on losing its personnel and at the same time motivating and maintaining quality personnel sufficient to the need of its business continuously.



## **4. Operating Assets**

### **4.1) Core Operating Assets of the company and its subsidiaries**

As of 31 October 2018, the company and its subsidiaries have core operating assets, as follows:

Items	Area (estimated number)	Ownership	Net Book Value (THB Million)	Encumbrance
1. Land & Land Development (Rai)				
Land for factory location				
- Khon Kaen Sugar Industry	1,661.83	Owner	1,011.84	
- Tamaka Sugar Industry	239.13	Owner	610.47	
- New Krung Thai Sugar Factory	1,547.74	Owner	569.65	
- New Kwang Soon Lee Sugar	249.04	Owner	103.00	
- KSL Agro & Trading Co., Ltd.	90.86	Owner	59.56	
- Khon Kaen Sugar Power Plant Co., Ltd.	420.15	Owner	178.40	
- KSL Material Supplies Co., Ltd.	673.45	Owner	219.98	
Cane Plantation Area	10,330.11	Owner	951.76	
Office Lands	-	Owner	-	
Other Lands	98,851.30	Owner	684.14	
Total			4,388.80	
2. Factory Building and Construction		Owner	4,765.85	
3. Machinery and Equipment		Owner	12,987.07	
4. Motor Vehicle and Labors saving device		Owner	596.11	
5. Furniture and Office Equipment		Owner	40.20	
6. Assets in Construction		Owner	3,385.05	
Total			26,163.08	

## 4.2) Intangible Assets

### Trademarks

Key trademarks of Khon Kaen Sugar Industry Public Company and subsidiaries are registered at The Department of Intellectual Property, as followings:



### **PRIVILEGES OF BENEFITS FROM PROMOTED INVESTMENT**

A domestic subsidiary received 3 investment promotion certificates from the Board of Investment of Thailand (BOI) under the Investment Promotion Act B.E. 2520. The benefits includes the exemption from income tax for profit for the year derived from operations of promoted businesses for the period of 8 years, commencing from the date of first receiving operation revenue of promoted businesses. The details are as follows:

<u>Certificate No.</u>	<u>Sections</u>	<u>Date</u>	<u>Promoted activity types</u>	<u>Commenced date</u>	<u>Expire date</u>
	<u>Privilege</u>			<u>of revenues generated</u>	
1432(2)/2552	25, 26, 28, 31(1), 31(2), 31(3), 31(4), 34, 35(1), 35(2) and 35(3)	June 24, 2009	- Production of electricity, power steams and water for manufacture	November 30, 2010	November 29, 2018
1349(2)/2556	25, 26, 28, 31(1), 31(2), 31(3), 31(4), 34, 35(1), 35(2) and 35(3)	Mach 15, 2013	- Production of electricity, power steams and water for manufacture	January 21, 2014	January 20, 2022
61-0170-1-00-1-0 and 34	25, 26, 28, 31(1), 31(2), 31(3), 31(4)	February 12, 2018	- Production of electricity, power steams and water for manufacture	Income not yet derived	

Furthermore, in accordance with the Promotion Certificate No. 1432(2)/2552, and 1349(2)/2556 the subsidiary receives the privilege in 50% income tax reduction of the regular rate for the period of 5 years commencing from the expiration date of income tax exemption and under all Promotion Certificates, the subsidiary is granted privilege for exemption of import duties for approved machinery and exemption from income tax on dividend on profit from promoted businesses during the period in which the Company is granted exemption from corporate income tax.

**4.3) Investment and Management Policy for subsidiaries and affiliates**

As of October 31, 2018, the company invests in both direct and indirect 13 subsidiaries and 2 affiliate, as followings:

**Subsidiaries (The Company holds the shares directly)**

- 1) Tamaka Sugar Industry Co., Ltd
- 2) New Krung Thai Sugar Factory Co., Ltd
- 3) New Kwang Soon Lee Sugar Factory co., Ltd
- 4) KSL Real Estate Co., Ltd
- 5) KSL Export Trading Co., Ltd
- 6) Khon Kaen Sugar Power Plant Co., Ltd
- 7) KSL Material Supplies Co., Ltd.
- 8) KSL Agro and Trading Co., Ltd.
- 9) Savannakhet Sugar Co., Ltd
- 10) Koh Kong Sugar Industry Co., Ltd
- 11) Wynn In Trading Co., Ltd
- 12) WSP Logistics Co., Ltd.

**Subsidiaries (The company holds the shares indirectly through Wynn In Trading Co., Ltd.**

- 13) Koh Kong Plantation Co., Ltd.

**Affiliate**

- 1) Thai Sugar Terminal Pcl.
- 2) BBGI Pcl.

For the subsidiaries that the company holds its shares directly, the company has controlling power through holding more than 50 % of shares.

The company has the policy to invest in the business related to sugar business, sweetener business or other business that gives the benefit and reasonable return to core

business. The criteria for the investment will be based on competitive advantage, reasonable return, the amount of money to invest. In addition, considering the proportionate of investment will be depended on many factors, such as, how significant the expertise of business is. If the business needs special experiences significantly and the company has no or less experience, the company will let other strategic partners holding the share in higher proportion. However; if the company has the investment in high proportion, the company will assign its own representatives to participate in a position of company directors or a position of top management. In addition all of company investment must be approved by the board of director and there should not be the conflict of interest with the parent company in the future.

The company also have Non-financial KPIs such as Market share, Customer satisfaction

KSL has been certified ISO9001:2000, therefore the company have to survey Customer satisfaction both domestic and international survey which cover areas of Quality, Services and others to assess and improve satisfaction. The company have target to get score at least 94 out of 100. The result in the last 3 years as follows:

<b>Satisfaction Survey</b>	<b>Year 2016</b>	<b>Year 2017</b>	<b>Year 2018</b>
Domestic	96.51	98.26	96.46
International	95.21	96.71	95.78

For Market share in Sugar production in Thailand

	<b>Year 2016</b>	<b>Year 2017</b>	<b>Year 2018</b>
Production	774,046 Metric Ton	713,259 Metric Ton	1.182 Million Metric Ton
% Market Share	8%	8%	8%

## **5. Legal Dispute**

As of 31 October 2018, the Company had no dispute which might have a potential negative impact in excess of 5% of the shareholders' equity per its consolidated financial statements.

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## **6. General Information and Other Information**

### **6.1) General Information**

Company Name : Khon Kaen Sugar Industry Public Company Limited

Type of business : Manufacturer of Sugar & Sugar-related products

Registered & Head Office : 503 KSL TOWER 9<sup>th</sup> Floor, Sriyudhya Road, Rajathevi,  
Bangkok, 10400 Thailand

Company Registration Number : 0107547000214

Registration Phone number

Tel. : +662-642-6230

Fax : +662-642-6228

Website : <http://www.kslgroup.com>

## 6.2) Risk Hedging Procedure Against Sugar Price Volatility in the World Market

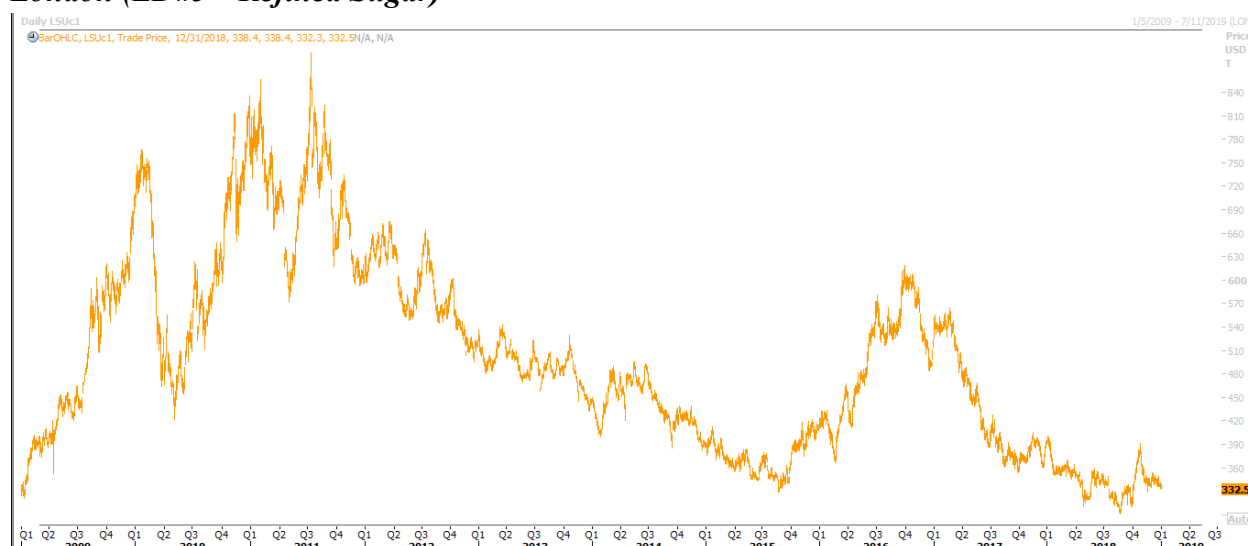
Thailand has the capability to produce sugar more than domestic consumptions, some of remaining sugar were exported. Ratios of domestic consumption to exportation vary each year by year --approximately from 20:80 to 40:60--depending on yearly amounts of sugar cane crushed. Then, Thailand becomes the second largest sugar exporter after Brazil. Revenue of sugar producers in Thailand is partially based on the world market sugar prices and fixed domestic sugar prices, regulated by government.

In terms of world sugar price, the policies supporting and protecting benefits of farmers, and food security policies regulate importing countries to issue measures for regulating and restricting sugar importation. These policies, issued by international government sectors, affect sugar demand in the world market. Factors related to climate uncertainty such as flooding, droughts, or severe cold in countries where sugar is produced and consumed, limited number of exporting countries, and any other events affecting the world market sugar supply also affect the world sugar prices. Furthermore, in the past 2 – 3 years, significant increase in investment by foreign funds has heightened fluctuation of sugar prices in the world market; prices are much higher or lower than fundamental factors. Sugar prices are especially volatile in years when consumption demand is close to or greater than the amount of sugar produced. Chart 6.1: World Sugar Prices in the Past 10 Years demonstrates volatility of sugar prices.

*Chart 6.1: World Sugar Prices in the Past 10 Years*

### *New York (NYBOT#11 – Raw Sugar)*



**London (LD#5 – Refined Sugar)**

Due to the fact that revenue of sugar producers in Thailand is partially based on the world sugar prices, which fluctuate significantly, the company's operating results will be affected when sugar prices in the world market drop drastically. To prevent the risk posed by sugar price volatility in the world market, the risk hedging procedure has been established with the use of risk management mechanisms and tools in the forms of futures contracts. Prices are based on those at futures markets in New York (NYBOT#11 – Raw Sugar) and London (LD#5 – Refined Sugar). Details are as follows:

**Case 1: Normal business transactions in trading export sugar (without risk hedging)**

A buyer and seller agree on a sugar price based on the market price. Once reaching an agreement, the changed world market price does not affect the agreed price and accounting recorded value. The seller records the price as agreed with the buyer, for instance:

**In case of sugar price increase in futures market**

Day 1: Sugar futures price is at 600 USD / ton :

The buyer and seller agree on a transaction of sugar at the market price of 600 USD + premium 100 USD

Day 2: Sugar futures price increases to 800 USD / ton :

The seller delivers the sugar. The buyer pays 600 USD + 100 USD premium = 700 USD  
Accounting Record: The company income generated from sugar sale is 700 USD.



Note: Premiums of sugar are based on types of sugar, delivery sites, delivery time, delivery terms, etc.

*In case of sugar price decrease in futures market*

Day 1: Sugar futures price is at 600 USD / ton :

The buyer and seller agree on a transaction of sugar at the market price of 600 USD + premium 100 USD.

Day 2: Sugar futures price decreases to 400 USD / ton :

The seller delivers the sugar. The buyer pays 600 USD + 100 USD premium = 700 USD.

Accounting Record: The company's income generated from sugar sale is 700 USD.

It can be seen that prices that buyers receive depend on the time that buyers and sellers agree to make transactions. This becomes problematic when the world sugar prices are high. Sellers are interested in selling, while buyers are not willing to buy due to high prices. When the world sugar prices are low, buyers are willing to buy. Sellers, however, consider the prices too low and are not so willing to sell. Sellers and buyers are unable to agree on prices. This method would only work if sugar prices in the world market were not volatile. High volatility of sugar price causes the sellers and/or buyers losing the opportunities to trade at their own satisfied prices.

**Case 2: Adopting risk hedging procedure for sugar price in form of sugar future contracts**

During a period when the world sugar prices are highly volatile, to prevent losing opportunities to sell at satisfied prices, sugar producers adopt risk hedging procedure in form of "sugar futures contracts" which their price are based on world sugar price. With this futures contracts, contracts are not settled by sugar delivery, but by cash settlement which paying the difference between the sugar price fixed on the day the contracts are made and the sugar price on the day the contracts are settled (unwinded). The risk hedging procedure may be carried out directly at sugar futures market through a broker or alternatively, through a financial institution as a counterparty. Examples are as follows:

*In case of sugar price decrease in futures market*

Day 1: Sugar futures price is at 600 USD / ton :

The seller is satisfied with the price at this level, but no interest from any buyer. Buyers expect the price to decrease. The seller entered into a contract with a financial institution fixing the sugar futures price at 600 USD.

Day 2: Sugar futures price decreases to 400 USD / ton :

A buyer is interested in buying. The seller sells sugar at the agreed market price of 400 USD + 100 USD premium = 500 USD. At the same time, the seller closes or unwinds the futures contract by buying back the contract at the market price of 400 USD/ton (sold at 600 USD while bought back at 400 USD), resulting in 200 USD gain.

From this example, the seller's actual income from the sugar sale is 500 USD + 200 USD gain from entering into the sugar futures contract = 700 USD. The amount equals the guaranteed price of 600 USD + 100 USD premium = 700 USD.

Accounting Record: The company generates income from sugar sale at 500 USD (which is lower than the guaranteed price of 700 USD). The 200 USD gain from entering into the sugar futures contract is recorded as other income.

*In case of sugar price increase in futures market*

Day 1: Sugar futures price is at 600 USD/ton :

The seller is satisfied with the price at this level, but receives no interest from any buyer. Buyers expect the price to decrease. The seller enters into a contract with a financial institution fixing the sugar futures price at 600 USD.

Day 2: Sugar futures price increases to 800 USD/ton :

A buyer needs sugar for use, resulting in buying at a high price. The seller sells sugar at the agreed market price of 800 USD + 100 USD premium = 900 USD. At the same time, the seller closes or unwinds the futures contract by buying back the contract at the market price of 800 USD/ton, resulting in 200 USD loss (sold at 600 USD while bought back at 800 USD).

In this example, the seller's actual income from the sugar sale is 900 USD + -200 USD loss from entering into the sugar futures contract = 700 USD. The amount equals the guaranteed price of 600 USD + 100 USD premium = 700 USD.

Accounting Record: The company generates income from sugar sale at 900 USD (which is higher than the guaranteed price of 700 USD). The -200 USD from entering into the sugar futures contract is recorded as a loss.

In all the cases, the company has the net income of 700 USD (excluding a commission paid to the financial institution). Methods of producing accounting records are, however, different. For the regular transaction, (no risk management involved), the company records 700 USD as income from sale. The concerns with this type of transaction is that at the time there may not be

any buyer willing to buy, or the seller may not be willing to sell. Adopting a risk hedging tool of sugar futures contracts, if the market is in a downturn, the company will record income from the sugar sale at 500 USD, and 200 USD gain from entering into the sugar futures contract will be recorded as other income. However, during an upturn in the market, the company will record 900 USD as income from sale and -200 USD loss from entering into the sugar futures contract.

In conclusion, entering into sugar futures contracts enable (1) buyers and sellers to trade at prices considered satisfactory by both parties without the need to wait for prices to reach the levels that buyers and sellers can agree on; and (2) the net revenue will be equal to fixed prices. If the market is experiencing a down turn, actual income from sugar sales will be low, but will be offset by gain from entering into sugar futures contracts. During an upturn, however, actual income from sugar sale will be high, while there is loss from entering into sugar futures contracts.

### **Important Concerns**

1. The times of recording actual sales may be different from those of recording gain/loss from entering into sugar futures contracts. Accounting policies of some companies, for example, record income from actual sales when sugar is delivered to customers. Gain/loss from entering into sugar futures contracts is recorded upon contract closure or unwinded. It is possible that companies will realize gain/loss from entering into sugar futures contracts before recording sales, resulting in a discrepancy between the two records produced at different periods. This outcome will be experienced significantly by companies that report their operating results in quarterly basis.
2. Adopting a risk hedging procedure for sugar price volatility in form of sugar futures contracts can insure the company against the sugar price risk on existing sugar volume and also sugar volume estimated to be produced in the future. Amounts hedged under sugar future contracts vary according to sugar production estimated to be produced in the future. However, amounts of sugar produced depend on quantities of cane crushed largely affected by climate, vast cultivation areas, and a lot of farmers. As a result, inaccuracy of estimation of sugar cane crops may be rather high.

When estimation of sugar cane crops is too high, sugar futures contracts have been made according to the estimates and later the actual outputs do not match up with the estimates, the contracts become oversold. If the sugar future price is in an upturn, there will be actual loss from sugar futures contracts made. This is due to the fact that there is no actual sale at a high price to offset. In contrast, when the sugar market price is experiencing a downturn, there will be actual gain from sugar futures contracts.