

Part 1

Business Overview

1. Policy and Business Overview

SPRC is one of the most modern refineries in Thailand with a capability to process a wide range of crude oils and produce high quality Petroleum products. Our complex refinery is located in the Map Ta Phut Industrial Estate, Rayong, which provides easy access to multiple transportation links ensuring convenient and cost effective transportation for our refined products. Our refining capacity is 165,000 barrels per day of crude oil, which is approximately 13.4% of Thailand total refining capacity. We produce a wide range of high quality Petroleum products including liquefied petroleum gas ("LPG"), polymer grade propylene ("PGP"), chemical grade naphtha, premium and regular grades of gasoline, jet fuel, diesel, fuel oil, and asphalt. We place our Petroleum products primarily to Thai domestic market, mostly through our long term major customers, Chevron and PTT.

1.1 Vision, Mission, and Strategy

SPRC's Vision is:

"One Family...Fueling the Future of Thailand"

SPRC's Mission is:

"We are a highly engaged Family, dedicated to providing sustained superior returns to our shareholders through industry leading safe and reliable operations, producing quality products that exceed customer expectations, in harmony with our communities and the environment"

Strategy

SPRC has 3 Key Result Areas, which are Operational Excellence, People, and Stakeholders, to achieve our Mission and Vision. The strategic objectives of each Key Result Areas are defined as follows:

1. Operational Excellence: Set the Global Standard for Operational Excellence

SPRC has a strong One Family culture, where we care about each other like a family. This caring culture is the basis our belief in achieving incident and injury free operations. We work together as One Family to protect our staff and contractors, the surrounding community, the environment, and to be our customers partner of choice. We are committed to both personal safety and process safety excellence. SPRC continues to set the standard through Human Performance (HP), to help improving our performance through recognizing potential errors, and putting procedures and practices in place to eliminate these errors, and reduce the chance of incidents or injuries in our workplace. We continuously look for ways to strengthen our performance to sustain our world leading safety and reliability performances.

2. People: Set the Standard in Thailand as the Employer of Choice

SPRC drives our organization through high efficiency work teams and an engaged family, to set the standard in Thailand as the Employer of Choice. We continue to strengthen our Knowledge Management program to create a learning organization and continue to develop world class leaders throughout our organization.

3. Stakeholders: Set the Standard in Asia Pacific for Shareholder Return

SPRC sets the standard for Shareholder Return through our Bottom Line Improvement Program (BLIP) which focuses on capturing increased margin and drives for improved financial performance. BLIP focus includes crude and feedstock optimization, process optimization, product optimization, cracker feed synergy, improved energy efficiency and oil loss, people efficiency and waste elimination. We strive to continuously improve efficiency and develop and implement new initiatives to continuously improve incremental margin. One way we do this is to sustain placement of our products in the higher value domestic market through being the Supplier of Choice.

Sustainable Development (SD) concepts are integrated throughout our business and operational policies, procedures and work instructions through the Refinery Management System. SPRC has 9 focus areas where we have assigned teams to help drive better performance.

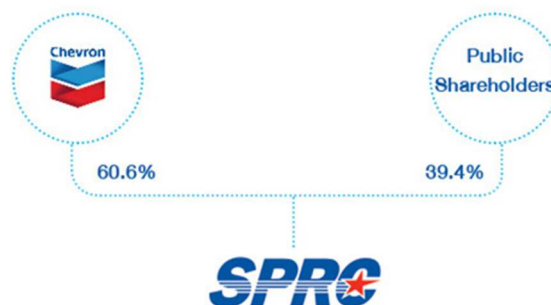
1.2 Development and Significant Changes in 2018

Our key accomplishment in 2018 are:

- Achieved 18.1 million man-hours without a days away from work injury.
- Stayed competitive through Bottom Line Improvement Program (BLIP), margin captured \$2.93/bbl, and increase of \$0.34/bbl over 2017.
- Crude optimization with 37 types of crude processed during the year including 6 crudes new to SPRC.
- Increased diesel production capacity by 2% to serve domestic demand.
- Increased optimization to maximize synergy exchanges with PTTGC to capture benefit during strong diesel market.
- Received Environmental Impact Assessment approval for our Capacity Project and other projects in March, which allows us to execute a refining capacity expansion project to 175,000 barrels per day in 4Q 2019.
- Received an Outstanding Company Performance Awards at the SET Awards 2018.

1.3 Shareholding Structure

Chevron is our major shareholder, holding 60.6% of share in SPRC. The present shareholding structure is as shown below.



1.4 Relationship with Major Shareholder

Our long standing relationship with our major shareholder, Chevron, provides SPRC global access to a wide range of competitively priced crudes and feedstocks, and petroleum products sales network. Chevron provides SPRC access to proprietary technologies, operational expertise and best practices from an industry leading international oil company, ensuring SPRC remains a top performer in safety and reliability, and stays competitive among Thai refineries.

1.5 Human Performance

Human Performance (HP) is one of the key focus areas that will help SPRC continually improve on our **Incident and Injury Free** journey. The HP program is primarily designed around the process of helping people become **more effective in the workplace** as well as becoming **more aware of the potential to make errors**. HP is then about understanding what changes can be made to improve people effectiveness and building in safeguards or tools to either minimize the chance of errors occurring or to reduce the consequences.

The HP program has looked at the following:

- Increasing the overall Staff Awareness of what HP is about and how it can impact their personal performance
- The upgrading our **Critical Work Procedures** through their review and then conversion into a consistent “smart” format
- The review of **Job Competency Profiles** and the associated training programs
- The incorporation of a more robust and consistent **Shift Turnover Process**
- The incorporation of the HP principles into the **Incident Investigation and Reporting process**

The following are highlights of the HP achievements for year 2018:

- Conducted HP workshops across the organization with the theme “Right Task, Right Way, Every Time”
- Extended the HP program to the Administration side of the company
- Use of technology to support Operator Driven Reliability (ODR)
- Competency recertified for Operations positions
- Application of rigorous audit program for critical Safe Work Practices in Operations

In 2019 we will shift much of the Operations focus to supporting the major shutdown of the refinery “The Event” in Q4. The HP program will continue to upgrade procedures, maintain consistency in shift turnovers and build competency across the organization. These activities, together with the inclusion of the HP principles in the incident investigation process will help ensure a safe a successful “Event” execution in 2019.

Nature of Business

SPRC is one of the leading petroleum product producers in Thailand and among the most efficient refineries in the Asia Pacific region. We own and operate a complex refinery with a capacity of 165,000 barrels per day of crude oil, which represents 13.4 % of the refining capacity in Thailand.

2.1 Crude and Product

Our refinery is capable of processing a wide range of crude oil, which we typically source from the Middle East and the Far East. Our choice of feedstocks and product slate at any time depends on relative prices and yields. We decide on our product slate with input from our offtakers, based on our assessment of demand and projected prices for the various products that we can produce, typically around 3 months in advance of expected orders.

Our primary petroleum products from the distillation and conversion of crude oil are hydrocarbon fuels, which include LPG, premium and regular grades of gasoline, jet fuel, diesel, fuel oil and asphalt, as well as petrochemical feedstocks used in the petrochemical industry, which include PGP, LPG, chemical grade naphtha, mixed C4, reformat and sulfur.

2.2 Revenue structure

The following table sets forth the sales revenue and sales volumes of our various petroleum products for the periods indicated. Sales prices and revenue include excise taxes, oil fund, conservation fund and local taxes on fuels as required. These taxes are pass-through taxes that are sent on to the government.

Year Ended December 31

Sale Revenue (in millions of US\$)	2016			2017			2018		
	Volume			Volume			Volume		
	Sales Revenue	(thousand barrels)	\$/bbl ⁽²⁾	Sales Revenue	(thousand barrels)	\$/bbl ⁽²⁾	Sales Revenue	(thousand barrels)	\$/bbl ⁽²⁾
PGP	98.5	1,620	60.81	99.2	1,414	70.21	122.1	1,490	81.99
LPG	107.9	2,931	36.81	128.7	2,703	47.63	137.0	2,718	50.42
Light Naphtha	108.9	2,607	41.78	131.6	2,487	52.91	181.8	2,804	64.84
Gasoline	1,420.0	16,336	86.92	1,556.1	15,382	101.16	1,868.8	16,277	114.81
Jet Fuel	234.1	4,537	51.59	286.3	4,131	69.30	466.7	5,181	90.09
Diesel	1,817.8	23,386	77.73	2,053.0	22,148	92.69	2,694.6	23,464	114.84
Fuel Oil	253.5	7,761	32.67	349.4	7,221	48.38	437.7	6,855	63.84
Asphalt	33.7	1,244	27.05	55.5	1,232	45.07	49.5	825	60.01
Mix C4	91.6	2,146	42.68	115.6	2,533	45.64	125.8	2,247	55.99
Crude	25.1	652	38.48	0.9	16	54.45	0.3	5	72.17
Other ⁽¹⁾	182.4	3,767	48.43	232.6	4,226	55.06	354.1	5,015	70.61
Total Revenue	4,373.5	66,987	65.29	5,008.9	63,492	78.89	6,438.6	66,880	96.27

(1) Includes sulfur, reformat and products sold pursuant to our cracker feed exchange with PTT Global Chemical

(2) Includes excise tax, energy conservation promotion fund, oil fuel fund and local taxes

We sell a significant portion of our petroleum products primarily through the Offtake Agreement that we have entered into with Chevron and PTT and we sell our products both domestically and for export. From time to time, we also enter into a variety of short-term product sales agreements on a spot or term basis for the remaining petroleum products that are produced in our refinery.

Our top two customers are Chevron and PTT. The following table sets forth the percentage of total revenue accounted for by Chevron and PTT, respectively, for the periods indicated.

Year Ended December 31,			
	2016	2017	2018
	% of Total Revenue		
Chevron	55.8	57.5	52.4
PTT	32.5	31.3	35.0
Others	11.7	11.2	12.6
Total	100.0	100.0	100.0

The following table sets forth our sales revenue for our petroleum products that are sold domestically as compared to export for the periods indicated. The domestic market is typically higher value than the export market.

Year Ended December 31,						
	2016		2017		2018	
	Sales Revenue	% of Total Revenue	Sales Revenue	% of Total Revenue	Sales Revenue	% of Total Revenue
(in millions of US\$, except for percentages)						
Petroleum Products						
Domestic	4,036.4	92.3%	4,354.8	86.9%	5,728.7	89.0%
Export	337.1	7.7%	654.1	13.1%	709.9	11.0%
Total revenue	4,373.5	100.0%	5,008.9	100.0%	6,438.6	100.0%

The following table sets forth our sales revenue for each of our petroleum products and such revenue as a percentage of our total revenue for the periods indicated.

Year Ended December 31,						
	2016		2017		2018	
Sale Revenue (in millions of US\$)	Sales Revenue	% of Total Revenue	Sales Revenue	% of Total Revenue	Sales Revenue	% of Total Revenue
Polymer Grade Propylene ..	98.5	2.3%	99.2	2.0%	122.1	1.9%
Liquefied Petroleum Gas ⁽¹⁾ .	107.9	2.5%	128.7	2.6%	137.0	2.1%
Light Naphtha	108.9	2.5%	131.6	2.6%	181.8	2.8%
Gasoline	1,420.0	32.5%	1,556.1	31.1%	1,868.8	29.0%
Jet Fuel	234.1	5.3%	286.3	5.7%	466.7	7.2%
Diesel	1,817.8	41.5%	2,053.0	41.0%	2,694.6	41.9%
Fuel Oil	253.5	5.8%	349.4	7.0%	437.7	6.8%
Asphalt	33.7	0.8%	55.5	1.1%	49.5	0.8%
Mix C4	91.6	2.1%	115.6	2.3%	125.8	2.0%

Crude.....	25.1	0.6%	0.9	0.0%	0.3	0.0%
Others ⁽²⁾	182.4	4.2%	232.6	4.6%	354.1	5.5%
Total Revenue	4,373.5	100.0%	5,008.9	100.0%	6,438.6	100.0%

(1) Includes Government fuel subsidies

(2) Includes sulfur, reformat and products sold pursuant to our cracker feed exchange with PTT Global Chemical

2.3 Product Pricing

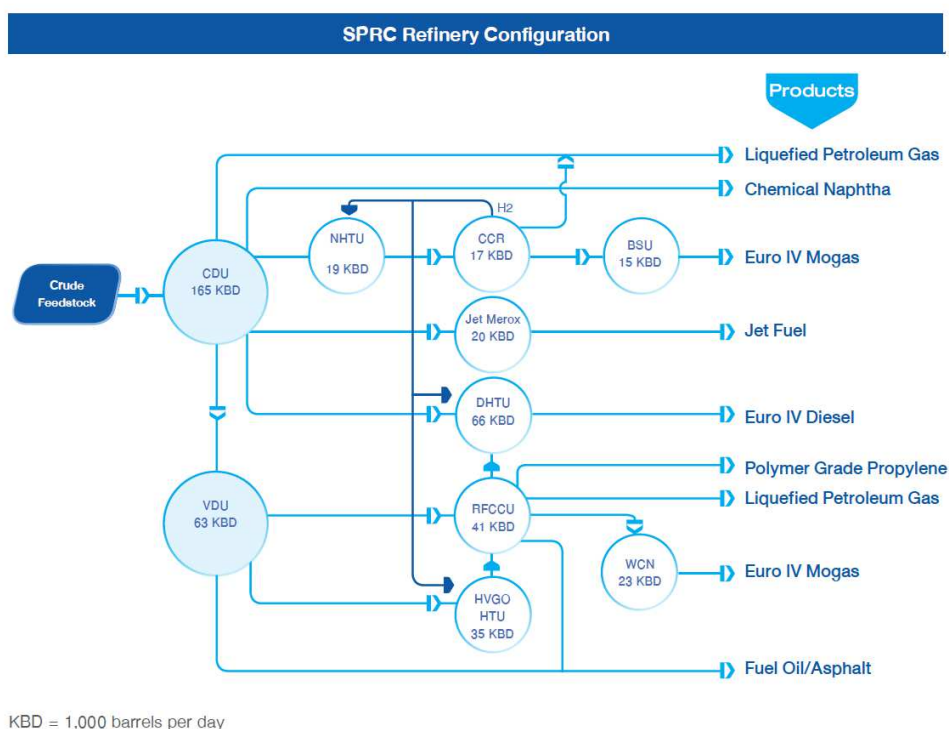
Most of the products sold through the offtake Agreement are benchmarked off the Mean of Platts Singapore, or MOPS. Thai domestic prices are adjusted from MOPS pricing with certain transportation, production, product quality, and market adjustments as appropriate.

Domestic sale prices of petroleum products sold outside of the Offtake Agreement are also market driven and are generally based on the monthly average of regional benchmark prices with certain adjustment for the applicable product in the month that they are sold. Our exports for petroleum products are also generally based on benchmark pricing, such as the price for the relevant product quoted on MOPS, plus or minus a premium or discount based on market conditions and negotiations with potential purchasers as well as differences in product quality and location.

2.4 Production Facilities and Processes

Our production facilities are located in Rayong province, approximately 200 kilometers to the southeast of Bangkok. Our refinery is a cracking refinery as compared to a hydroskimming refinery. Hydroskimming refineries are relatively low complexity refineries that have a significant amount of fuel oil yield. Cracking refineries are able to upgrade a significant portion of fuel oil into higher value transportation fuels such as gasoline, jet and diesel, providing a much higher margin than hydroskimming refineries.

The following diagram illustrates our refinery's configuration:



Our refinery's main units comprise of the following (all capacity figures are given as of 31 December 2018):

- One Crude Distillation Unit ("CDU") that heats crude and then distills it, with a capacity of 165,000 barrels per day that uses crude oil as a primary feedstock and primarily produces LPG, naphtha, jet fuel, diesel and long residue;
- One Vacuum Distillation Unit ("VDU") that uses a vacuum to improve distillation of long residue from the CDU, with a capacity of 63,400 barrels per day, and primarily produces diesel, heavy and very heavy vacuum gas oil, fuel oil and asphalt.
- One Naphtha Hydrotreater Unit ("NHTU"), with a capacity of 18,900 barrels per day, which removes sulfur from heavy naphtha prior to feeding it to the continuous catalytic regeneration reformer;
- One Continuous Catalytic Regeneration Reformer ("CCR"), with a capacity of 17,400 barrels per day, which converts low-octane naphtha into high-octane reformate for production of various grades of unleaded gasoline;
- One Benzene Saturation Unit ("BSU") that reduces the benzene in reformate, with a capacity of 15,100 barrels per day;
- One Jet Merox Unit that treats jet streams from the CDU in order to produce jet fuel, with a capacity of 20,000 barrels per day;
- One Diesel Hydrotreater Unit ("DHTU") that treats streams from the CDU, VDU and RFCCU to produce diesel, with a capacity of 66,400 barrels per day;
- One Residue Fluidized Catalytic Cracker Unit ("RFCCU") that cracks petroleum hydrocarbons in order to convert heavy low value fractions of petroleum crude oils to more valuable and higher margin products, with a capacity of 40,800 barrels per day. The RFCCU operates in conjunction with one propane/propylene splitter that allows for the separation and production of polymer grade propylene (PGP), with a capacity of 6,400 barrels per day, as well as merox treating units designed to make LPG and gasoline products meet product specifications with a total capacity of 49,000 barrels per day;
- One Whole Cracked Naphtha Hydrotreater Unit ("WCN") that treats gasoline from the RFCCU, with a capacity of 22,600 barrels per day; and
- One Heavy Vacuum Gas Oil Hydrotreater Unit ("HVGO HTU") that removes sulfur and improves feed quality for the RFCCU, with a capacity of 34,700 barrels per day.

2.5 Overview of the Refinery Production Process

By heating crude oil to a certain temperature and sending it to the crude distillation unit, it is possible to separate crude oil into different fractions, each with its own boiling range. The crude distillation unit produces several streams that are utilized in the refinery to produce different petroleum products. The lighter boiling components rise up the crude distillation tower while the heavier boiling components fall to the bottom. As the lighter components pass through the crude distillation tower, the oil's temperature gradually drops and vapor is condensed. The distillation of oil vapors at different temperatures produces various petroleum products such as LPG, naphtha, jet fuel, and diesel. The heavier components are sent to the vacuum distillation unit which reduces the boiling point of the heavier components to facilitate the separation of diesel and heavy vacuum gas oil from residue. The residue from the vacuum distillation unit is used to produce fuel oil and asphalt. The heavy vacuum gas oil and very heavy vacuum gas oil are sent to the RFCCU.

The heavy vacuum gas oil from the vacuum distillation unit is fed to the heavy vacuum gas oil hydrotreater, which removes sulfur and improves feed quality for the RFCCU. The RFCCU converts

streams from the vacuum distillation unit and the heavy vacuum gas oil hydrotreater unit that would otherwise be used to make lower value fuel oil into lighter, more valuable products such as LPG, gasoline and diesel by cracking, or breaking, large molecules into smaller molecules. Our RFCCU also upgrades a portion of the vacuum distillation unit residue and this allows our refinery to process lower cost, heavier crude oils. A dedicated distillation process is used to separate components into refinery fuel gas, PGP, LPG, gasoline, diesel, and a small amount of fuel oil. The gasoline from the RFCCU is treated in the whole cracked naphtha hydrotreater unit to meet Euro IV gasoline specifications.

Some of the lighter components from the crude distillation tower are sent to a series of towers called the light end recovery. The separated components consist of a refinery fuel gas, LPG, light naphtha and heavy naphtha. Light naphtha is sent to the gasoline-blending unit, or sold as chemical naphtha to petrochemical companies as ethylene cracker feedstock. Low octane heavy naphtha is routed to the naphtha hydrotreater to remove sulfur and then to the continuous catalyst regeneration reformer to boost its octane by changing the shape of the oil molecules to higher octane molecules. The reformed naphtha, or reformat, is sent to the benzene saturation unit which reduces benzene content in order to comply with Euro IV specifications. The product from the benzene saturation unit is used to blend different grades of unleaded gasoline.

The oil from one of the streams of the crude distillation unit is directed to the Jet Merox Unit to remove contaminants to produce jet fuel. Other streams from the crude distillation unit, the vacuum unit and the RFCCU are treated in the diesel hydrotreater unit to produce Euro IV diesel.

2.6 Feedstocks

2.6.1 Crude Oil Supply

The main feedstock used in our refinery production process is crude oil. We are capable of processing a wide range of crude oil, including crude oil from the Middle East, Far East and other regions. As our refinery has upgrading and conversion units, we are able to use a higher proportion of heavy sour crude from the Middle East, which has a higher sulfur content and is less costly than light sweet crude, to produce a product slate that matches customer demand. We use Chevron's global crude and feedstock procurement network, crude characterizations and proprietary linear program to optimize the quantity and type of crude oil and other feedstocks that serve as inputs in our refinery. This allows us to more precisely source, select and blend crude oil that enhances our gross refining margins while meeting customer demand. Our crude oil slate is determined after we decide on our product slate with input from our offtakers, based on our assessment of customer demand and projected prices for the various products that we can produce, typically around 3 months in advance of product sales. We input pricing and product demand information into Chevron's proprietary linear software, which takes into account our production processes and constraints, to determine the optimal blend of crude oil to purchase.

We source and purchase crude oil primarily through Chevron and PTT and their affiliates on credit terms that are in line with market practice.

2.6.2 Other Refinery Feedstocks and Raw Materials

We also purchase long residues and other feedstocks for processing in our refinery. We purchase such principal feedstock for our refinery primarily from Chevron under feedstock supply agreements. We use hydrogen to remove sulfur from our petroleum products as part of the hydrotreating process. We have entered into agreements with outside suppliers to provide supplemental hydrogen to our refinery.

2.6.3 Intermediate Products Exchange

We have entered into a cracker feed exchange with GC where we supply heavy vacuum gas oil as supplemental feed to GC's hydrocracker, and GC supplies us with hydrocracker bottoms as a supplemental feed to the RFCCU. The objective of the exchange is to increase yields of higher value

products at both our RFCCU and GC's hydrocracker. Our facilities are located near to those of GC's refinery, and the intermediate products exchange is accomplished through use of direct pipelines.

2.6.4 Catalysts

We use various types of catalysts in many of the major units in our refinery to facilitate reactions to improve product yields and product quality. Catalysts typically last from 2 to 5 years, depending on the type of catalyst used and the unit in which it is used. We evaluate and select catalysts based on their performance and price and the needs of our refinery. We typically purchase catalysts on a spot basis, based on technical and commercial considerations at the time. However, our Residue Fluidized Catalytic Cracker Unit requires continuous catalyst make-up, and we typically enter into term contracts for this continuous supply.

2.7 Flows and Storage

2.7.1 Crude Oil

We primarily receive crude oil shipments through a single point mooring system, that we own jointly with GC, that permits us to receive shipments from very large crude carriers, or VLCCs, of up to 265,000 dwt capacity. VLCCs significantly reduce crude transportation costs from the Middle East and we also take advantage of co-loading VLCCs with GC in order to share these transportation costs. The co-loading also applies the Aframax size with other refineries to minimize freight cost when receiving crude in smaller shipment. We are also able to receive crude oil in smaller shipments through a pier in our marine terminal. This crude is delivered to storage tanks at the refinery through pipelines that connect directly to our refinery.

2.7.2 Product Distribution

The strategic location of our refinery in the Map Ta Phut Industrial Estate in Rayong provides us access to a convenient product delivery network that allows us to distribute our products in a cost effective manner via transmission pipelines, coastal vessels via our marine terminal, and trucks via our truck loading terminal, to Thailand's main demand clusters for petroleum products. In addition, several petrochemical companies that purchase products from our refinery are also located in the vicinity of the Map Ta Phut Industrial Estate. Our refinery is connected to the Thapline pipeline and our offtakers transport gasoline, jet fuel and diesel through it to distribution networks in the Bangkok area. We operate a booster pump, which is jointly owned with GC, to deliver products to the Thapline pipeline.

We also have a marine terminal with two piers to distribute products throughout Thailand. The main pier has five berths and is able to accommodate vessels of up to 80,000 dwt and is used for the distribution of petroleum products both domestically and to export markets as well as to receive domestic crude oil and other feedstocks. We also have a second pier that has two berths for the loading and distribution of LPG.

We also operate a truck loading terminal for our offtakers to facilitate the distribution of our petroleum products to the southeast and northeast of Thailand, within Rayong province and to the Indo-China export market, including Laos, Cambodia and Myanmar. Our truck loading terminal also contains an asphalt loading rack to distribute asphalt and we charge operating costs of the truck loading terminal to offtakers. We have installed a vapor recovery unit and bottom loading capabilities in our truck terminal to reduce VOC emissions at the terminal.

2.7.3 Storage

Our refinery has a total of 71 storage tanks and facilities to enable us to store feedstocks after delivery and before process, products before delivery and certain intermediate processing streams. We have an

aggregate nominal crude oil storage capacity of approximately 4.9 million barrels, representing up to 29 days' supply of crude oil. Thai regulations require us to hold a legal reserve of crude oil equivalent to 6% of our annual sale of petroleum products domestically. Our product inventory increases and decreases from time to time reflecting timing of product deliveries and operational variations.

2.8 Competition

The refining industry in Thailand is highly competitive. As of 31 December 2018, there were 7 refineries in Thailand, with a combined refining capacity of 1,235 kbpd. We principally compete with 5 other domestic petroleum refineries in Thailand with a combined capacity of 1,097 kbpd, which are Thai Oil, Esso, Bangchak Petroleum, GC, and IRPC. PTT, which is Thailand's largest oil and Gas Company, holds significant interests in 3 of our principal competitors: Thai Oil, GC and IRPC.

2.9 The Oil Refining Industry

2.9.1 Current Oil Price Environment

In 2018, crude prices were volatile with Dubai crude price moving between US\$49.50/bbl and US\$84.41/bbl, with an average of US\$69.65/bbl, which was higher than 2017 average of US\$53.16/bbl. Average Dubai price for Q2/18 and Q3/18 were US\$72.12/bbl and US\$74.25/bbl respectively as a result from Venezuela's production decline due to deteriorating economy, Libya's National Oil had declared force majeure on exports from Zawiya oil terminal as production at Sharara oilfield dropped and Iran's crude oil exports are expected to decline after the U.S. withdrew from the Iran's nuclear deal. In the fourth quarter 2018, average Dubai price decrease to US\$67.44/bbl because of global supply increased and investors worried about the impact on fuel demand from of lower economic growth and trade disputes. The Organization of the Petroleum Exporting Countries (OPEC) and other large oil producers led by Russia agreed in December to cut their combined crude output by 1.2 million barrels per day from January 2019 in order to stem the fall in oil prices. The U.S. crude oil stocks have reached low record stock levels at 441 million barrels at the end of December 2018.



2.9.2 Oil Industry Outlook

The International Monetary Fund (IMF) has projected world economic growth to expand by 3.7% in 2019. The advanced economies forecast for 2019 is 2.1% which lower from 2018 as the decline in advanced economy growth with the unwinding of the US fiscal stimulus and the fading of the favorable spillovers from US demand to trading partners is offset by a pickup in emerging market. World liquids demand growth largely unchanged at 1.3 mb/d in 2018 and 1.4 mb/d in 2019 as a weaker economy is largely offset by lower oil prices.

Asian refined products demand growth is expected to reduce modestly in 2019 amid slowing economic growth and rising trade tensions. Middle distillate demand growth will remain relatively strong amid the continual development of aviation infrastructure in developing countries and relatively low airfares in a bid by airlines to retain market. Asian gasoline and naphtha demand growth is estimated to moderate further owing to weaker automobile car sales in China and more ample supply availability. Fuel oil demand growth is expected to remain relatively flat in first half 2019 before declining ahead of the IMO 0.5%S bunker fuel specification.

Excess of supply is expected to return the market balance in 2019 due to OPEC and non OPEC agreed to cut oil production 1.2 MMBPD starting in January 2019, along with declining Iranian output, should allow a modest recovery in prices.

2.10 Environmental Matters

Our operations are subject to various environmental laws and regulations, including the Enhancement and Conservation of National Environmental Quality Act B.E. 2535 (1992), the Factory Act B.E. 2535 (1992) and Fuel Control Act B.E. 2542 (1999). In 1992, Thailand strengthened environmental laws and regulations in order to promote sustainable development and to better protect the natural environment.

Environmental laws and regulations, among other matters, restrict the type, quantities and concentration of various substances that can be released into the environment. Our operations are also subject to laws and regulations relating to the generation, handling, storage and transportation of petroleum products, as well as the treatment of pollutants. These environmental laws and regulations, particularly those relating to waste management, air emissions and water discharged from our operations, affect our oil refining business. The primary governmental bodies which supervise the environmental aspect of our operations are the Office of Natural Resources and Environmental Policy and Planning under the Ministry of Natural Resources and Environment, the Pollution Control Department of the Ministry of Natural Resources and Environment, the Industrial Estate Authority of Thailand, the Industrial Works Department of the Ministry of Industry and the Department of Energy Business of the Ministry of Energy.

We have implemented various pollution control system and other environmental impact mitigation measures and monitoring program as required by applicable law, including applying advanced technologies to reduce emissions and conserve resources. Our refinery has implemented a high efficiency wastewater treatment system consisting of an oil and water separator that permits the recycling of oil, an induced air flotation unit that also improves oil and water separation, an equalization unit that mixes and controls the volume and concentration of contaminant and bio treaters that remove contaminants prior to discharging water. Our refinery has implemented solid waste management system to ensure that all types of wastes generated from SPRC sites are properly classified, handled and safely disposed of in compliance with Thai legislation and International agreements. We also applied 3Rs (Reduce, Reuse and Recycle) in the solid waste management. SPRC waste management focus to reduce or minimize the amount of waste generated and disposal in landfill by incorporating 3Rs wastes where possible, disposing the remainder in a safe and environmentally responsible and acceptable manner.

In 2018, the government has announced the Enhancement and Conservation of National Environmental Quality Act (number 2) B.E. 2561 and Ministry of Industry has announced exception of non-hazardous

waste movement permit requisition B.E. 2561 and which currently we have already complied with this regulation.

We conduct regular reviews aimed at achieving compliance with our environmental policies. We believe we are in compliance in all material respects with environmental laws and regulations applicable to us.

SPRC believes in maintaining a good balance between environmental stewardship, financial performance, and social development. We have incorporated this fundamental Sustainable Development belief into the way we do business. Several key Focus Areas for us to continuously improve our performance include Green House Gases Emissions, Air Emissions, Oil Spill Prevention and Response, Water Management and Waste Management.

3. Risk Management and Risk Factors

Risk management is the one of important work processes in our refinery. Effective risk management minimizes the chance of the identified risk happening and the potential impact if it does occur, as well as providing valuable inputs to corporate decision making and strategic planning that improves business growth with sustainability.

SPRC has a robust work process to identify risk factors, develop risk assessments and mitigation plans to manage these risks. We attach great importance to identify risk factors from internal and external sources, which are aligned with our "Key Result Areas" (KRA's), Operation Excellence, Stakeholders and People. We utilize a risk matrix to assess which risks require mitigation plans.

The SPRC risk management process assesses risk throughout all areas of our business, including strategic risk, business risk, operational risk, financial risk, project risk, trading risk and compliance risk. All risk factors and mitigation actions are reviewed quarterly with the Risk Management Committee which consists of the Chief Executive officer, the deputy Chief Executive Officer-Operation, the Supply Planning Manager and the Chief Financial Officer. We also review our risk mitigation plans and progress on mitigation plans with the Audit Committee on a quarterly basis.

3.1 Strategic Risk

3.1.1 Refinery Competitive Position

SPRC uses Solomon Associates refinery benchmarking services to help SPRC develop aspirational targets to improve our operating efficiency and competitiveness. SPRC has demonstrated sustained performance meeting our aspirational targets in utilization, efficiency and reliability, which are the first steps in being competitive. To provide continuous improvement in financial returns, SPRC has a Bottom Line Improvement Program (BLIP) which addresses margin improvement, People Efficiency & Waste Elimination (PEWE) and oil loss control. We have effective work processes such as Advanced Optimization Studies (AOS) and Innovation Quests (IQ) to help identify ideas to enhance refinery optimization.

SPRC shuts the entire refinery every five to six year for a major turnaround and inspection (T&I), which reduces downtime and increases major maintenance efficiency, improving our overall competitiveness. During our next T&I, scheduled in 2019, we will take the opportunity to implement projects to improve safety and reliability, reduce energy consumption, enhance flexibility for optimization of crude supply, and increase refinery capacity from 165,000 barrel/day to 175,000 barrel/day.

SPRC received a SET "Best Company Performance Awards 2018" for the first time indicating excellent financial results, corporate governance and public disclosures.

3.1.2 Laws and regulations relating to the environment or product specification requirements

SPRC supplies products that meet or exceed customer requirements and expectations. We have a dedicated working team, the Crude to Customer Committee, to develop and implement effective work processes starting with crude buying and finishing with product delivery to the customers, to ensure we deliver the right products, on schedule. and fit to customers' needs.

SPRC is a member of the Federation of Thai Industry (FTI) where we work with other refineries to understand laws and regulations that may impact our business and advocate with the government as appropriate. This helps us develop mitigation plans to minimize potential risks from the regulations. Some of the laws and regulations SPRC reviewed in 2018, related to our business, include new global bunker fuel specifications from the IMO, EURO V fuels, LPG free market price, and future asphalt specifications. SPRC has developed mitigation plans and actions for each of these items, and has a process to ensure these actions are completed as planned.

3.1.3 Market risk

Refinery margins are impacted by global drivers for crude and product prices in the market including supply and demand, much of which are outside of SPRC's control. SPRC has put a focus on those areas which we can control, to improve our performance relative to the market and improve our competitiveness. As stated above, SPRC sets aspirational targets for Operational Excellence through safe and reliable operations, allowing us to maximize utilization of our assets, and maximize profit through our Bottom Line Improvement Program (BLIP). We always set challenging targets to increase our realized margin over benchmark margins, whether in a low or high margin situation, which improves SPRC's competitiveness.

3.2 Operational Risk

A significant interruption in the operations

SPRC has a strong "One Family" culture, through which we commit to be incident and injury free in all our refinery's operation, which is the key driver for our excellent safety and reliability performance. SPRC's strategic intent is to Set the Standard globally for Operation Excellence. We seek to continuously improve our performance, using benchmarking from Solomon Associates to set our targets.

One of the methods SPRC is using to operate incident and injury free is to engage our family with "Human Performance" (HP) tools with the principle of the "Right Task, Right Way, Every Time". The Human Performance tool helps to identify and eliminate "error traps" from human mistakes, and support our family to perform tasks in procedure or skill based modes.

Process Safety Management (PSM) is another component of SPRC's Operational Excellence program. SPRC has embedded process safety concepts into our Refinery Management System that consists of Hydrocarbon Management, Asset Management, Administrative Management, and Environmental, Health and Safety Management. These management systems provide policies, procedures and work instructions for all areas of our business to ensure we operate incident and injury free.

SPRC also integrates Sustainable Development concepts with our "Key Result Areas" to ensure that our activities meet the expectations of all our stakeholders, including shareholders and the surrounding communities. SPRC received the CSR-DIW Continuous Award in 2018 for the 3rd Consecutive Year which was granted by the Department of Industrial Works (DIW), Ministry of Industry. The CSR-DIW Continuous Award recognizes SPRC's commitment to social responsibility, quality of life of employees, communities and the environment that must grow and develop together.

3.3 Financial Risk

SPRC has low debt/equity ratio and we have effective system to monitor including forecast cash flow. Moreover, our revenues, cost and expense are in US. dollar currency. These will help reducing our exposure to volatile interest rate and foreign exchange rate fluctuation.

4. Operating Asset

The Company's Major Assets

As of 31 December 2018, the company's property, plant and equipment, which the company has the right of ownership, and its net book value after accumulated depreciation as presented in the company's financial statement are as follows:

Major assets	Book value		Obligation
	US\$ million	Baht Million	
Land	73	2,395	No
Buildings	57	1,848	No
Refinery plant & machinery	1,986	64,770	No
Furniture, fixtures and equipment	72	2,359	No
Construction in progress	31	1,024	No
Total cost	2,220	72,396	
<u>Less Accumulated depreciation</u>	<u>(1,340)</u>	<u>(43,698)</u>	
Net book amount after accumulated depreciation	880	28,698	

Land

The company's refinery is located on its own land of approximately 1,200 rai in Map Ta Phut Industrial Estate. The company also leases certain parcels of land of approximately 115 rai for the operation relating to the refinery such as the company's product piers.

Refinery Plant and Machinery

The company has the right of ownership in the refinery plant and all machineries used in the company's refinery operation.

Detail of Insurance

The company's significant insurance policies include a "property all risks" policy, which includes coverage of material damage, machinery breakdown and business interruption for the refinery as well as the joint ownership interest in the single point mooring system. The company also carries third-party liability, marine cargo insurance and limited business interruption insurance. The company, insurance broker and shareholders review the company's insurance coverage periodically and the terms and conditions of the insurance policies are in accordance with industry norms and maintained at adequate levels.

All of the above insurance policies are subject to deductibles and are renewed annually. Some of the insurance coverage does not extend to war or acts of terrorism, among other exclusions.

Intangible Assets

As of 31 December 2018, the company's intangible assets and its net book value after accumulated amortization as presented in the company's financial statement are as follows:

Intangible assets	Book value	
	US\$ million	Baht Million
Computer Programs	13	433
Total cost	13	433
<u>Less</u> Accumulated amortization	(9)	(289)
Net book amount after accumulated amortization	4	144

Right for Use of Land in Map Ta Phut Industrial Estate and Long Term Lease

Agreement for Use of Land for industrial purpose in Map Ta Phut Industrial Estate

On 20 November 1992, the company entered into an agreement with IEAT for the use of land of approximately 43 rai which is used for the company's marine terminal. The agreement is for a period of 30 years.

On 11 April 2018, the company amended this agreement by returning the empty land to IEAT. The Company has remaining right to use the land approximate 34.5 rai.

The company has a plan to extend the agreement before it expires.

The company also entered into a memorandum annexed to the agreement for use of land for industrial purpose dated 23 July 2008 for the piperack used for product pipelines and transmission lines of approximately 12 rai for the period of 27 January 1994 to 30 June 2005 and approximately 5 rai for the period from 1 July 2005.

The company also entered into a land use agreement for other operations relating to IEAT undertaking dated 23 July 2008 for the piperack used for the petroleum product pipelines and transmission lines of approximately 15 rai. The agreement is for a period from 20 November 1992 to 19 November 2022.

Long Term Lease

The company entered into a land lease agreement with IEAT dated 19 June 2007 for the refinery operation and power generation with an area of approximately 52 rai in IEAT area for a period of 30 years from 6 July 1995 to 5 July 2025.

Investment Policy in Subsidiaries and Associated Companies

As of 31 December 2018, the company has no investment in subsidiaries or associated companies so the company does not have an investment policy in subsidiaries and associated companies.

5. Legal disputes

As of 31 December 2018, there is no material litigation against the Company which could have a negative effect on our assets exceeding 5% of shareholder's equity. In addition, there is no lawsuit, which could have a significant effect on our business.

6. General information and other important information

6.1 General information

Company Name	Star Petroleum Refining Public Company Limited
Initial	SPRC
Business	<p>Founded in 1992, SPRC is one of the leading petroleum product producers and oil refiner in Thailand and the Asia Pacific region.</p> <p>SPRC owns and operates a complex refinery with a capacity, as of 31 December 2018, of 165,000 barrels per day of crude oil, which represents 13.4% of the refining capacity in Thailand.</p> <p>SPRC strategically located in Map Ta Phut, Thailand's premier petrochemicals hub.</p> <p>Our key products consist of LPG, premium and regular grade of gasoline, jet fuel, diesel and fuel oil.</p> <p>Our unique configuration and flexibility in production enables us to produce more gasoline compared to other Thai refineries.</p>
Registration number	0107555000155
Address	<p>No.1, I-3B Road, Map Ta Phut, Muang Rayong, Rayong 21150</p> <p>Tel: +66 (0) 38 699 000 Fax: +66 (0)38 699 999</p>
Website	www.sprc.co.th
Listing Date	On 8 December 2015
Capital	As of 31 December 2018
Registered Capital	Baht 30,004,442,705 comprising 4,335,902,125 fully paid-up common shares of Baht 6.92 per share
Number of Employees	496 persons (as of 31 December 2018)
Secondary Market	Stock Exchange of Thailand (SET)
Investor Relations	<p>Telephone number: +66 (0) 38 699 887</p> <p>Website: http://investor.sprc.co.th/, E-mail: ir@sprc.co.th</p>

6.2 Reference

Securities Registrar	<p>Thailand Securities Depository Co., Ltd.</p> <p>93 Ratchadaphisek Road, Dindaeng, Bangkok 10400, Thailand</p> <p>Tel: +66 (0) 2 009 9000,</p> <p>Fax: +66 (0) 2 009 9991</p> <p>SET Contact Center: +66 (0) 2 009 999</p> <p>Website: http://www.set.or.th/tsd E-mail: SETContactCenter@set.or.th</p>
External Auditor	<p>PricewaterhouseCoopers ABAS Ltd.</p> <p>15th Floor Bangkok City Tower, 179/74-80 South Sathorn Road, Bangkok 10120, Thailand</p>