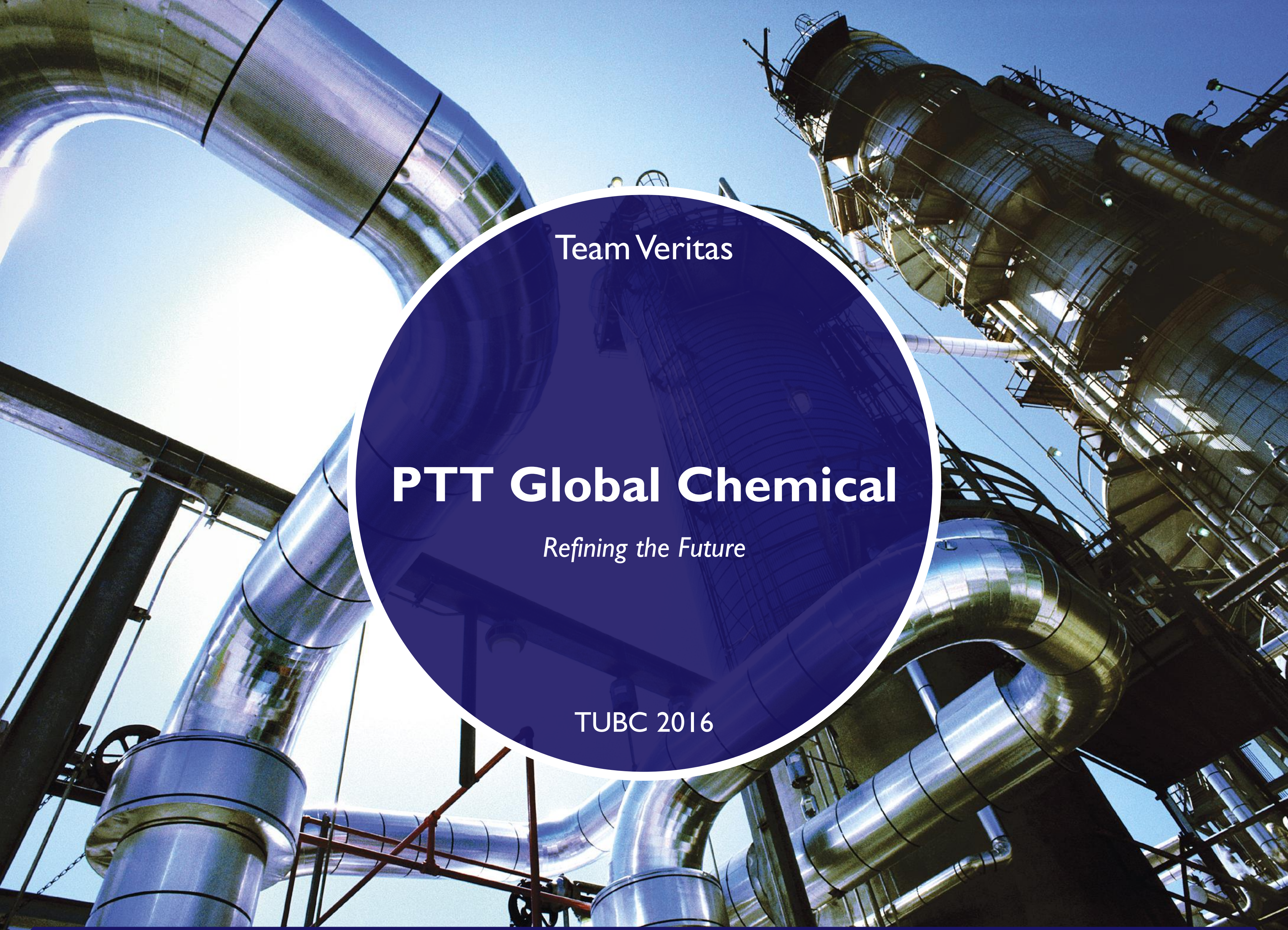


Team Veritas

PTT Global Chemical

Refining the Future

TUBC 2016

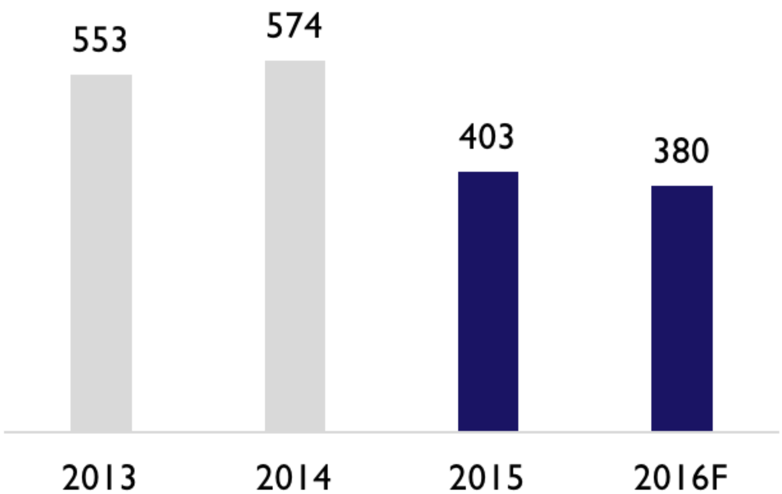
Pumthad Charudej Atis Pichetpat

Financial Performance

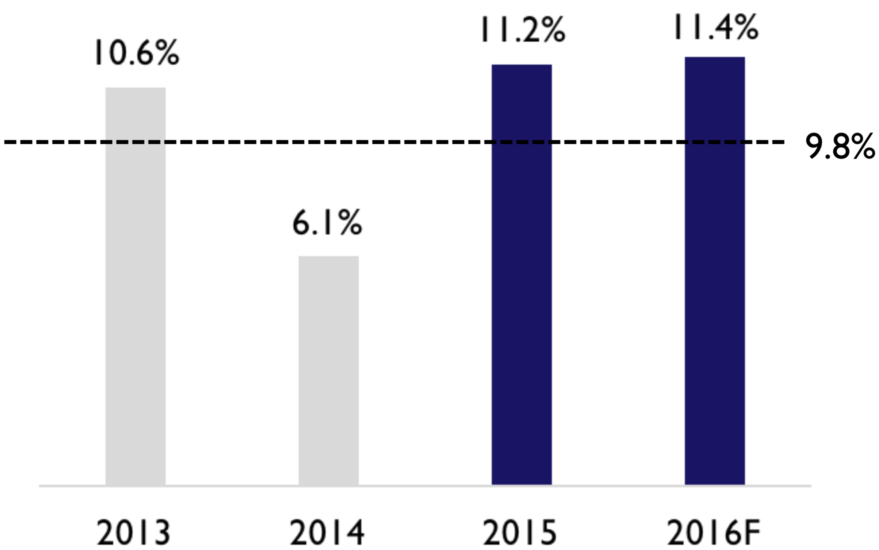
Revenue decrease in past few years

REVENUE

In billions of baht



EBITDA MARGIN



- Revenue fluctuates due to the volatile oil price

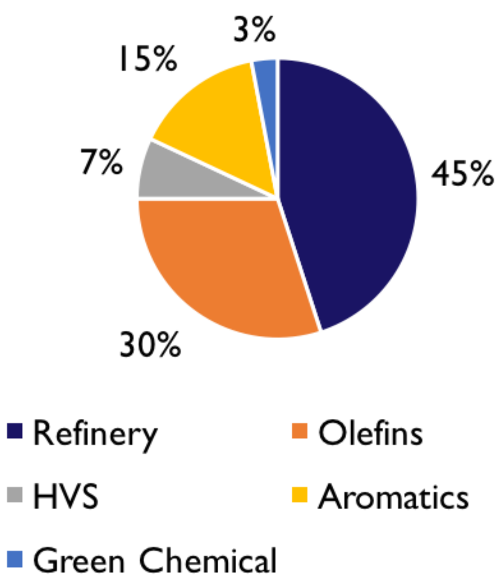
- Though sales decreased, overall EBITDA margin remained relatively stable
- Implies that PTTGC has been able to control production efficiency

Source: Annual Report 2015

Financial Breakdown

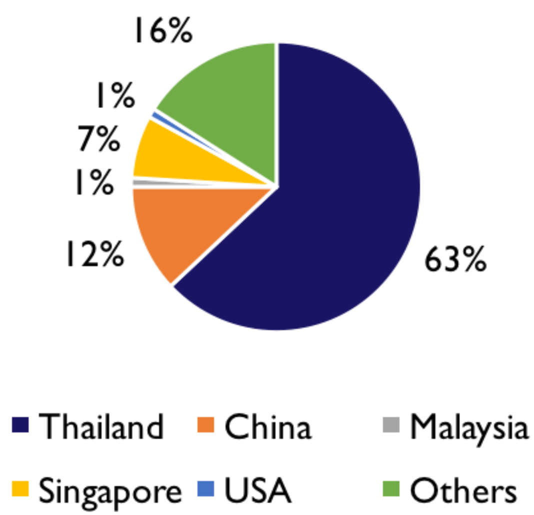
Most sales are from refinery ops. in Thailand

2015 REVENUE CONTRIBUTION



- Products with major contribution are refinery, olefins, and aromatics

GEOGRAPHY BREAKDOWN



- Majority of the sales are from Thailand while minor portion is from USA

Source: Annual Report 2015

Role of PTTGC's Refinery Business

Refinery contributes majority of sales

PETROLEUM REFINERY

- One of PTTGC's core business is petroleum refinery
- Their refinery has the capacity of refining 280,000 barrels of crude oil per day

DIFFERENT PETROLUEM PRODUCT

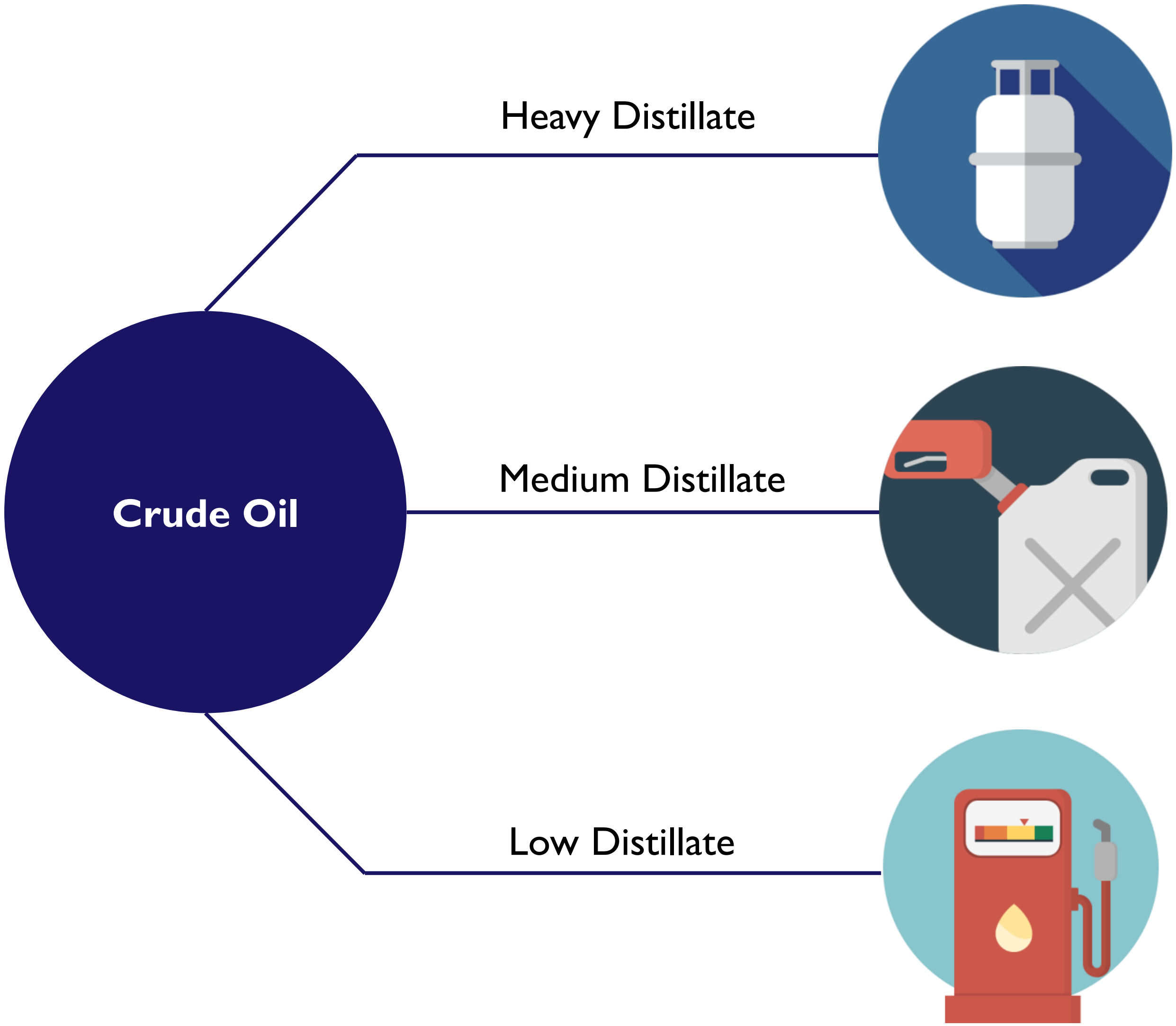
- Offers a wide range of petroluem products from light distillates to heavy distillates

Source: Annual Report 2015

Refinery Operations

Crude oil is processed into various petroleum

Situation Analysis



- Liquified Petroluem Gas
- Light Naphtha
- Reformate

- Jet Fuel
- Diesel

- Fuel Oil

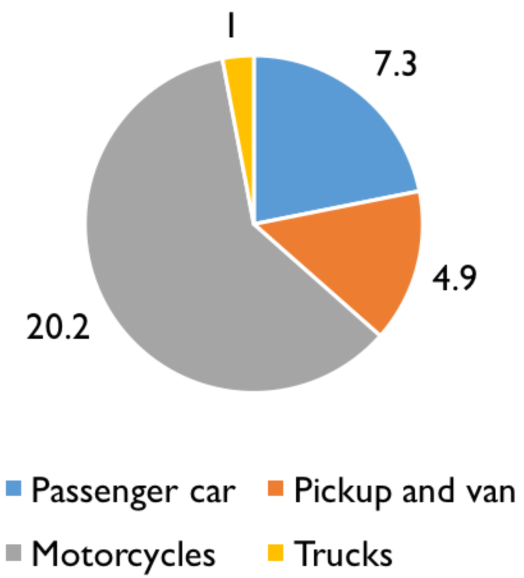
Source: Case Materials, Annual Report 2015

Trend Analysis

Thailand car consumption is on a decline

VEHICLE USERS IN 2015

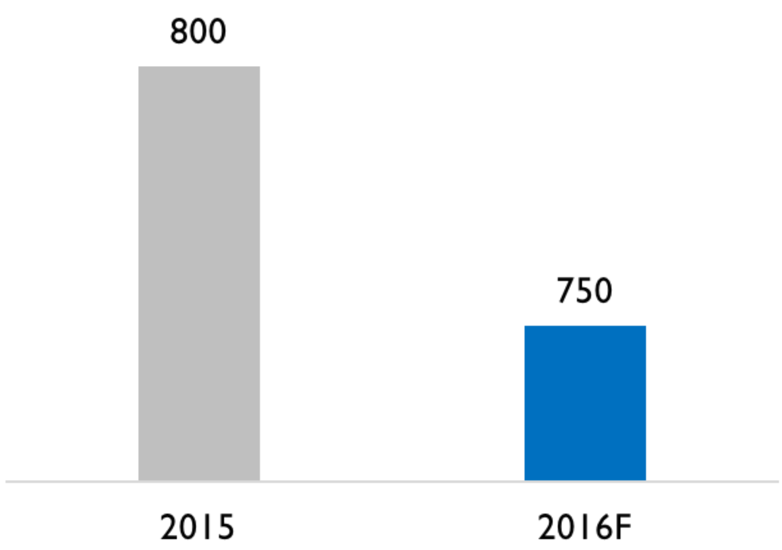
In millions of people



- Majority of the vehicle users in Thailand are motorcycle users, followed by passenger cars

DOMESTIC CAR SALES DROP

In thousands of units



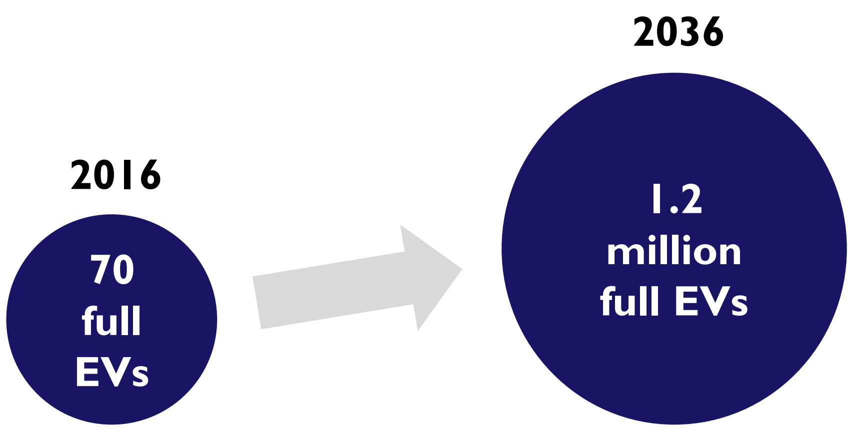
- New domestic car sales are expected to drop in 2016

Source: Bangkok Post

Trend Analysis

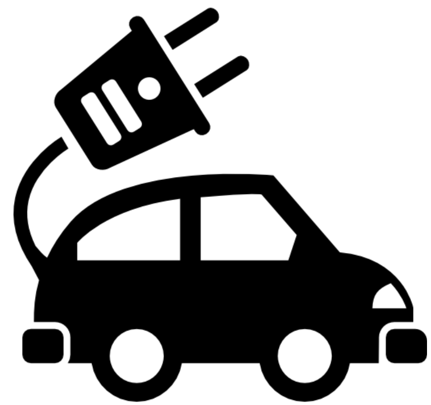
Thai government is aiming to promote EV usage

NEEDS OF EV INDUSTRY



- Production expertise and knowledge development
- Suitable charging infrastructure throughout the country
- Material technology

BUT MARKET IS STILL IN INFANCY



- There is currently 70 EV car with 4 charging infrastructure
- Thai market is not ready to sell EV due to high importing price
- Government and company can collaborate to drive future EV industry

Source: SCB EIC

Trend Analysis

Thai government is aiming to promote EV usage

Situation Analysis

Implication

Currently, the core domestic market is not ready for mass EV consumption but the future of EV is inevitable given rapid technological improvements

NEEDS OF EV INDUSTRY

2016

70 EV

2036

1.2 million EV

- Production expertise and knowledge development
- Suitable charging infrastructure throughout the country
- Material technology

BUT MARKET IS STILL IN INFANCY

- There is currently 70 EV car with 4 charging [illegible]
- Thai market is not ready to sell EV due to high importing price
- Government and company can collaborate to drive future EV industry

Source: SCB EIC

Two Growth Stages

There will be two parts to our strategy

First Stage: Grow	Second Stage: Prepare
	
• Focus on **maximizing growth based on our core expertise and existing business**	• **Prepare PTTGC for the imminent threat of EV** trend that is coming up in the future

Source: Team Analysis

Executive Summary

5-year strategic direction

GOAL	KEY QUESTIONS	RECOMMENDATIONS
To ensure sustainable growth of PTTGC's core businesses while prepping the company for the upcoming trend in electric vehicles	How can the company maintain its competitive edge in its core lines of business?	***Bolster the Core*** Identify **new geographic market opportunities** in order to strengthen the company's core lines of business through production expansion
	How can the company prepare itself for the changing EV landscape?	***Adapt for More*** **Extend chemical product lines** to suit the needs of upcoming EV production in Thailand


Bolster the Core

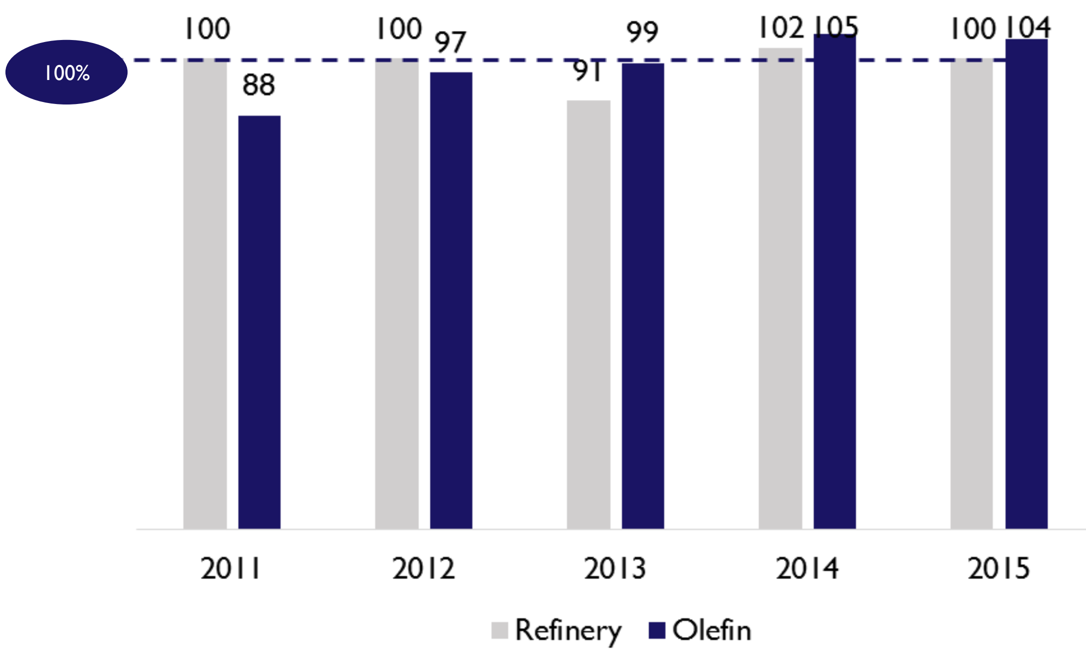
Situation Analysis

High utilization rates are pushing for GC to expand

Bolster the Core

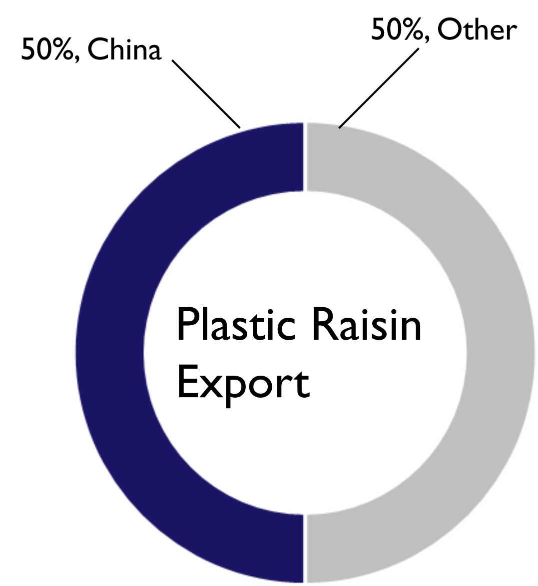
Maximum utilization rate of Refinery and Olefin

Utilization rate, in percentage



Export to China

In percentage



With maximum utilization, PTTGC should move forward to its next action

Source: Team Analysis, Annual Report 2015

High utilization rates are pushing for GC to expand

Bolster the Core

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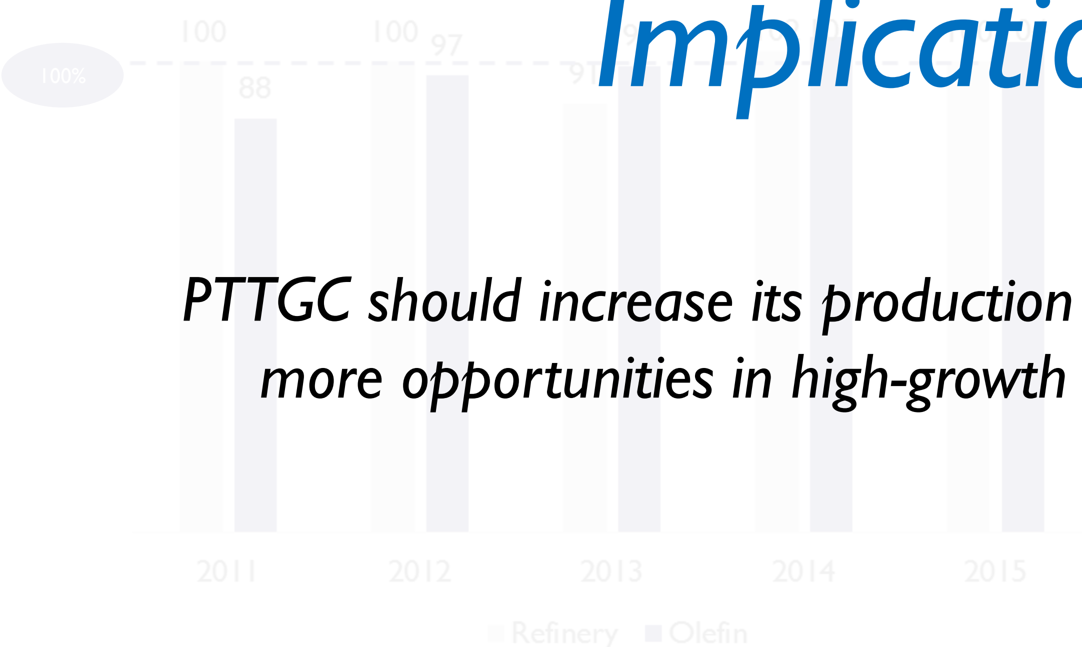


Export to China

In percentage

Implication

PTTGC should increase its production capacity and capture more opportunities in high-growth emerging markets

With maximum utilization, PTTGC should move forward to its next action

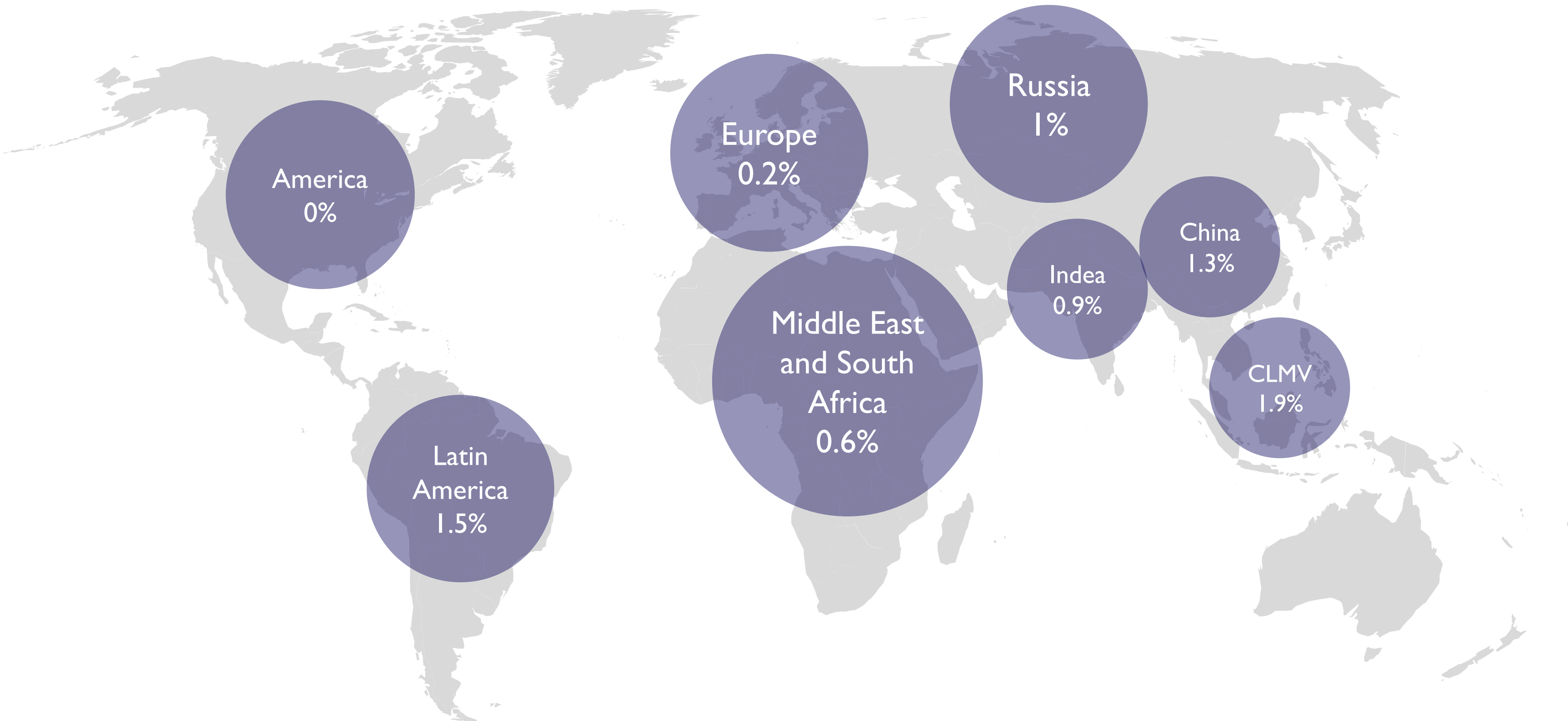
Source: Team Analysis, Annual Report 2015

Situation Analysis

Global petrochemical demand growth leads to CLMV

Bolster the Core

Forward 5-year CAGR in petrochemical industry by region



Source: Trading Economics

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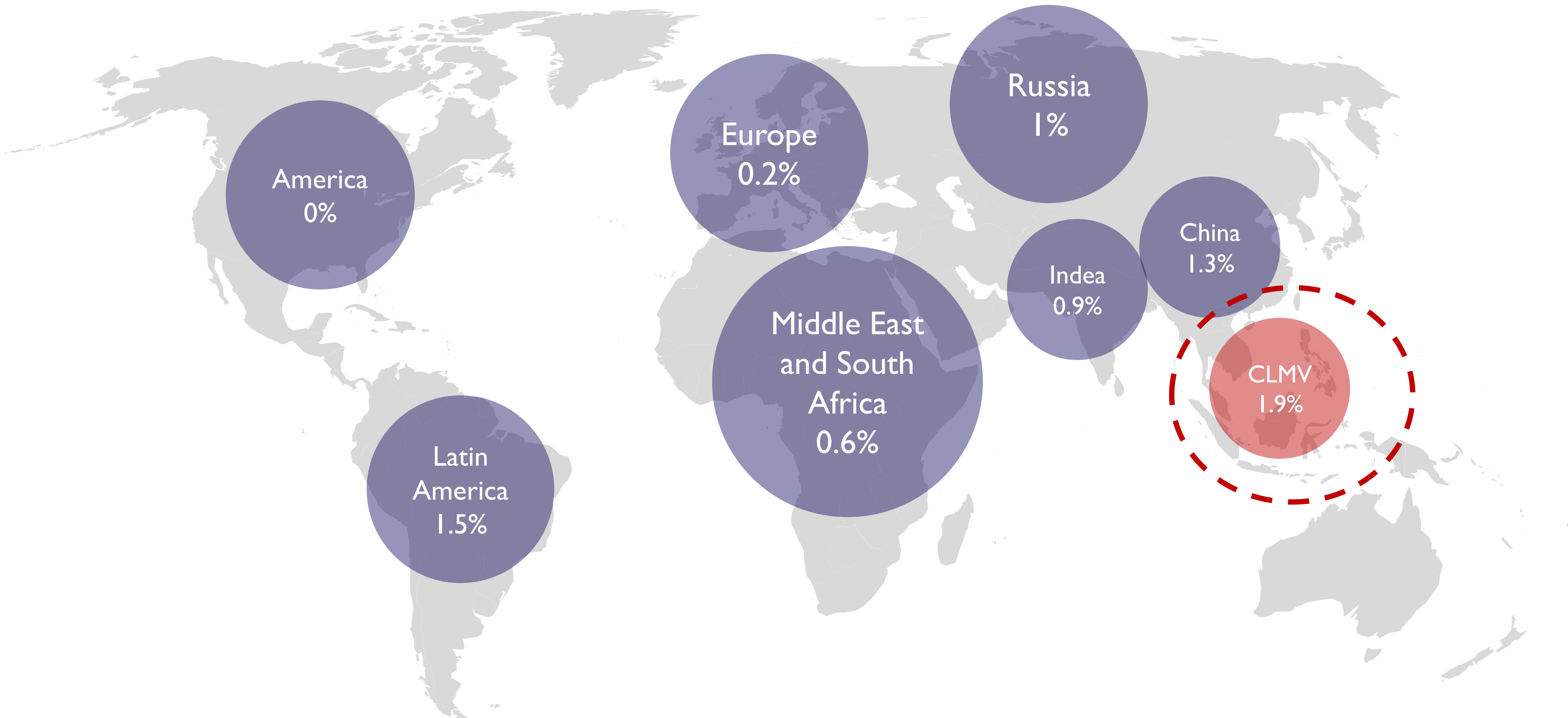


Source: Trading Economics

PTTGC must be selective in choosing a market

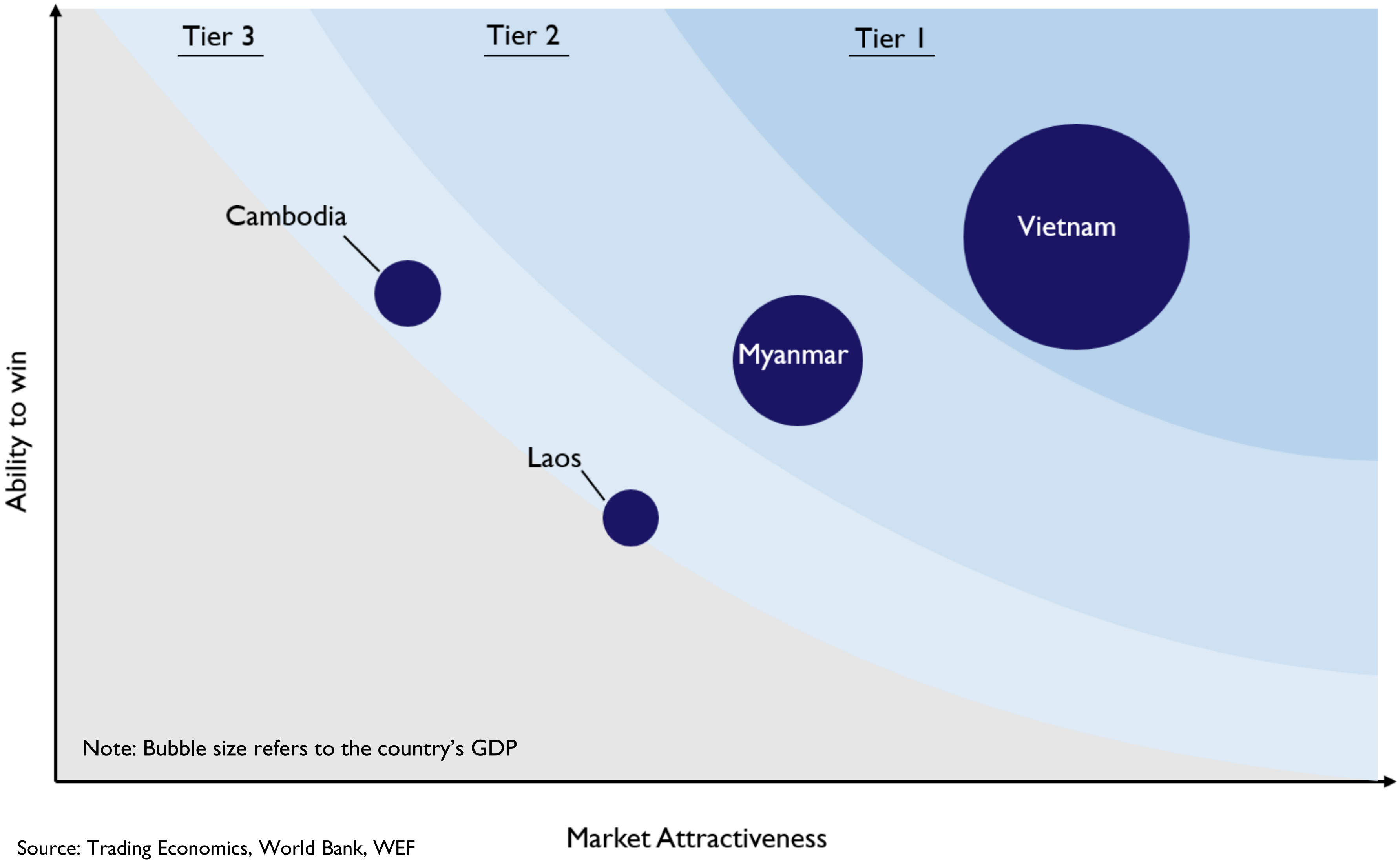
	Market Attractiveness			Ability to win
	Resin Consumption In KTA	**Oil Consumption** Thousand barrel per day	**GDP Growth** In percentage	**Ease of doing business** In rankings
Weights	30%	35%	35%	100%
Vietnam	1,736	471	6.5	90
Myanmar	98	25	8.5	167
Laos	11	3.2	7.5	134
Cambodia	18	28	7	127

Source: Trading Economics, World Bank, WEF

Strategic location map

PTTGC should enter the tier 1 and tier 2 countries

Bolster the Core



Source: Trading Economics, World Bank, WEF

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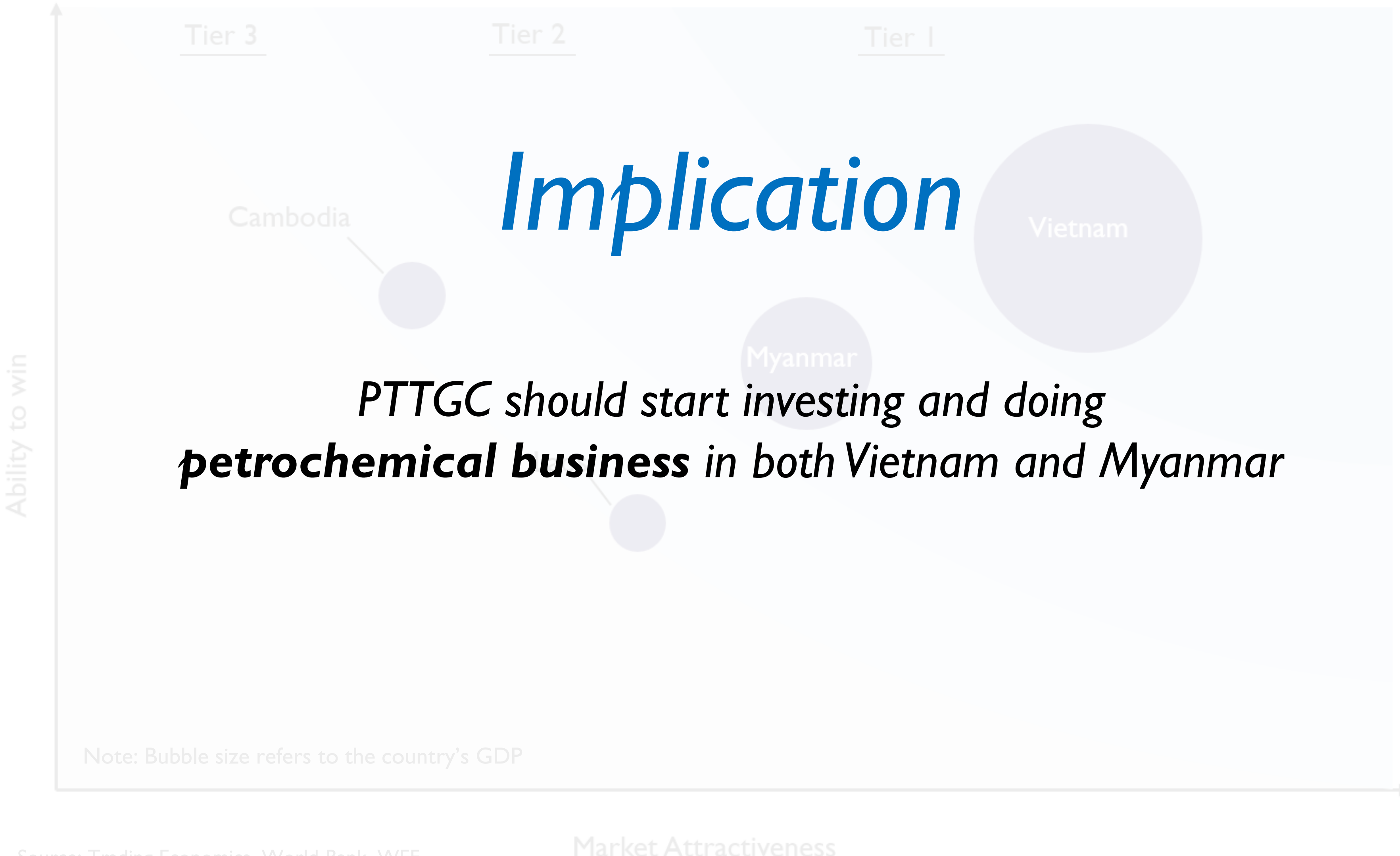

Implication

PTTGC should start investing and doing ***petrochemical business*** *in both Vietnam and Myanmar*

Source: Trading Economics, World Bank, WEF

PTTGC needs to select the best mode of entry

	Organic		Inorganic	
Mode of entry	**Direct Investment**	**Exportation**	**Mergers and Acquisitions**	**Strategic Partnerships**
Benefits	• Quality control • Direct access to market	• Easy access to markets	• Benefit from target's market reach and assets	• Develop and gain local expertise
Risks	• Costly • Time consuming	• Product life and distance key constraints	• Inability to realize potential synergies	• Leakage in competitive edge

Source: Team Analysis

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Source: Team Analysis

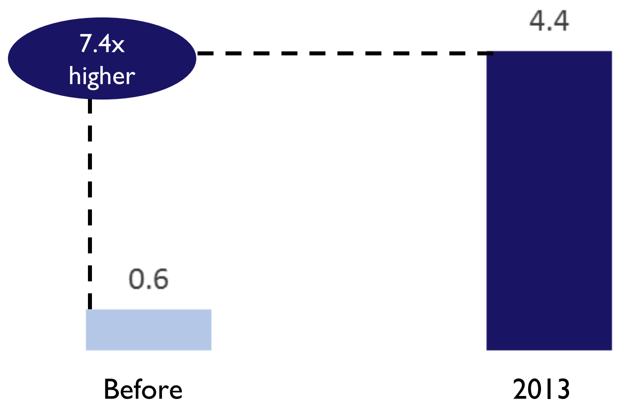
Strategic rationale

PTTGC will enter both country with key goals

Bolster the Core

To capture huge opportunities in Vietnam

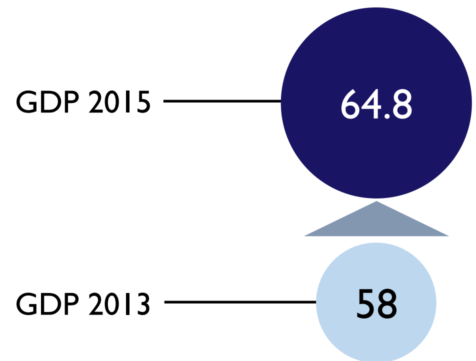
Oil reserve of Vietnam, in billion barrels



- Vietnam consume over 1,700 Kilo Tons of plastic resin per year
- The current refinery can meet up to one third of the country's oil demand
- The country is currently research on better fuel quality (Euro 5 standard on road fuel in 2021)

To be the first mover in Myanmar

Myanmar GDP, in billion USD



- Recent economic liberalization leads to a new opportunity in oil and gas industry
- There are uprising trends in plastic resin consumption as well as demand for oil
- The country is currently research on better fuel quality (lower pollution emission)

Source: Trading Economics, World Bank

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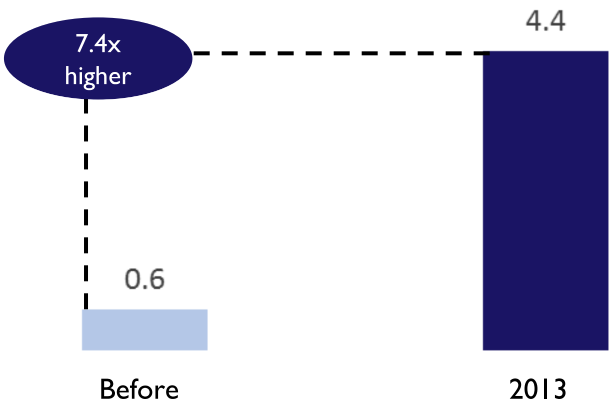

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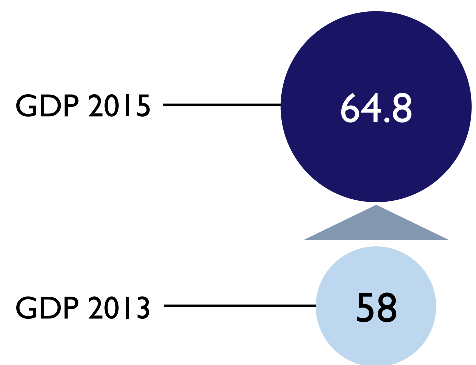

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- There are uprising trends in plastic resin consumption as well as demand for oil
- The country is currently research on better fuel quality (lower pollution emission)

Value preposition: PTTGC will gain partnerships while its partners will gain better R&D system

PTTGC should partner with PetroVietnam

Criteria Establishment

1 **Size of the business**

Measured by the amount of investment and sales of the company. This criteria is used in order for PTTGC to find the partner that will yield the highest impact.

2 **Willing to create strategic partnership**

Measured by the flexibility and the number of subsidiaries owned by the company. This criteria also refers to the ease of implementation

Partnership landscape

Source: Team Analysis

PTTGC should partner with PetroVietnam

Bolster the Core

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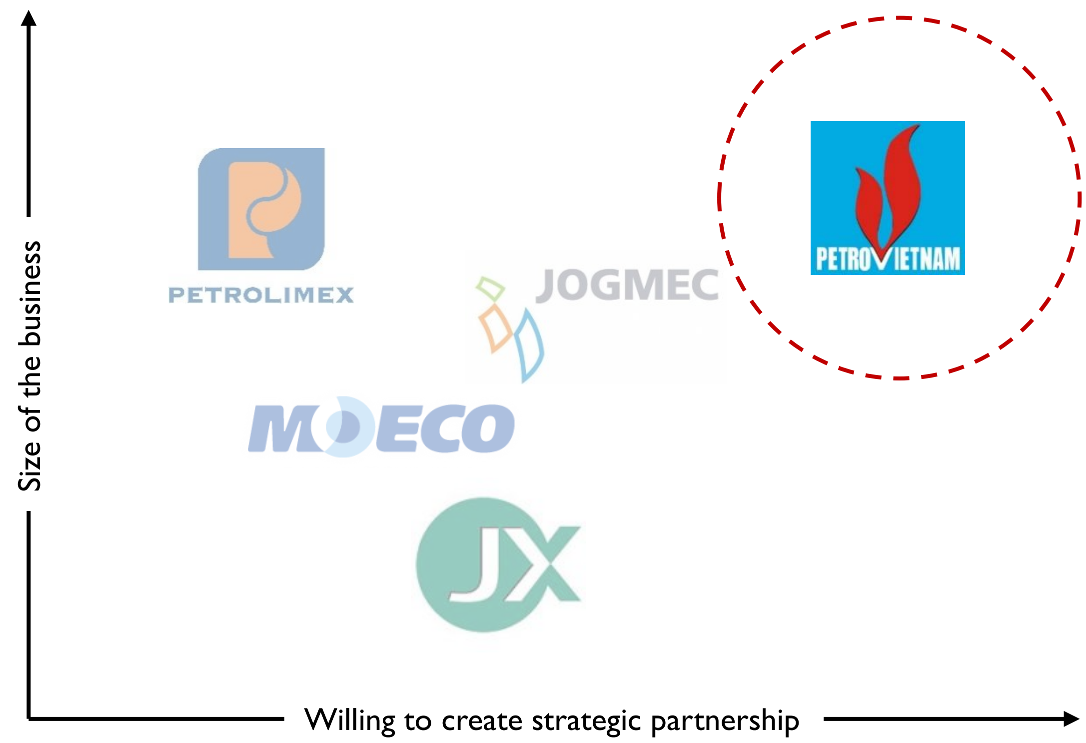


Source: Team Analysis

Implementation

PTTGC should partner with MPE to be a first mover

Bolster the Core

Recent economic liberalization of Myanmar

Partnership with MPE to gain the first mover advantage

Low amount of oil refinery
Myanmar currently have 3 oil refinery, which is state owned

Heavy need in oil supply
Myanmar currently import 10,000-15,000 barrel of oil per day

Great opportunities
Over 150 foreign company are bidding for an opportunity in refinery business in Myanmar

Myanmar Petrochemical Enterprise

- By partner with MPE, PTTCG will have an opportunity to gain huge competitive advantage at an emerging market.
- MPE and PTTGC will join together to develop a better quality oil

Source: Team Analysis

Key Takeaway

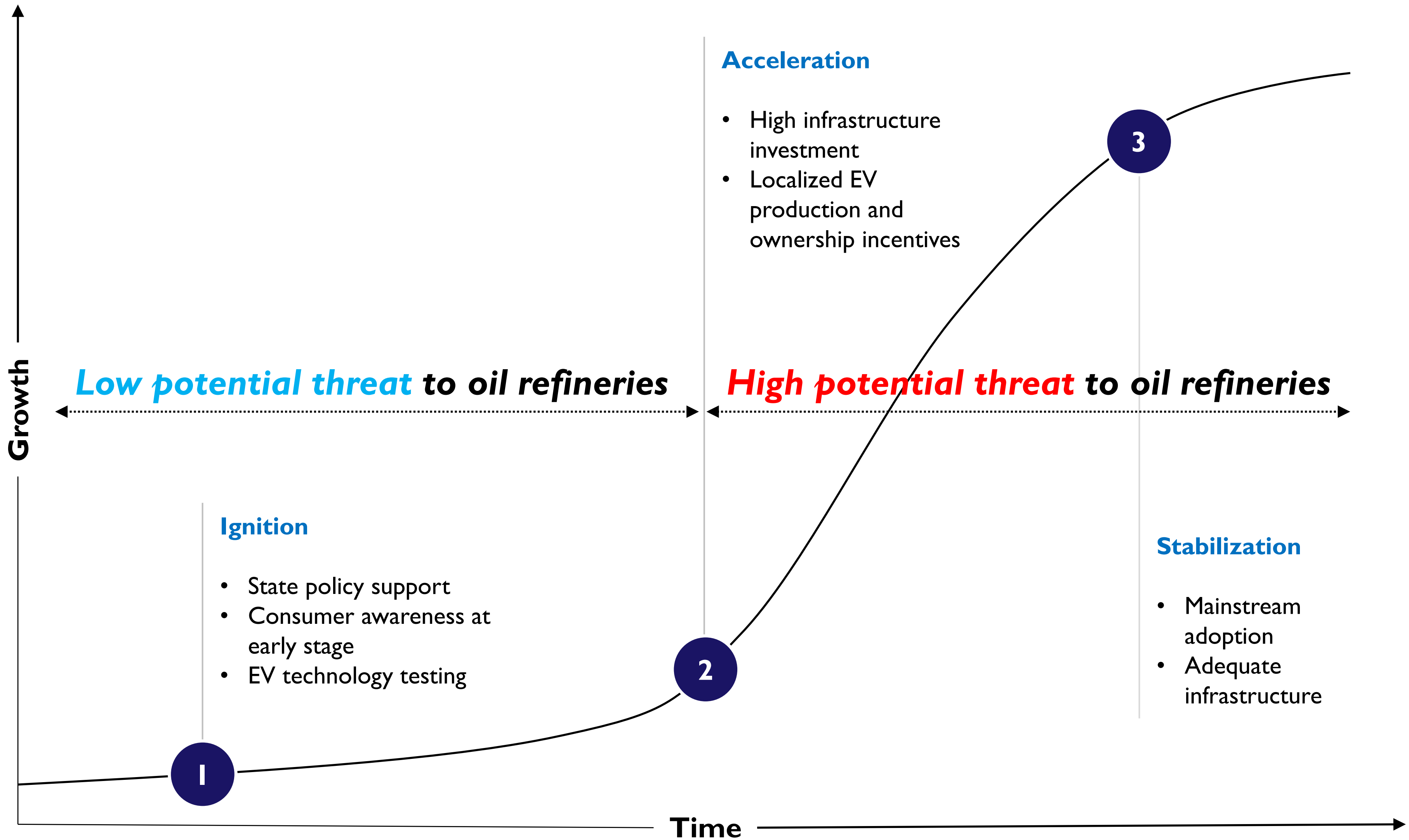
By expanding its business into Vietnam and Myanmar, PTTGC will be in the best position as a key mover to set foot as a major petrochemical company of the emerging CLMV region

Adapt for More

Current Situation

PTTGC cannot avoid the long-term trend of EV

Adapt for More



Source: SCB EIC

Economic changes are needed for EV integration

Adapt for More

- Integration of EVs within product portfolio of OEMs
- Development of material and production technology
- Relevant charging infrastructure
- Government regulations and subsidies
- Adjustment of core operations and processes
- Collaboration within the mobility value chain
- Reduction of customer anxiety and marketing concerns

Source: Strategy&, Team Analysis

Success Factors for EV Growth in Thailand

…where PTTGC can influence the following

Adapt for More

Integration of EVs within product portfolio of OEMs

Development of material and production technology

Relevant charging infrastructure

Government regulations and subsidies

Adjustment of core operations and processes

Collaboration within the mobility value chain

Reduction of customer anxiety and marketing concerns

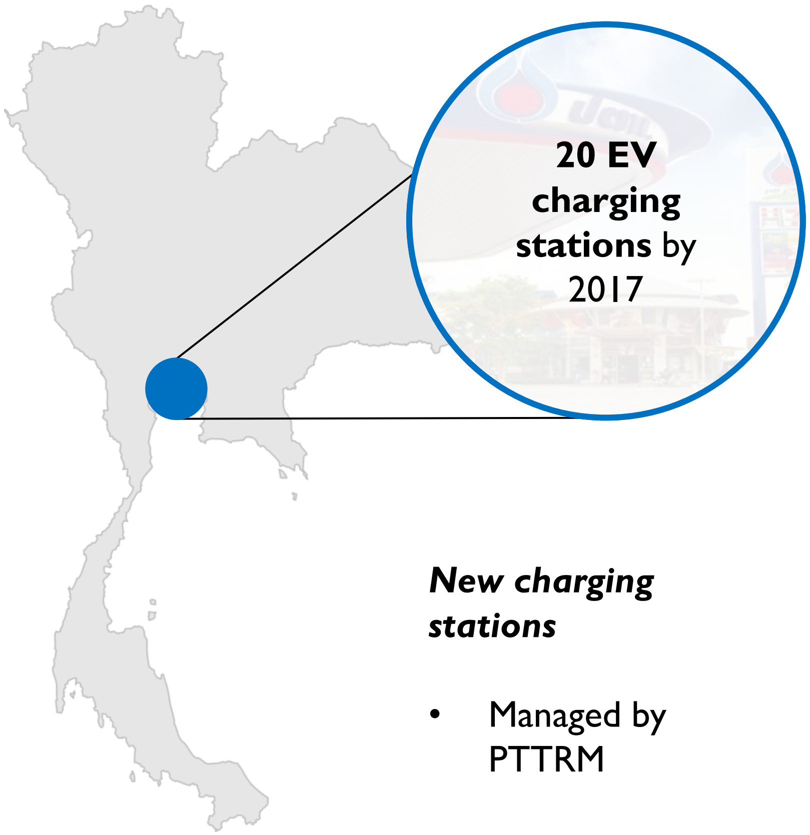
Source: Strategy&, Team Analysis

Existing Initiatives

PTT Group already have plans to tackle EV trend

Adapt for More

Charging Station Expansion



New charging stations

- Managed by PTTRM

Renewable Energy Enhancement

GPSC

CC/CPP | Solar | Hydro

GPSC is a part of PTT Group

- Involved in power generation
- Engaged in renewable energy sources
- 1090 MW of electricity output

Source: Reuters, GPSC

Where is the window of ***opportunity*** pointing at then?

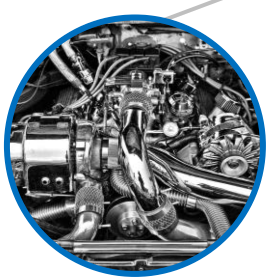
Generic components that make up vehicles

Adapt for More

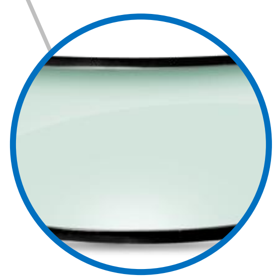
Operating software and on-board entertainment system

Seats made out of leather

Exoskeleton frame made of metal alloy



Internal combustion engine and **motor** using gasoline as core fuel



Car glass made of laminated glass

Source: Team Analysis, Case Materials

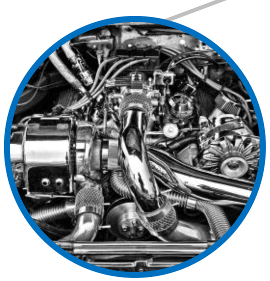
Electric vehicles need lightweight materials

Adapt for More

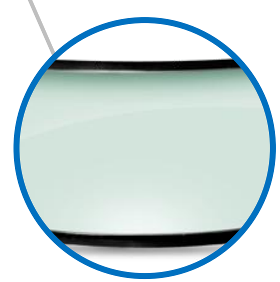
Operating software and on-board entertainment system and mobile connectivity

Seats made out of polyurethane

Exoskeleton frame made of carbon fiber reinforced plastic



Lithium-ion battery pack and **electric motor**



Windows made of polycarbonates

Source: Team Analysis, Case Materials

There are four types of EVs

Adapt for More

Hybrid	Plug-in hybrid	Battery	Fuel-cell
			
HEVs	**PHEVs**	**BEVs**	**FCEVs**
Regenerative brakes and ICE	Electric battery and ICE	Full electric battery	Hydrogen fuel cell

Available today for the mass (HEVs, PHEVs)

Medium-long term mass availability (BEVs, FCEVs)

5-10 years

Source: Case Materials, Bloomberg, Bangkok Post

There are four types of EVs

Adapt for More

Hybrid	Plug-in hybrid	Battery	Fuel-cell


Implication

In order for PTTGC to adapt to upcoming EV trends, the company must extend its chemical product lines to serve the needs of EV manufacturers

HEVs | PHEVs | BEVs | FCEVs

5-10 years

Regenerative brakes and ICE

Electric battery and ICE

Full electric battery

Hydrogen fuel cell

Source: Case Materials, Bloomberg, Bangkok Post

Five key products to serve downstream customers

Bolster the Core

Business Divisions	Chemical Extension	End-Usage
Olefins and **Aromatics**	Polybutylene terephthalate	PBT mixed with carbon fiber to formulate highly strong and light carbon car **body**
Olefins and **Aromatics**	Carbon fiber reinforced plastic	
Olefins, **Aromatics**, and **HVS**	Polyurethane	PU mixed with carbon fiber to through compression molding for **rear seat shells**, **cables**, and **vehicle roofs**
Aromatics and **Phenol**	Polycarbonate	PC can be used for car **windows**
Olefins and **Aromatics**	Thermoplastic	**Electric battery casings**

Source: Case Materials, Team Analysis, Dupont

Downstream Customers

PTTGC should leverage on Group's EV agreement

Adapt for More

2015 EV Development Agreement

- Cooperation on development of EVs in Thailand through charging stations and raising consumer awareness
- Potential EV producers in Thailand

Other Potential Customers

- FOMM has invested in Thailand's EV production
- Toyota and Honda are major HEV players in the country

Engage in supplier-customer partnership to enhance joint EV technology development

Source: Reuters, Team Analysis, PTT

A win-win situation for all stakeholders

PTTGC

- Access to consumer insights on EV trends
- No. 1 refinery complex in the country
- Benefit from diversification

Auto Manufacturers

- Benefit from charging station investment by oil players
- Gain access to major source of olefin and aromatics supply

Value Sharing

Consumers

- Faster development of local EV production leads to faster and less costlier EV adoption

Government

- Fulfill policy direction on EV and lower public reliance on fossil fuels

Source: Team Analysis

PTTGC should adapt depending on industry's stage

Adapt for More

EV Industry Stage	Ignition	Acceleration
	Next 5 years	Next 10 to 20 years
Target EV	**HEVs and PHEVs**	**BEVs and FCEVs**
	Hybrid	Full-electric
Supplying	**PU and PC**	**C. fiber, PBT, PU, and T. plastics**
	Semi-light weight	Very light weight and flame-retardant

Source: Team Analysis

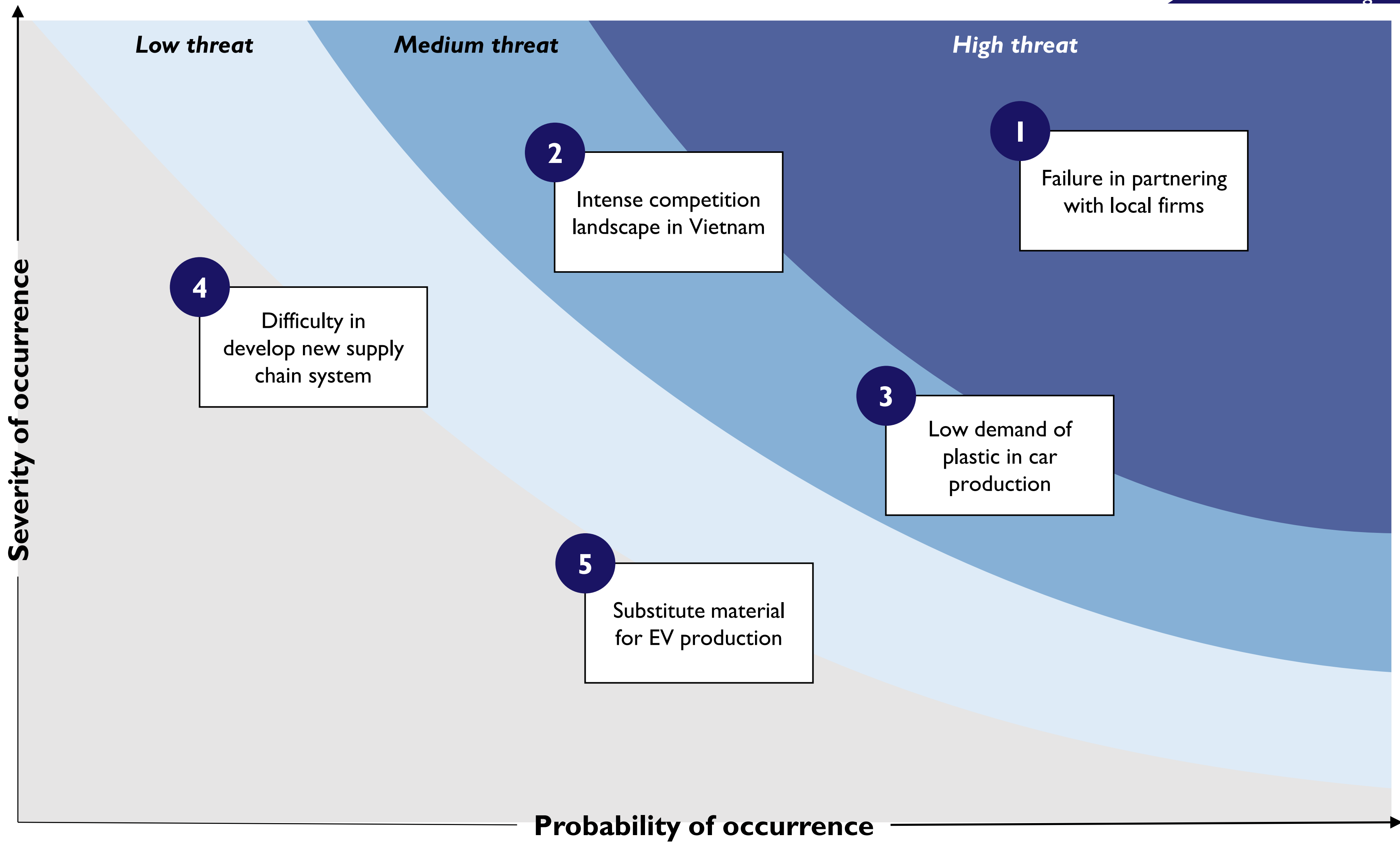
Key Takeaway

By extending downstream product lines focusing on Olefins, Aromatics, and HSVs that support EV manufacturers, PTTGC will be able to prepare itself for potential future growth in Thailand's EV production

Risks and Mitigations

Risks Analysis

Identifying risks by severity and probability



Source: Team analysis

Risks Analysis

Actions to mitigate key risks

RANKING OF RISKS		ABILITY TO MITIGATE	MITIGATION ACTIONS
1	Failure in partnering with local firms	●●●○○	Partner with foreign firms to penetrate into the market and engage in bidding process
2	Intense competitive landscape in Vietnam	●●●●○	Seek other regions with similar profile to expand refinery business into
3	Low demand of plastic in car production	●●●○○	Leverage by partnering with car companies to be supplier of their necessary materials
4	Difficulty in develop new supply chain system	●●●●●	Utilize the existing supply network of PTT or other of its subsidiaries
5	Substitute material for EV production	●●●●○	Research on other material that PTTGC can supply and selling more in other types of EV (e.g. HEV)

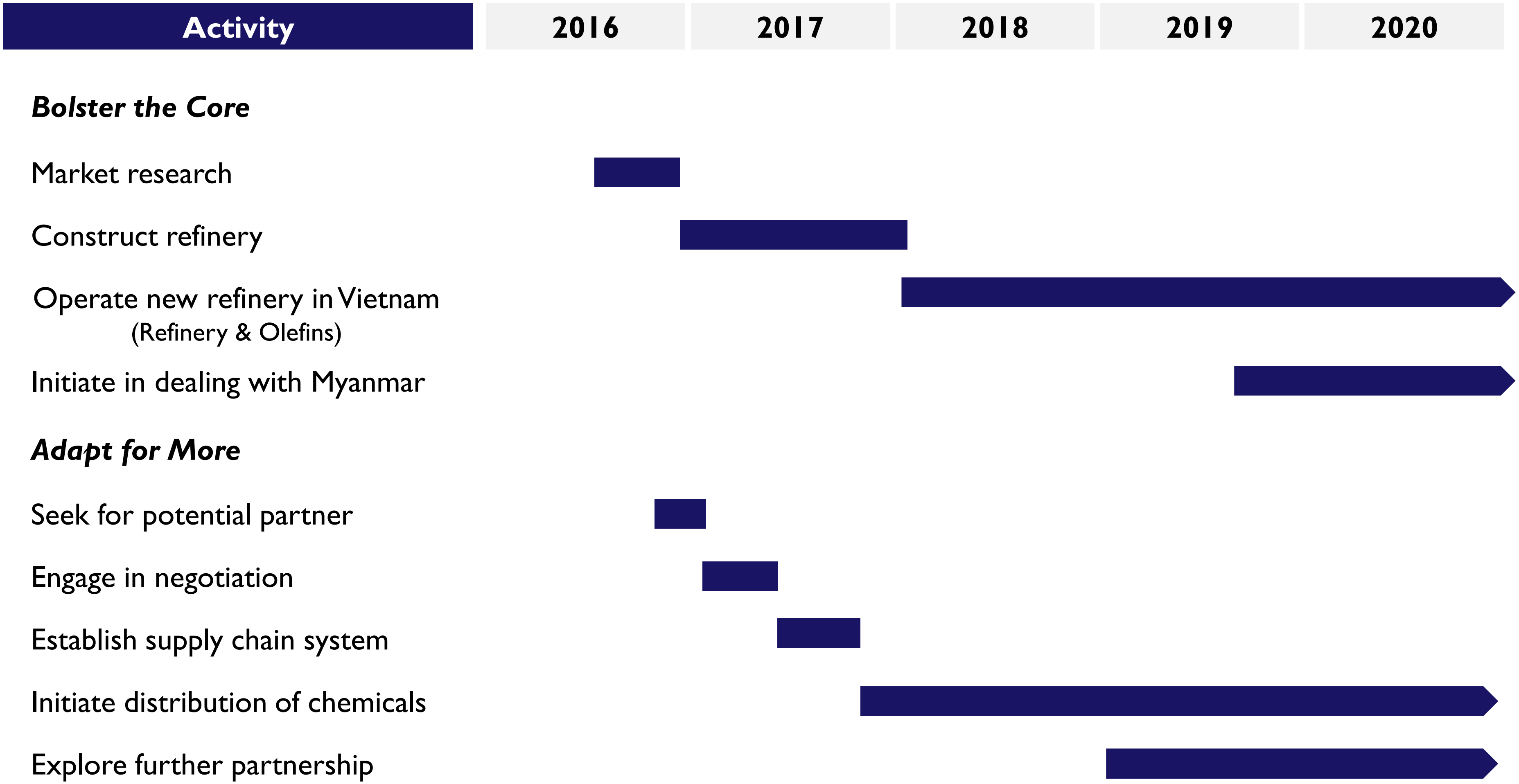
Source: Team analysis

Implementation and Impact

Timeline

Outlining key steps for smooth integration

Implementation

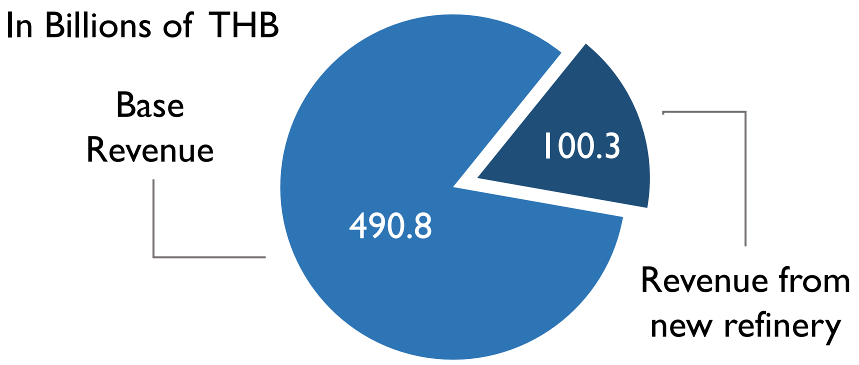


Source: Team analysis

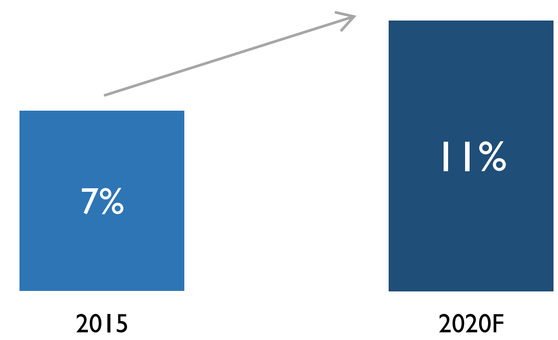
Key Performance Indicators

Significant growth with more diversified revenue portfolio

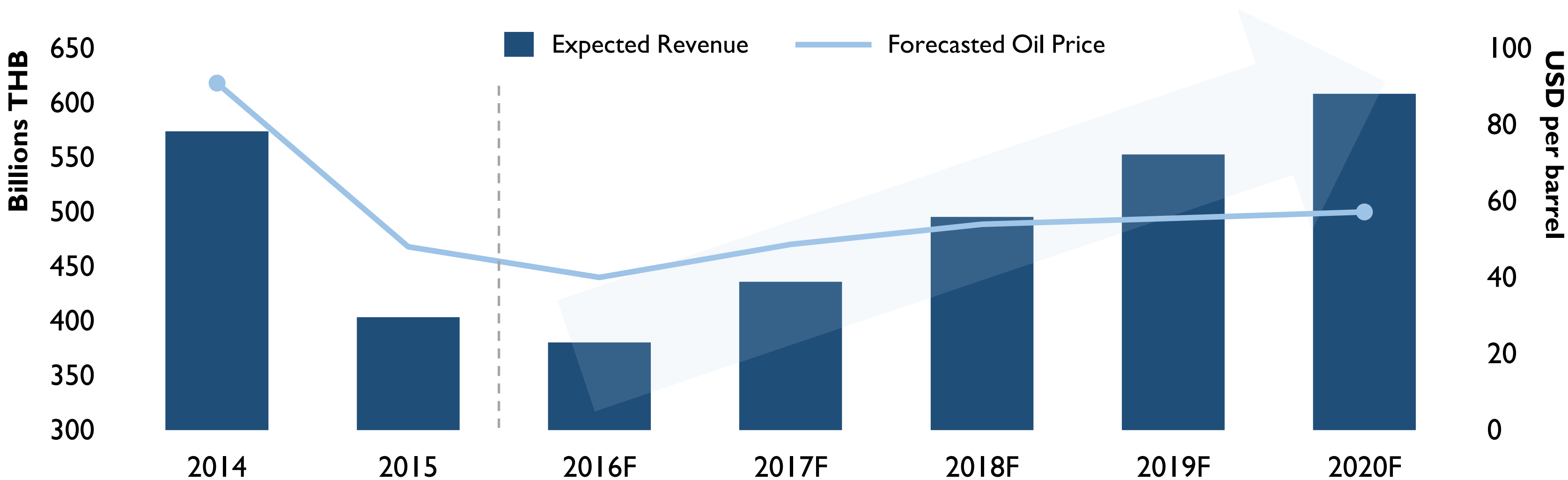
REVENUE CONTRIBUTION FROM VIETNAM



IMPROVE SALES CONTRIBUTION OF HVS



EXPECTED REVENUE WILL RELY LESS ON FORECASTED OIL PRICE

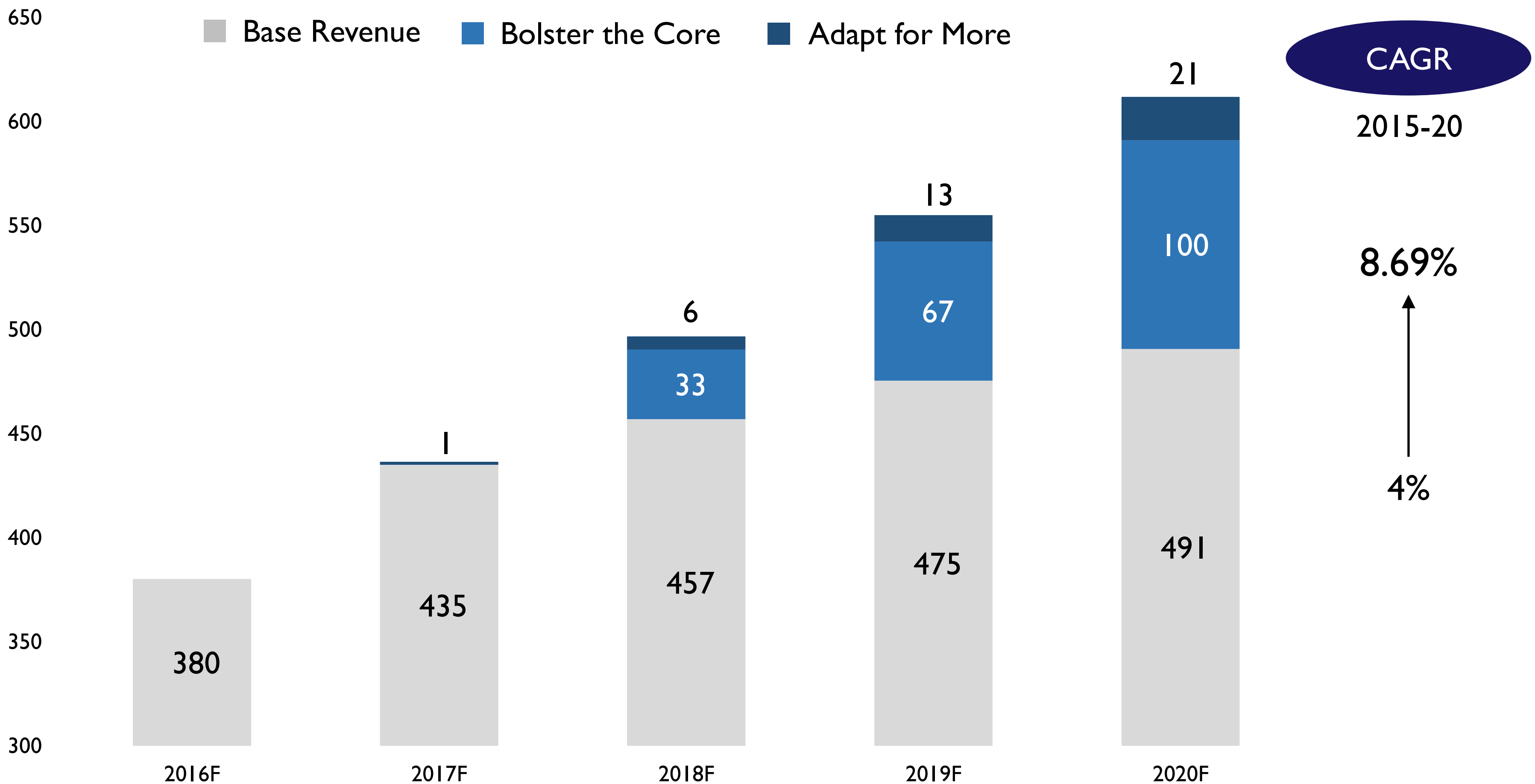


Source: World Bank Forecast, Team Analysis

Revenue Forecast

By 2020, revenue expected to reach THB 611.9b

In Billions of THB



Source: ICCT, Reuters, Team Analysis

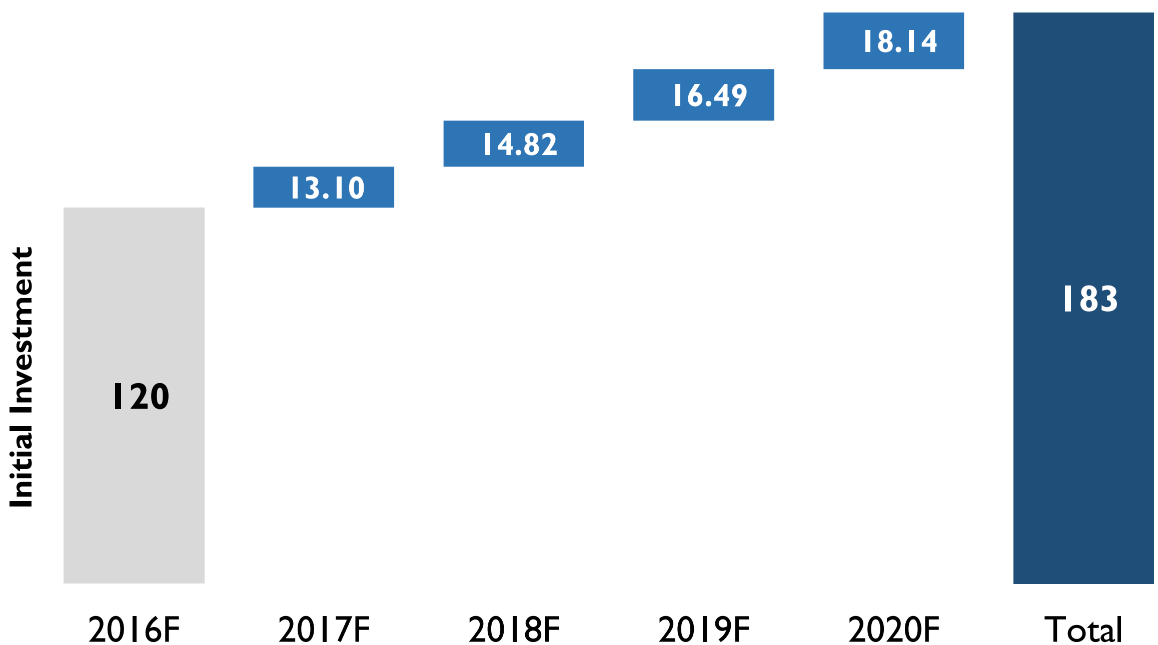
Costs Breakdown

Total cost for 5-year strategies is THB 183.4b

Financials

In Billions of THB

BUDGET ALLOCATION



Sources of fund		
Short term debt	Long-term debt	Operating cash flow

INITIAL INVESTMENT

Refinery investment	109.1
Marketing research	0.0035

RECURRING EXPENSES

Selling expense	0.43% of revenue
Admin. expense	2.2% of revenue
R&D	3% of revenue
Supply chain cost	2% of COGS
Partnering cost	0.005

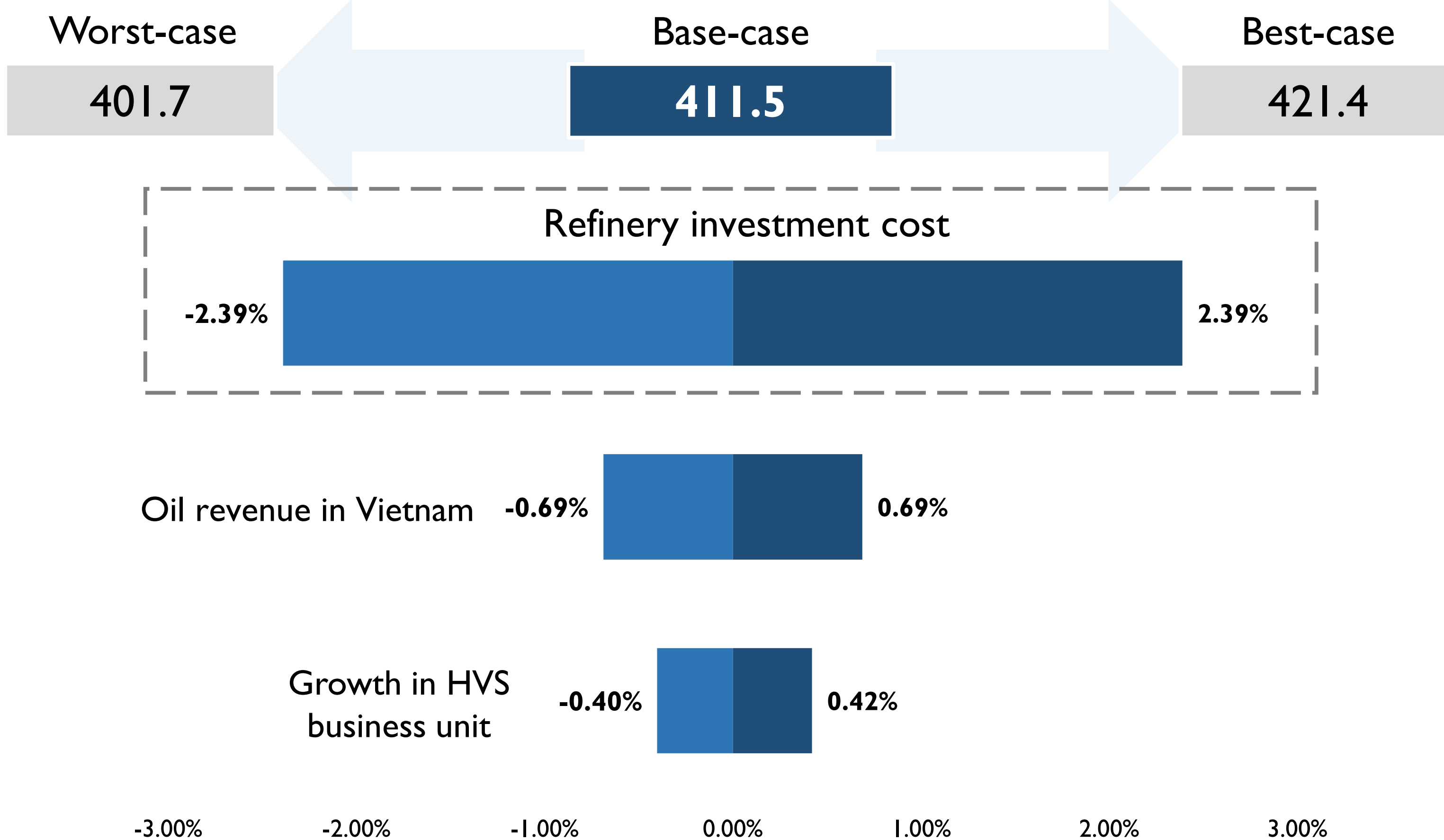
Source: ICCT, Reuters, Inbound Logistics, Team Analysis

NPV Analysis

Key factor with impact to NPV

SENSITIVITY OF NPV TO CHANGES IN KEY FACTORS

In billions baht

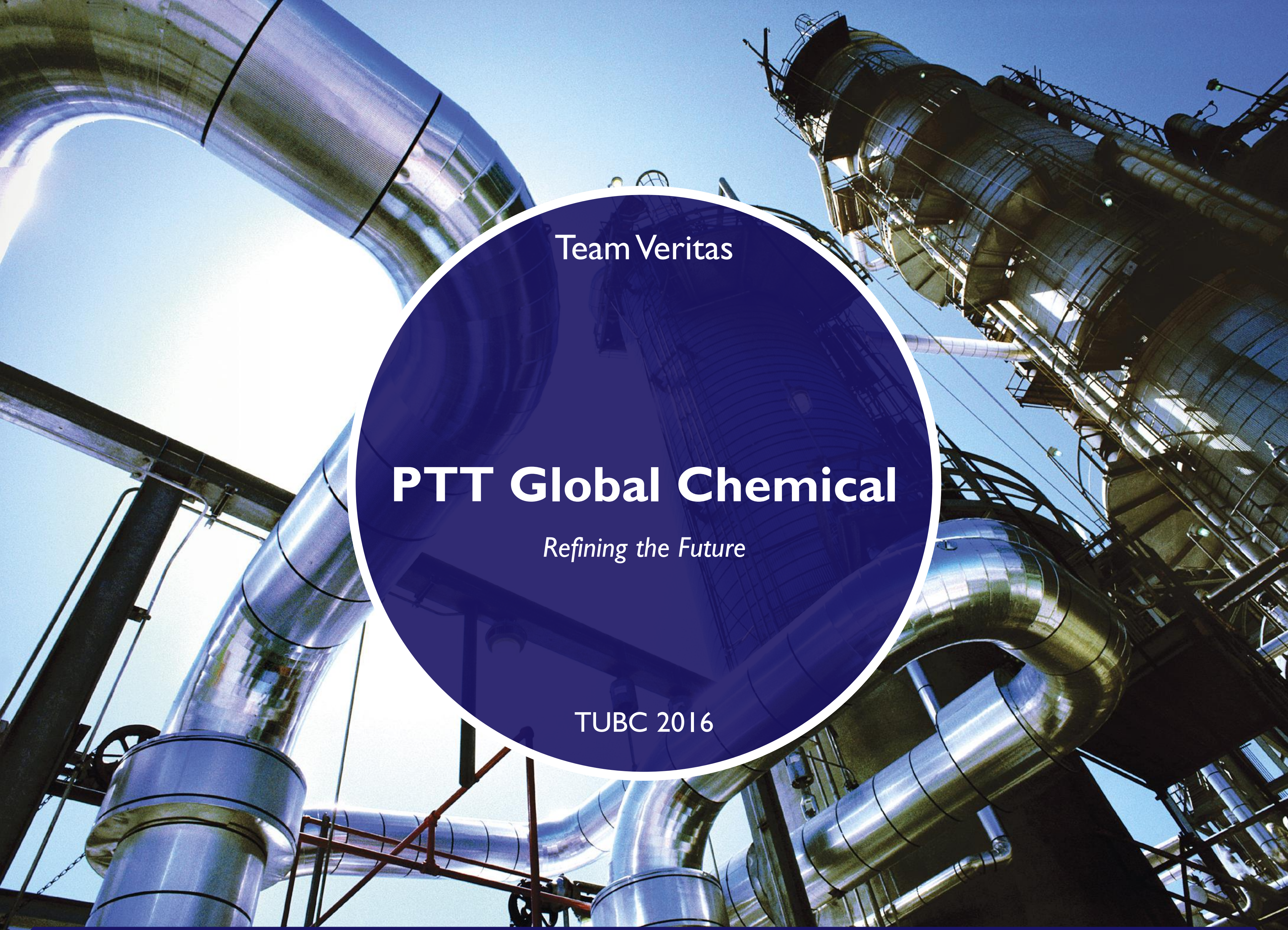


Source: Team analysis

Executive Summary

5-year strategic direction

GOAL	KEY QUESTIONS	RECOMMENDATIONS
To ensure sustainable growth of PTTGC's core businesses while prepping the company for the upcoming trend in electric vehicles	How can the company maintain its competitive edge in its core lines of business?	***Bolster the Core*** Identify **new geographic market opportunities** in order to strengthen the company's core lines of business through production expansion
	How can the company prepare itself for the changing EV landscape?	***Adapt for More*** **Extend chemical product lines** to suit the needs of upcoming EV production in Thailand



Team Veritas

PTT Global Chemical

Refining the Future

TUBC 2016

Pumthad Charudej Atis Pichetpat

Slide Navigation
Contents

Historical data

	2013	2014	2015
Revenue from sale of goods & rendering of services	552,880,979,159	574,010,433,007	403,440,229,574
Cost of sale of goods and rendering of services	(500,672,951,917)	(543,647,288,865)	(366,168,005,889)
Gross margin	52,208,027,242	30,363,144,142	37,272,223,685
Investment income	1,559,383,959	1,012,437,432	1,212,296,615
Other income	1,889,003,757	1,608,999,395	2,394,866,238
Selling expenses	(2,844,219,312)	(2,642,819,327)	(1,283,957,458)
Administrative expenses	(11,186,668,621)	(11,922,303,743)	(10,139,562,481)
Loss from impairment of assets	-	-	(2,530,904,888)
Provisions for business restructuring	-	(2,239,153,040)	-
Net derivative gain	675,830,022	2,739,027,203	2,595,388,702
Net foreign exchange gain (loss)	(1,322,051,191)	125,241,239	(2,288,507,809)
Finance costs	(6,084,079,971)	(5,487,228,724)	(5,177,793,631)
Share of loss of investments in joint ventures	-	-	(14,482,835)
Share of profit of associates	(77,631,097)	534,400,332	725,371,261
Profit before income tax expense	34,817,594,788	14,091,744,909	22,764,937,399
Income tax expense	(1,976,230,264)	(559,364,768)	(1,984,085,210)
Profit for the year	32,841,364,524	13,532,380,141	20,780,852,189

Back Up – Base case forecast

Base case revenue forecast

Backups

	2016F	2017F	2018F	2019F	2020F
Revenue from sale of goods & rendering of services	380,300,995,895	435,113,017,831	457,048,979,557	475,482,459,617	490,824,003,881
Cost of sale of goods and rendering of services	(343,266,111,269)	(392,740,369,354)	(412,540,139,431)	(429,178,510,315)	(443,026,047,653)
Gross margin	37,034,884,625	42,372,648,477	44,508,840,126	46,303,949,302	47,797,956,228
Investment income	962,055,473	1,100,714,604	1,156,206,470	1,202,838,034	1,241,647,863
Other income	1,540,960,730	1,763,056,318	1,851,939,745	1,926,631,290	1,988,794,464
Selling expenses	(1,639,225,864)	(1,875,484,209)	(1,970,035,620)	(2,049,490,151)	(2,115,617,394)
Administrative expenses	(8,383,906,411)	(9,592,262,074)	(10,075,850,211)	(10,482,224,566)	(10,820,435,806)
Loss from impairment of assets	-	-	-	-	-
Provisions for business restructuring	-	-	-	-	-
Net derivative gain	2,130,613,644	2,437,694,727	2,560,589,644	2,663,862,117	2,749,812,203
Net foreign exchange gain (loss)	-	-	-	-	-
Finance costs	(4,233,749,383)	(4,843,951,214)	(5,088,156,108)	(5,293,369,178)	(5,464,160,878)
Share of loss of investments in joint ventures	-	-	-	-	-
Share of profit of associates	629,885,797	629,885,797	629,885,797	629,885,797	629,885,797
Profit before income tax expense	28,041,518,610	31,992,302,425	33,573,419,842	34,902,082,644	36,007,882,478
Income tax expense	(1,716,228,241.33)	(1,958,028,510.84)	(2,054,797,819.28)	(2,136,116,119.34)	(2,203,794,511.90)
Profit for the year	26,325,290,369	30,034,273,914	31,518,622,022	32,765,966,524	33,804,087,966

Back Up – base assumptions

Assumptions for revenue forecast

Backups

	2013	2014	2015	2016F	2017F	2018F	2019F	2020F
COGS	(0.91)	(0.95)	(0.91)	(0.90)	(0.90)	(0.90)	(0.91)	(0.91)
Investment income	0.00282	0.00176	0.00300	0.00253	0.00253	0.00253	0.00253	0.00253
Other income	0.0034	0.0028	0.0059	0.0041	0.0041	0.0041	0.0041	0.0041
Selling exp.	(0.005)	(0.005)	(0.003)	-0.4310%	(0.004)	(0.004)	(0.004)	(0.004)
Admin exp.	(0.020)	(0.021)	(0.025)	-2.2045%	(0.02)	(0.02)	(0.02)	(0.02)
Net derivative gain		0.00	0.01	0.01	0.01	0.01	0.01	0.01
Net foreign exchange gain (loss)	(0.00)	0.00	(0.01)					
Finance costs	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)
Share of profit of associates				629,885,796.50	629,885,796.50	629,885,796.50	629,885,796.50	629,885,796.50
Tax	(0.06)	(0.04)	(0.09)	(0.06)	(0.06)	(0.06)	(0.06)	(0.06)

Back Up – recom 1 fin.

Bolster the Core

Vietnam			Revenue	Cost
Oil				
Dung Quat capacity	6,500,000	tons/yr	200,557,125,000	104,698,500,000
New refinery capacity	9,000,000	tons/yr	277,694,480,769	144,967,153,846
PTT investment	17,278,106			697,960,000,000
				363,560,681,940

Arometics and Olefins				
Existing capacity	5.41	MTA	181,548,103,308	
New capacity	5.00	MTA	167,882,470,231	218,593,528,094.33
Total			445,576,951,001	363,560,681,940
Proportion invested	30%			
Fully functional in	4	years		
	33,418,271,325	66,836,542,650	100,254,813,975	133,673,085,300

	2015	2016F	2017F	2018F	2019F	2020F
Total revenue	403,440,229,574	380,300,995,895	435,113,017,831	457,048,979,557	475,482,459,617	490,824,003,881
Incremental revenue				33,418,271,325	66,836,542,650	100,254,813,975

Back Up – recom 2 fin.

Adapt for More

Backups

	2015	2016F	2017F	2018F	2019F	2020F
Total revenue	403,440,229,574	380,300,995,895	435,113,017,831	457,048,979,557	475,482,459,617	490,824,003,881
HVS Contribution	7%					
HVS Revenue	28,240,816,070	26,621,069,713	30,457,911,248	31,993,428,569	33,283,772,173	34,357,680,272
Expected growth	20%					
New HVS revenue	28,240,816,070	26,621,069,713	31,945,283,655	38,334,340,386	46,001,208,463	55,201,450,156
Incremental revenue	-	-	1,487,372,407	6,340,911,817	12,717,436,290	20,843,769,884

Revenue forecast with recommendations

	2016F	2017F	2018F	2019F	2020F
Revenue from sale of goods & rendering of services	380,300,995,895	435,113,017,831	457,048,979,557	475,482,459,617	490,824,003,881
Recom 1			33,418,271,325	66,836,542,650	100,254,813,975
Recom 2	-	1,487,372,407	6,340,911,817	12,717,436,290	20,843,769,884
New revenue	380,300,995,895	436,600,390,238	496,808,162,700	555,036,438,558	611,922,587,741
Cost of sale of goods and rendering of services	(343,266,111,269)	(394,082,896,846)	(448,427,450,618)	(500,985,277,275)	(552,331,677,695)
Gross margin	37,034,884,625	42,517,493,392	48,380,712,081	54,051,161,282	59,590,910,046
Investment income	962,055,473	1,100,714,604	1,156,206,470	1,202,838,034	1,241,647,863
Other income	1,540,960,730	1,763,056,318	1,851,939,745	1,926,631,290	1,988,794,464
Selling expenses	(1,639,225,864)	(1,881,895,287)	(2,141,411,141)	(2,392,394,696)	(2,637,593,231)
Administrative expenses	(8,383,906,411)	(9,625,051,868)	(10,952,359,277)	(12,236,027,793)	(13,490,108,524)
Loss from impairment of assets	-	-	-	-	-
Provisions for business restructuring	-	-	-	-	-
Net derivative gain	2,130,613,644	2,437,694,727	2,560,589,644	2,663,862,117	2,749,812,203
Net foreign exchange gain (loss)	-	-	-	-	-
Finance costs	(4,233,749,383)	(4,843,951,214)	(5,088,156,108)	(5,293,369,178)	(5,464,160,878)
Share of loss of investments in joint ventures	-	-	-	-	-
Share of profit of associates	629,885,797	629,885,797	629,885,797	629,885,797	629,885,797
Profit before income tax expense	28,041,518,610	32,097,946,469	36,397,407,210	40,552,586,852	44,609,187,740
Income tax expense	(1,716,228,241)	(1,964,494,255)	(2,227,634,638)	(2,481,944,569)	(2,730,221,173)
Profit for the year	26,325,290,369	30,133,452,213	34,169,772,572	38,070,642,283	41,878,966,567

Back Up – cost breakdown
Cost breakdown

Backups

		2016F	2017F	2018F	2019F	2020F	
Initial investment							
Market research		3,490,950					Fedpulse
Refinery cost		109,068,204,582					ICCT, Reuters, Team analysis
Recurring expenses							
Selling expenses			6,411,078	171,375,521	342,904,545	521,975,837	
Administrative expense			32,789,793	876,509,065	1,753,803,228	2,669,672,719	
R&D	3%	11,409,029,877	13,053,390,535	13,711,469,387	14,264,473,789	14,724,720,116	
Partnership cost		5,000,000					
Supply chain cost	2%		26,807,591	114,667,466	231,807,735	379,930,905	Inbound Logistics
Total		120,485,725,408.99	13,119,398,997.28	14,874,021,439.21	16,592,989,295.85	18,296,299,577.80	
Grand Total		183,368,434,719					

Back Up – NPV calc.

NPV calculation

	2016F	2017F	2018F	2019F	2020F
Net Income	26,325,290,369	30,133,452,213	34,169,772,572	38,070,642,283	41,878,966,567
CAPEX	109,068,204,582				
Depreciation and amortization	16,877,776,145	16,877,776,145	16,877,776,145	16,877,776,145	16,877,776,145
FCF	(65,865,138,068)	47,011,228,358	51,047,548,717	54,948,418,428	58,756,742,712
Lt-Growth	0.80%				
TCF	543,365,106,918.08				
	(65,865,138,068)	47,011,228,358	51,047,548,717	54,948,418,428	602,121,849,630
WACC	10.90%	KSS			
NPV	$411,530,252,158.10				
	411,530,252,158.10				

Sensitivity analysis

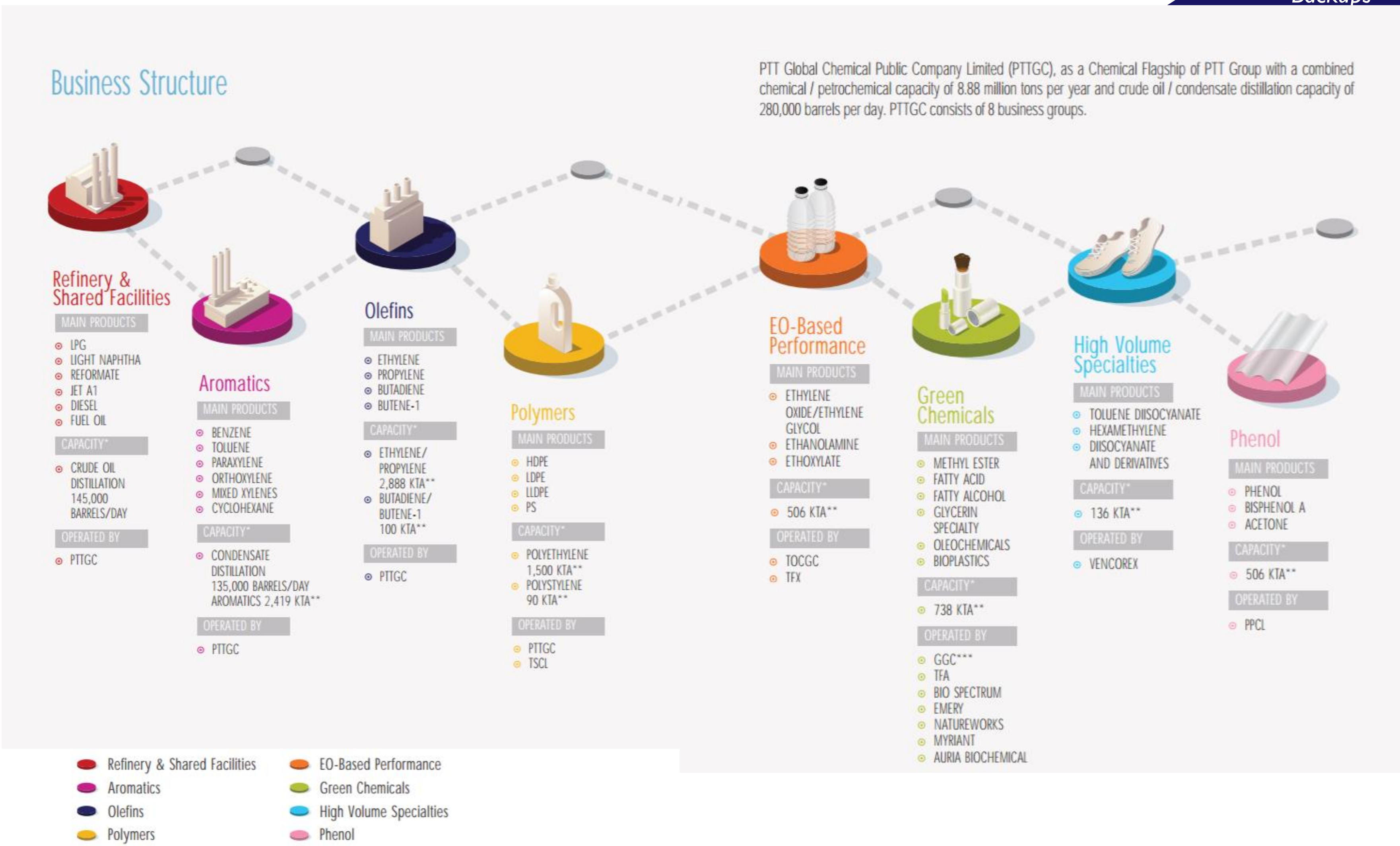
HVS Growth	409,877,705,257.13	411,530,252,158.10	413,262,177,524.04
Oil Revenue in Vietnam	408,699,645,495.86	411,530,252,158.10	414,360,858,820.35
Refinery Cost	401,695,427,579.01	411,530,252,158.10	421,365,076,737.19

HVS Growth	-0.40%	0.42%
Oil Revenue in Vietnam	-0.69%	0.69%
Refinery Cost	-2.39%	2.39%

PTTGC's Business Units

PTTGC's Business Units

Backups



Distribution Channels

Potential logistic partner in Vietnam

Agility
A New Logistics Leader

- Agility logistic
- Expert in emerging market logistics
  - 2.14M shipments
  - 372,700 tons of air freight
  - 513,500 TEUs of ocean freight
  - Global network in 100 countires

Potential Logistic partner in Myanmar

LEO
GLOBAL LOGISTICS CO., LTD.

- LEO Myanmar Logistics
- Part of Project Cargo Network (PCN) which have include
  - 230+ specialist
  - Operate in over 100+ countries
  - USD 2.9 Billion annual revenue
  - 12,300 members worldwide

Note: Insert
Source: Insert

Doing business in Myanmar

The State-owned Economic Enterprises Law ("SEE Law") states that the Government has the sole right to carry out the exploration, extraction and sale of petroleum and natural gas and production of products of the same.

However, the Government may, in the interest of the State, permit such activities to be carried out jointly ***between the government and any other organizations.***

-Myanmar rules and regulation for foreign investors-

Source: Myanmar legal service LTD

Strategic rationale for entering Vietnam and Myanmar

Bolster the Core

To capture huge opportunities in Vietnam

Recent discovery
Vietnam recently discover oil and gas reserve which increase its supplies from 0.6 to 4.4 billion barrels

Low production capacity
Vietnam have low refinery capacity compare to other CLMV countries

Great opportunities
Over 150 foreign company are bidding for an opportunity in refinery business in Myanmar

To be the first mover in Myanmar

Low amount of oil refinery
Myanmar currently have 3 oil refinery, which is state owned

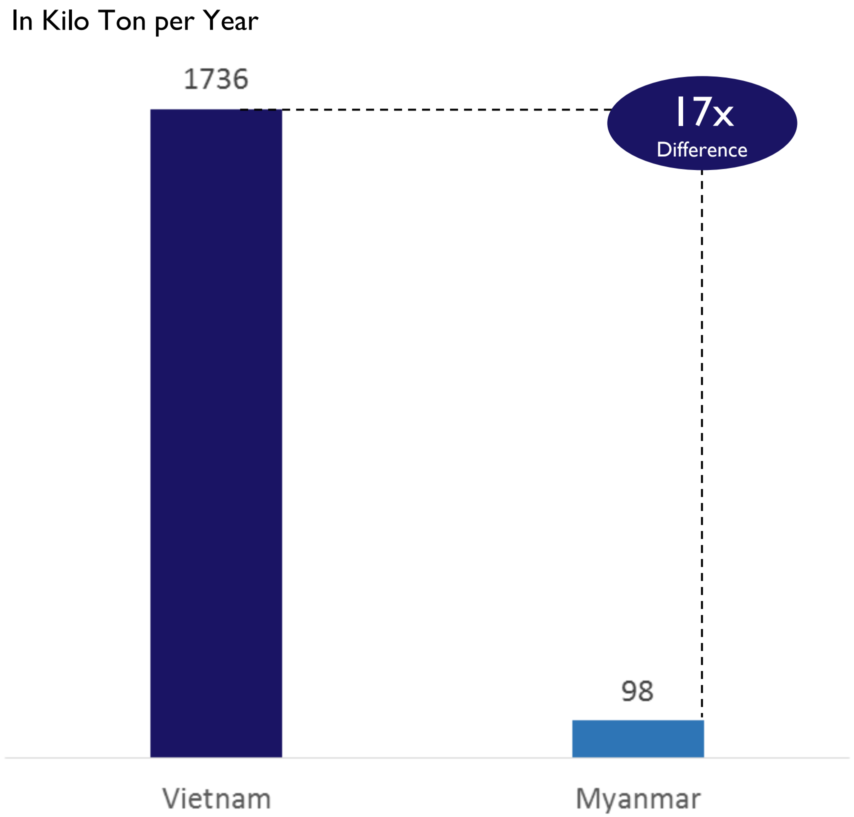
Heavy need in oil supply
Myanmar currently import 10,000-15,000 barrel of oil per day

Great opportunities
Over 150 foreign company are bidding for an opportunity in refinery business in Myanmar

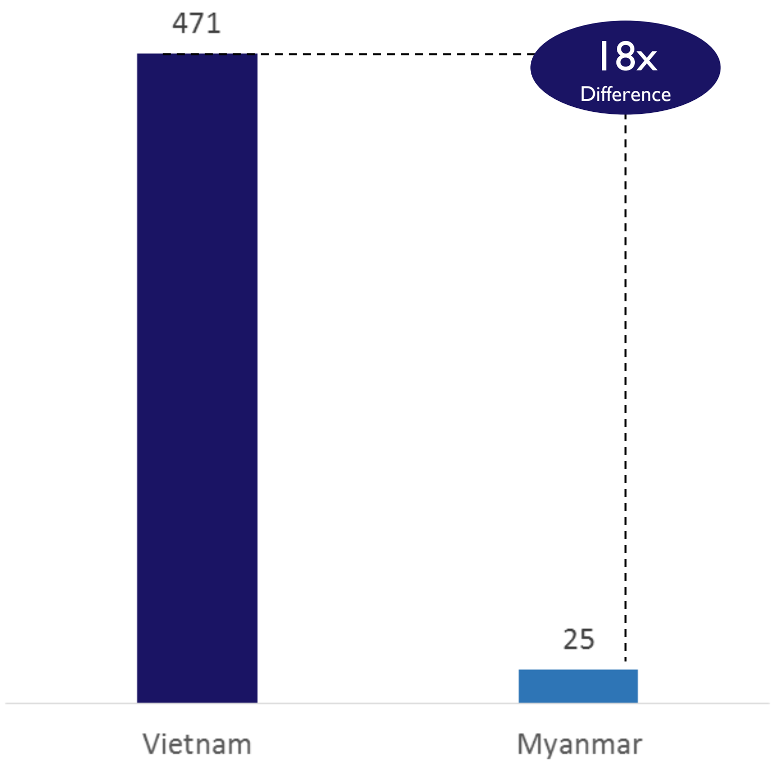
Source: Team analysis

Why are we choosing Vietnam over Myanmar

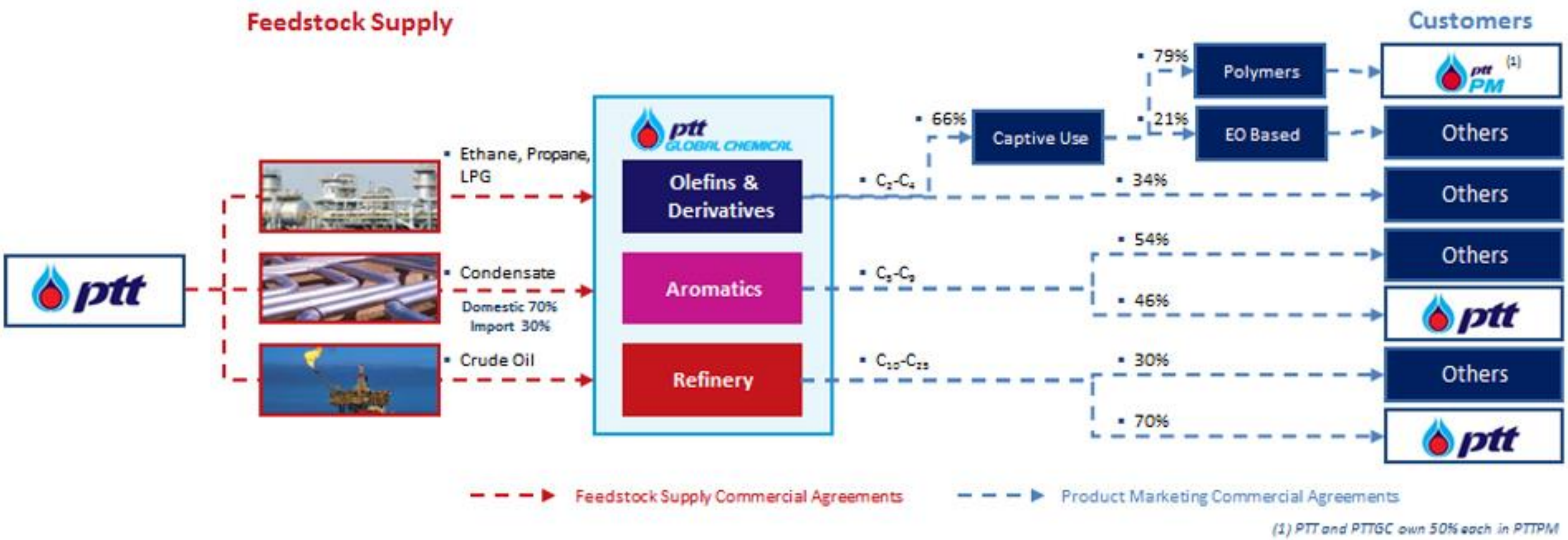
Plastic resin consumption



Potential Logistic partner in Myanmar



Value Chain

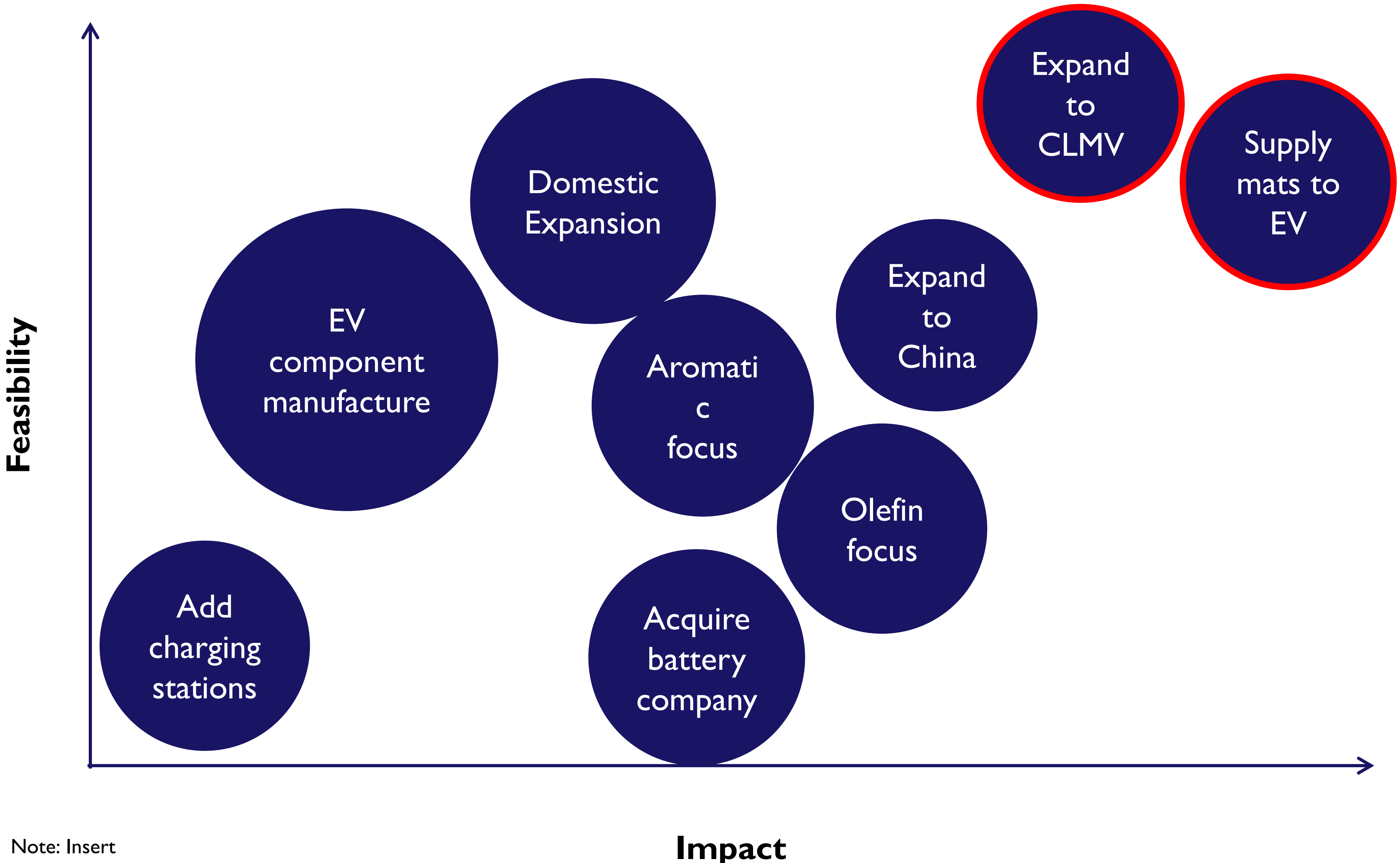


Source: PTTGC official websites

Back Up – strategy prioritization

Strategy Prioritization

Backups



Note: Insert
Source: Team analysis

Core Competencies

- Subsidiary of PTT
  - Strategic location
  - Price efficiency
  - High capacity
  - Government connection
  - Able to tap into PTT's resource

Back Up - competitors
Competitors

- Indorama Ventures
- Golden Lime
- SCG Chemical
- Gratitude Infinite
- White Group