

# Petroleum Product Trade

*ASEAN region and the neighboring countries*

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# Content

## Introduction

## Challenges

- *Reduction or Abolition of Subsidies*
- *Improvement of Fuel Quality*
- *Expansion of Refining Capacity*

## Estimation by LP Model (Refining Model)

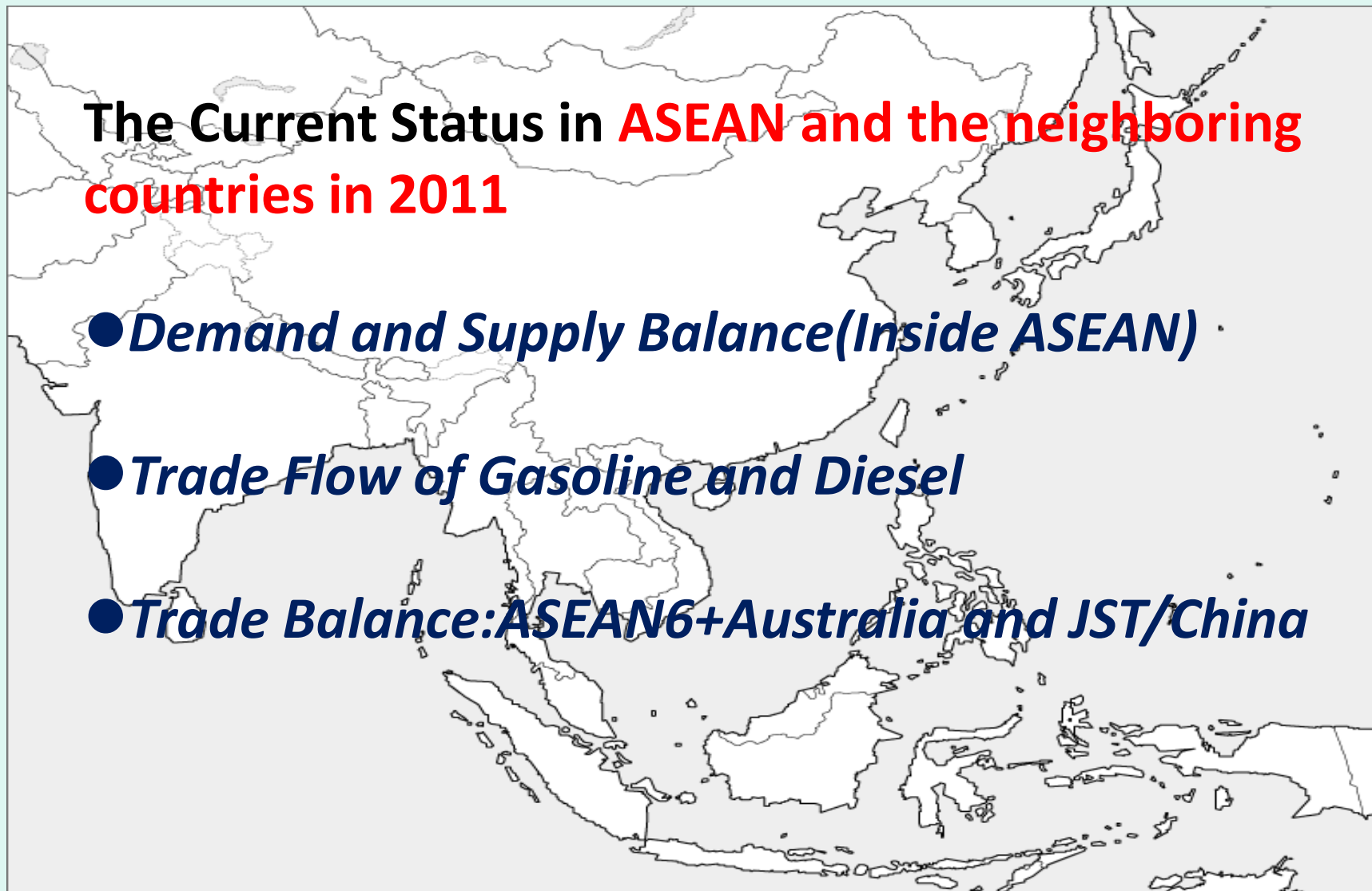
- *Crude Throughput and Utilization Rate*
- *Trade Balance in Gasoline and Diesel Fuel*

## Conclusion

# Introduction

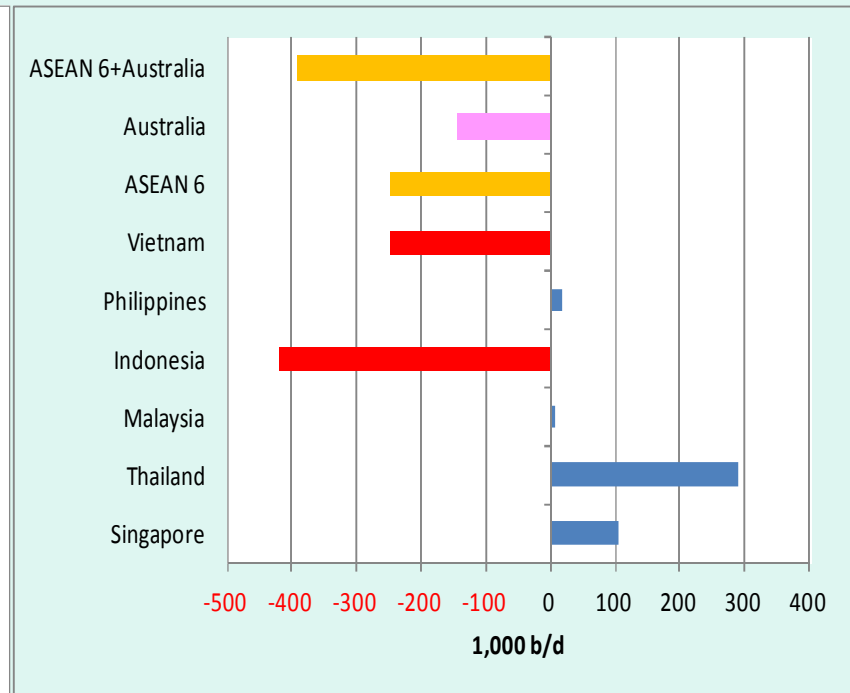
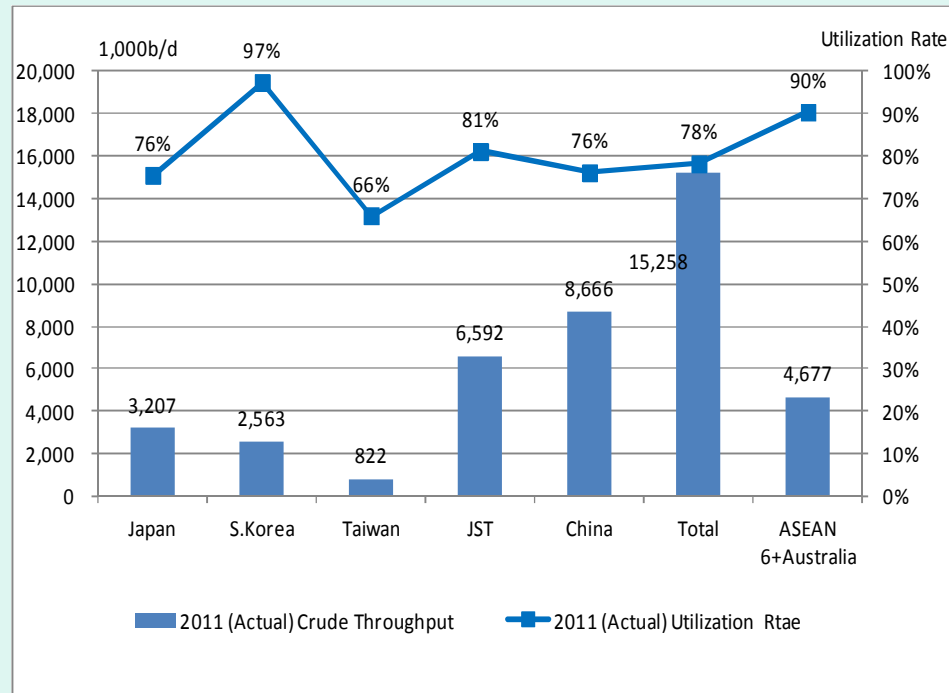
The Current Status in **ASEAN** and the neighboring countries in 2011

- *Demand and Supply Balance(Inside ASEAN)*
- *Trade Flow of Gasoline and Diesel*
- *Trade Balance:ASEAN6+Australia and JST/China*



# Demand and Supply Balance in 2011

## CDU Availability\*

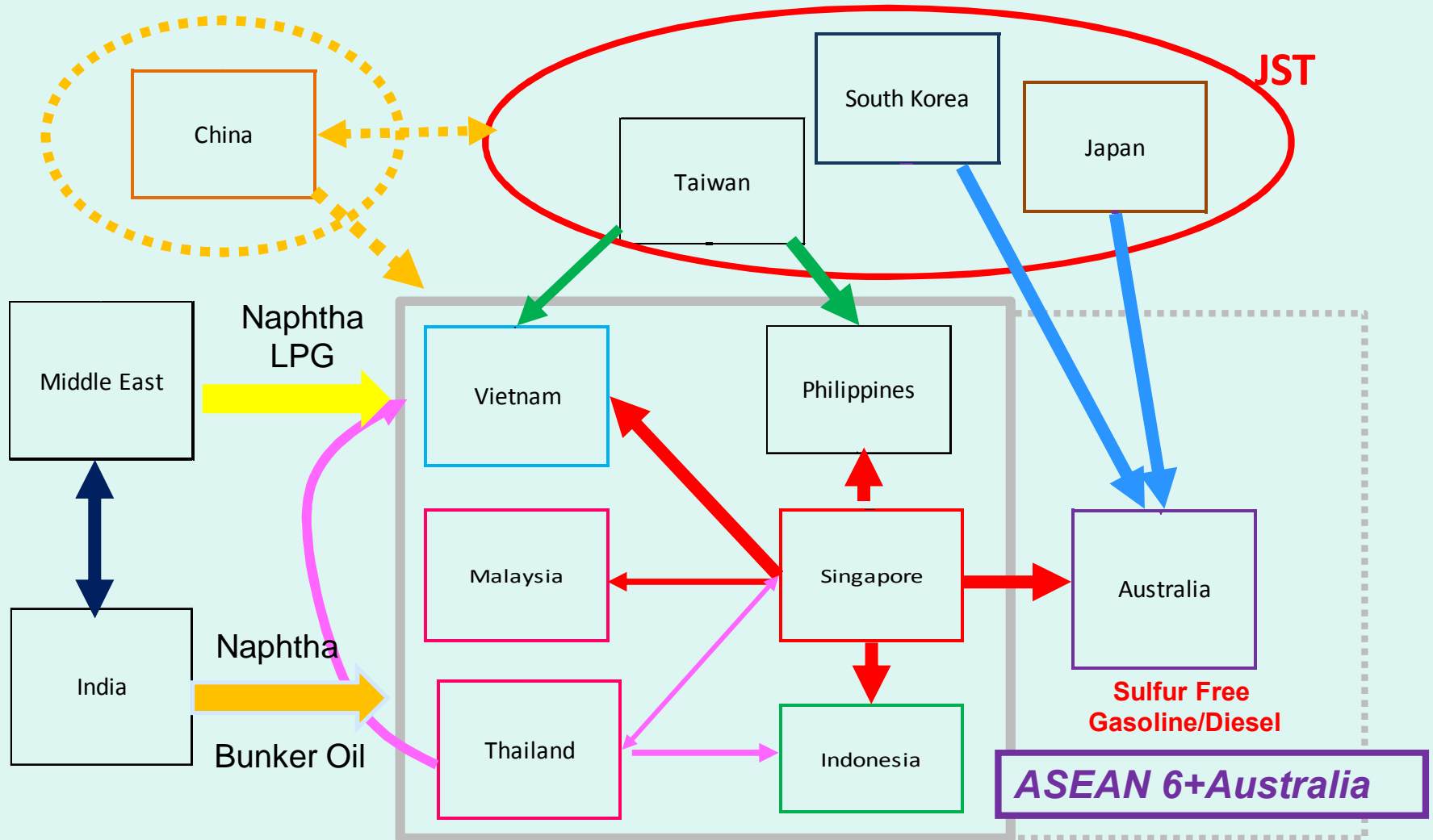


\*CDU Capacity – Domestic Product Demand (ex.LPG)

		Net Export (Export-Import)							(1,000 b/d)
		Singapore	Thailand	Malaysia	Indonesia	Philippines	Vietnam	ASEAN 6	Australia
2011	Gssoline	218	15	-95	-275	-30	-64	-231	-41
	Gas Oil	175	71	14	-251	-49	-88	-128	-151

**15%~20% Shortage of CDU Capacity ≙ (▲358+▲192=▲551)x1.5~2.0**

# Trade Flow : Gasoline and Diesel (Gas Oil)

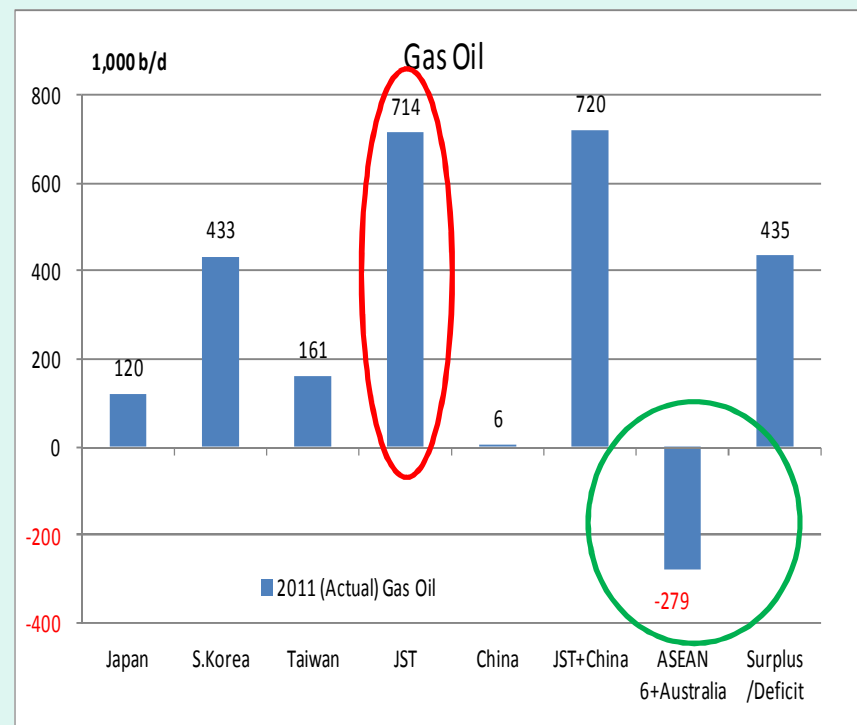
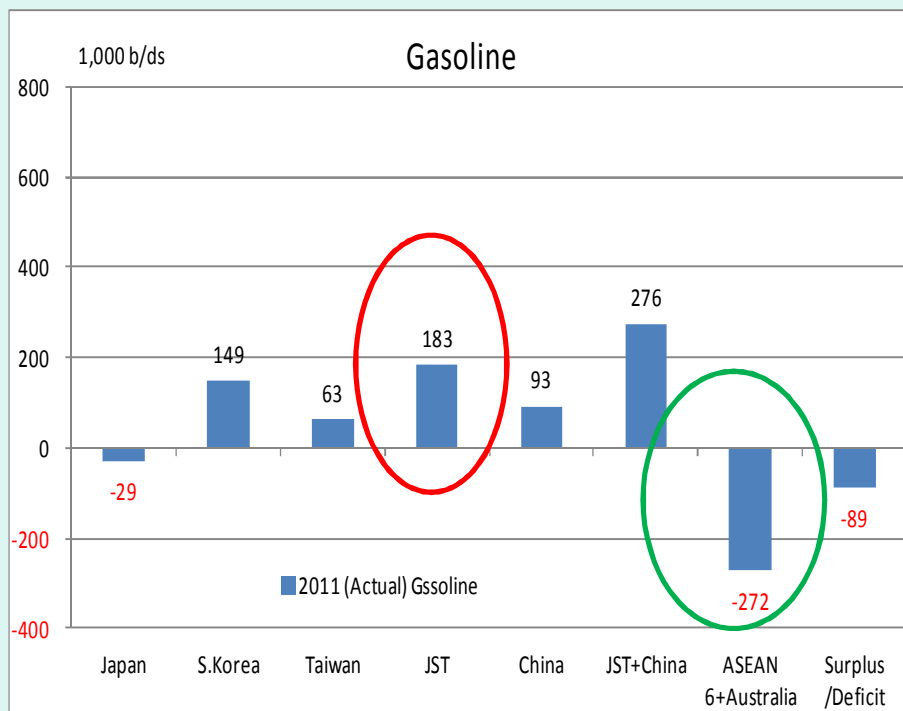


Net Export (Export-Import) (1,000 b/d)

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# Trade Balance: ASEAN 6+Australia and JST in 2011

Net Export = Export – Import



**Gasoline: JST and China make up for the gap of Asean6+Australia.**

**Diesel : JST only makes up for the gap of Asean6+Australia.**

# Challenges

## of ASEAN countries for 2011-2020

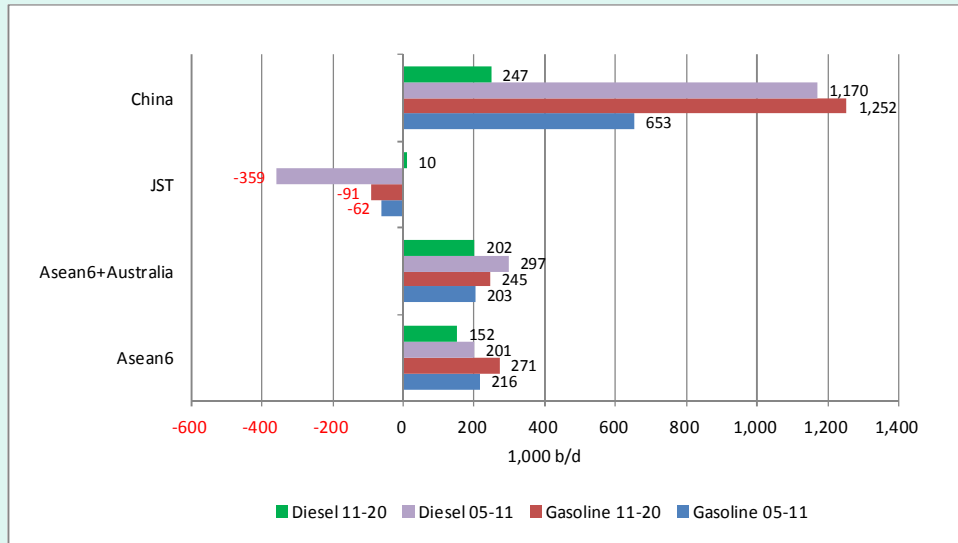


- *Reduction of subsidies in gasoline and diesel to mitigate a too strong demand growth*
- *Improvement of Fuel Quality and the Refining Investment*
- *Expansion of Refining capacity (De-bottlenecking and Upgrading)*

# From “Diesel’s age” to “Gasoline/Diesel’s age”



## Incremental Demand of Gasoline and Diesel in 2005-2011 and 2011-2020 by region



### Diesel AAGR (Annual Average Growth Rate)

#### Down to a large extent

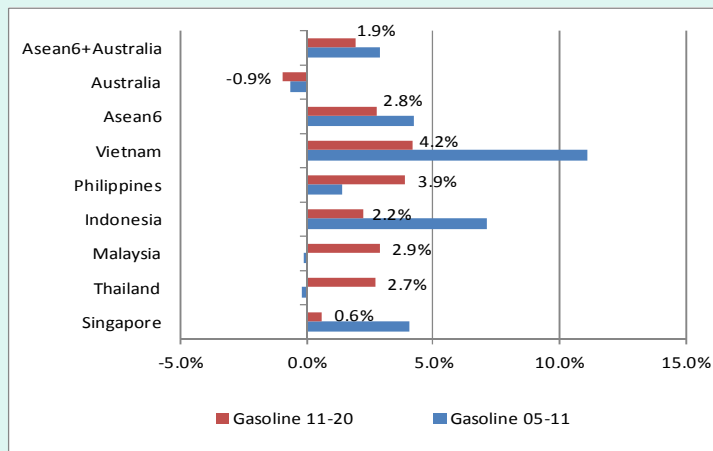
- *The end of High Economic Growth*
- *Reduction of Subsidies*
- *Alternative Fuel in Power, Industry, and Agriculture*

### Gasoline AAGR

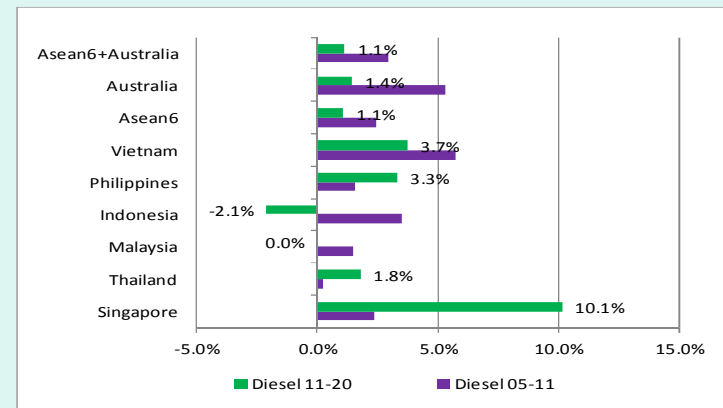
#### Down to some extent

- *GDP per capita goes up*
- *Purchasing Power for one’s own car*

## AAGR of Gasoline by country in ASEAN In 2005-2011 and 2011-2020



## AAGR of Diesel by country in ASEAN In 2005-2011 and 2011-2020





# Fuel Quality: Sulfur content

Schedule of lowering the Sulfur content of Diesel Fuel between 2011 and 2020

**Group 1: Less than 10ppm up to 2020 (equivalent to Euro V )**

**Group 2: Less than 50ppm up to 2020 (equivalent to Euro IV )**

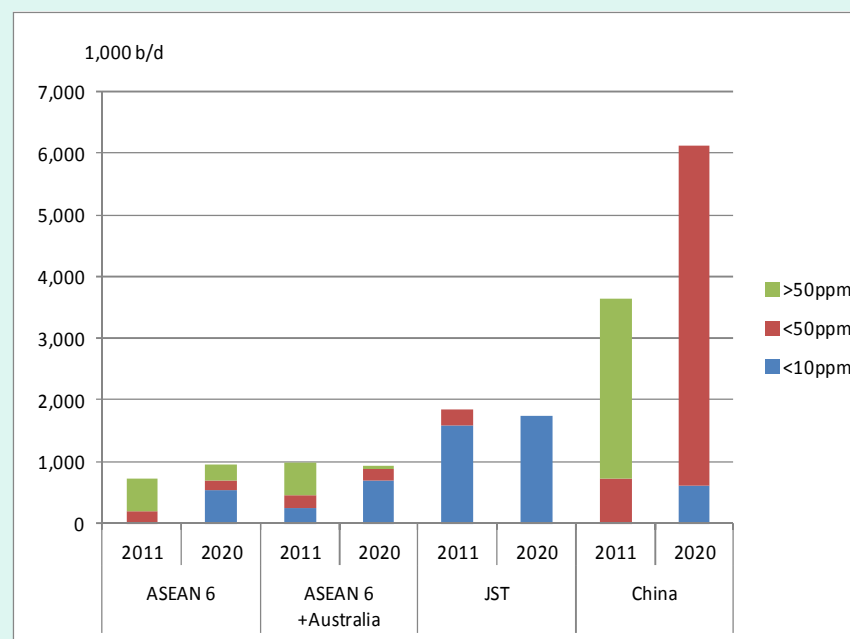
**Group 3: Less than 350ppm up to 2020 (equivalent to Euro III )**

Diesel Fuel :Sulfur Content (ppm)

	2010	2011	2015	2020
Japan	<10	<10	<10	<10
South Korea	10	10	10	10
Taiwan	50	50-10	10	10
China	500-50	500-50	50-10	10*
Singapore	50	50	10	10
Thailand	350	350	10	10
Malaysia	500	500	500-50	50
Indonesia	3,500	3,500-500	3,500-500	3,500-500
Philippines	350	350	350-50	350-50
Vietnam	2,500-500	500	500	350
Australia	10	10	10	10

Source: FGE

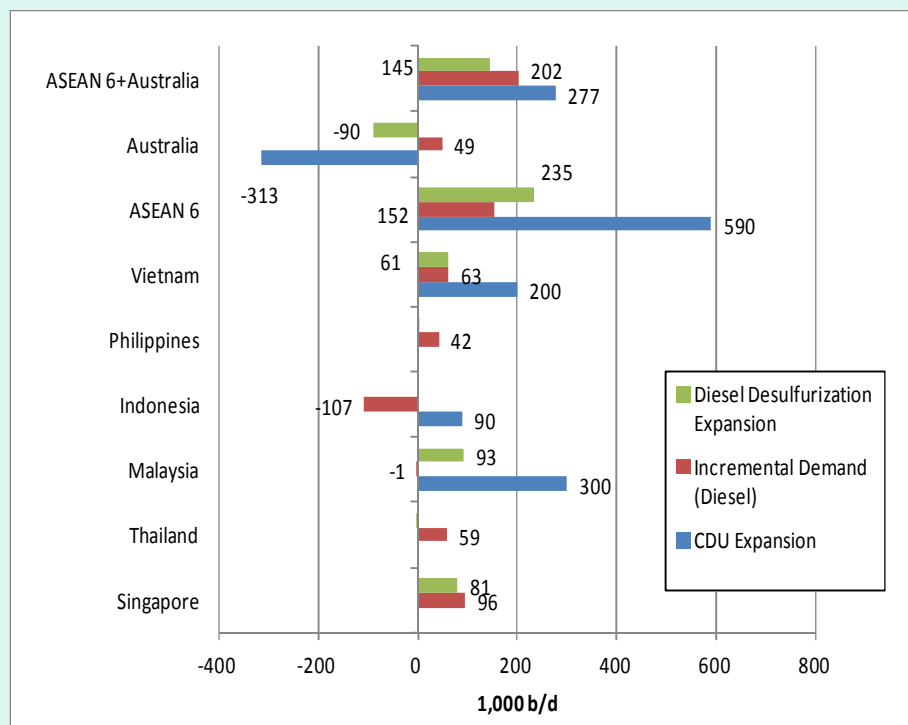
Capacity of Diesel Desulfurization Unit



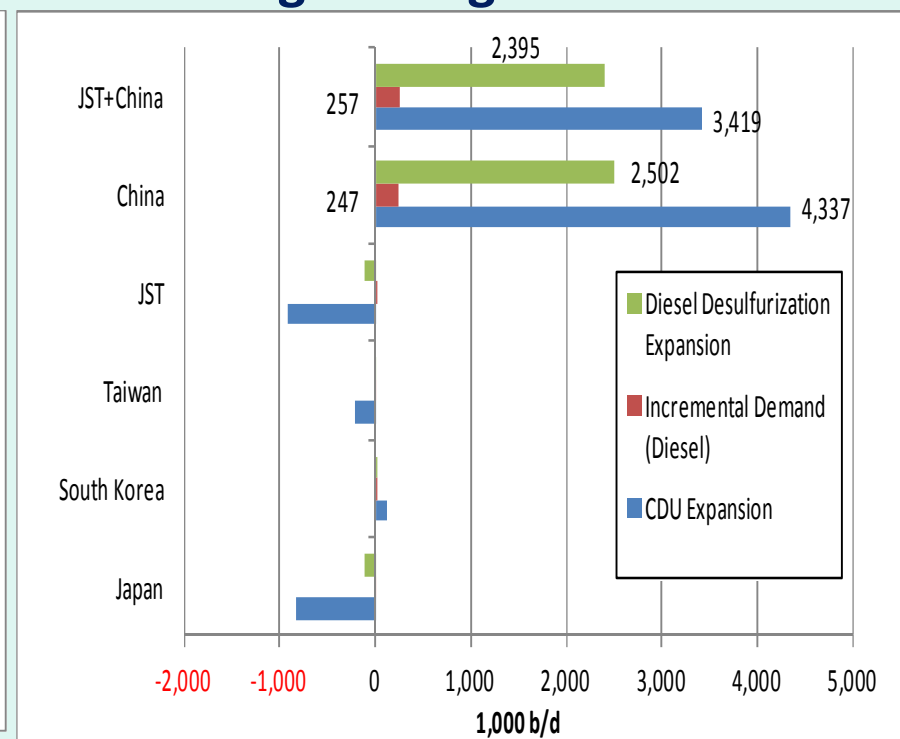
Source: Estimated by IEEJ

# Expansion of CDU and Diesel Desulfurization Unit between 2011 and 2020

## ASEAN



## The Neighboring Countries

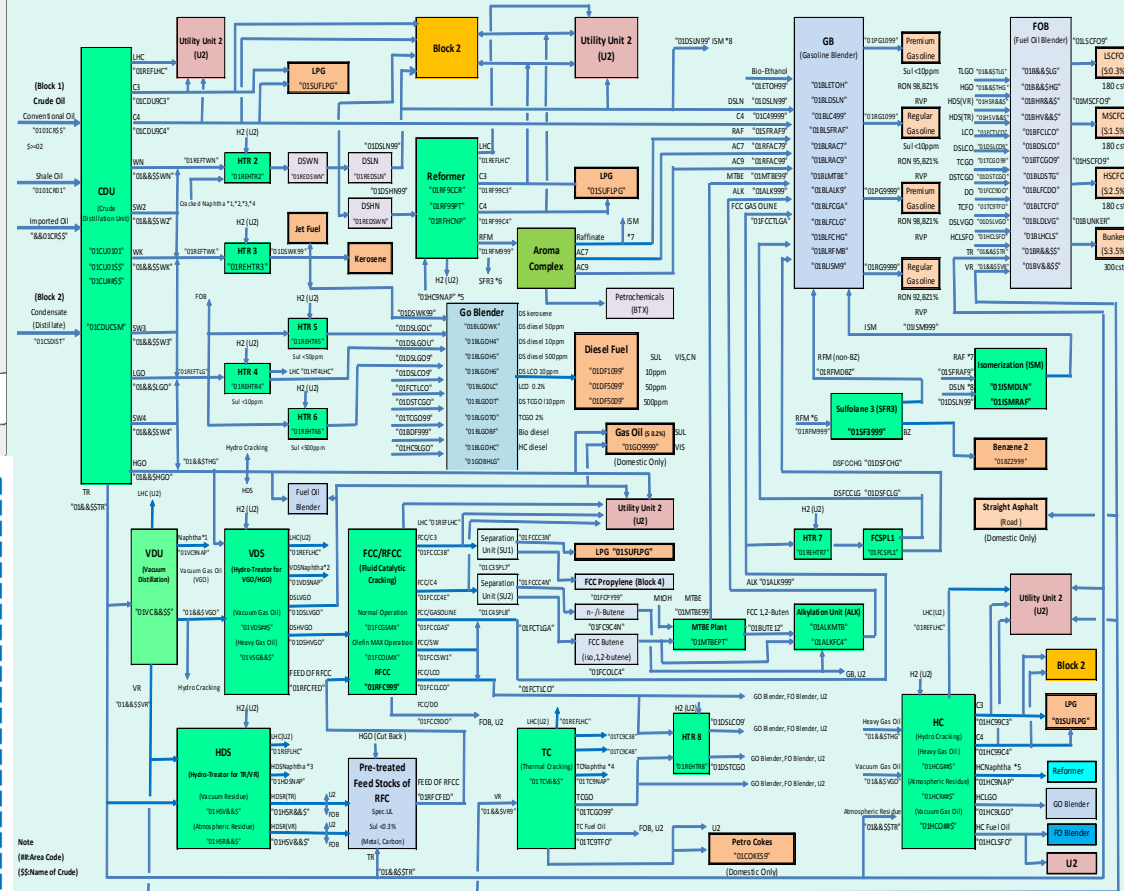
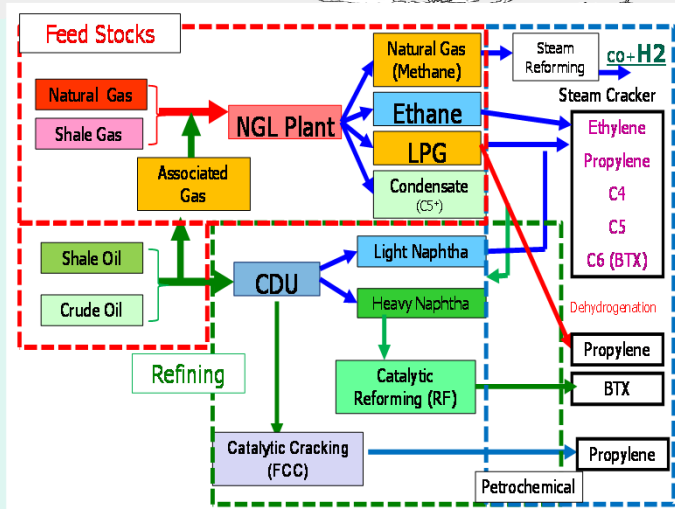
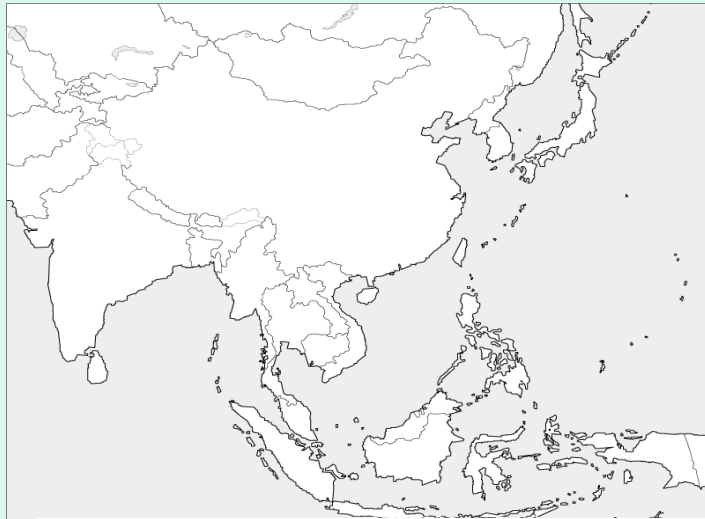


**ASEAN6: CDU Capacity Expansion → New Refineries**

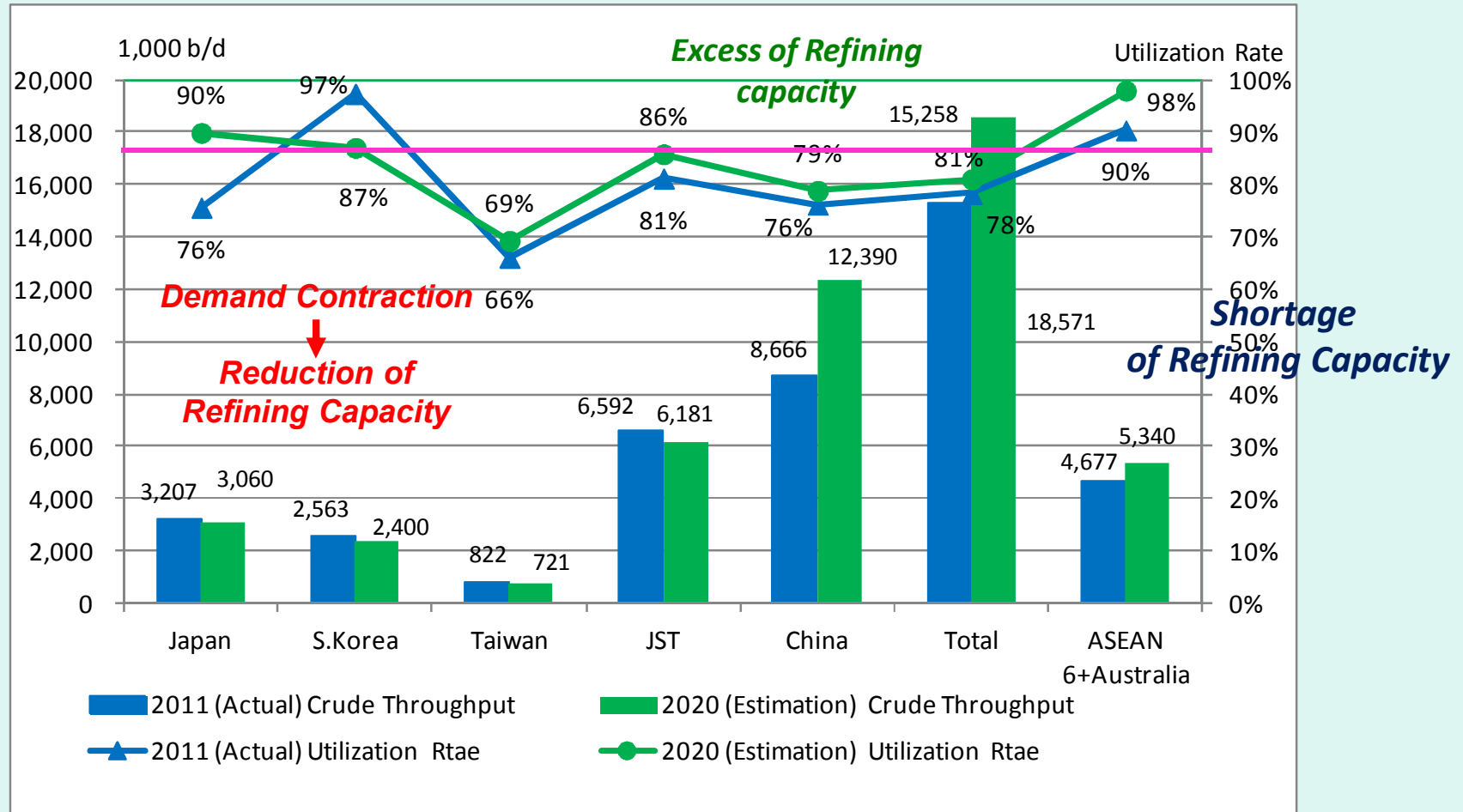
**Malaysia (RAPID Project :0.3 mm b/d), Vietnam (Nghi Son: 0.2 mm b/d)**

**Japan and Taiwan: Shut-down of Refinery and Reduction of Capacity ≒ 1 mm b/d**

# Estimation of Trade Balance in 2020 by using LP Model (Refining Model)

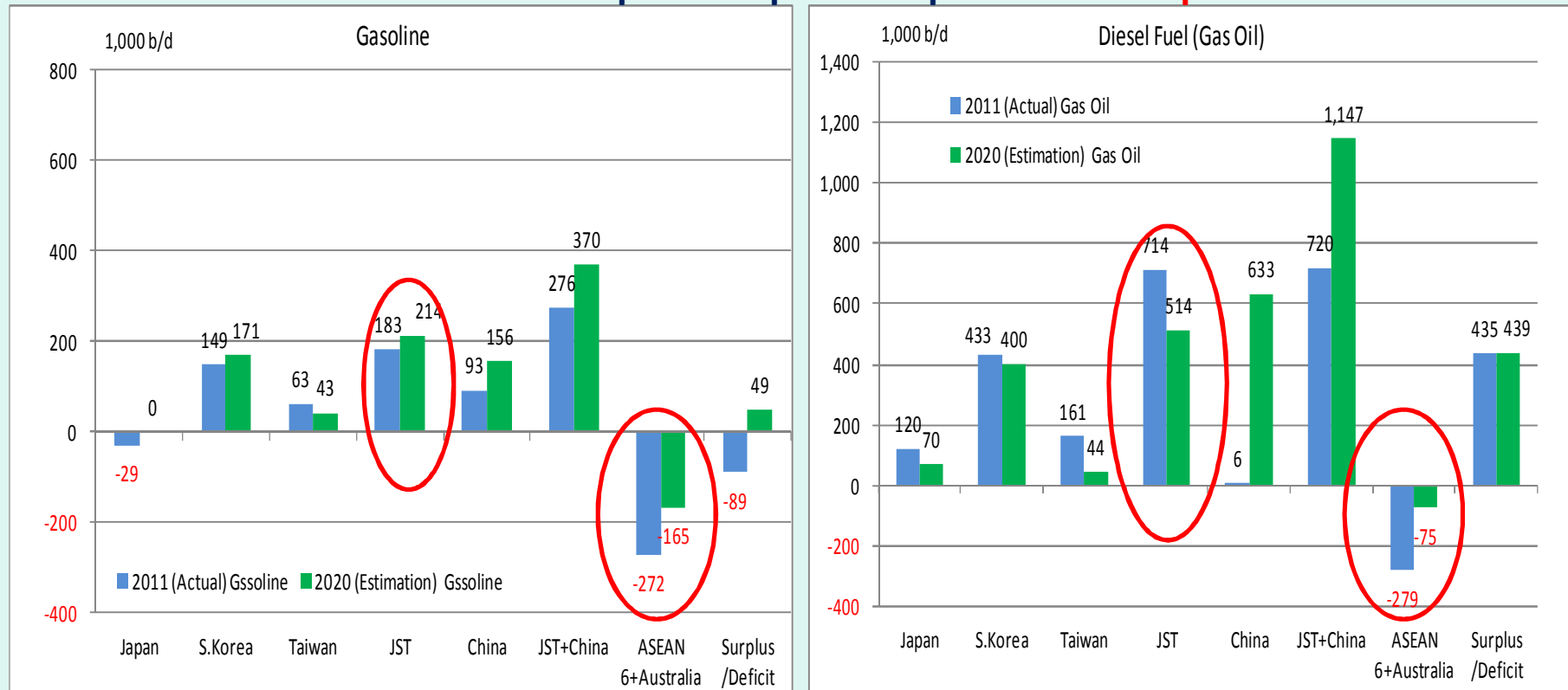


# Supply Balance in 2020 for ASEAN and the neighboring countries



# Trade Balance of Gasoline and Diesel in 2020 (ASEAN and the neighboring countries)

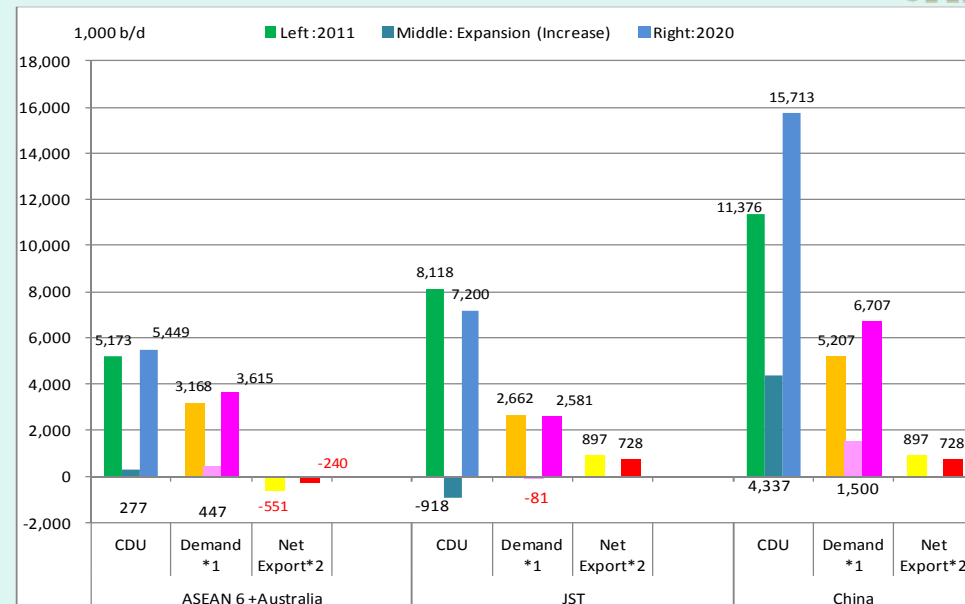
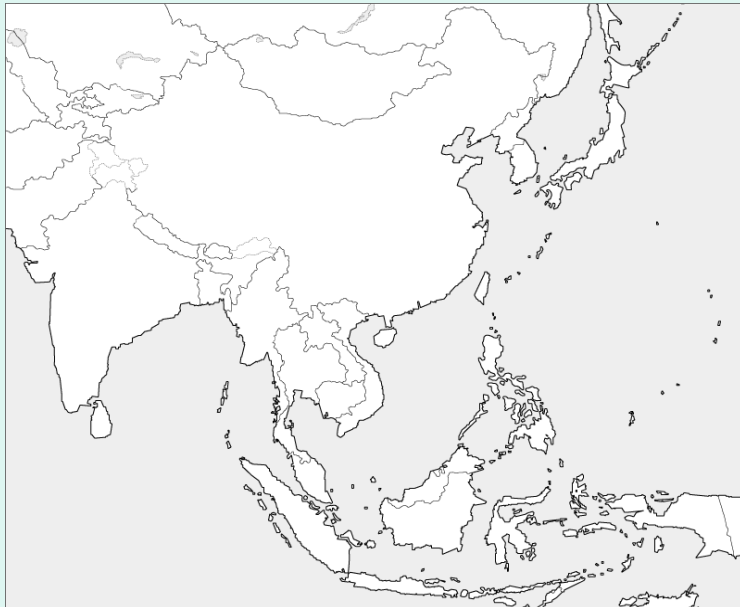
Net Export = Export – Import = - Net Import



Net Import of either gasoline or diesel is expected to be reduced by more than 50% and the gap to be made up for by JST's export.

**Gasoline: 272 → 165, Diesel : 279 → 75 ; Total 551 → 240**

# Conclusion



\*1:Demand = Gasoline and Diesel only

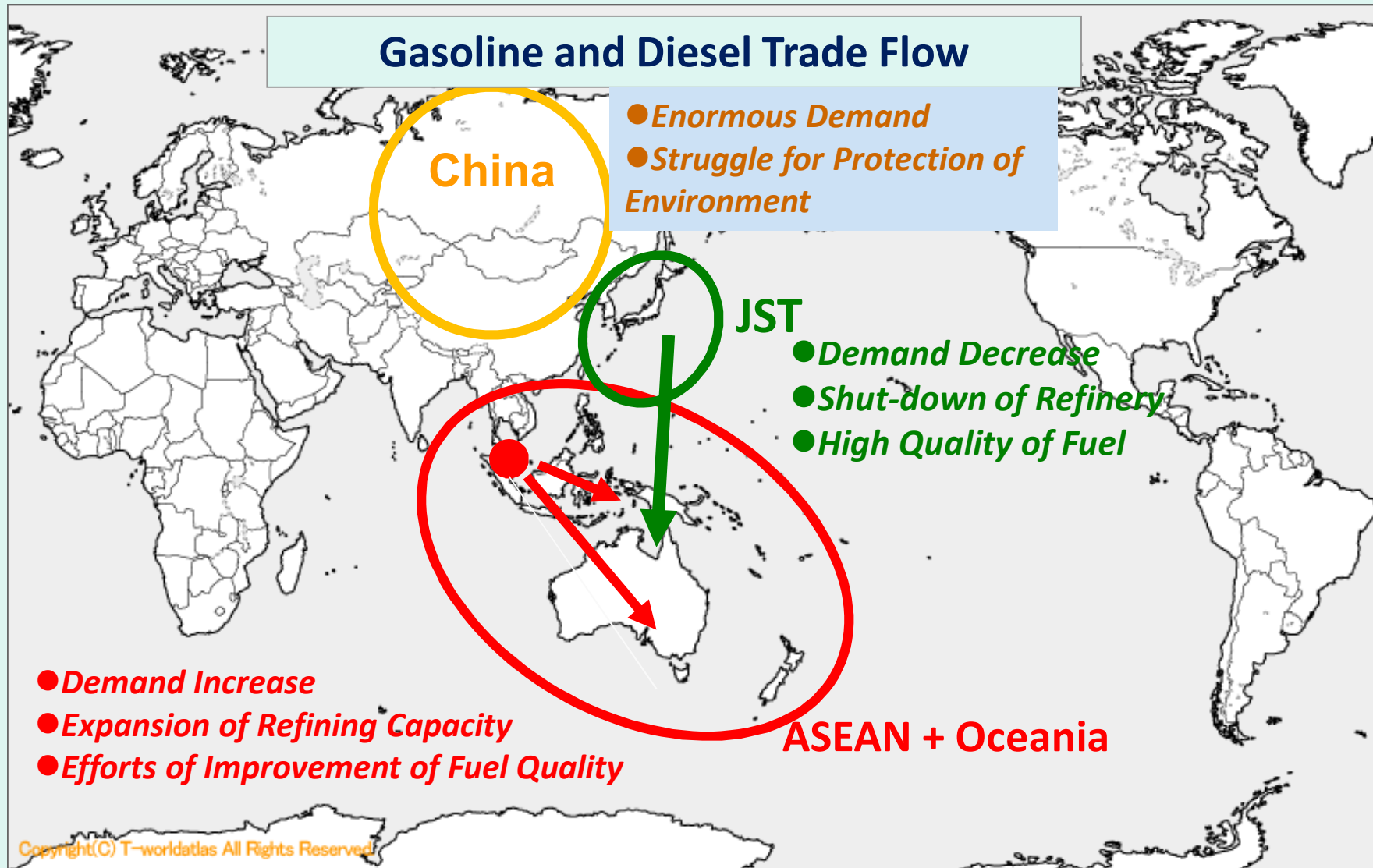
If the following items can be successfully implemented, ASEAN trade balance will be improved and more close to **“Self-sufficiency in gasoline and diesel”** in 2020.

- *Reforms of Subsidies in Diesel and Gasoline*
- *Implementation of Fuel Quality (Gasoline and Diesel)*
- *Expansion of Capacity in response to Incremental Demand and Installment of Desulfurization/Upgrading Unit*

Even If they cannot be well implemented, JST will be able to support the improvement of ASEAN’s trade balance and to make up for the gap of demand and supply for the time being.

**However, until when?**

# Issues to be discussed for Energy Security



# Thank you for your attention

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