

India Energy Conference: Oil, Gas and Alternative

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Refining Outlook-Opportunities for India

“Analysis of Supply and Demand of Petroleum Products for the World and Asia*”

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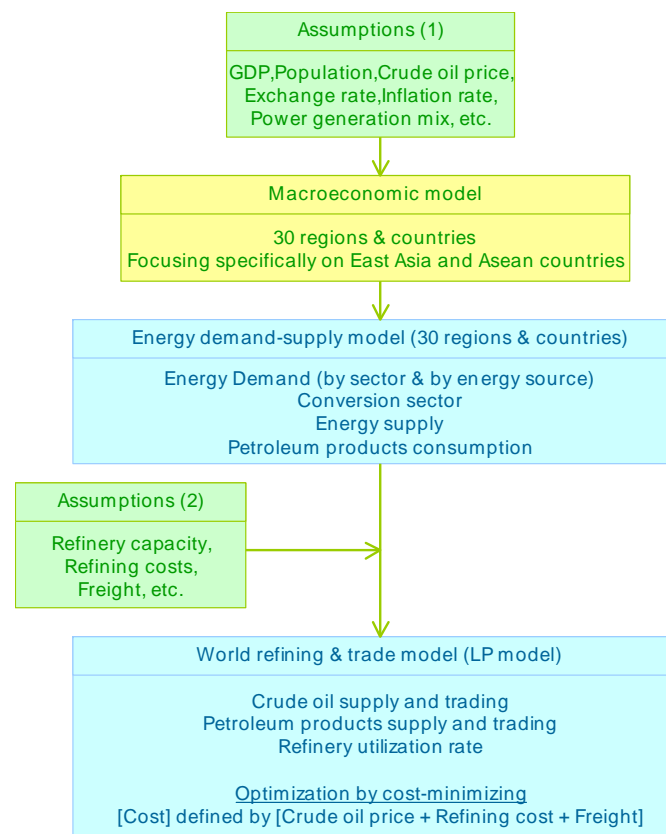
*This study was conducted by Energy Data and Modeling Center (EDMC), IEEJ.

For detail information of this forecast, please visit our website <http://eneken.ieej.or.jp>

Projection Outline

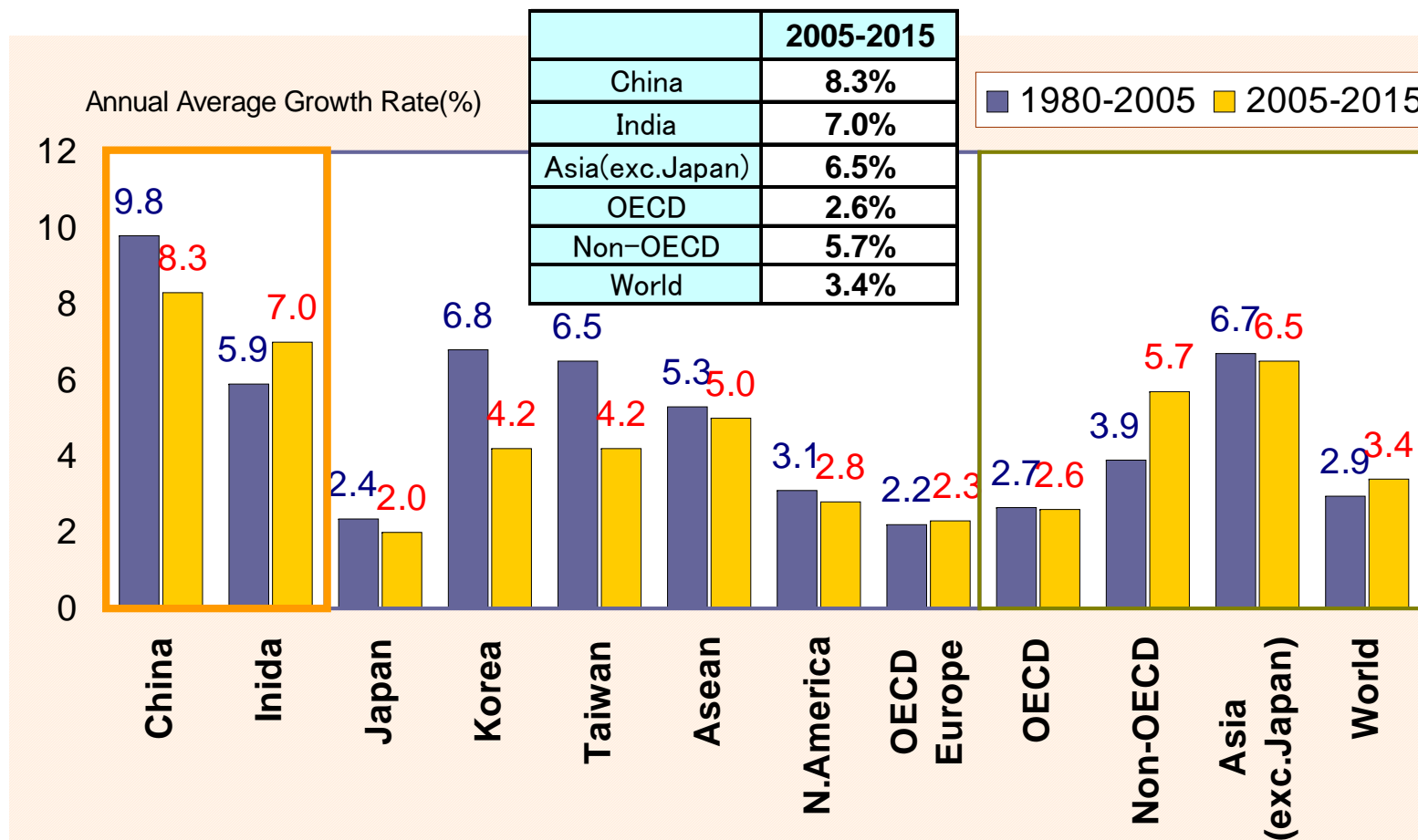
- Objective :
 - To analyze future supply and demand balance of petroleum as well as petroleum trade flows for various countries of the world
 - To examine the changing international petroleum supply and demand situation through various simulative analysis
- Projection Period: 2005~2015
- Methodology :
 - World energy demand estimation model (the econometric model)
 - World oil refining and trade flow model (the linear programming model)
- Scenarios:
 - Reference Case
 - Japan's import CIF price (\$/bbl) is assumed to be 55.7 in 2005, 51.7 in 2010, and 52.1 in 2015
 - High Oil Price Case
 - Crude oil prices as of 2010 are assumed to rise to a level twice that of the 2005 price level and Japan's import CIF price (\$/bbl) is assumed to be 55.7 in 2005, 101.4 in 2010, and 104.2 in 2015

Structure of the Model and a Calculation Flow



(Source) IEEJ(2008), "Analysis of Supply and Demand of Petroleum Products for the World and Asia"

World GDP Outlook



(Source) IEEJ, "Asia/World Energy Outlook 2007"

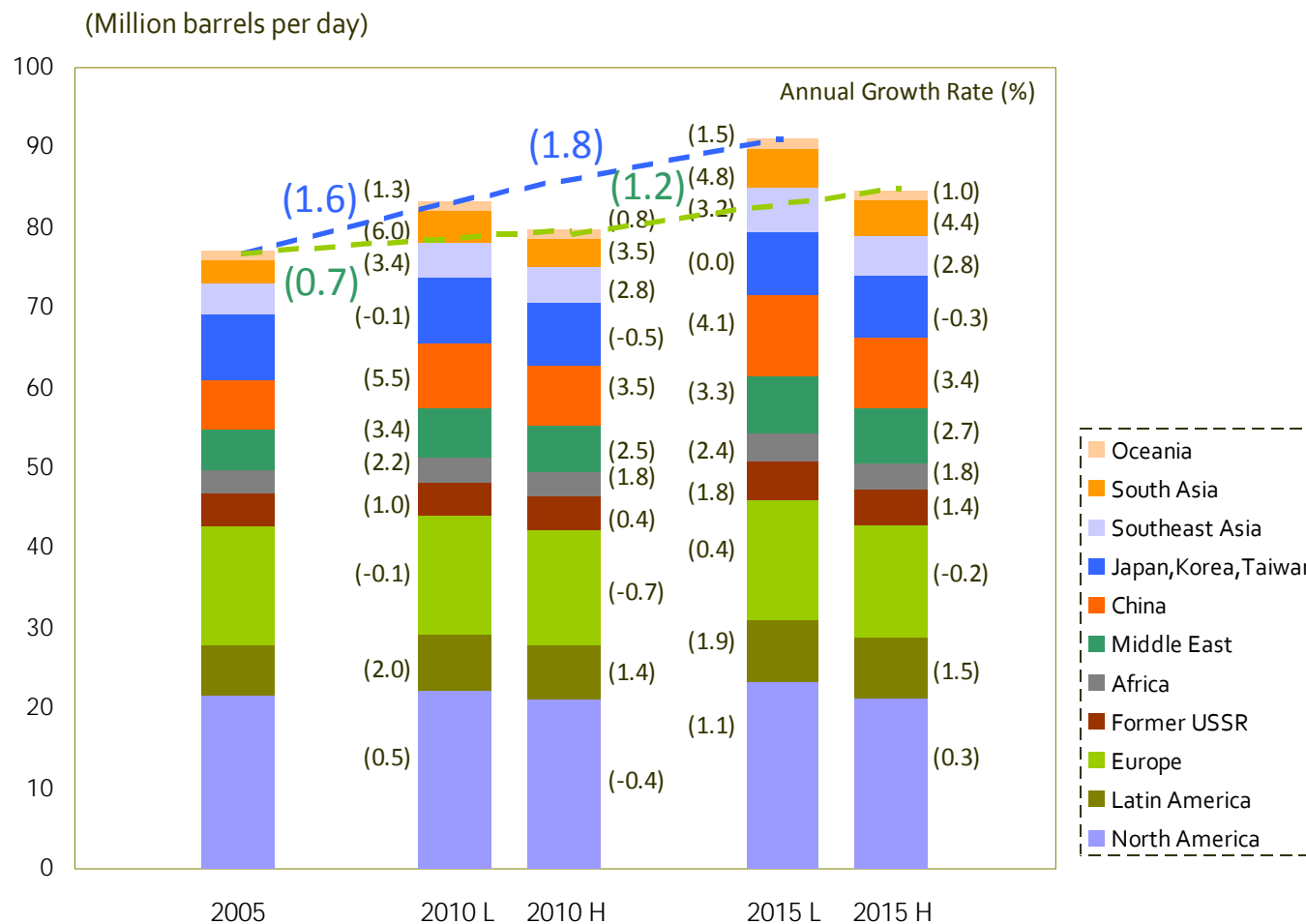
Assumption of Crude Oil Prices

(2005USD/bbl)

| | 2005 | Reference | | High Oil Pirce | |
|-------|------|-----------|------|----------------|-------|
| | | 2010 | 2015 | 2010 | 2015 |
| WTI | 56.5 | 51.4 | 52.9 | 102.9 | 105.7 |
| Dubai | 49.4 | 44.9 | 46.2 | 89.9 | 92.3 |
| Brent | 54.4 | 49.5 | 50.9 | 99.1 | 101.8 |
| SLC | 54.0 | 49.1 | 50.5 | 98.3 | 101.0 |

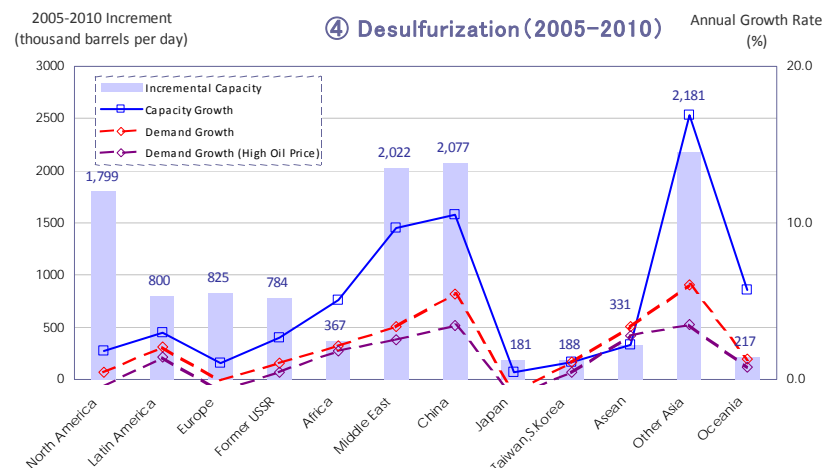
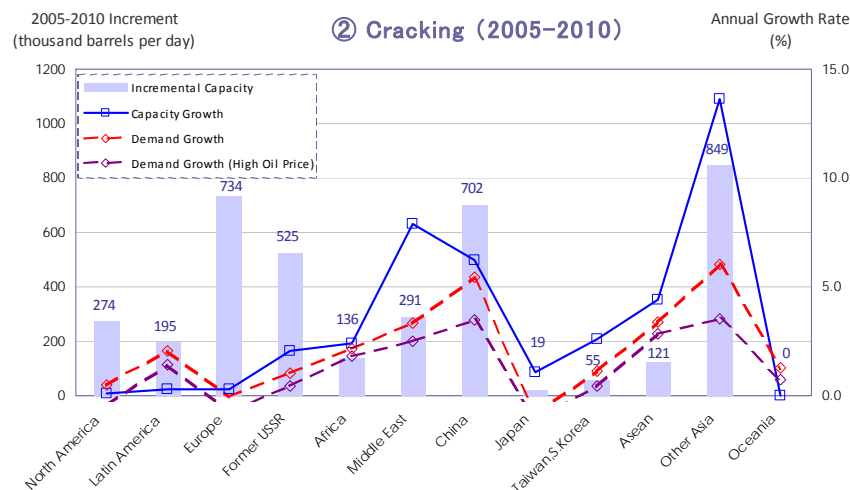
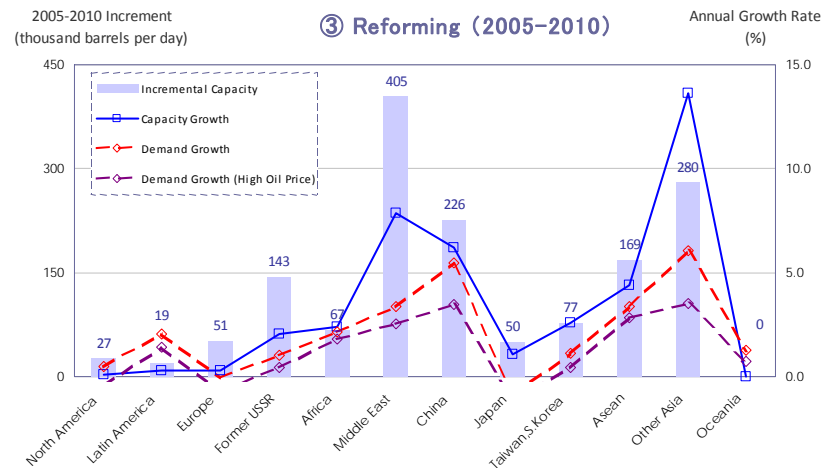
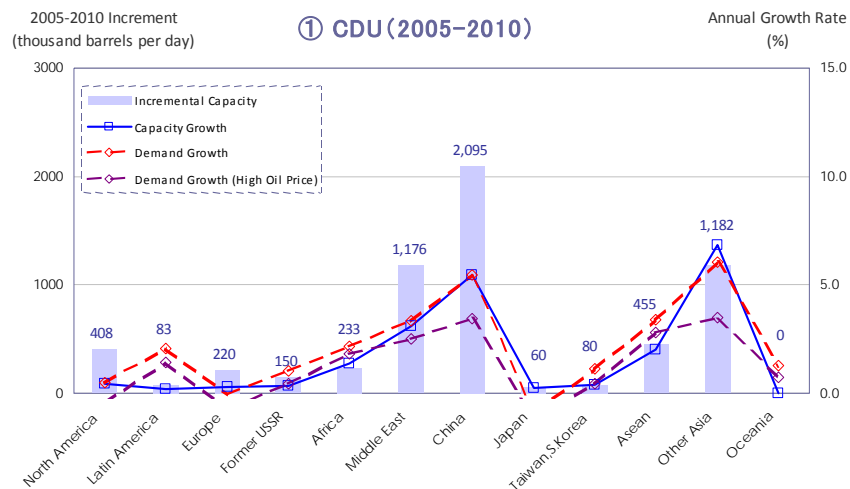
(Source) IEEJ(2008), “Analysis of Supply and Demand of Petroleum Products for the World and Asia”

Petroleum Product Demand by Region



(Source) IEEJ(2008), "Analysis of Supply and Demand of Petroleum Products for the World and Asia"

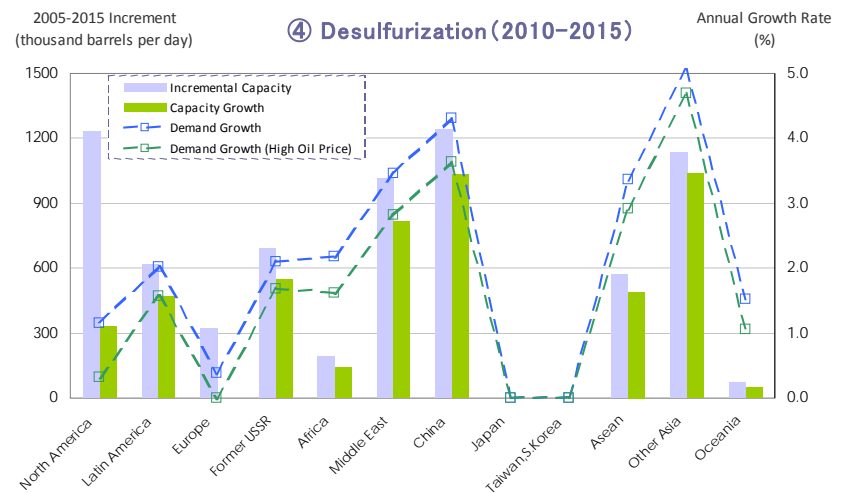
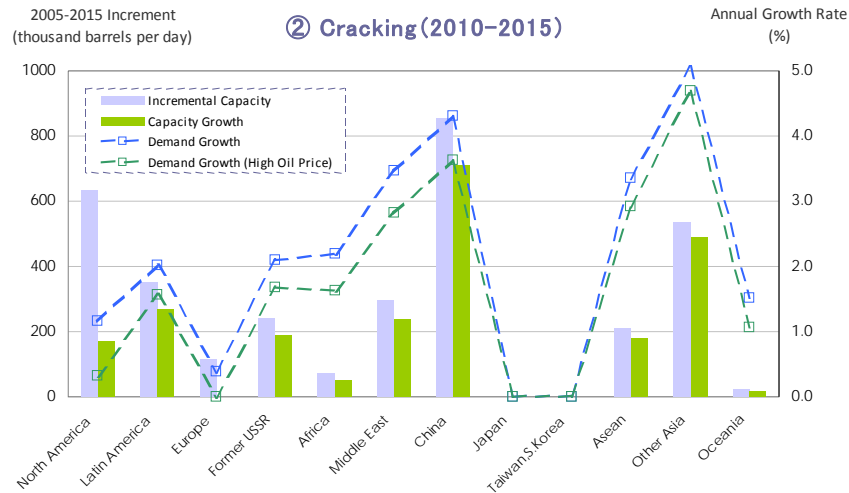
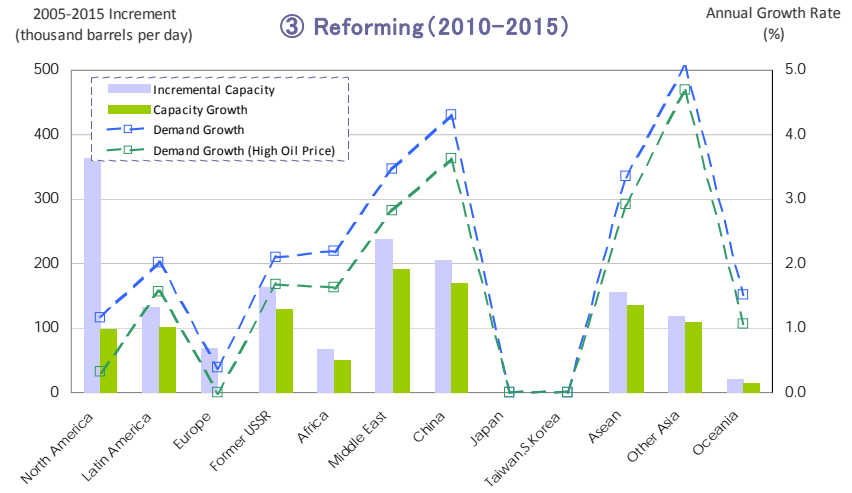
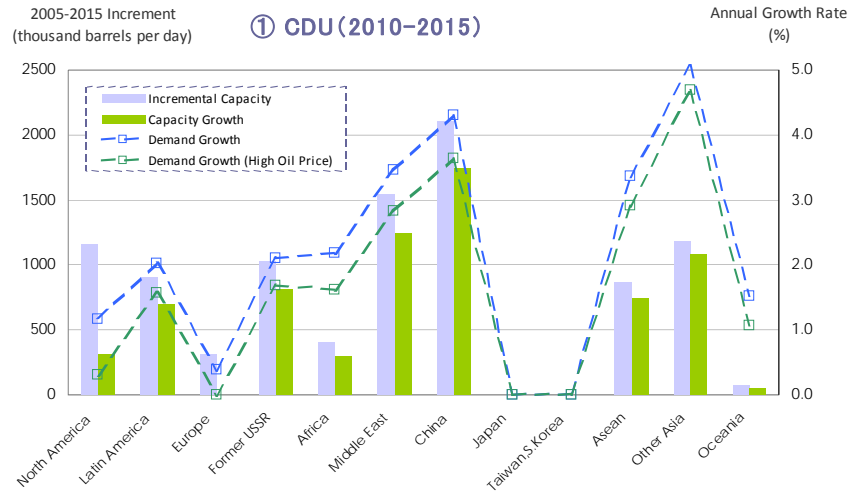
Increment of Installed Capacity by Region (2005-2010)



(Source) IEEJ(2008), "Analysis of Supply and Demand of Petroleum Products for the World and Asia"

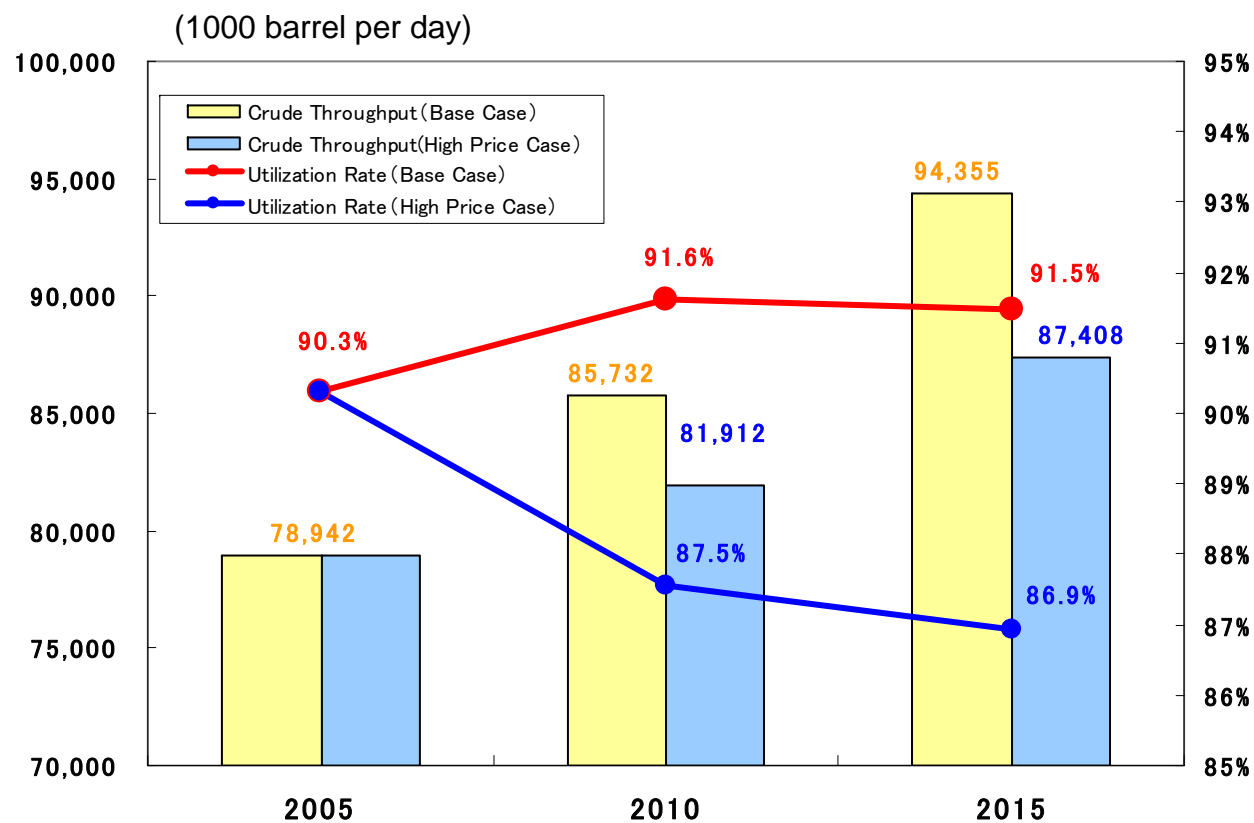
Increment of Installed Capacity by Region

(2010-2015)



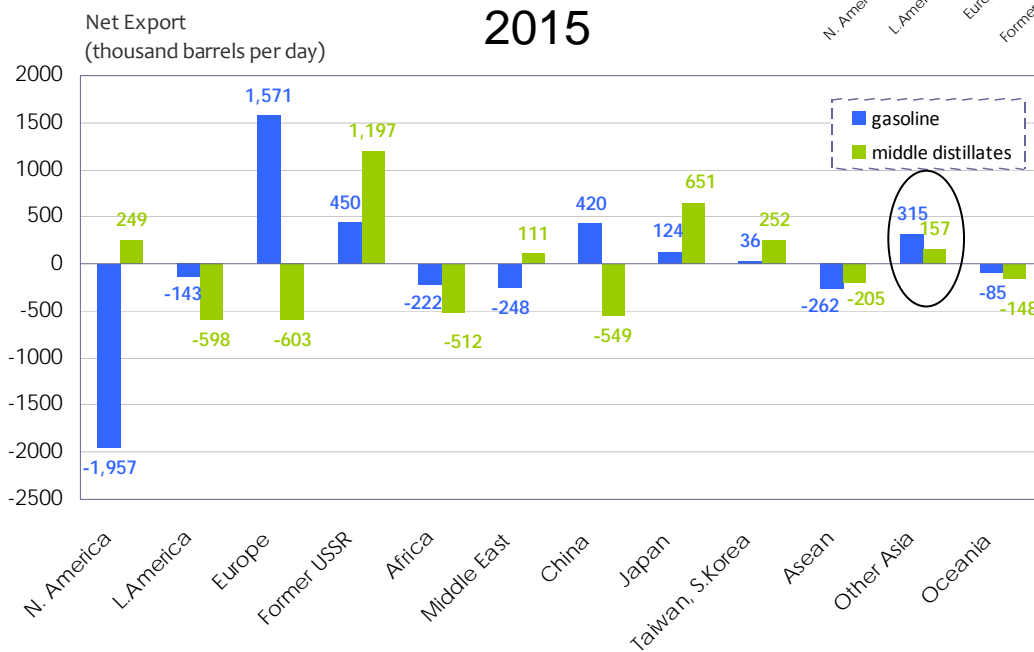
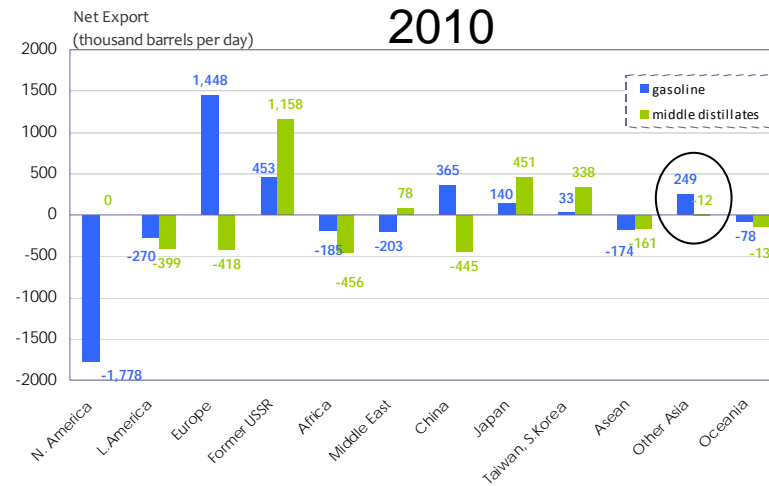
(Source) IEEJ(2008), "Analysis of Supply and Demand of Petroleum Products for the World and Asia"

Crude Throughput and Utilization Rate



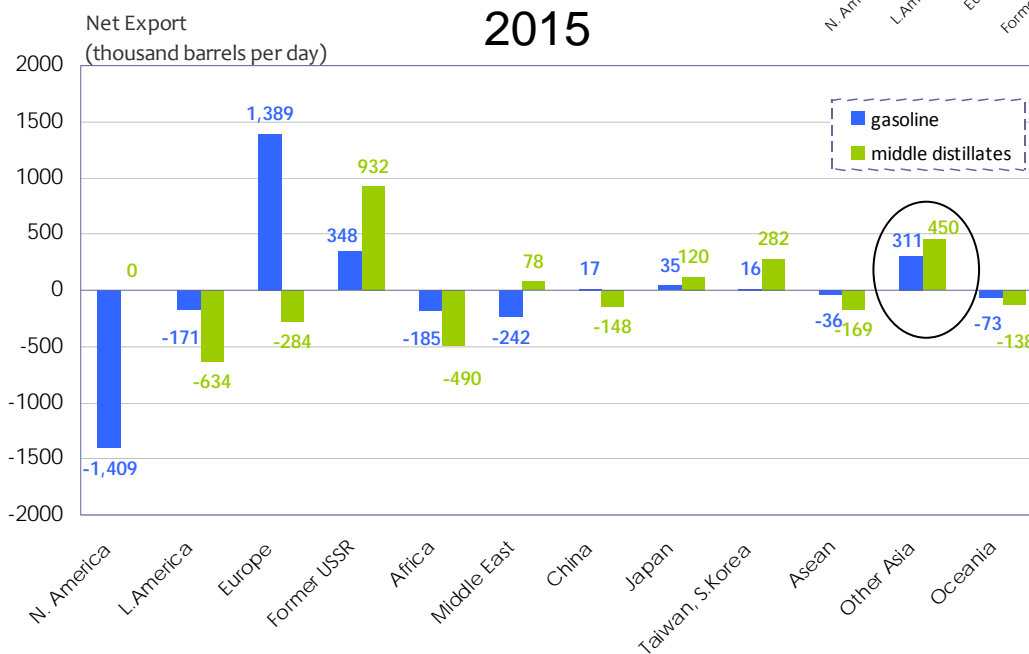
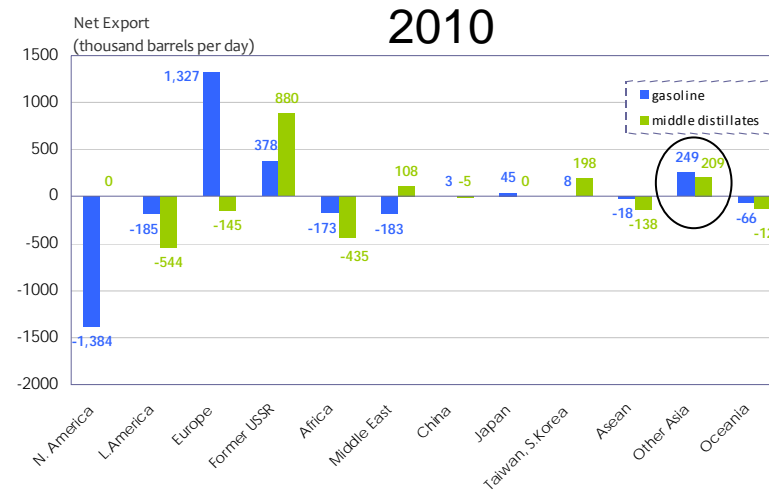
(Source) IEEJ(2008), “Analysis of Supply and Demand of Petroleum Products for the World and Asia”

Supply-Demand Balance by Region in Reference Case (2010, 2015)



(Source) IEEJ(2008), "Analysis of Supply and Demand of Petroleum Products for the World and Asia"

Supply-Demand Balance by Region in High Price Case (2010, 2015)



(Source) IEEJ(2008), "Analysis of Supply and Demand of Petroleum Products for the World and Asia"

Summary

- India
 - Petroleum product demand will grow by 6.0% from 2005 to 2010, and further by 4.8% annually until 2015 in South Asia.
 - Refining capacity will reach 1.5 million B/D in the private company, 2.5 million B/D at the state-owned company, and 4.0 million B/D in total by 2010.
 - Private company's refining capacity will be mainly utilized for exports.
 - India's gasoline exports will be expanded to 0.28 million B/D to the Middle East, Oceania, and Europe in 2010 and further to 0.32 million B/D in 2015.
 - The destination of middle distillate exports from India's export-oriented refineries will be expanded from the neighboring areas to Europe.
 - Exports are projected to increase to 0.56 million B/D in 2010 (including 0.12 million B/D to Europe) and to 0.54 million B/D in 2015 (including 0.27 million B/D to Europe).
- South Asia vs. Middle East
 - South Asia, which is ahead of other regions in the buildup of refining capacity, will prevail in exports to the European and American markets during the period from 2010 to 2015.
 - However, if export-oriented oil refineries come on line from 2012 onward as planned in the Middle East region, there will be intensifying competition between South Asia and the Middle East for exports to the European and American markets.