

Growing Oil Demand and SPR Development in Asia

A decorative graphic consisting of overlapping blue, red, and yellow squares with a black crosshair.

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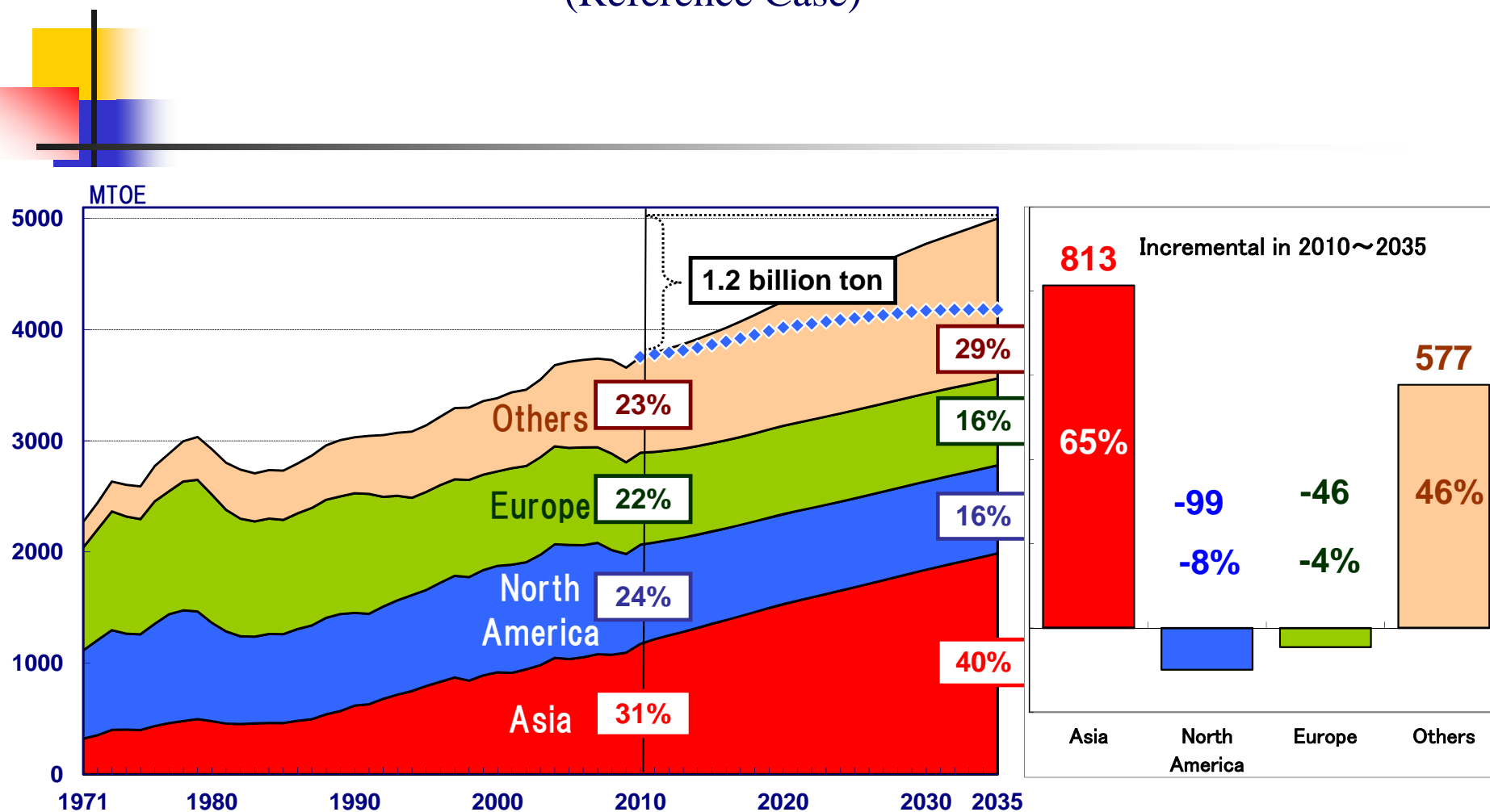
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Outlook of World Oil Demand

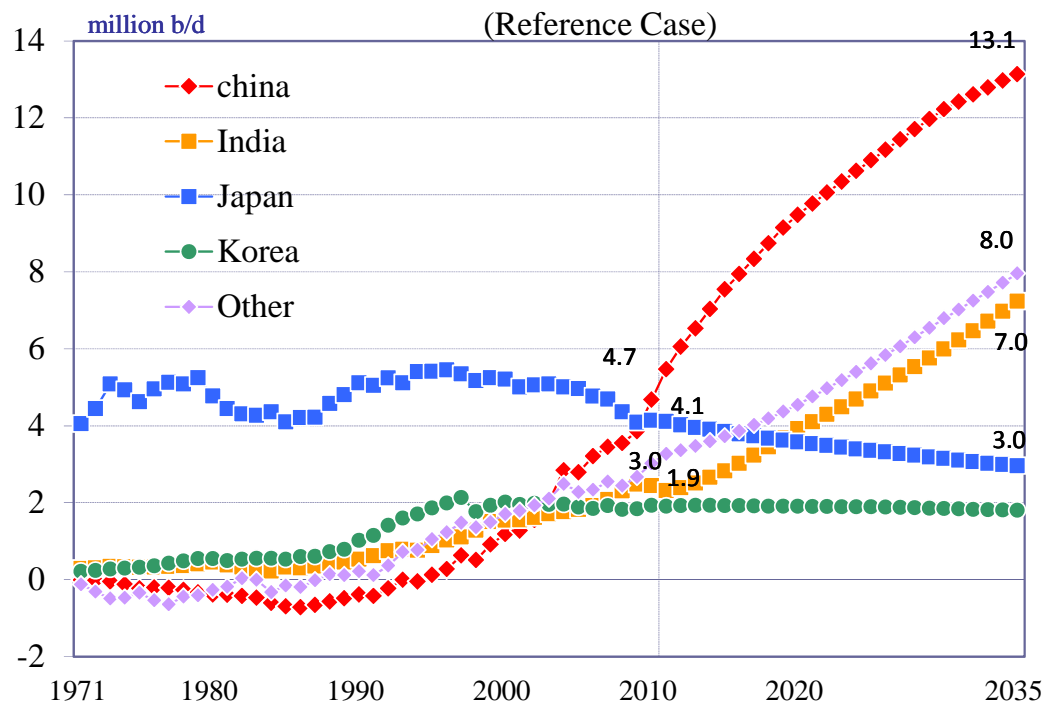
(Reference Case)





Competition for Access to Energy Resources

Outlook of Oil Import in Asia



Oil import in China will increase to 13.1 million B/D in 2035, followed by India (7.0 million B/D) and other developing Asia, mainly ASEAN.

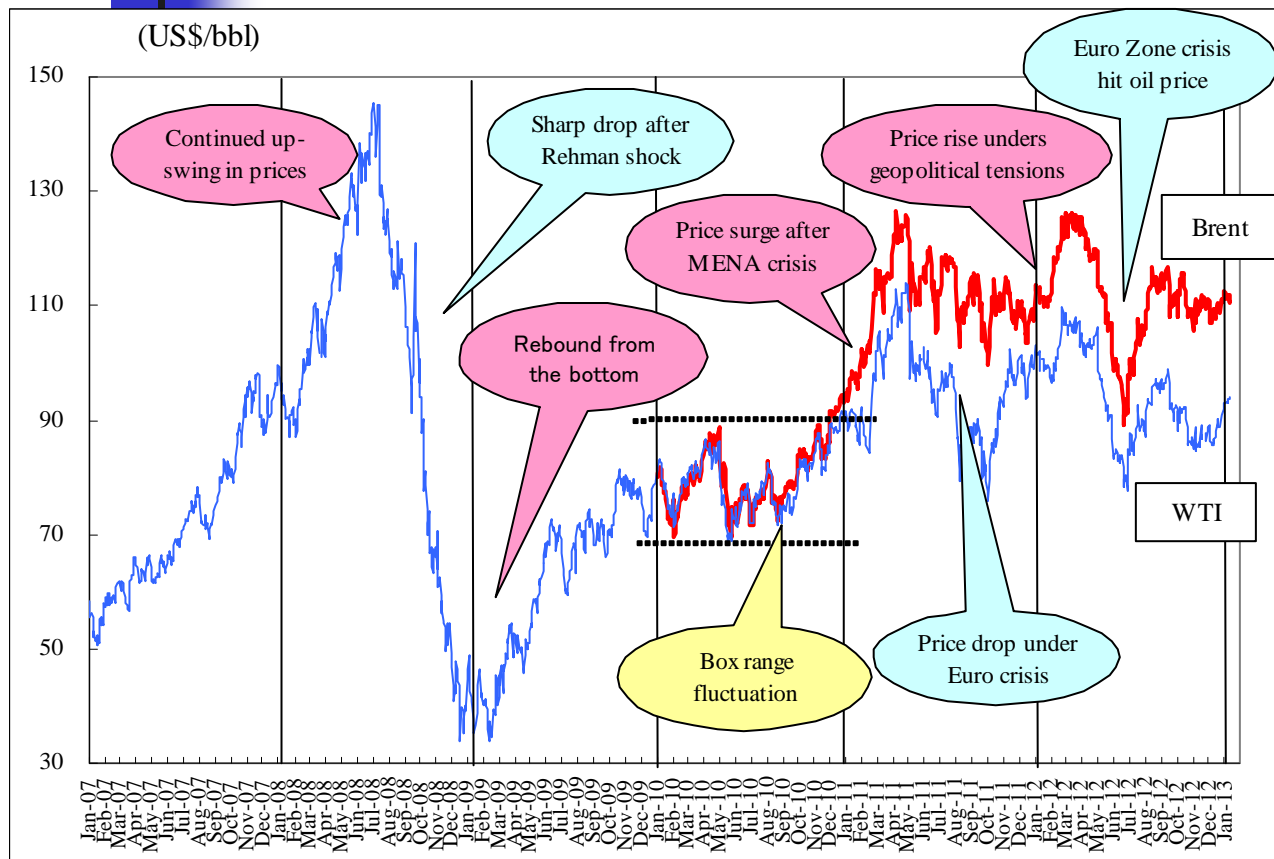
Source: IEEJ (Asia/World Energy Outlook 2012)

- Growing import dependence is perceived as “vulnerability”
- Strategy being taken as a counter measure:
 - Domestic energy resource development
 - Energy diversification
 - Overseas resource development
 - Promotion of NOCs
- Excessive (exclusive) pursuit of “Mercantilist” approach may lead to politicize and destabilize world energy markets
- Behavior of emerging giants attracts attentions in global energy community



Recent Oil Price Volatility

Crude oil price remains volatile throughout 2011-2012

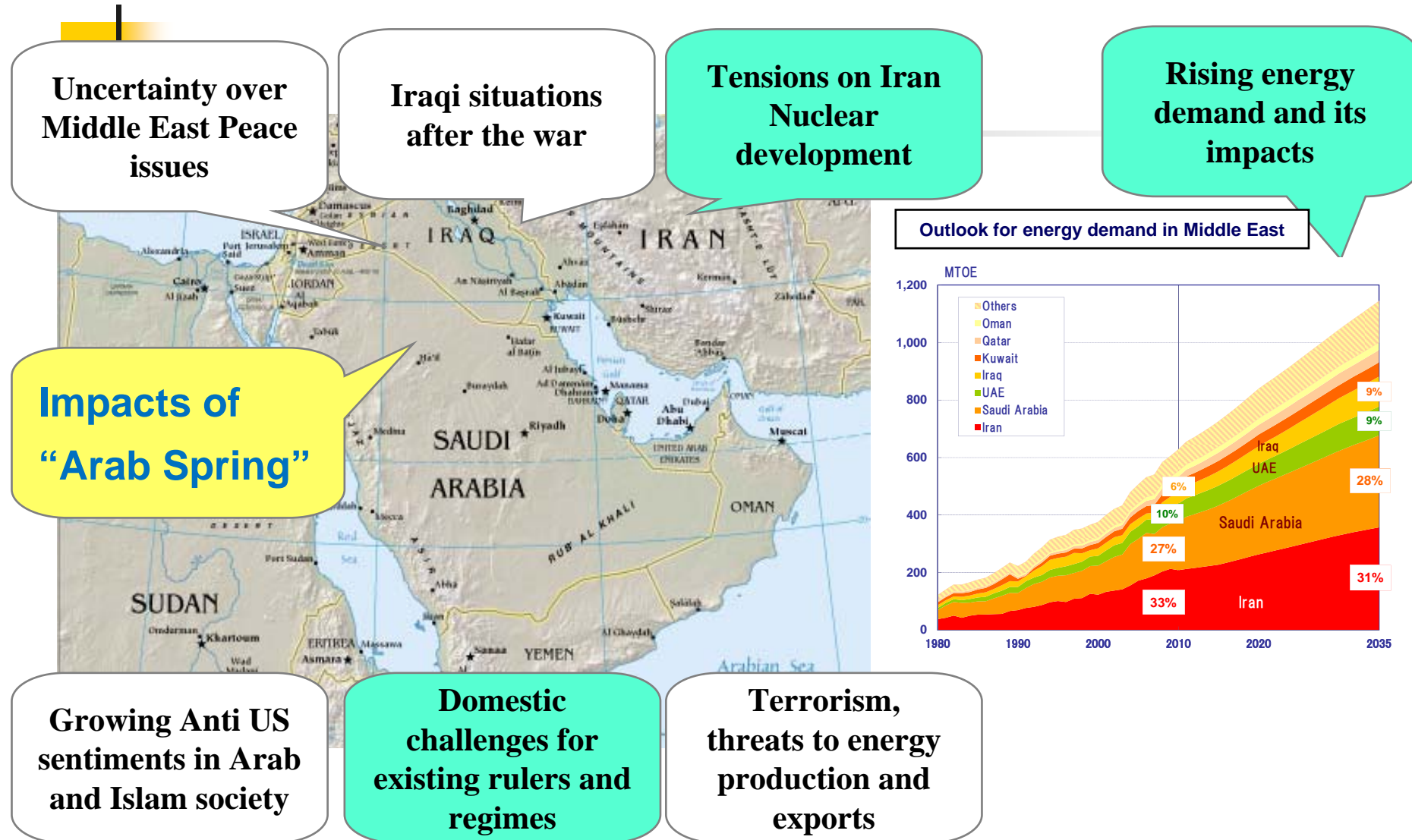


- Brent futures price average in 2012 resulted in 111.7\$, WTI for 94.2\$
- Price fluctuation at "high level" in the last two years
- Brent topped 120\$ during Feb-Mar 2012 due to impacts of geopolitics
- Euro Zone crisis put downward pressure after May 2012
- Brent stayed at about 110\$ (WTI at 80-90\$) after Oct 2012

Source: NYMEX data, etc.



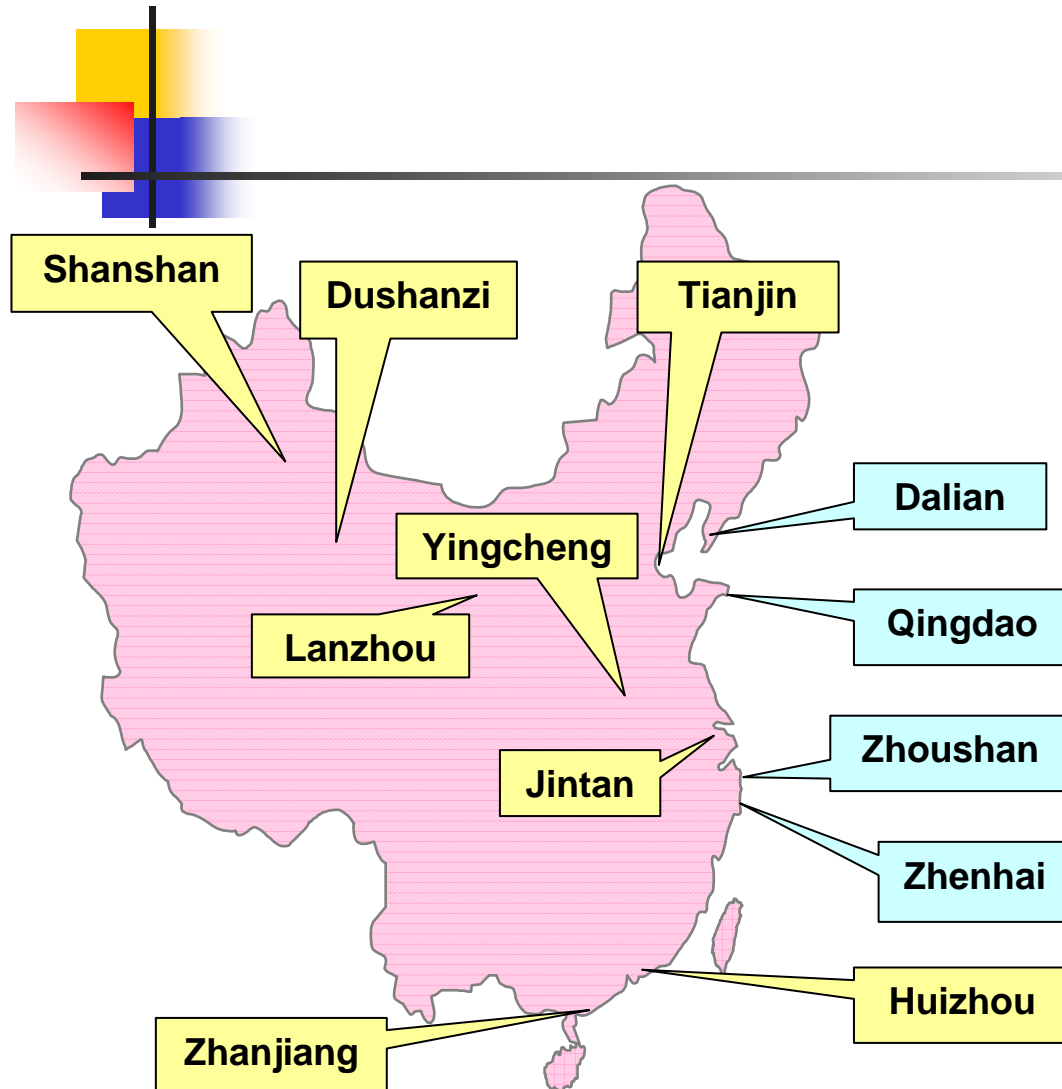
Instability in the Middle East



Source: Prepared by IEEJ



SPR Program in China



- Phase 1: A total storage capacity of 103 Million Barrels (MB) at four sites was completed in March 2009.
- Phase 2: (under construction since September 2009)
 - Original plan: A total storage capacity of 169 MB at eight sites and expected to be completed in 2015.
 - Upgrade plan: Capacity upward revision to about 210 MB to be completed in 2013.
 - Latest update: Capacity downward revision to about 177 MB to be completed in 2015.
 - SPR fill rate is expected at about 200 KBD with considerable lower/higher range band.
- Phase 3: (Plan from now on)
 - A total storage capacity of about 177 MB is set to begin in 2013, expected to be completed by 2020.



SPR Program in India



Site	Planned Completion year	Capacity (Million tons)
Visakhapatnam	2012	1.33
Mangalore	2012	1.5
Padur	2012	2.5
Total		5.33

- All the projects are delayed by various reasons.
 - Visakhapatnam of 0.3 MT portion is expected to be completed in March 2013
 - Mangalore is expected to be completed in December 2013
 - Padur is expected to be completed in April 2014

- Additional 12.5 MT capacity construction is being planned for Padur (5MT) and Chandikhol, Rajkot and Bikaner (2.5MT each)



ASEAN Oil Stockpile Roadmap

Country	Inventory Level 1,000KL (Year)	Inventory Level Day cover	Stockpile Target
Cambodia	90 (2010)	30 days	• To maintain current 30 days stock obligation
Indonesia	3,510 (August 2011)	21 days	• To maintain current 23 days stock obligation
Laos	50 (2010)	25 days	• To increase stock day cover up to 30 days in 2020, and further up to 40 days in the future
Myanmar	260 (2010)	71 days	• To increase stock level up to 500,000 KL to cover 86 days in 2020, and further up to 520,000 KL in 2025
Philippines	2,060 (2010)	43 days	• To maintain current stock obligation (15 days for oil company) • A plan is being discussed to establish 30 days national stockpile
Thailand	6,800 (June 2010)	45 days	• To maintain current 36 days stock obligation • A plan is being discussed to increase stock obligation up to 45 days in 2013, and further up to 90 days in the future
Vietnam	1,800 (2010)	37 days	• National Stockpile Master Plan is approved by PM • Stockpile level to be increased to cover 90 days import in 2015, and stock level to be further increased to maintain 90 days import cover