

# Emergency Oil Stocks and Energy Security in the APEC Region

“Petroleum Stockpiling in the 21<sup>st</sup> Century”

Nov.30 – Dec.2, 2004

Westin Galleria Houston Hotel

Houston, Texas USA

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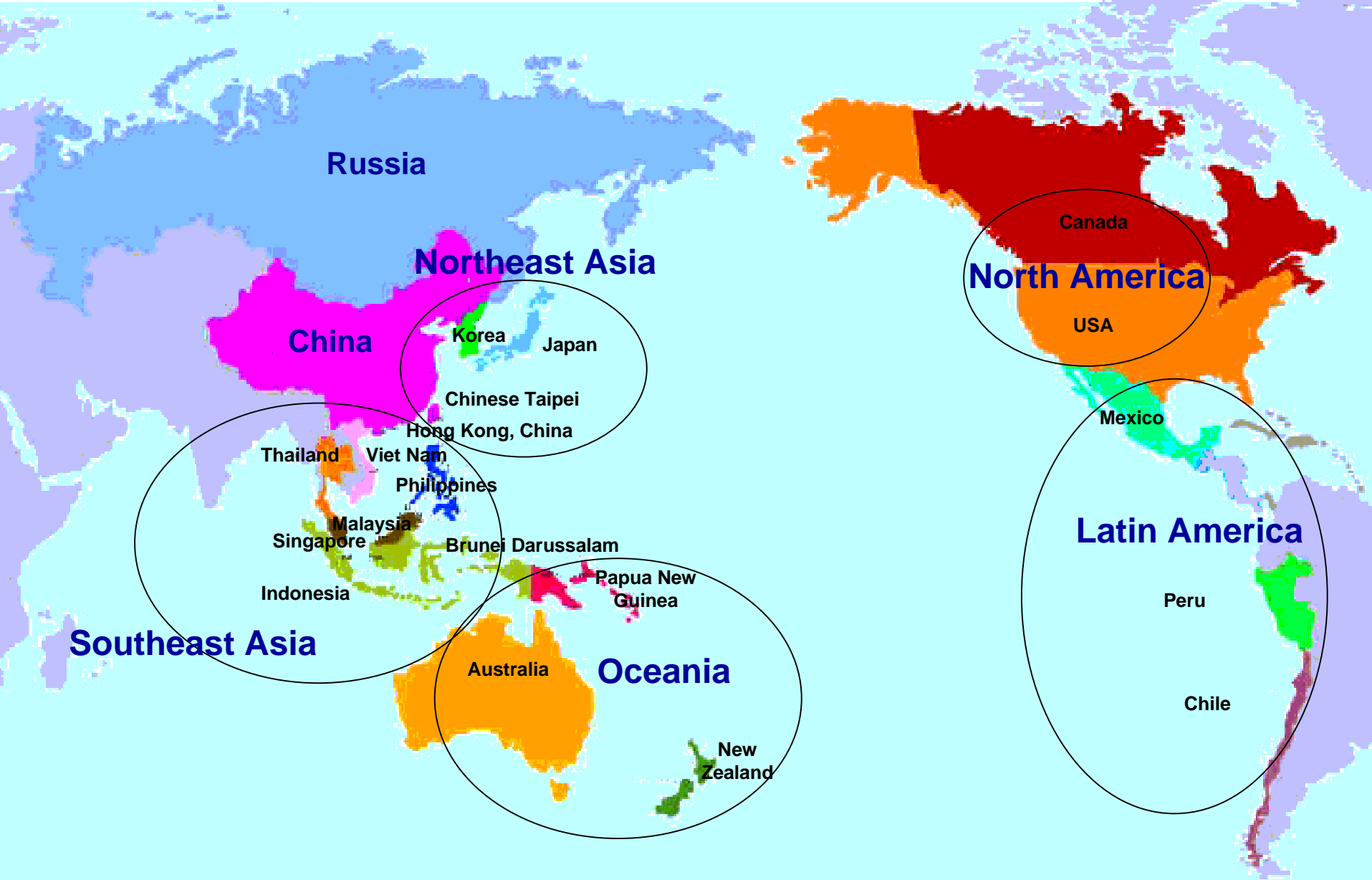
President

Asia Pacific Energy Research Centre

**APERC**  
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# APEC and APERC

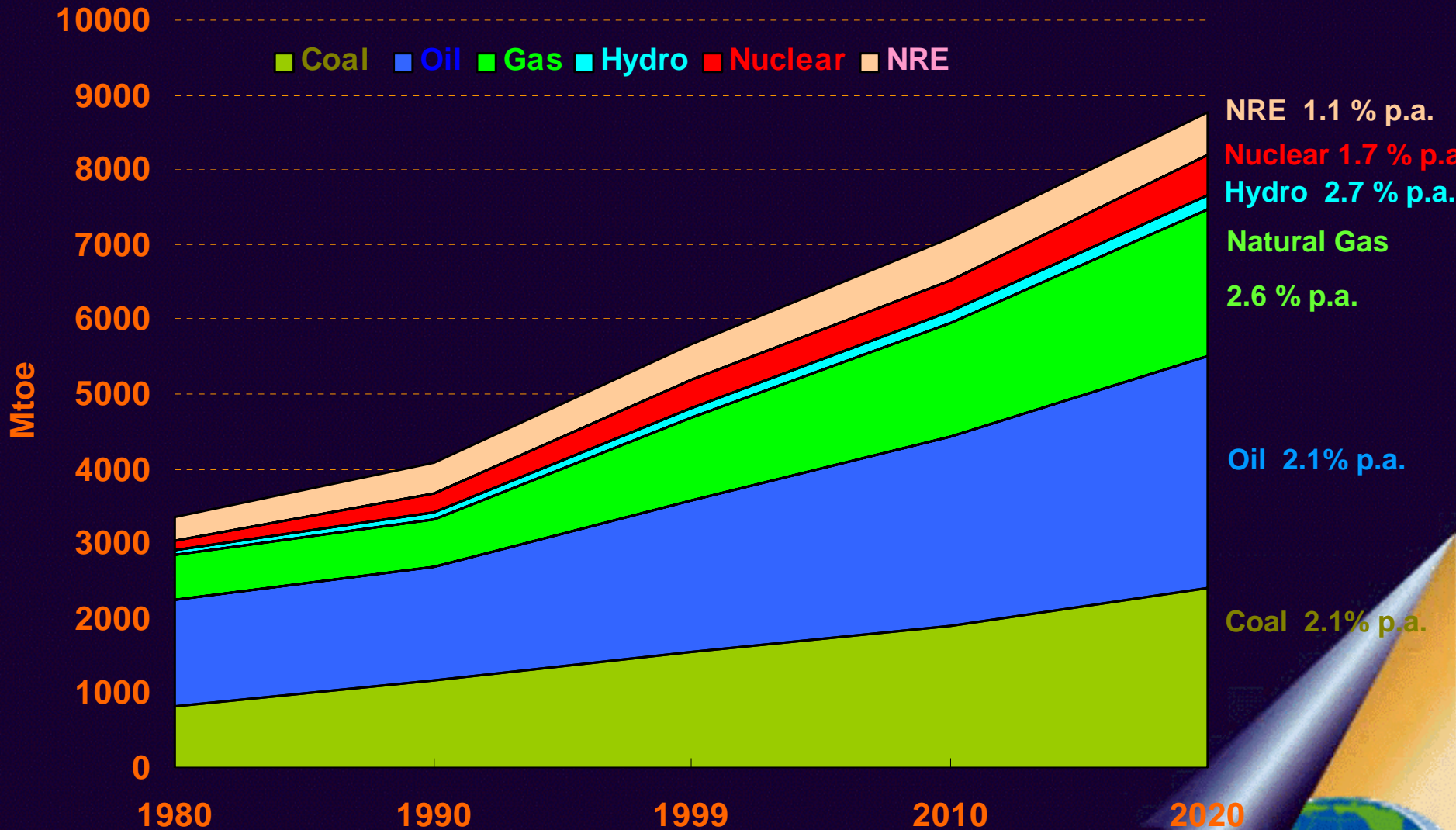


# Outline

- Outlook of Energy Demand and Supply in APEC
  - Total Primary Energy Demand
  - Oil Demand
- Energy Security in APEC
  - Import Dependency
  - Investment Requirements
- Measures to Enhance Energy Security
  - APEC Energy Security Initiative
  - Emergency Oil Stock Piles
- International Cooperation for Oil Supply Security
  - Joint Oil Stockpile



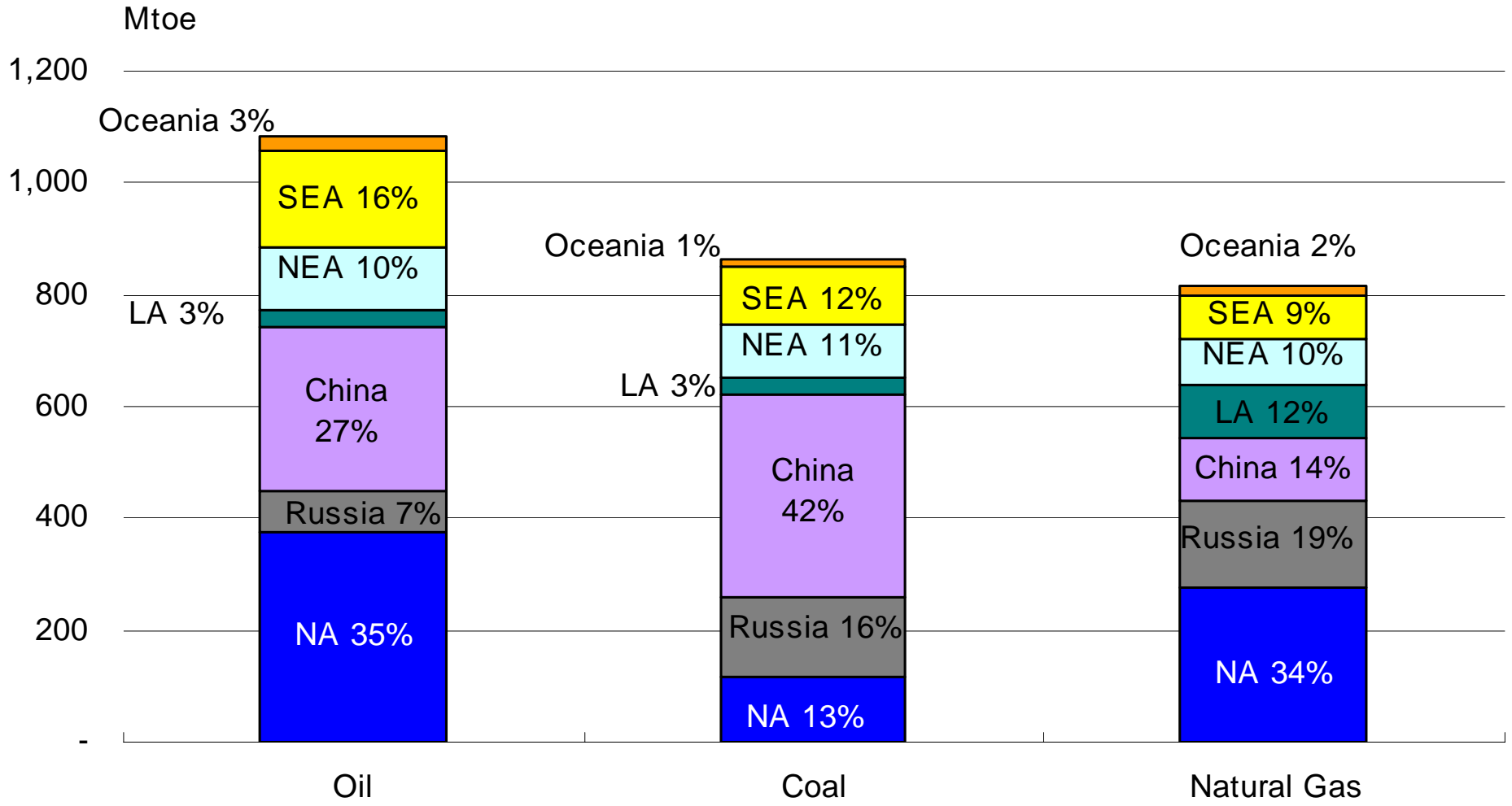
# Total Primary Energy Demand in APEC



(Source) APERC (2002), "APEC Energy Demand and Supply Outlook 2002"

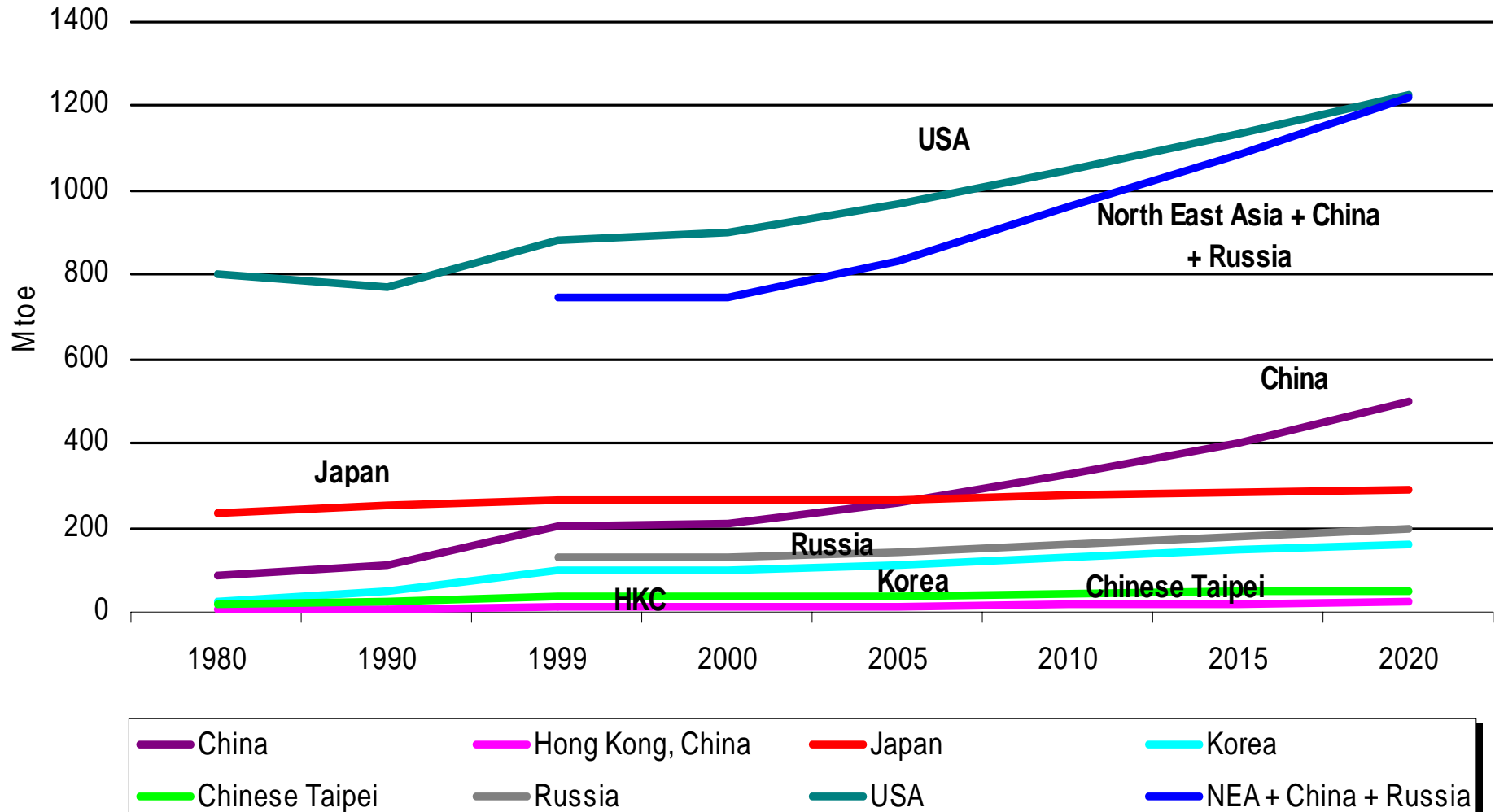


# Energy Growth by Region (1999-2020): Oil, Coal and Natural Gas

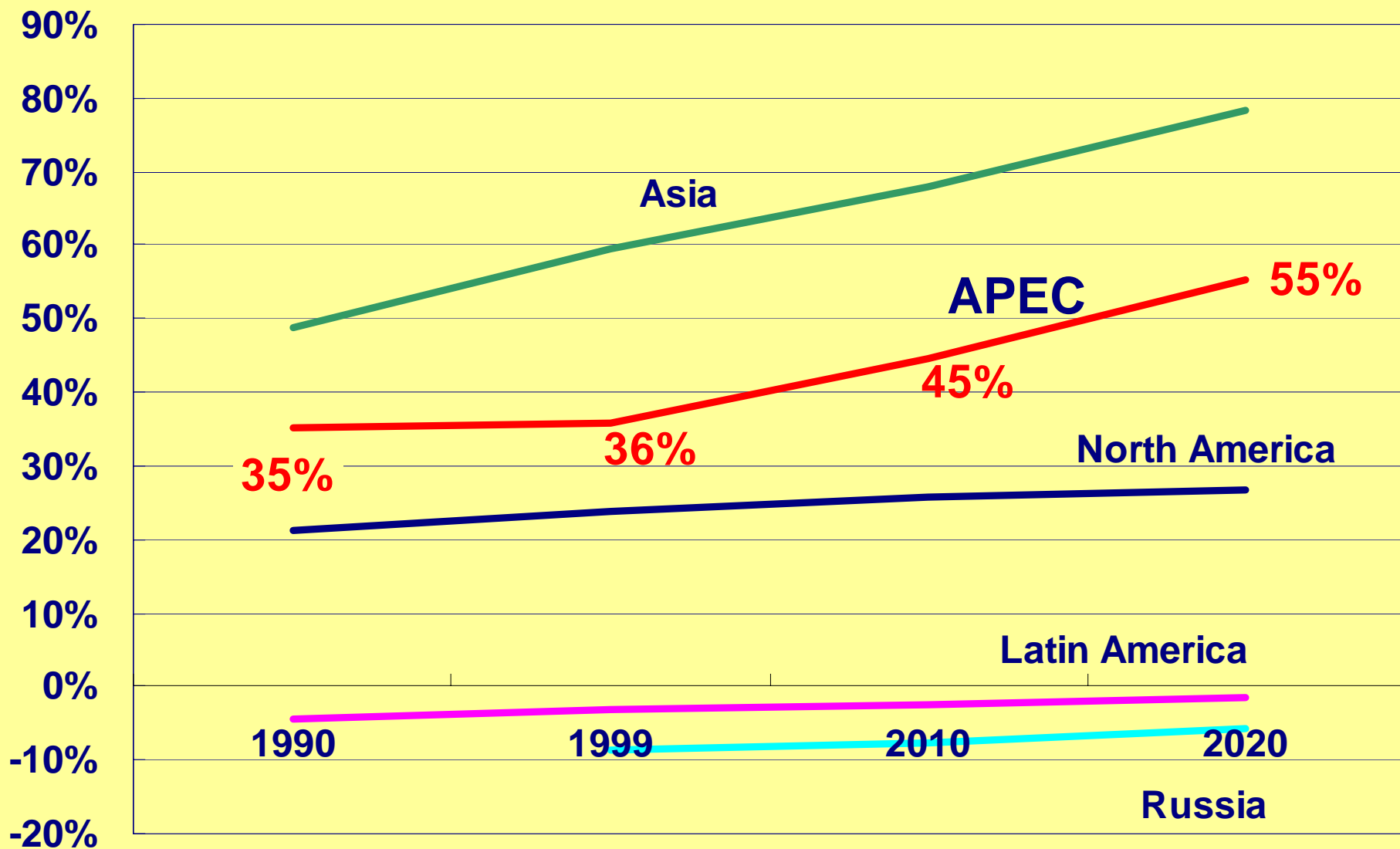


■ North America 
 ■ Russia 
 ■ China 
 ■ Latin America 
 ■ Northeast Asia 
 ■ Southeast Asia 
 ■ Oceania

# Oil Demand Outlook for Selected APEC Economies



# Oil Import Dependency is Rising.



(Source) APERC (2002), "APEC Energy Demand and Supply Outlook 2002"



# Net Oil Import Dependency in Asia (2002 and 2020)

	2002	2020
<b>China</b>	32%	69%
<b>Indonesia</b>	-11%	58%
<b>Japan</b>	101%	100%
<b>Korea</b>	104%	100%
<b>Malaysia</b>	-50%	37%
<b>Philippines</b>	98%	97%
<b>Thailand</b>	75%	95%
<b>Viet Nam</b>	-74%	6%

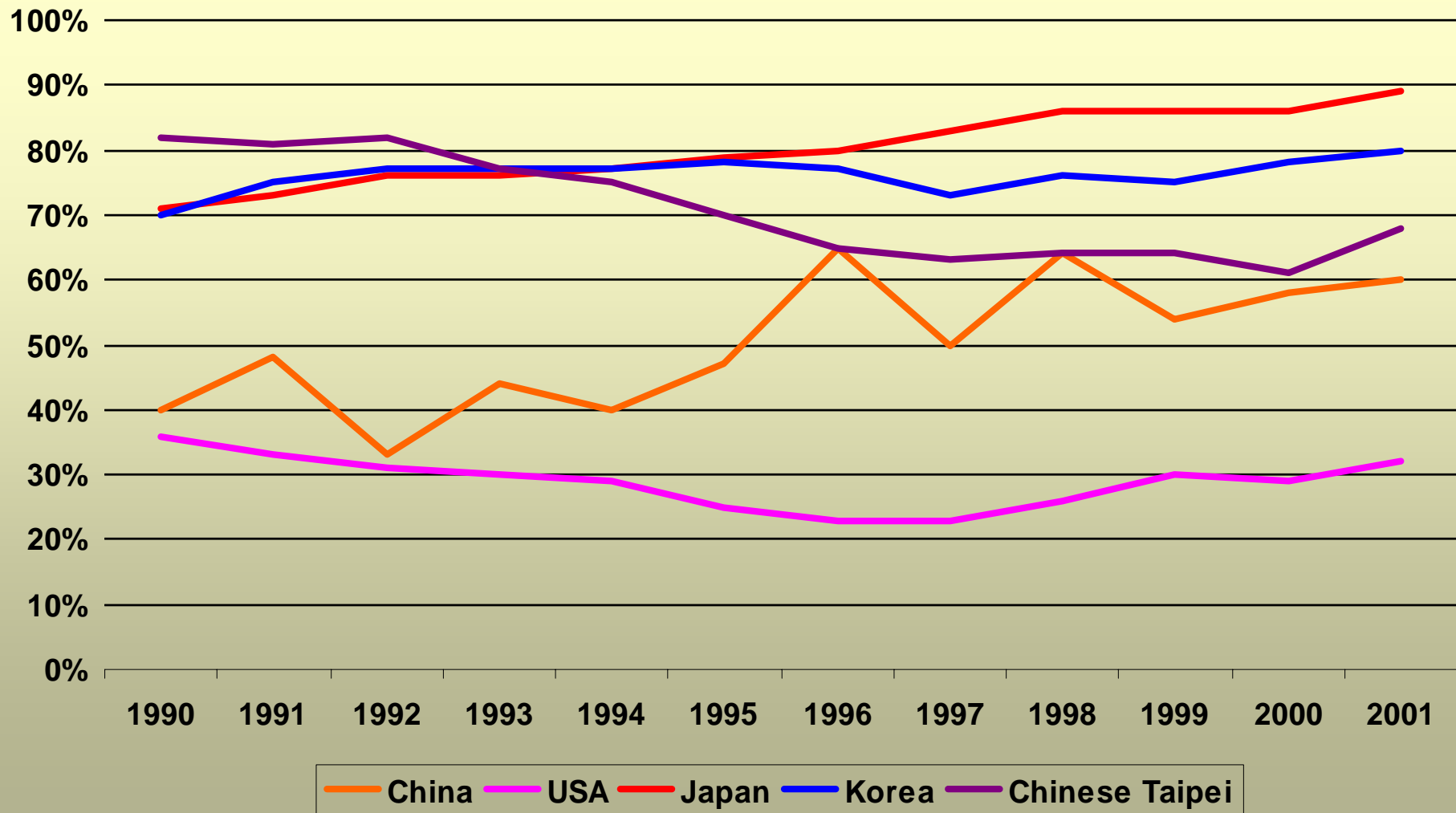
(Note) Net Oil Import Dependency = (Oil Import + Oil Export)/Total Primary Demand of Oil

(Source) History: IEA (2004), "Energy Balances of OECD and Non-OECD Countries",

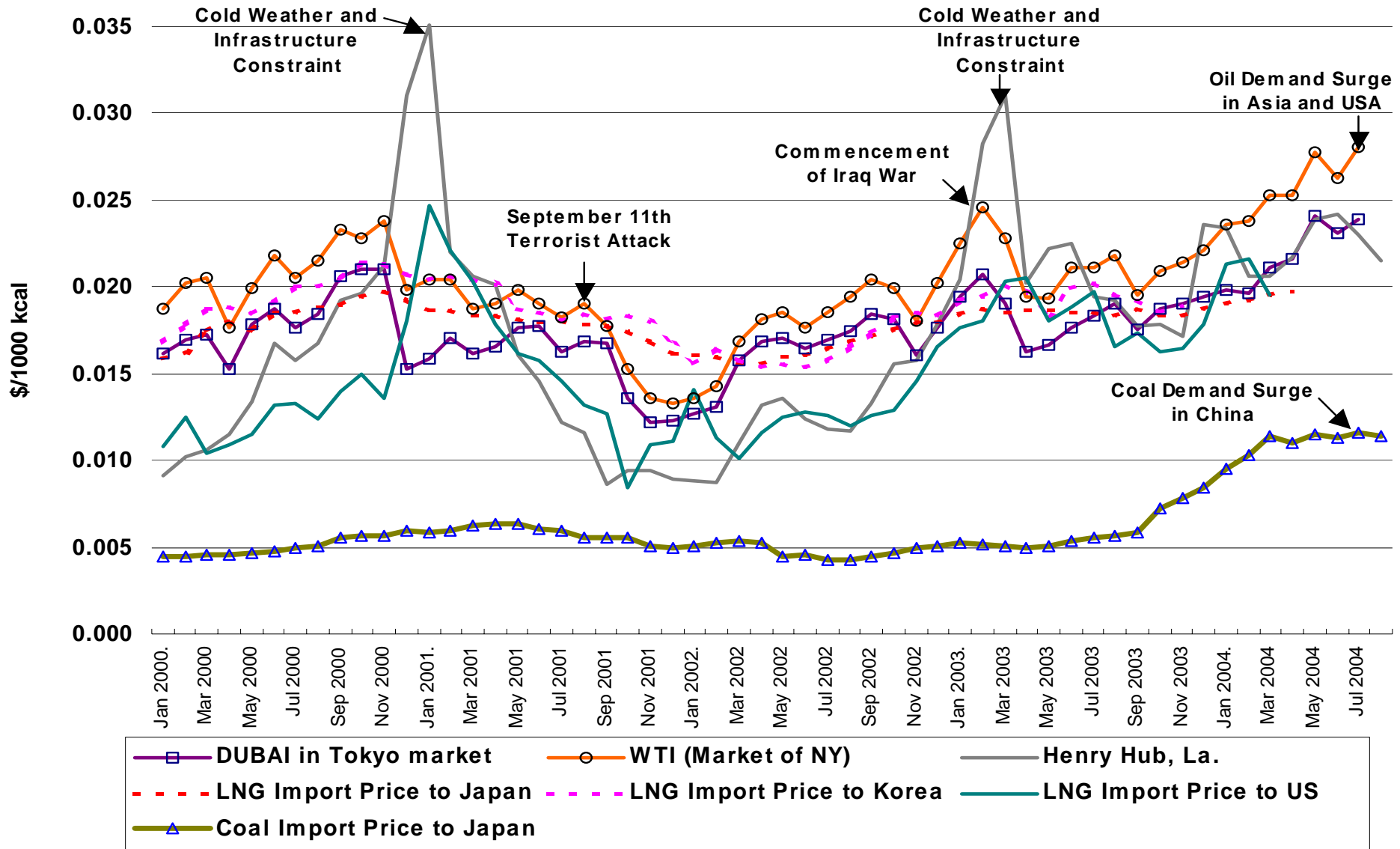
Projection: APERC (2002), "APEC Energy Demand and Supply Outlook 2002"



# Crude Oil Import Dependence on the Middle East



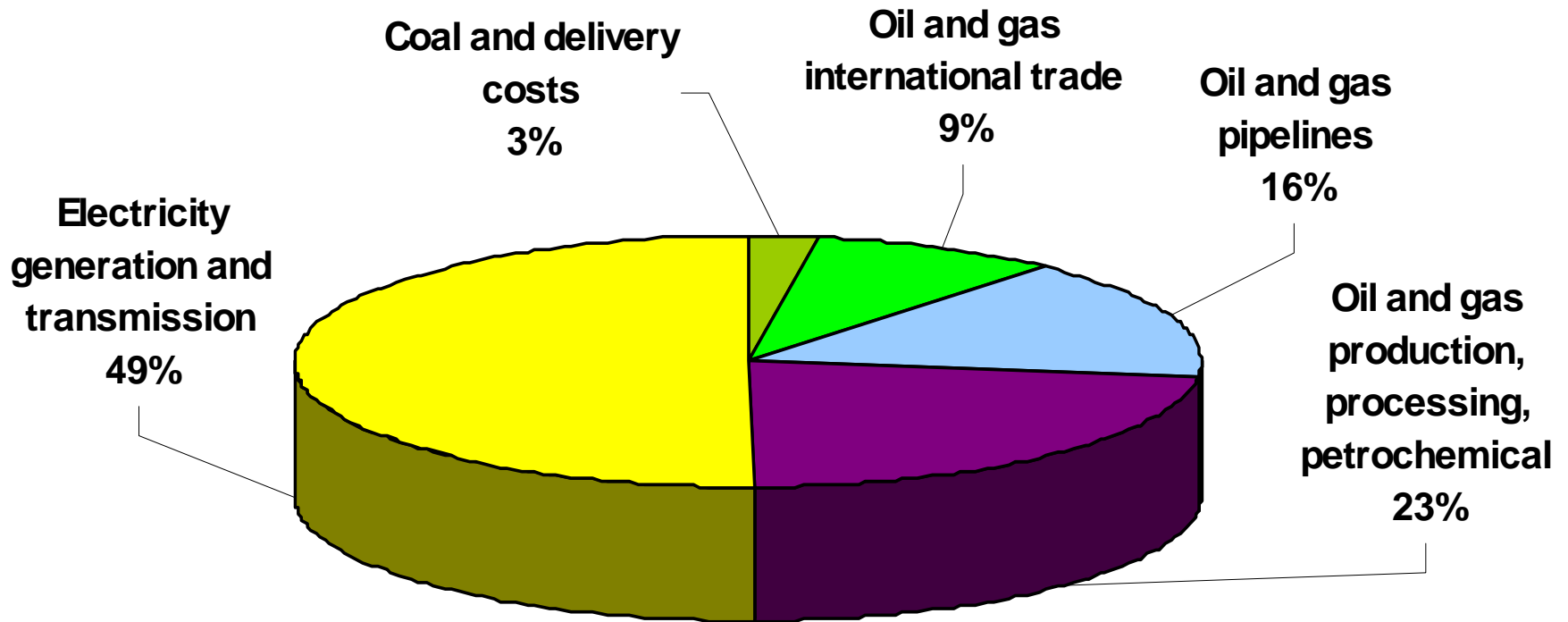
# Oil, Gas and Coal Prices are Rising.



Source: APERC Analysis (2004)

Note: Original data is from EDMC (2004) on oil, Platts (2004) on coal, Energy Intelligence Group (2004) on Henry Hub Price and IEA (2004) on LNG import price.

# Energy Investment Needs in APEC will Total US\$3.4 Trillion to \$4.4 Trillion (2000-2020)



(Source) APERC (2003), "Energy Investment Outlook for the APEC Region"

# APEC Energy Security Initiative

## **Short-term Measures:** *Preparing for energy supply disruptions*

- **Joint Oil Data Initiative**
- **Real-Time Emergency Information Sharing**
- **Best Practice Principles for the Establishment and Management of Strategic Oil Stocks**
- **Feasibility Study on Joint Oil Stockpiling**

## **Long-term Measures:**

- **Facilitating Energy Investment**
- **Efficient Use of Energy**
- **Expanding Energy Choices**
- **Capitalising on Technological Innovation**



# An Overview of Oil Stockpiling in APEC

- **IEA Member of APEC**
  - Australia, Canada, Japan, Korea, New Zealand, and USA
- **Net Oil Importer of APEC (Non-IEA Member)**
  - Chile, China, Hong Kong, Peru, the Philippines, Singapore, Chinese Taipei, Thailand
- **Net Oil Exporter of APEC (Non-IEA Member)**
  - Brunei Darussalam, Indonesia, Malaysia, Mexico, Papua New Guinea, Russia and Viet Nam

# Oil Stockpiling in APEC: IEA Members

	Days of stockpile	Actual or target	Time	Note
<b>Australia</b>	<b>178 days of net import (Industry)</b>	<b>actual</b>	<b>January 2004.</b>	<b>No emergency stocks. Stocks are held by Industry under no mandatory rule.</b>
<b>Canada</b>	<b>70 days of domestic consumption (Industry)</b>	<b>actual</b>	<b>2003</b>	<b>Net exporter of oil. No need to meet the IEA stockpiling obligation.</b>
<b>Japan</b>	<b>88 days of net import (Government)</b>	<b>actual</b>	<b>March 2004.</b>	
	<b>74 days of net import (Industry)</b>	<b>actual</b>	<b>March 2004.</b>	
<b>Korea</b>	<b>51 days of net import (Government)</b>	<b>actual</b>	<b>End 2003.</b>	
	<b>55 days of net import (Industry)</b>	<b>actual</b>	<b>End 2003.</b>	
<b>New Zealand</b>	<b>80 days of forward demand (Industry)</b>	<b>actual</b>	<b>September 1999.</b>	<b>No emergency stocks. Stocks are held by Industry following Petroleum Demand Restraint Act 1981.</b>
<b>USA</b>	<b>53 days of net import (Government)</b>	<b>actual</b>	<b>March 2004.</b>	<b>Only government stockpiling as strategic stockpiling. But combining together with Industry stockpile, total oil stock is about 150 days.</b>
	<b>100 days of net import (Industry)</b>	<b>actual</b>	<b>March 2004.</b>	

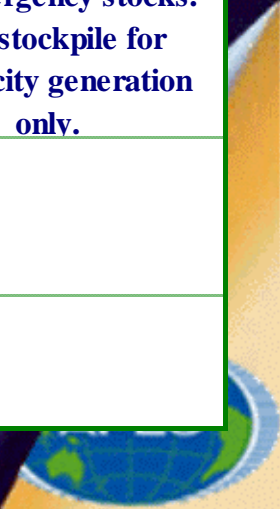
(Source) Australia: Department of Industry, Tourism and Resources, Canada: APERC, Japan: JOGMEC, Korea: KNOC, New Zealand: APERC, USA: APERC



# Oil Stockpiling in APEC: Net Oil Importer

	Days of stockpile	Actual or plan	Time	Note
<b>Chile</b>	<b>25 days of product sales (Industry)</b>	<b>actual</b>	<b>2002</b>	<b>No emergency stocks. Commercial stocks only.</b>
<b>China</b>	<b>90 days of net import (Government)</b>	<b>plan</b>	<b>by 2010</b>	<b>No emergency stocks. Plan to build emergency stocks by 2010.</b>
<b>Hong Kong</b>	<b>30 days of net import of natural gas and naphtha (Industry)</b>	<b>plan</b>	<b>-</b>	<b>An "Oil Contingency Plan" being developed</b>
<b>Peru</b>	<b>no information available</b>			
<b>The Philippines</b>	<b>Two stock facilities planned to be built (Industry)</b>	<b>plan</b>		<b>No emergency stocks. Plan to build two storage facilities.</b>
<b>Singapore</b>	<b>56 days of consumption (Industry)</b>	<b>actual</b>		<b>No emergency stocks. Fuel stockpile for electricity generation only.</b>
<b>Chinese Taipei</b>	<b>30 days of net import (Government)</b>	<b>target</b>	<b>by end 2004.</b>	
	<b>60 days of consumption (Industry)</b>	<b>actual</b>	<b>2004</b>	
<b>Thailand</b>	<b>22 days of consumption (Industry)</b>	<b>actual</b>	<b>2002</b>	

(Source) APERC (2000), "Emergency Oil Stocks and Energy Security in the APEC Region" and Information from Member Governments (2004)



# Oil Stockpiling in APEC: Net Oil Exporter

- **Net Oil Exporter of APEC:** Brunei Darussalam, Indonesia, Malaysia, Mexico, Papua New Guinea, Russia and Viet Nam
  - As net exporters of oil, they do not hold any emergency oil stocks.
  - But Indonesia imposes stockpiling obligation on **PERTAMINA**, which holds working stock to supply demand for 20 days.
  - Viet Nam plans to build emergency oil stocks by 2010.
    - As of 2004, industry holds oil stocks equivalent to 15 days of consumption.
    - Plan by 2010: 30 days of net import (Government), and 30 days of net import (Industry)

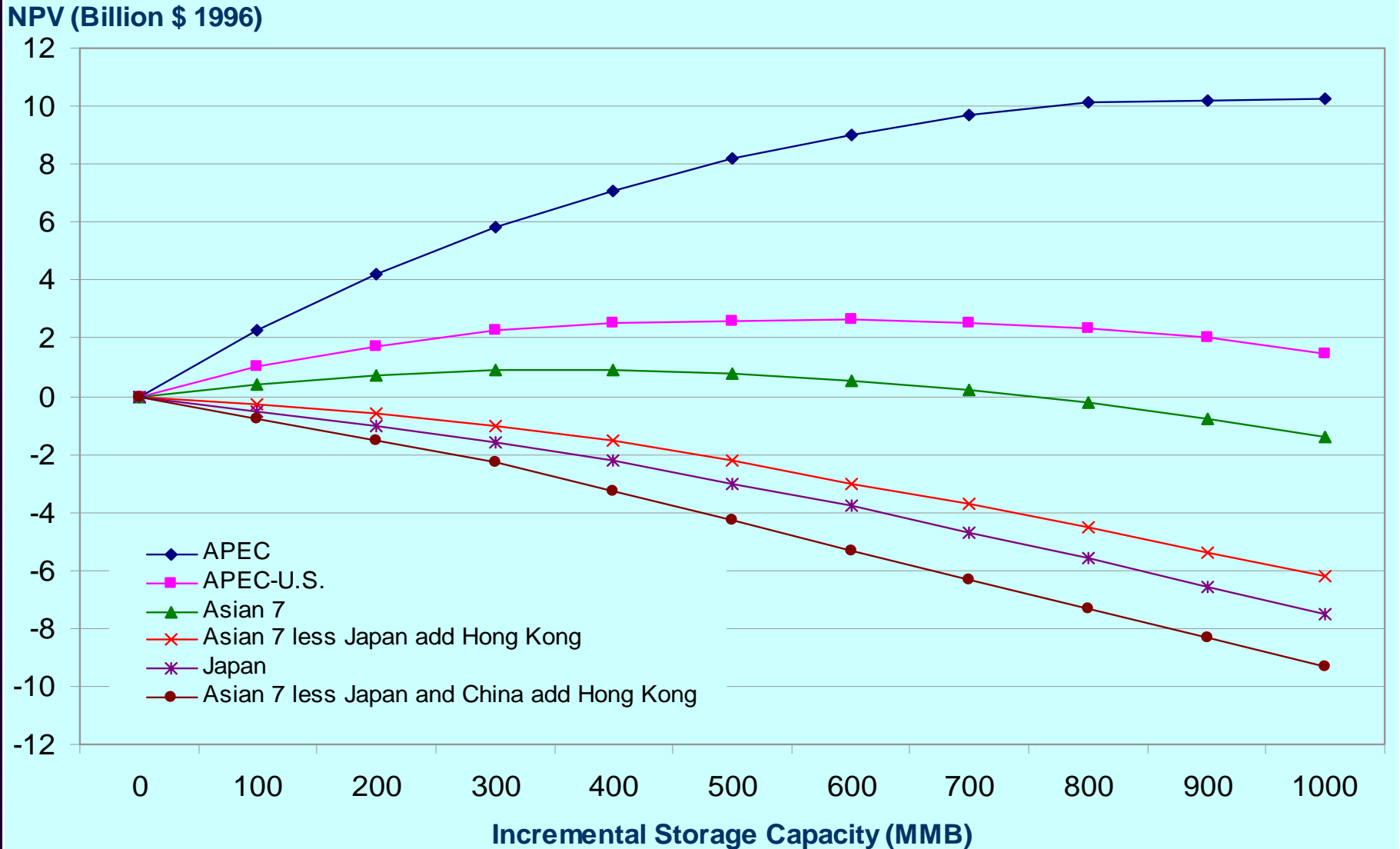


# Cost of Stockholding

	In Ground Trench	Hard Rock Mine	Salt Cavern
<b>Capital Cost (USD/bbl: undiscounted sum)</b>	15.68	15.44	5.51
<b>O&amp;M (USD/bbl-year)</b>	0.16	0.09	0.17
<b>Fill/Refill Cost (USD/bbl)</b>	0.05	0.05	0.09
<b>Drawdown Cost (USD/bbl)</b>	0.07	0.07	0.1

Source: PB-KBB (1998)

# Net Economic Benefits of Expansion for Various APEC Economy Groupings



# Implications

- Energy demand in APEC economies will grow at the faster pace than the world average.
  - Transportation sector will lead oil demand growth.
- APEC economies will become more vulnerable to the oil supply disruptions.
  - Oil import dependency of Asia will reach 80% in 2020 from 60% today.
- Oil stockdraw at an emergency situation is an effective measure to reduce economic damage.
  - Despite its effectiveness, some APEC economies face financing difficulty in building and holding emergency oil stocks.
- APEC economies could consider to coordinate their stockhold and stockdraw to maximize the economic benefits.



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