



APERC Workshop

The 49th APEC Energy Working Group and Associated Meetings
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4. APEC Oil and Gas Security Initiative

4-4. Oil Supply Emergency Preparedness in the APEC Region

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Asia-Pacific
Economic Cooperation

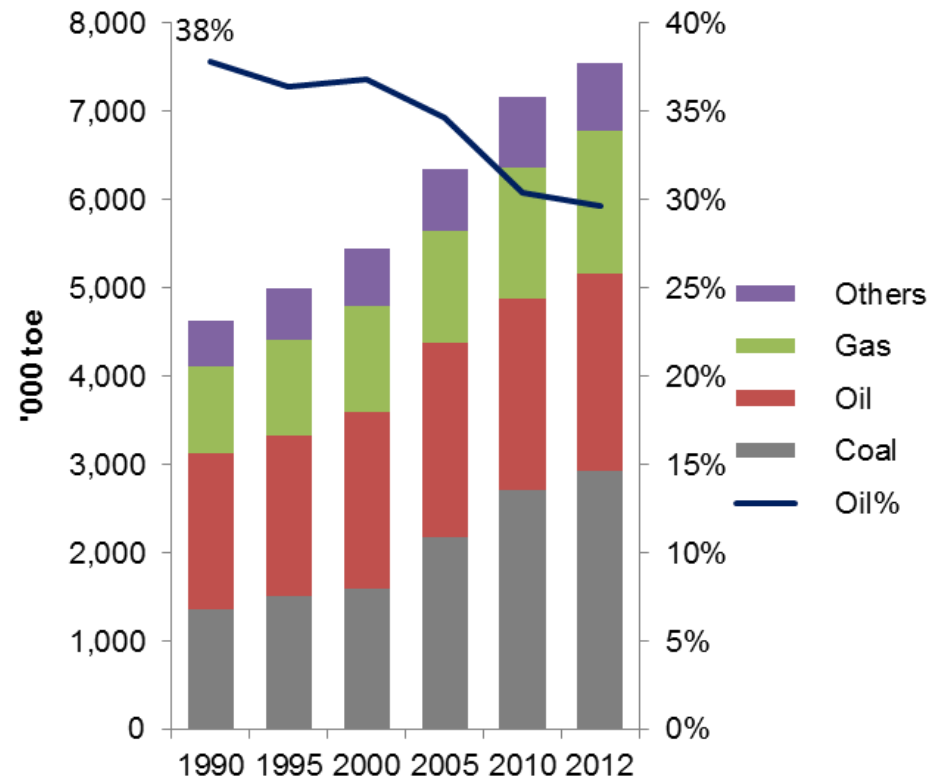


Oil Use in APEC --- Historical

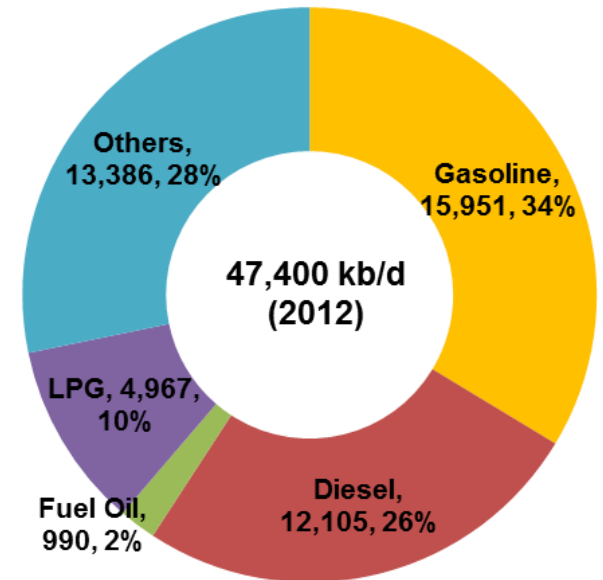
- ❑ While oil share in the primary energy supply has been declining, its demand has been steadily increasing in the APEC region.
 - Its share dropped from 38% in 1990 to 30% in 2012

- ❑ Combined share of gasoline and diesel was about 60% of the total oil demand in 2012. As in the other parts of the world, transport sector drives APEC's oil demand (about 56% in 2012).

APEC's Energy Demand



APEC Oil Demand by Product (kb/d)



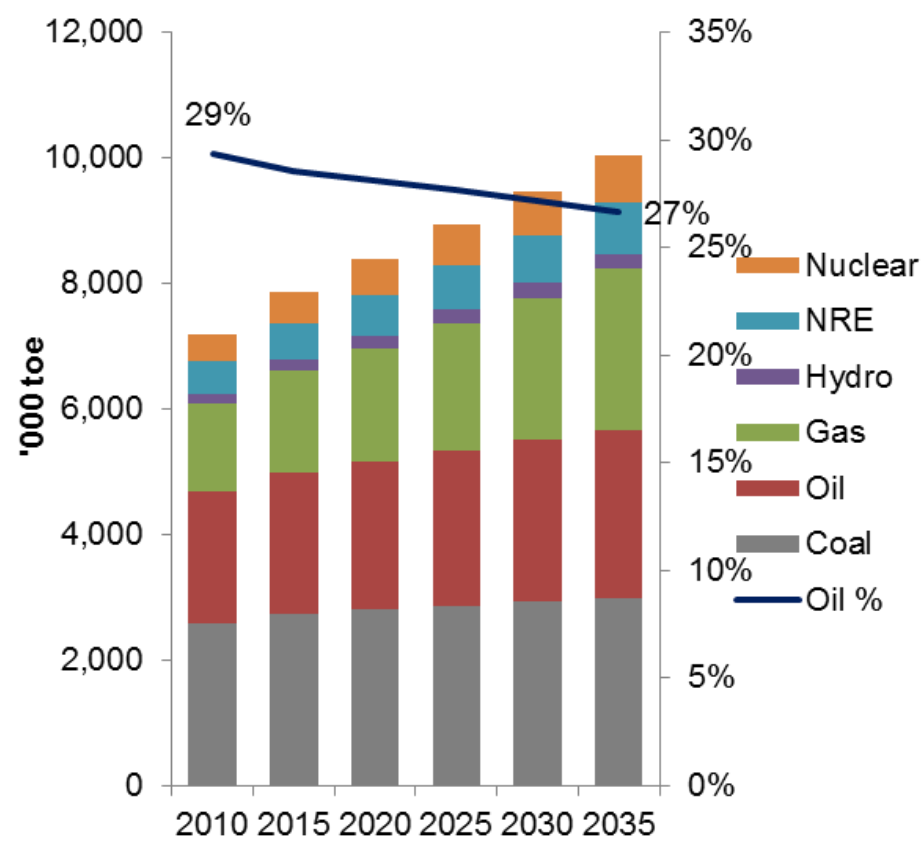


Oil Use in APEC --- Outlook

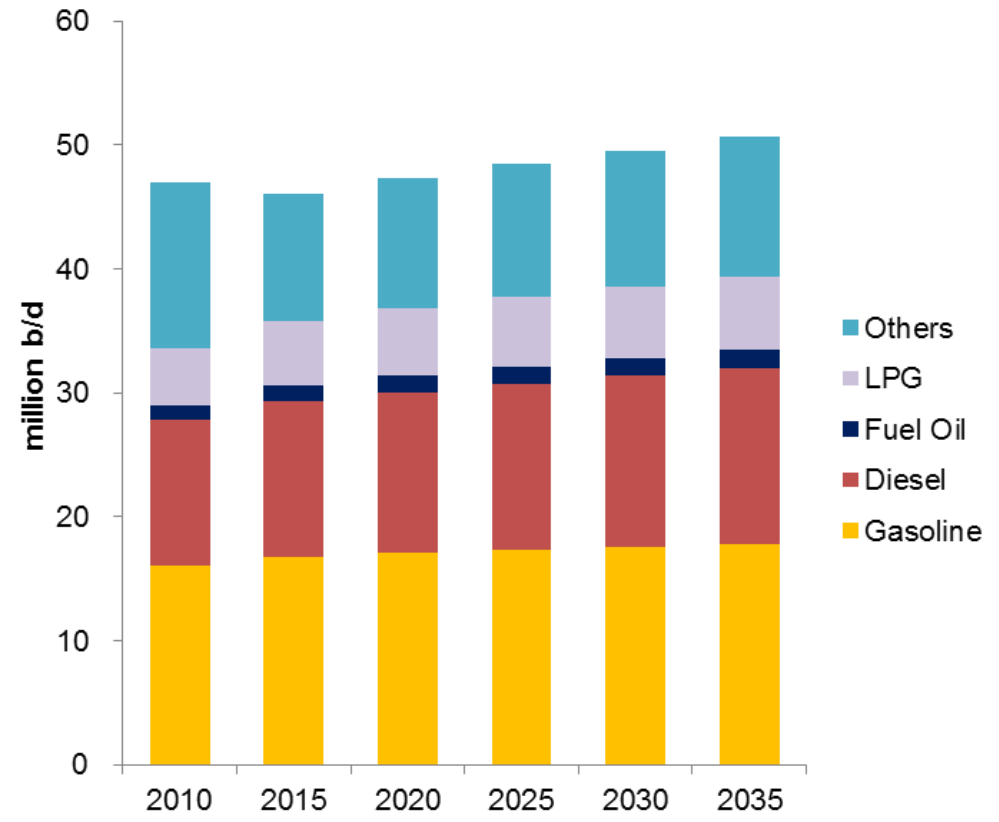
- ❑ Oil will remain as the second largest energy source for APEC. Its share will slightly fall by 2% from 2010 to 2035.

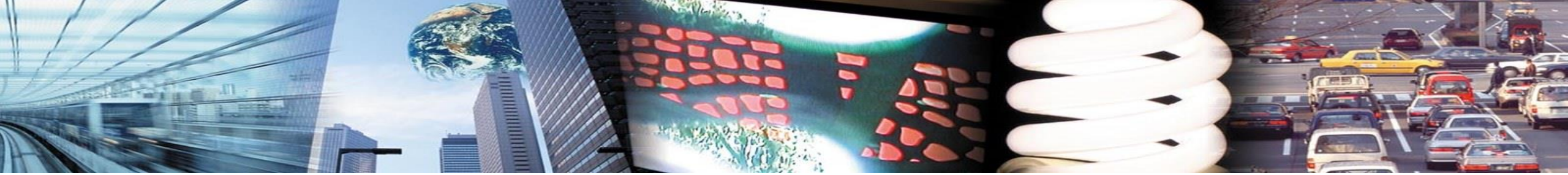
- ❑ Demand of all oil product is expected to grow at AAGR 1.1%.
 - Diesel and gasoline will continue to be the primary driving force to increase the regional oil consumption. About 60% of total oil demand growth will come from gasoline and diesel.

APEC's Energy Outlook



Oil Product Demand (2010-35)

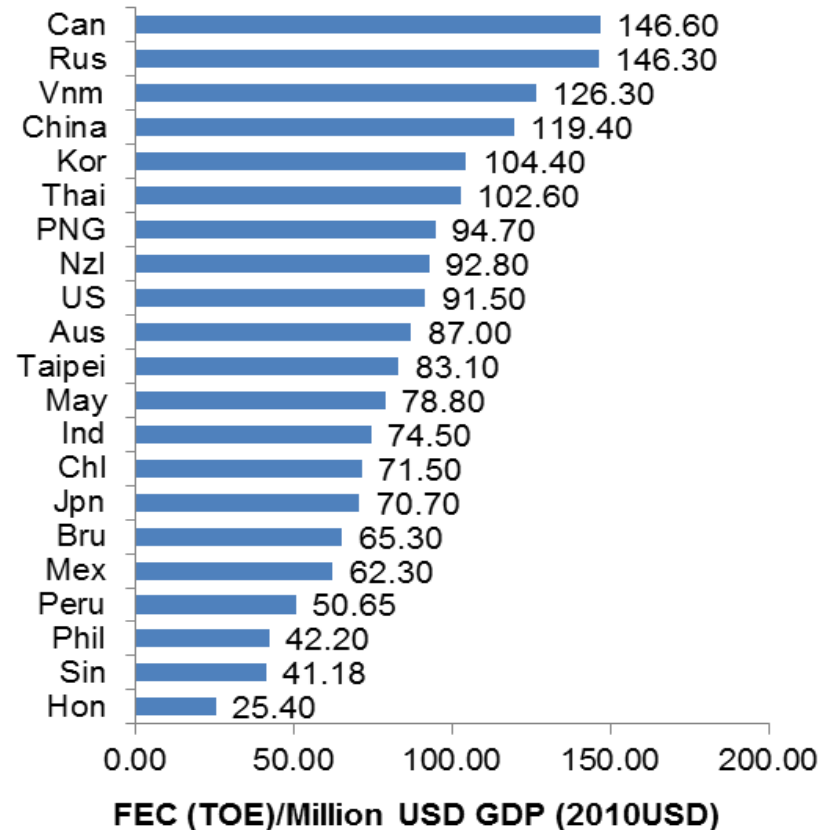




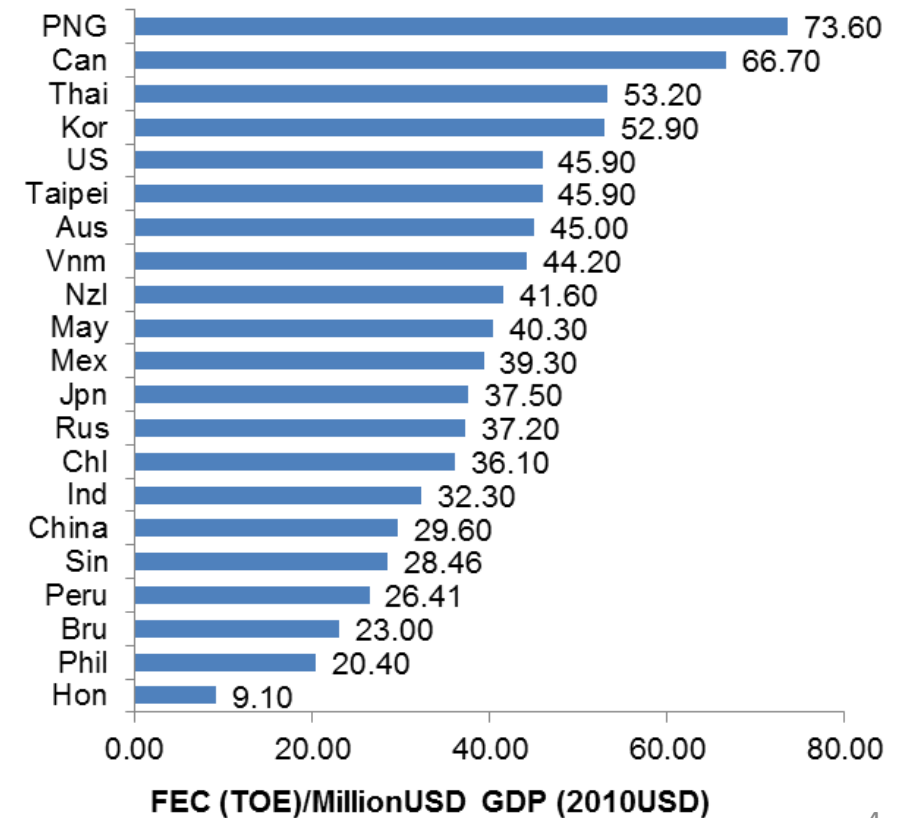
Energy and Oil Intensities --- Historical

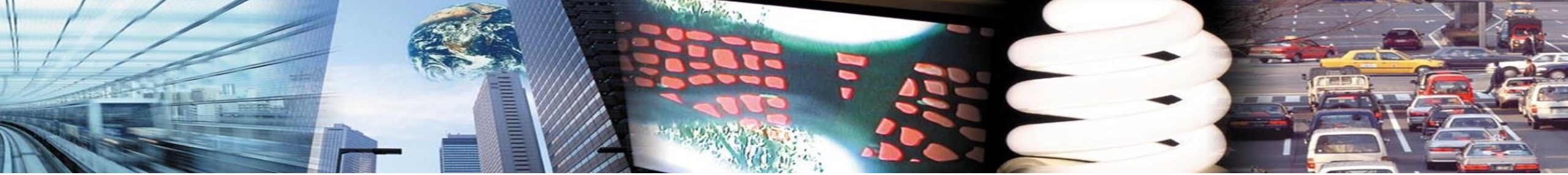
- ❑ Energy intensity, or energy use per unit of GDP, varies over APEC economies mainly because of each member's industry structure.
- ❑ Intensities tend to be high in economies with heavy industries and high dependency on oil.

Final Energy Intensity in APEC Economies



Oil Intensity in APEC Economies

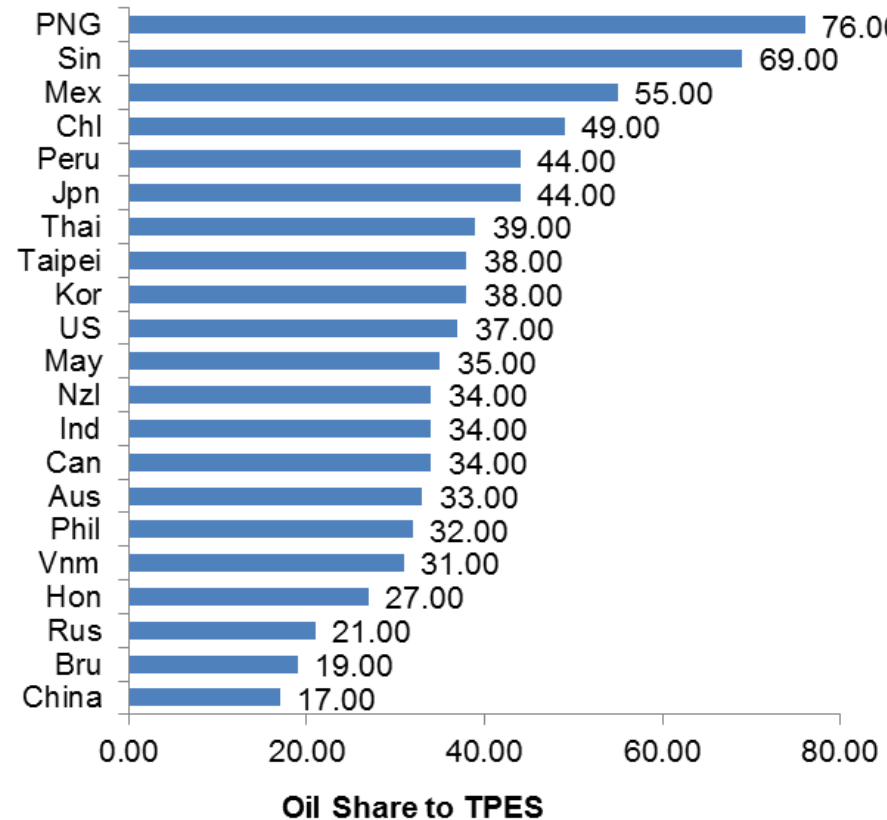




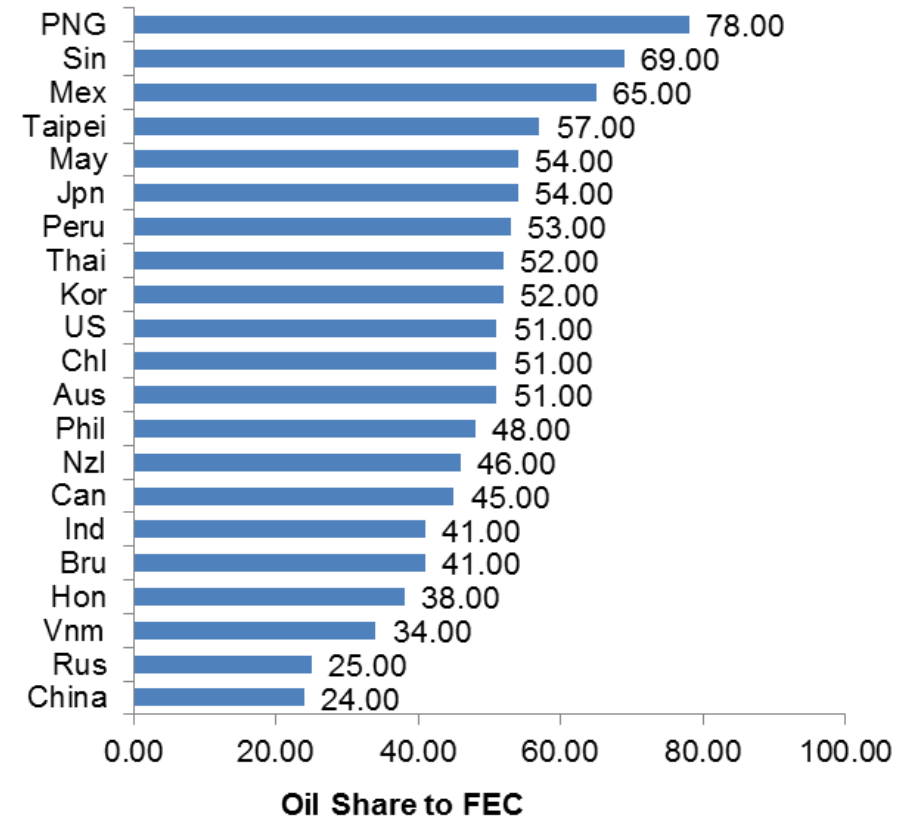
Oil Share - - - Historical

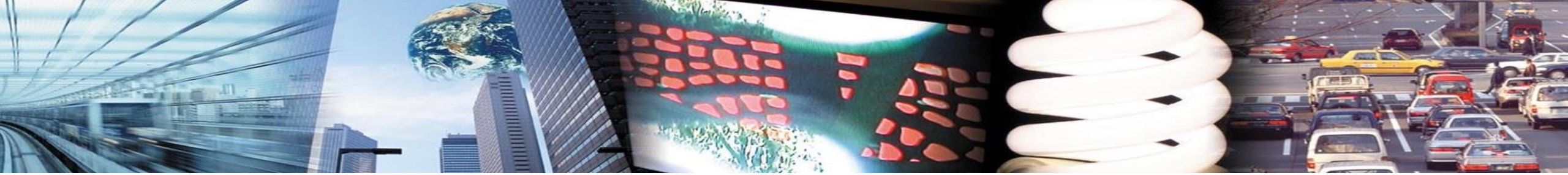
- About half of APEC economies has more than 50% oil dependency as a source of fuel (FEC).
- Those economies have high dependency on oil for transport, as well as on industry uses

Oil Share in TPES in APEC Economies



Oil Share in FEC in APEC Economies

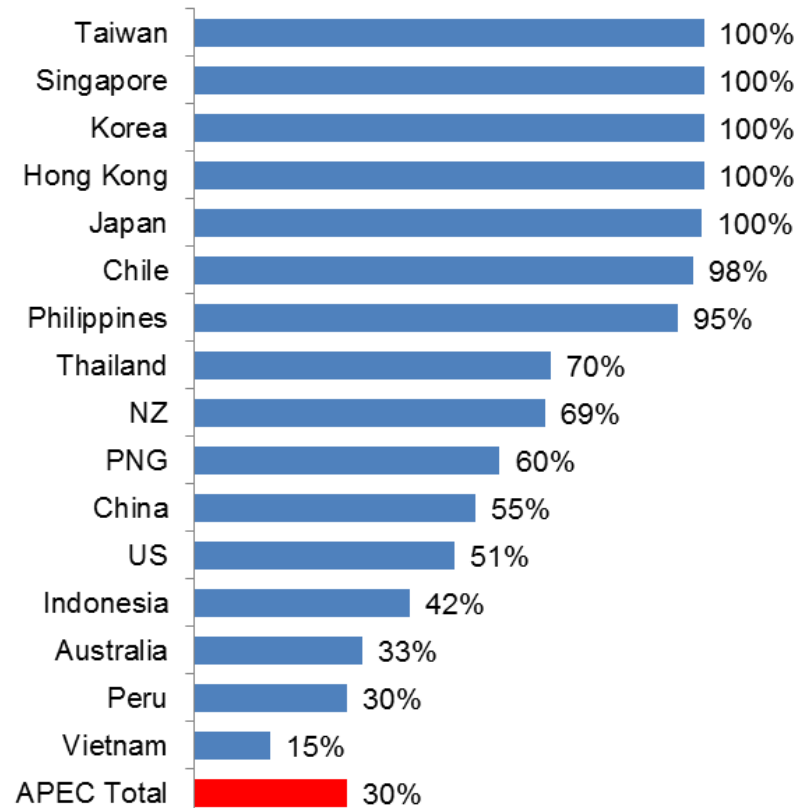




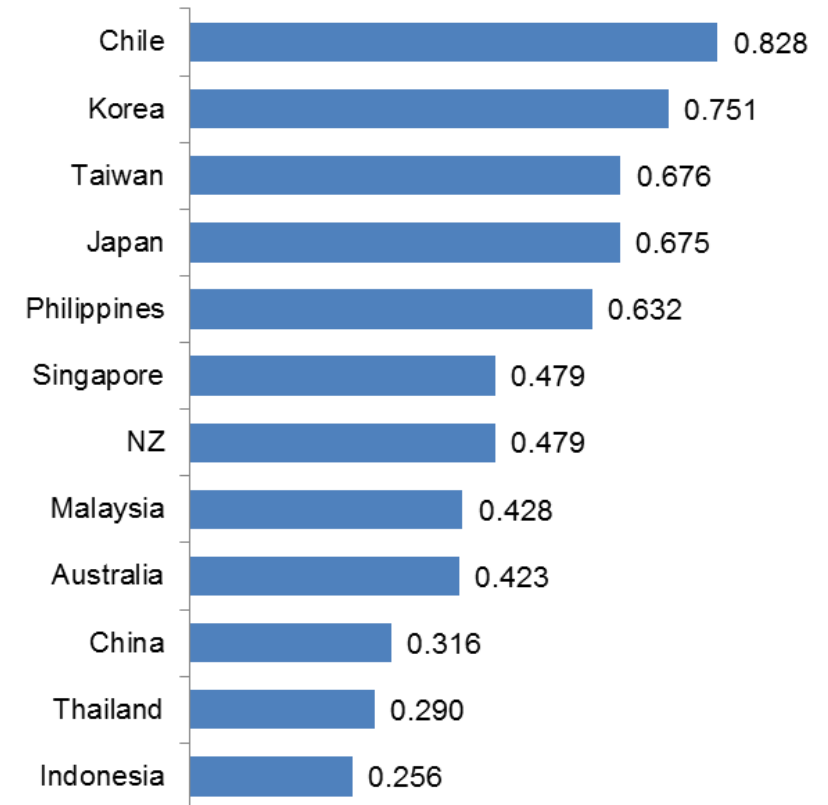
Import Dependency and Its Concentration

- ❑ A number of APEC economies are net oil importers
 - Overall, APEC import dependency was about 30%
- ❑ Economies with high import dependency also tend to have a concentrated sources of imports.
 - Asian economies is likely to have a higher HHI (HHI measures the import source concentration)

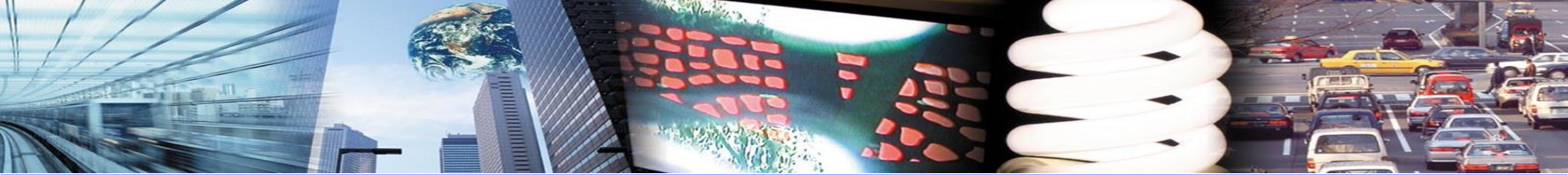
Import Dependency



Herfindahl-Hirschman Indices (HHI)



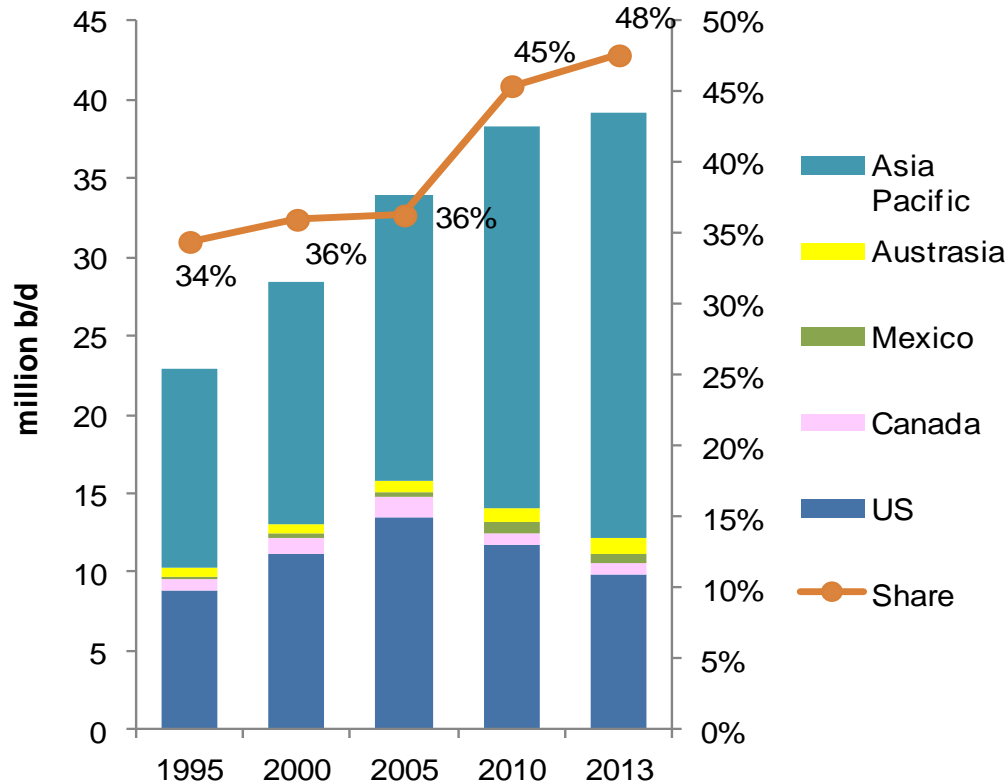
HHI is calculated by 7 regional categories (APEC, FSU, Middle East, Africa, Other Asia Pacific, Other Americas).



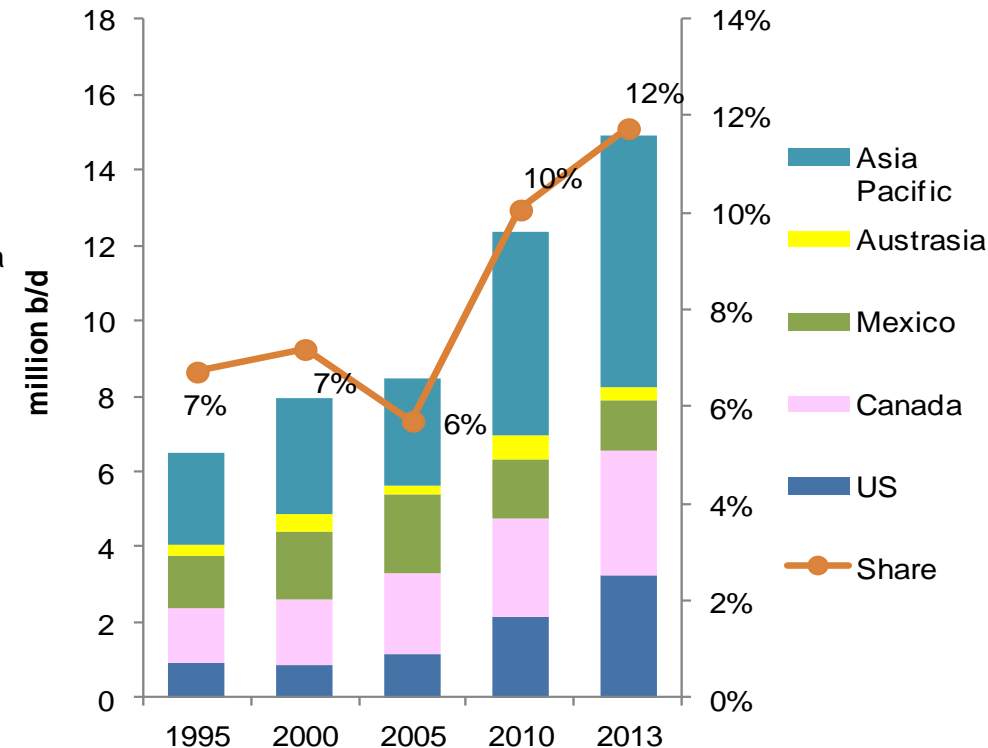
Oil Trade in APEC

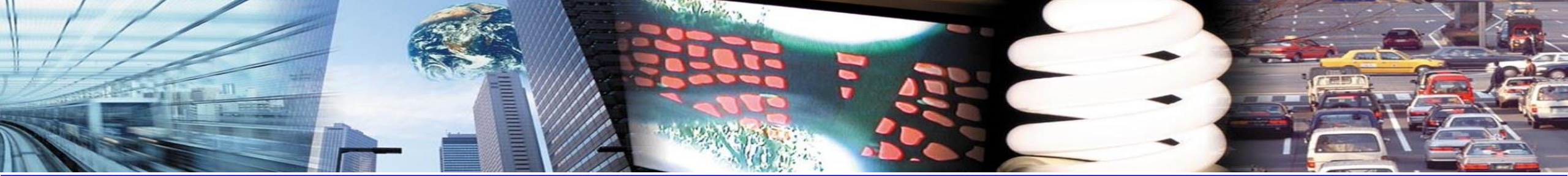
- As its oil demand continues to grow, APEC is becoming the center of the international oil trade.
 - Oil import growth in Asia Pacific is to some extent offset by the decline of the US import.
 - Oil export is growing more rapidly than import.

Oil Imports by Asia Pacific and Its Share



Oil Exports by Asia Pacific and its Share

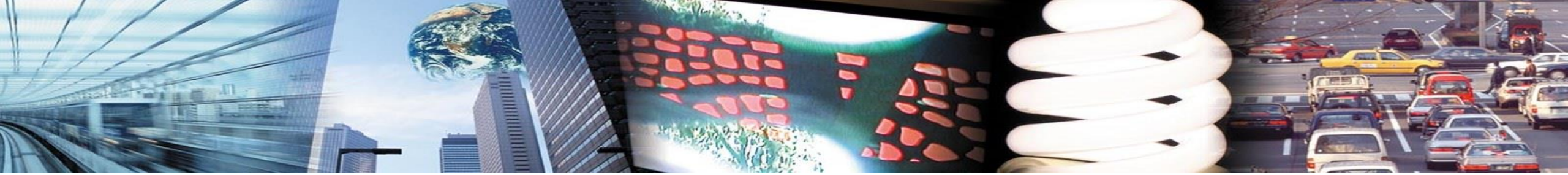




National Emergency Strategic Organization: NESO

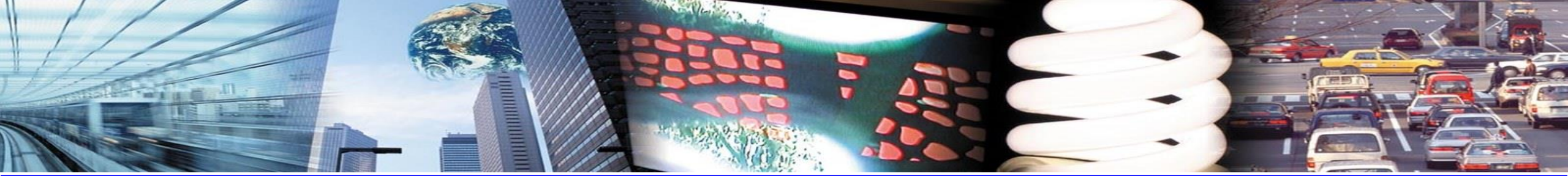
Most economies have identified and established a NESO

Economy	The National Emergency Strategic Organization (NESO)
Australia	NESO is responsible for co-ordinating emergency response in the event of an oil supply disruption.
Brunei	The Energy Department Prime Minister Office (EDPMO) is the leading governmental body responsible for dealing with oil supply disruptions.
Canada	The Energy Supplies Allocation Board (ESAB) is a key agency in the event of an oil supply disruption.
Chile	The National Emergency Office (Onemi), overseen by the Ministry of the Interior and Public Security is responsible for dealing with oil supply disruptions.
China	The State Council is the main decision maker and has the authority to order releases from the Strategic Petroleum Reserve
Chinese Taipei	(No information)
Hong Kong	(No information)
Indonesia	The National Energy Council is responsible for co-ordinating emergency response in the event of an oil supply disruption.
Japan	The Petroleum Refining and Reserve Division of the Natural Resources and Fuel Department acts as a secretariat and forms the core of the Japanese NESO during oil supply disruptions
Korea	The Energy and Resource Policy Division and the Petroleum Division of MOTIE function as the core body of NESO.



National Emergency Strategic Organization: NESO

Economy	The National Emergency Strategic Organization (NESO)
Malaysia	The National Security Council of the Prime Minister's Department is the agency that has responsible for dealing with oil supply disruption.
Mexico	(No information)
New Zealand	The Ministry of Business, Innovation and Employment (MBIE) is responsible for policy related to oil supply security and chair of NESO
PNG	(No information)
Peru	(No information)
Philippines	The Department of Energy (DOE) as the lead agency of the Inter-Agency Energy Contingency Committee is the main and leading governmental body responsible for dealing with oil supply disruptions.
Russia	(No information)
Singapore	The Inter-Agency Government Committee will be established by the government for dealing with oil supply disruptions.
Thailand	The Minister of Energy and the Fuel Management Committee are responsible for co-ordinating emergency response in the event of an oil supply disruption.
United States	The US Department of Energy (DOE) serves as NESO with the responsibility of initiating and co-ordinating a US response
Viet Nam	The Ministry of Industry and Trade (MOIT) is the leading governmental body responsible for dealing with oil supply disruptions.

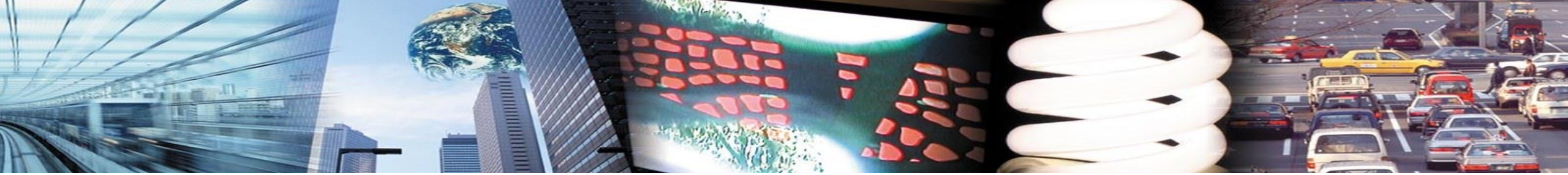


Emergency Policy

Emergency policy framework has been developed or being developed in most economies.

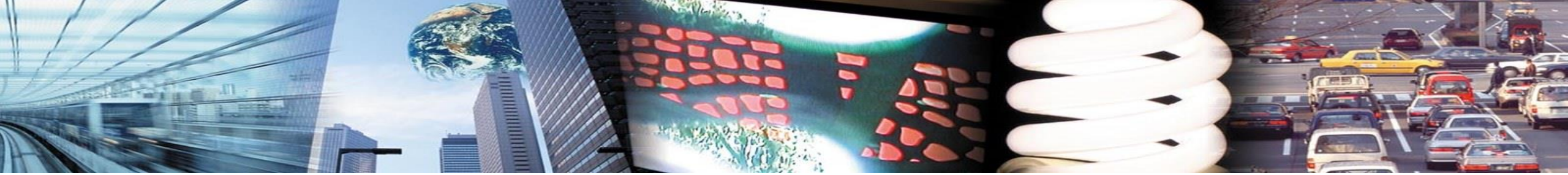
More exercises need to be developed to “operationalize” the framework.

Economy	Emergency Policy	Exercise Activity
Australia	The NESO and the National Oil Supplies Emergency Committee (NOSEC) will implement appropriate response measures	Emergency Response exercises is conducted regularly every 2 years by IEA
Brunei	The government has mandatory right to purchase and control all crude and oil product stocks held by the industry	APEC Oil and Gas Security Exercise (OGSE): Joint Southeast Asian Exercise in 2013
Canada	Energy Supplies Allocation Board (ESAB) would have the authority to regulate company stocks.	Emergency response exercises is conducted regularly every 2 years by IEA
Chile	The National Emergency Office (Onemi) is responsible for co-ordinating public and private efforts to control emergencies,	(No information)
China	The State Council will implement potential measures, including order releases stock from the Strategic Petroleum Reserve.	(No information)
Chinese Taipei	(No information)	(No information)
Hong Kong	(No information)	(No information)
Indonesia	Fuel Distribution System will be activated by the government to ensure supply availability	OGSE: Joint Southeast Asian Exercise in 2013 and APEC on Oil and Gas Security Exercise: Indonesia Exercise in 2013
Japan	NESO may ask the Minister of Economy, Trade and Industry (METI) to take a decision to release government stocks or lower the industry obligation.	Emergency response exercises is conducted regularly every 2 years by IEA
Korea	NESO will implement potential measures in demand and supply side	Conduct emergency exercise every year.



Emergency Policy

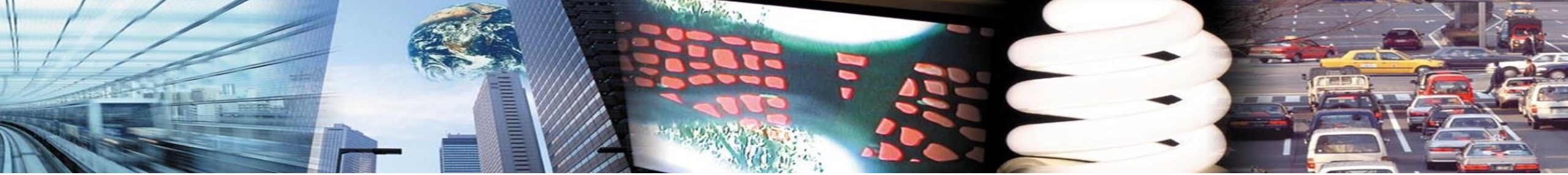
Economy	Emergency Policy	Exercise Activity
Malaysia	The Prime Minister could issue direction on the operations of PETRONAS (National Oil Company) including full control over the company's stock.	OGSE: Joint Southeast Asian Exercise in 2013
Mexico	(No information)	(No information)
New Zealand	NESO will take necessary measures during emergency such as drawdowning of stock	Emergency response exercises is conducted regularly every 2 years by IEA
PNG	(No information)	(No information)
Peru	(No information)	(No information)
Philippines	Oil Contingency Plan will be activated by the government	OGSE: Joint Southeast Asian Exercise in 2013
Russia	(No information)	(No information)
Singapore	The government will monitor the real-time security development and an appropriate inter-agency government committee will be convened to manage the situation.	OGSE: Joint Southeast Asian Exercise in 2013
Thailand	The government and the Fuel Management Committee will implement potential measures, such as drawdowning of the government-controlled oil stock.	Emergency Response Exercises with IEA in 2009. OGSE: Joint Southeast Asian Exercise in 2013
United States	Emergency stockholding schemes will be activated to respond to emergency by drawdowning of public and industry oil stocks.	Emergency response exercises is conducted regularly every 2 years by IEA
Viet Nam	The Committee of the State Management of Domestic Markets will be convened to make recommendations to the Prime Minister on possible emergency measures.	OGSE: Joint Southeast Asian Exercise in 2013



Stockpiling Policy

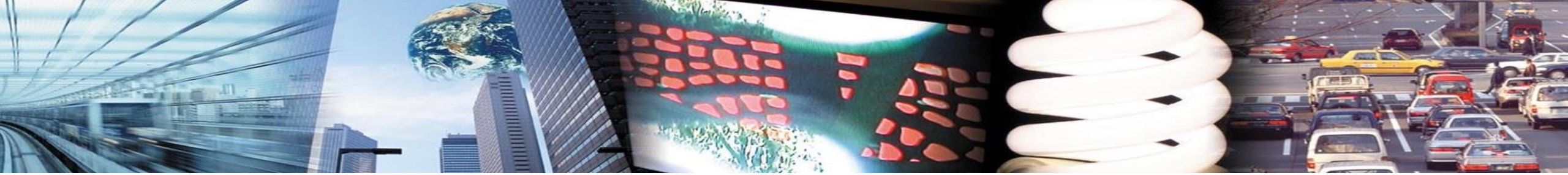
Importing economies outside IEA have begun to build their oil stockpiling.

Economy	Strategic Oil Stockholding
Australia	Australia does not impose minimum stockholding requirements on oil companies, nor does it have public stocks; all oil stocks in Australia are held by industry on a commercial basis.
Brunei	31 days for industry under the Energy Contingency Plan for Refined Petroleum Product Imports.
Canada	Canada does not have publicly held stocks and does not impose a compulsory stockholding obligation on industry. All the country's oil stocks are industry stocks held for commercial purposes.
Chile	About 25 days of operational oil stock based on sales during the previous 6 months is held by producers (refineries) and importers of liquid, petroleum-based fuels.
China	A minimum stockholding obligation on industry as part of the National Petroleum Reserve is still under considering. This is expected to be composed of government stocks and obligatory industry stocks, and will include both crude oil and products.
Chinese Taipei	(No information)
Hong Kong	(No information)
Indonesia	22 days of operational oil stock based on domestic oil consumption held by Pertamina (the national Oil Company).
Japan	As stockholding obligation to the IEA, the government holds emergency stocks and by placing a minimum stockholding obligation on industry. About 70 to 90 days of average daily imports, sales or refined production from the previous 12 months must be held by refineries, specified distributors and importers and 70 days of the stockholding for industry.
Korea	As a stockholding obligation to the IEA, the government holds stocks and by placing a minimum stockholding obligation on industry. Crude refiners are obliged to hold at least 40 days of stocks, in either crude or products (excluding naphtha), based on a 12-month average of their previous year's sales. Product importers, LPG importers and petrochemical companies are also required to hold at least 30 days of stocks, based on their domestic sales.



Stockpiling Policy

Economy	Strategic Oil Stockholding
Malaysia	Holding emergency oil stock is not considered at the moment.
Mexico	(No information)
New Zealand	New Zealand has no domestic public stocks, and the government does not place a minimum stockholding obligation on industry. All stocks in New Zealand are held on a commercial basis.
PNG	(No information)
Peru	(No information)
Philippines	Minimum Inventory Level of (MIR) of about 30 days of in-country stock of crude and finished products.
Russia	(No information)
Singapore	No mandatory stockholding for refineries or private oil companies. Power generating companies are obliged to hold 90 days of fuel oil stocks as backup fuels.
Thailand	Based on the amendment of the Fuel Trade Act of 2000, refineries is obligated to hold 6% of their yearly sales of crude oil and oil products; retailers and importers are obligated to hold 6% of crude oil and 10% of oil products. Their total levels must be at least 43 days of domestic consumption.
United States	As a stockholding obligation to the IEA, the government hold emergency stocks and by placing a minimum stockholding obligation on industry. About 90 days obligation of stock should be maintained by public Strategic Public Reserve and industry for commercial purposes.
Viet Nam	At least 90 days of net imports (or around 60 days of consumption) by 2015 based on the National Stockpile Master Plan.



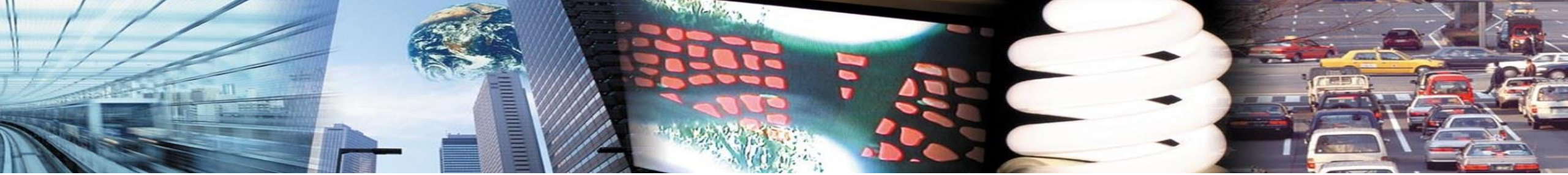
Summary of Indices

Asian economies tend to be more vulnerable to oil supply security

	Oil Dependency	Net Import	HHI	Oil Intensity	Regional Framework	Stockpiling Days
Australia	33%	33%	0.423	45.00	IEA	50 days
Brunei	19%	0%	no data	23.00	APSA	31 days
Canada	34%	0%	no data	67.00	IEA	no data
Chile	49%	98%	0.828	36.10	none	25 days
China	17%	55%	0.317	29.60	none	30-60 days
Hong Kong	27%	100%	no data	9.10	none	no data
Indonesia	34%	42%	0.256	32.30	APSA	22 days
Japan	44%	100%	0.675	37.50	IEA	161 days
Korea	38%	100%	0.751	52.90	IEA	237 days

Impact of oil supply disruption

Large	65%+	80%+	0.80+	60+	none	below 40 days
Moderate large	50-65%	60%-80%	0.60-0.80	40-60		40-60 days
Med	35-50%	40%-60%	0.40-0.60	20-40	APSA	60-80 days
Moderate low	20-35%	0%-40%	0.20-0.40	10-20		80-100 days
Low	below 20%	0%	0-0.20	0-10	IEA	More than 100days

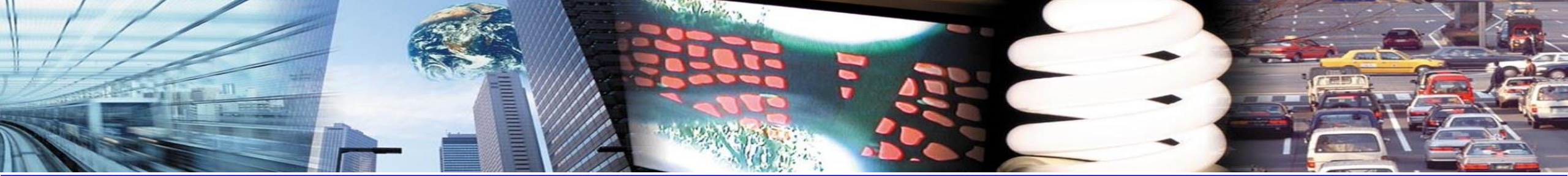


Summary of Indices

	Oil Dependency	Net Import	HHI	Oil Intensity	Regional Framework	Stockpiling Days
Malaysia	35%	0%	no data	40.30	APSA	no data
Mexico	55%	0%	no data	39.30	none	no data
New Zealand	34%	69%	0.479	41.60	IEA	92 days
Papua New Guinea	76%	60%	no data	73.60	none	no data
Peru	44%	30%	no data	26.41	none	no data
Philippines	32%	95%	0.632	20.40	APSA	30 days
Russia	21%	0%	no data	37.20	none	no data
Singapore	69%	100%	0.479	28.46	APSA	90 days (power generation)
Chinese Taipei	38%	100%	0.676	45.90	none	no data
Thailand	39%	70%	0.290	53.20	APSA	43 days
United States	37%	51%	0.289	45.90	IEA	249 days
Vietnam	31%	15%	no data	44.20	APSA	62 days

Impact of oil supply disruption

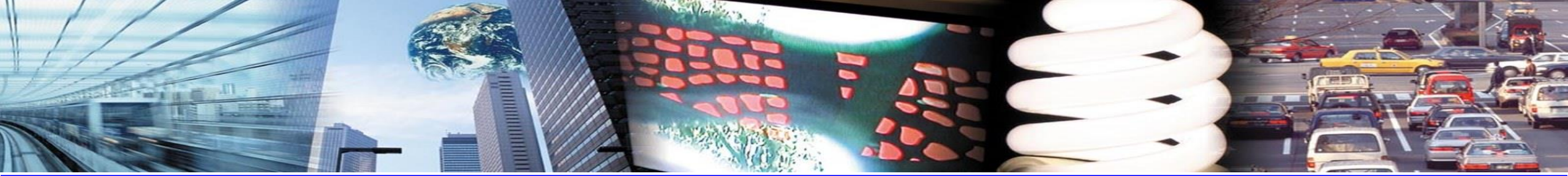
Large	65%+	80%+	0.80+	60+	none	below 40 days
Moderate large	50-65%	60%-80%	0.60-0.80	40-60		40-60 days
Med	35-50%	40%-60%	0.40-0.60	20-40	APSA	60-80 days
Moderate low	20-35%	0%-40%	0.20-0.40	10-20		80-100 days
Low	below 20%	0%	0-0.20	0-10	IEA	More than 100days



Policy and Regional Cooperation Implications

- ❑ Development of oil security and emergency response varies over economies.
 - IEA style of obligatory cooperation framework may be difficult for APEC economies.

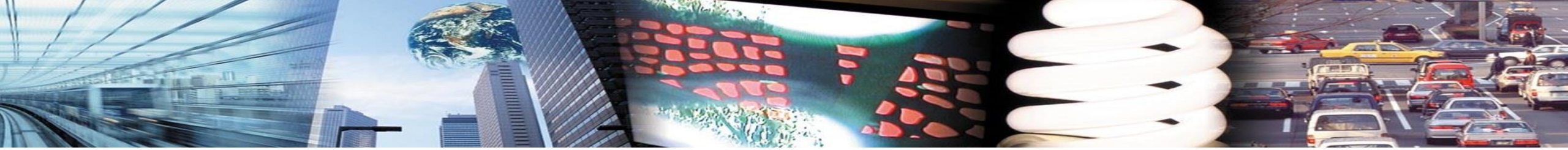
- ❑ A number of cooperation opportunities exist among APEC economies.
 - Combination of economies with different background may create effective cooperation.
 - As oil trading activities expand in the APEC, further liberalization of trade and investments will bring more benefits to oil supply security.



Policy and Regional Cooperation Implications

- ❑ Cooperation items are categorized into short-term and long-term items
 - Long-term items: regional framework on oil supply security or supply emergency; lowering oil intensity, import dependence, and net imports, etc.
 - Short-term items: building oil stockpiling, emergency preparedness, etc.

- ❑ Possibility of inter-framework collaboration within APEC
 - APEC has IEA member countries, APSA member countries, and countries that do not belong to any oil supply security framework.
 - How can APEC enhance inter-framework collaboration?



Thank you for your kind attention

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