



Asia-Pacific Energy Leaders' Summit  
Wellington, New Zealand

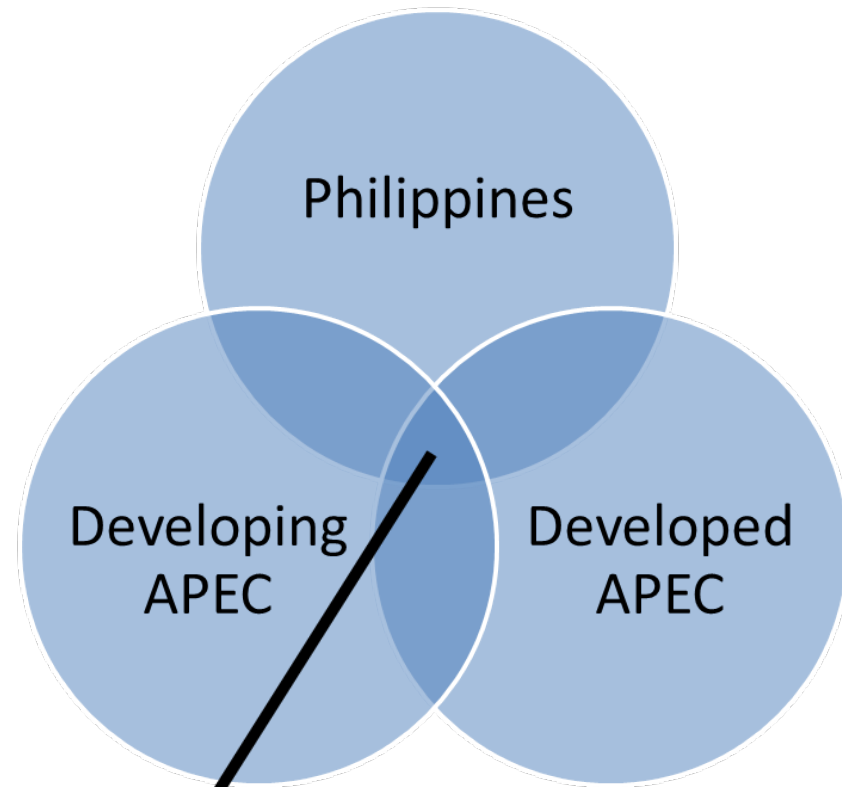
# APEC Resiliency Risks and Challenges

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# Energy Ministers Meeting (EMM12)

## *“Towards an Energy Resilient APEC Community”*

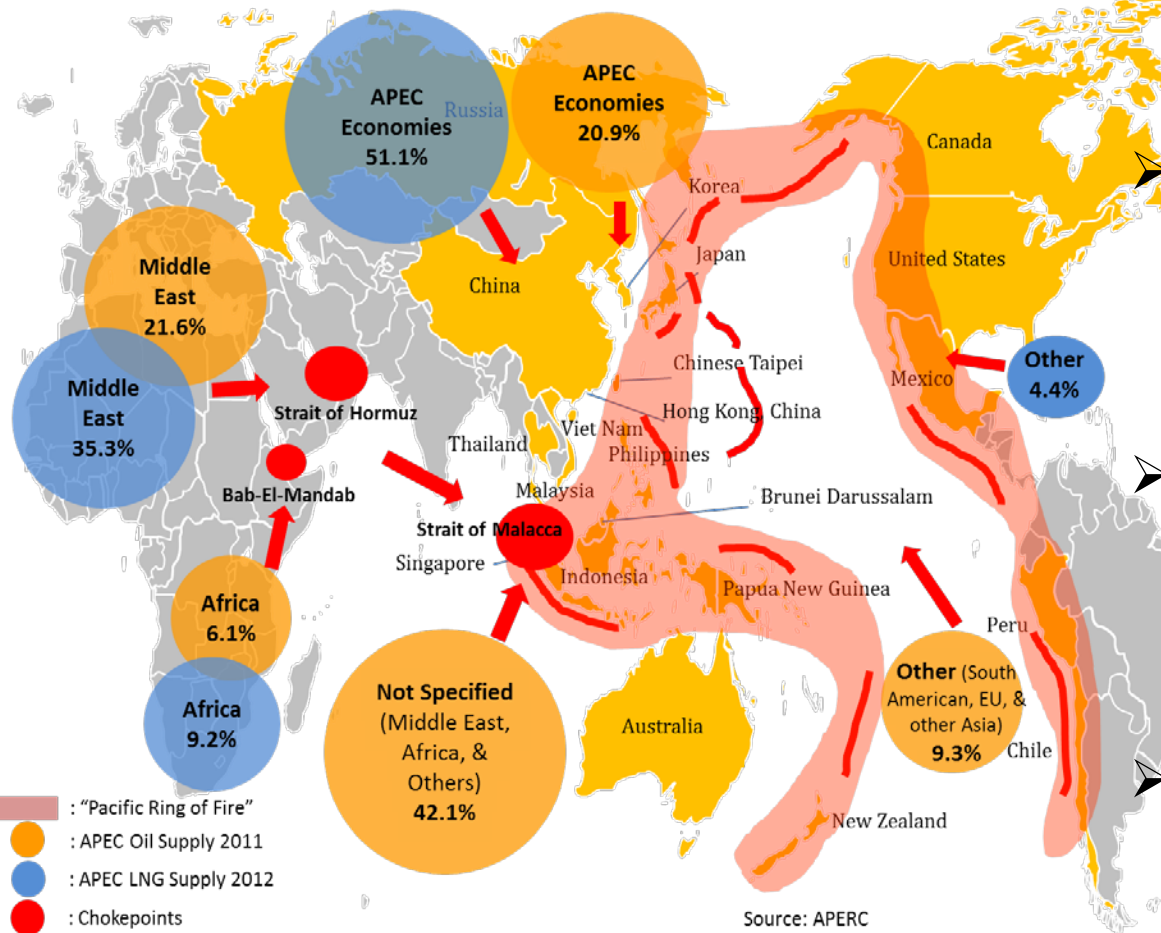
- Climate-Proofing Energy Infrastructures
- Providing Avenue for Cutting Edge Energy Efficiency Technologies
- Advocating Community-Based Clean Energy Use in “Energy-Poverty-Stricken” Areas
- Improving Energy Trade and Investment



12<sup>th</sup> EMM common concerns, problem areas, aspirations, etc.

# APEC Energy Resiliency and Security

## Pacific Ring of Fire



➤ **'Energy Resiliency'** is to cope with **natural and man-made disasters**.

On the other hand, **'Energy Security'** traditionally has been countermeasures against **geopolitical risks**.

➤ However, now Energy Security includes measures against natural and man-made disasters.

➤ Thus, Energy Security has become very closely related to Energy Resiliency.

# APEC Oil and Gas Security Initiative

**APEC Oil and Gas Security Initiative (OGSI)** was launched in response to “APEC Energy Ministerial Meeting Declaration” 2014 Beijing, China

**OGSI** consists of three pillars:

- **Oil & Gas Security Exercise** on a voluntary basis,
- **Oil & Gas Security Network** by officials in charge of oil and gas security policy in each Economy,
- **Oil & Gas Security Studies** on research topics related to oil and gas security in the APEC region.

## **Short Term Measures**

- Emergency response: Drawdown from storage, utilize spare capacity, rationing
- Assistance from Other Economies
- Introduce Car Pooling

## **Medium & Long Term Measures**

- Diversification of import sources
- Diversification of energy mix
- Regional interconnections
- Energy efficiency and conservation
- Develop Storage and Stockpile

# Progress in APEC Oil and Gas Security Exercise

## APEC Oil & Gas Security Exercise Model Procedure was published and applied in the Philippines

### OIL AND GAS SECURITY EXERCISE MODEL PROCEDURE

*A Step-by-Step Approach for Planning, Conducting and Evaluating Emergency Exercise*

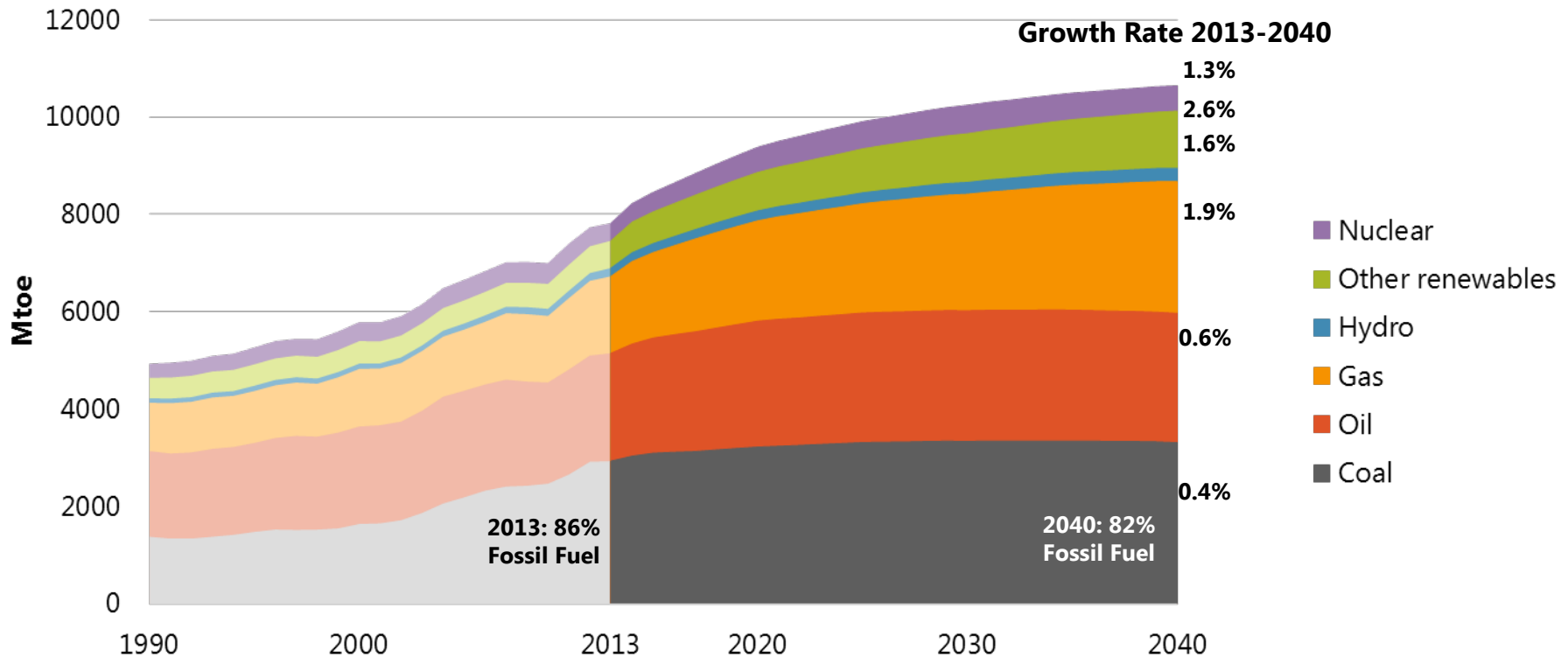


- **OGSE in the Philippines was held in Taguig City on 7-9 December 2015.**
- **Expert Review Team was composed of 10 members – IEA, ACE, ASCOPE, HAPUA, ERIA, Japan, Korea, the USA and the Philippines.**
- **About 50 attendees from different government agencies and private companies joint and actively participated in the exercise.**
- **Three emergency supply scenarios were presented for the exercise.**



# Fossil-Fuels Continue to Dominate Energy Supply

## Total primary energy supply by fuel, 1990 - 2040

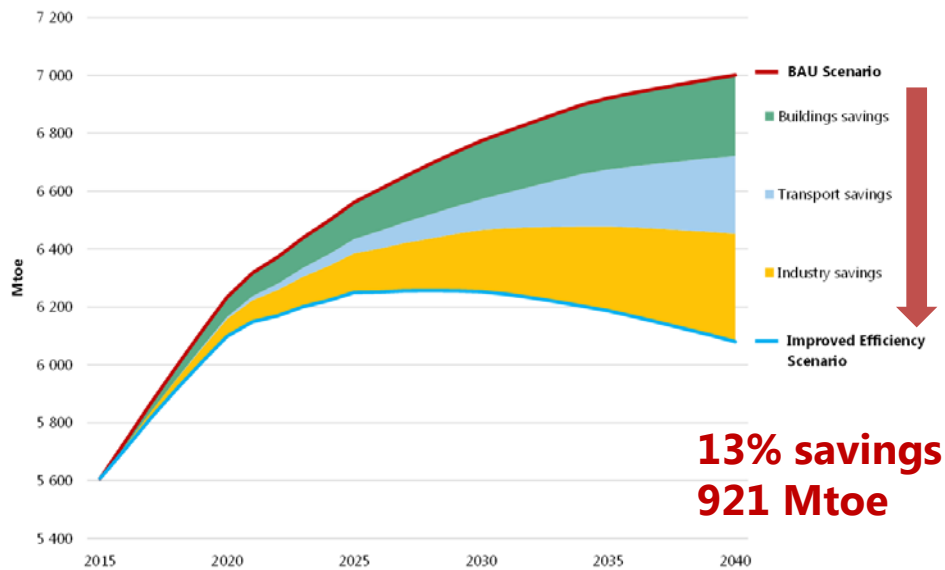


Source: IEA statistics 2015 and APERC analysis

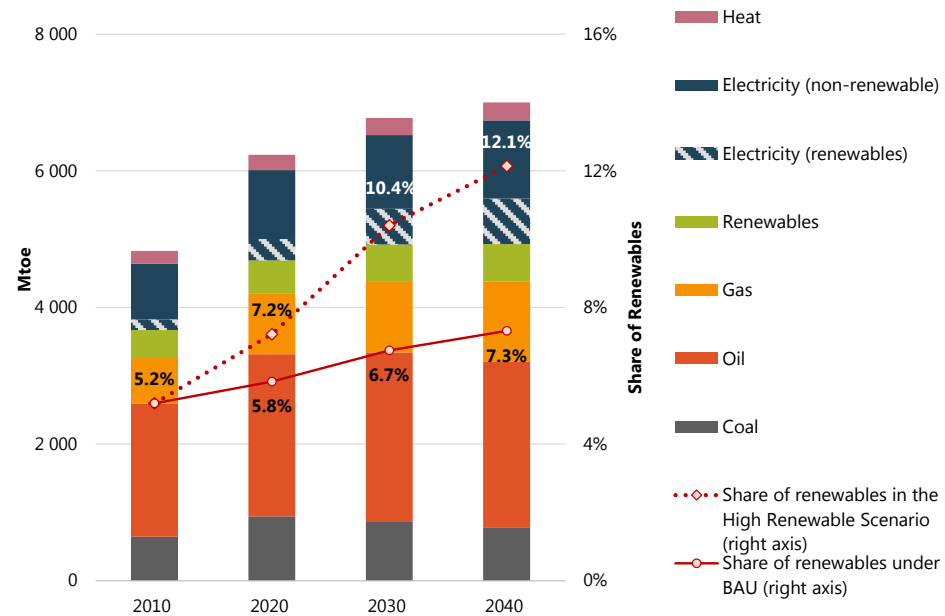
***Energy supply in APEC region will more than double by 2040 from 1990 level.***

# APEC Energy Goals

## 45% Energy Intensity Reduction



## Renewables Doubling Goal



**APEC Energy demand peaks under Improved Efficiency Scenario, intensity target is reached in 2032 vs 2037 in BAU**

**High Renewables Scenario outlines a least cost pathway to achieving the APEC renewables goal**

# Factors That Influence Resiliency & Security

## POLITICS

Geopolitics;  
International agreement;  
domestic and local politics;  
political risk; subsidies

## ECONOMICS

Extraction cost; commodity pricing; energy pricing; technology's efficiencies; capital & operational cost; lending rate; energy demand; economy openness; trades

## SOCIAL

Behavioural change; rate of adaptation to law and technology; public perception; public engagement; social order, household spending on energy

## TECHNOLOGICAL & TECHNICAL

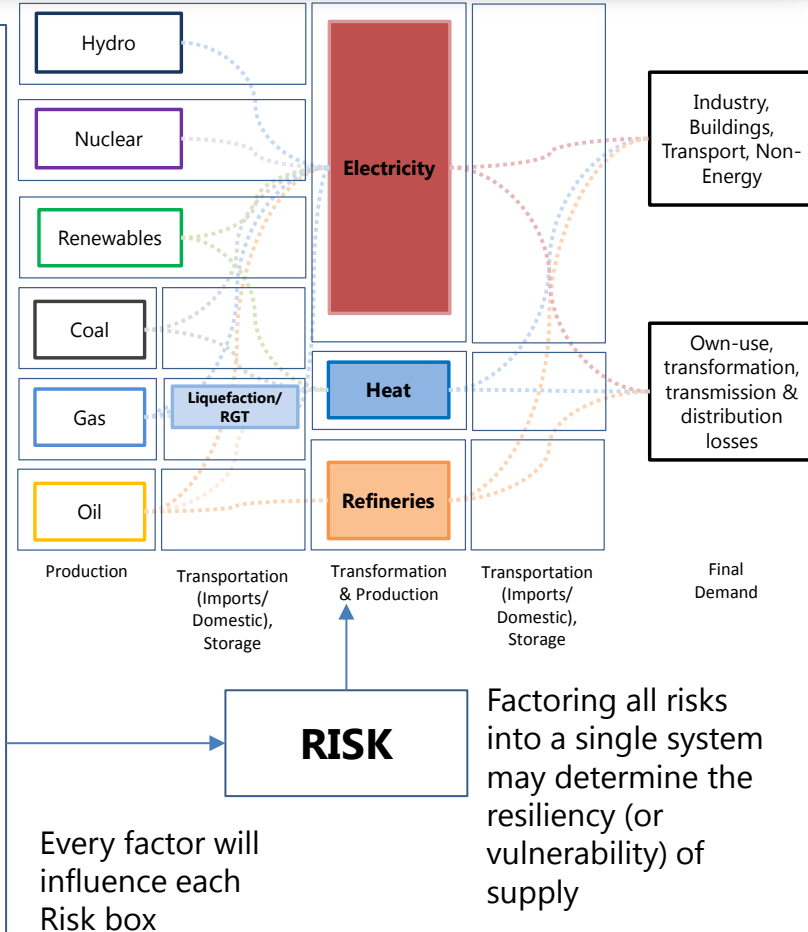
Rate of innovation vs implementation; Support infrastructure; Energy supply chain; Logistics efficiencies

## LEGAL

Emergency preparedness; transparency; rule of law; domestic & cross border monitoring system (tax etc.), human capital, strategic stockpile, emergency preparedness

## ENVIRONMENT

Seasonal weather; Climate change risk; cumulative environmental factor; access to modern energy



Non-exhaustive. Initial ideas in clustering risks



# Energy security indicators

	BAU	Improved Efficiency	High Renewables	Cleaner Coal	High Nuclear	High Gas 50%	High Gas 100%
Primary energy supply diversity (HHI)	0.24	0.23	0.23	0.24	0.23	0.24	0.24
Primary energy supply self-sufficiency (%)	92	95	94	92	94	88	85
Coal self-sufficiency (%)	100	100	100	100	100	100	100
Oil self-sufficiency (%)	75	80	76	75	76	75	75
Gas self-sufficiency (%)	92	100	92	92	93	83	75
Input fuel for electricity generation diversity (HHI)	0.31	0.28	0.27	0.31	0.28	0.29	0.29

	Largest gains
	Improvement
	Unchanged
	Deteriorate

***In terms of energy security, Improved Efficiency and High Renewables show largest improvements***



**Thank You**

***APEC Energy Demand and  
Supply Outlook, 6<sup>th</sup> edition***

**Release May 2016**

**<http://aperc.ieej.or.jp>**