

Overview of Market Development in Asia =Future Energy Demand in Asia=

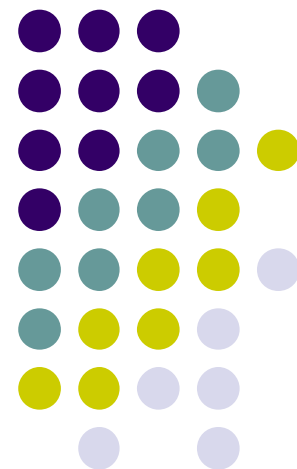
IEA Bioenergy Workshop

May 12, 2010

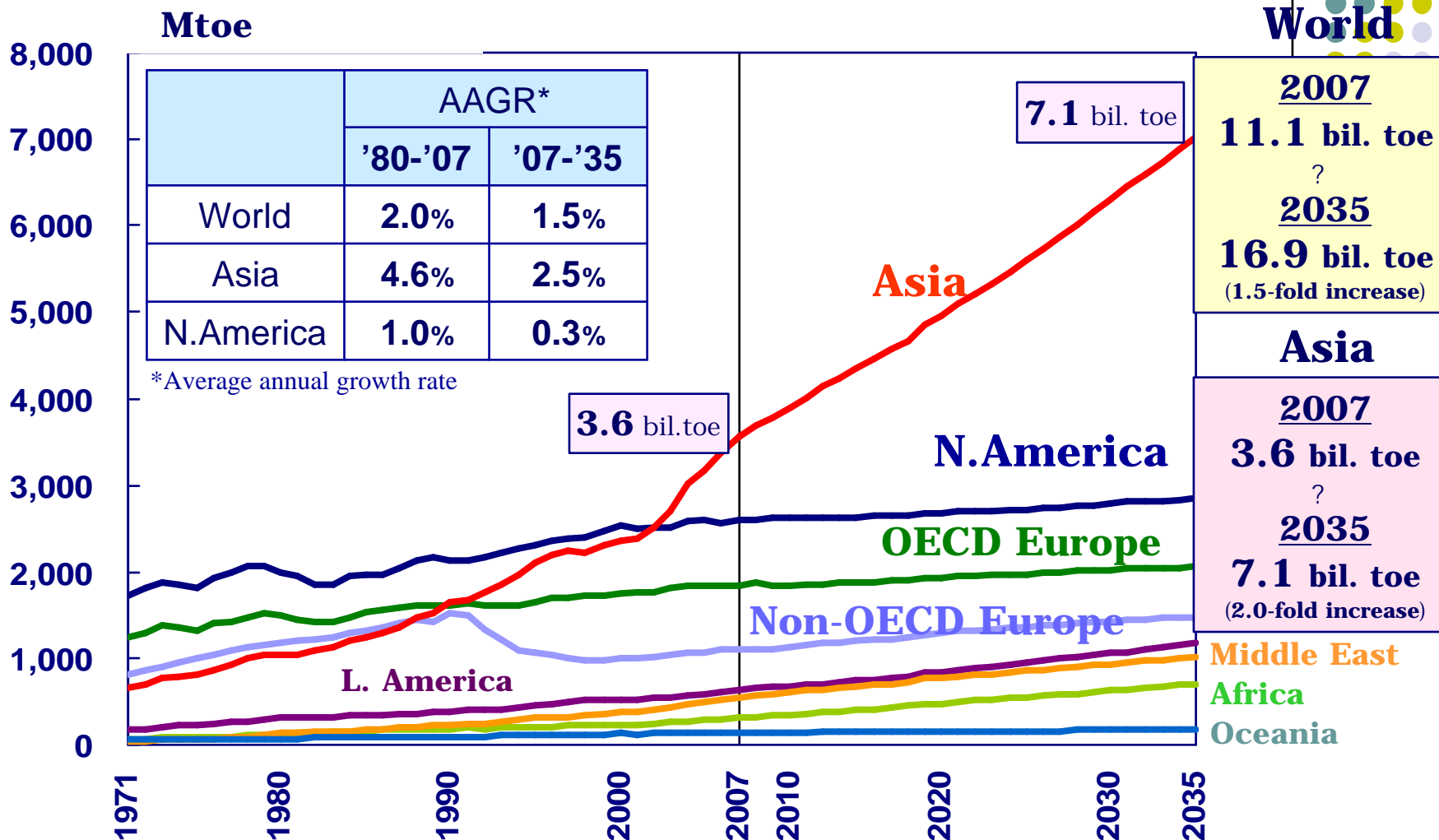
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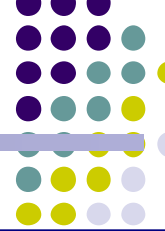


Primary Energy Demand by Region (World)



- By 2035, primary energy demand of Asia achieves twice as much as current level, reflecting high economic growth; 3.6 billion toe(2007) ? 7.1 billion toe(2035).
- Non-OECD will represent 90% of incremental growth of global energy demand toward 2035

Primary Energy Demand (Asia)

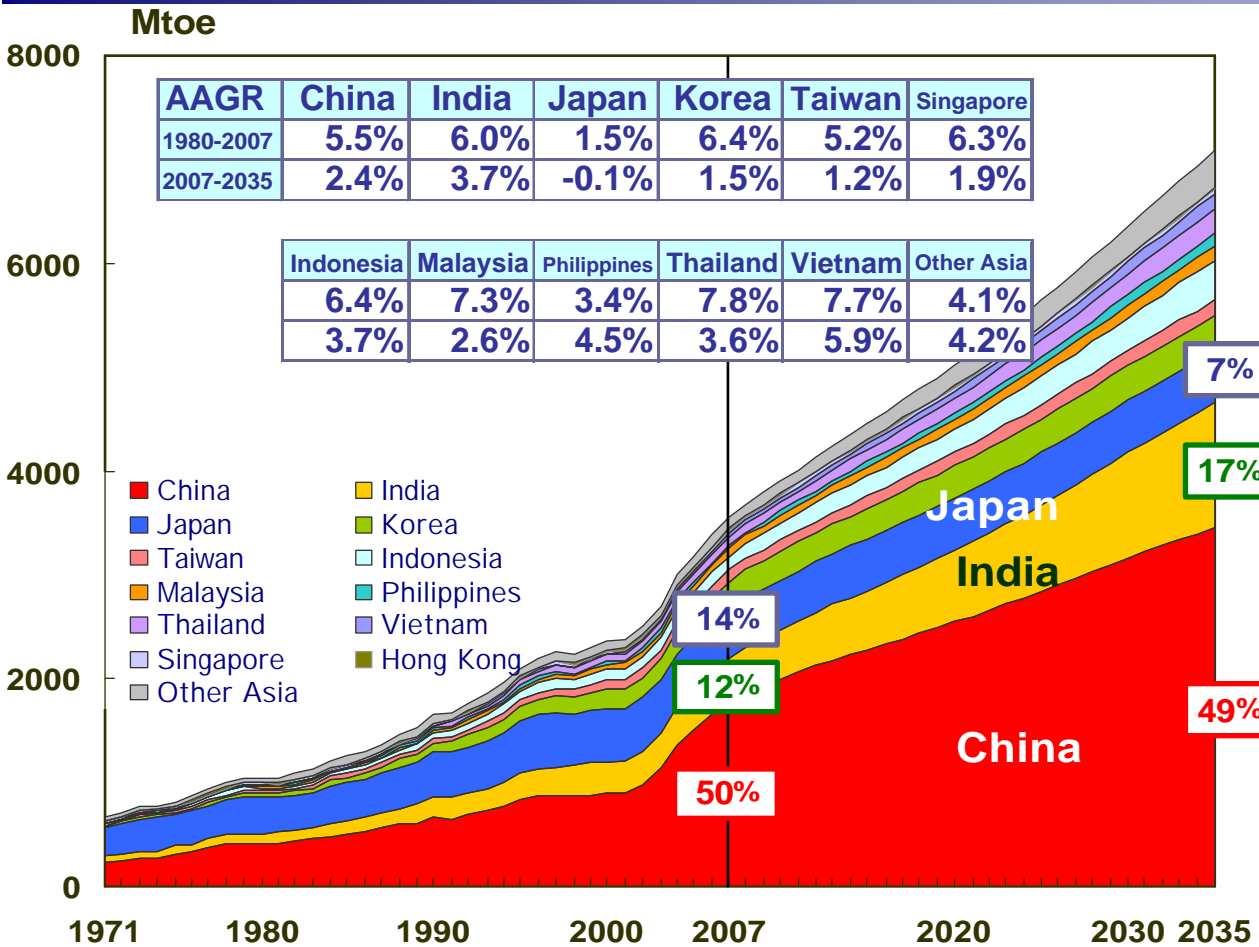


Asia

2007
3.6 bil. toe
 ?
2035
7.1 bil. toe
 (2.0-fold increase)

China / India

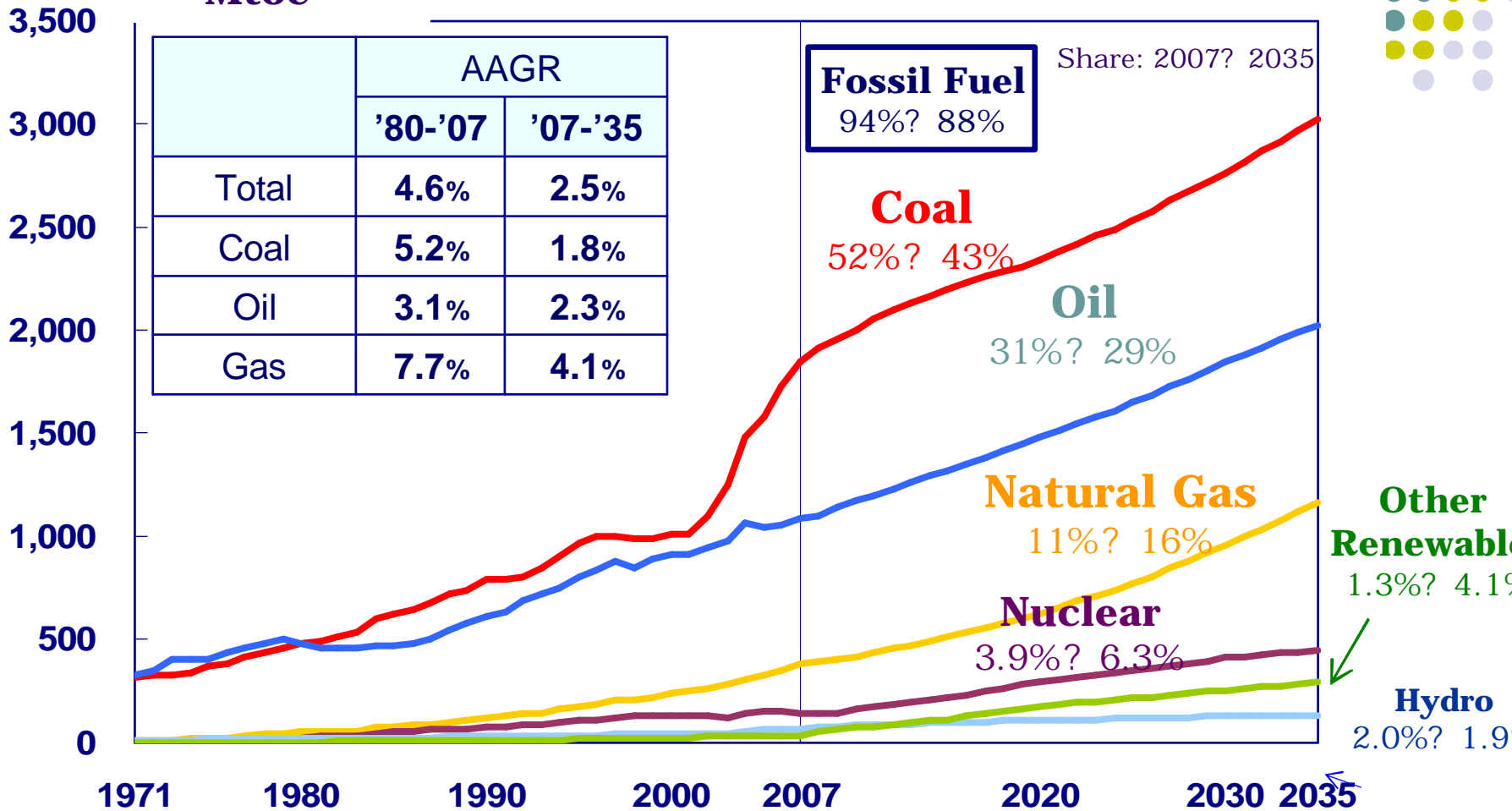
2007
1.8 bil. toe / 0.4 bil. toe
 ?
2035
3.5 bil. toe / 1.2 bil. toe
 (1.9-fold inc. / 2.8-fold inc.)



- Based on booming economic growth, the share of China and India together in Asian primary energy demand significantly increases to 66% by 2035.
- Japan's energy share in Asia, with its slower-paced economic growth and depopulation, will decline from 14% in 2007 to 7% in 2035.

Primary Energy Demand by Fuel (Asia)

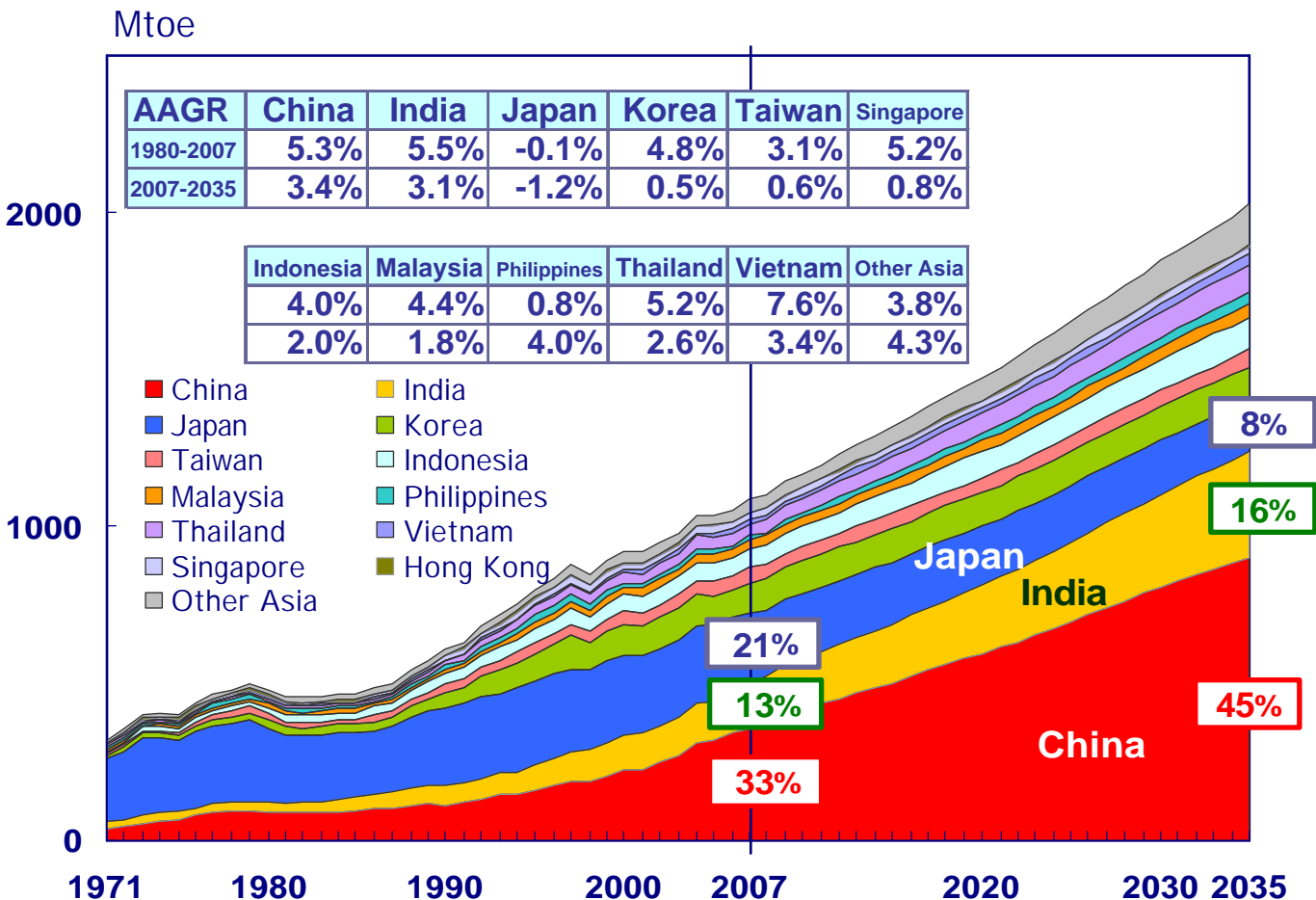
Mtoe



■ Coal and Oil will continue to maintain its centrality over Asian energy demand until 2035.

■ The share of natural gas will grow substantially to 16% by 2035, driven mainly by power generation. Fossil fuel dominates 88% of total energy supply and plays a key role by 2035.

Oil Demand by Region (Asia)



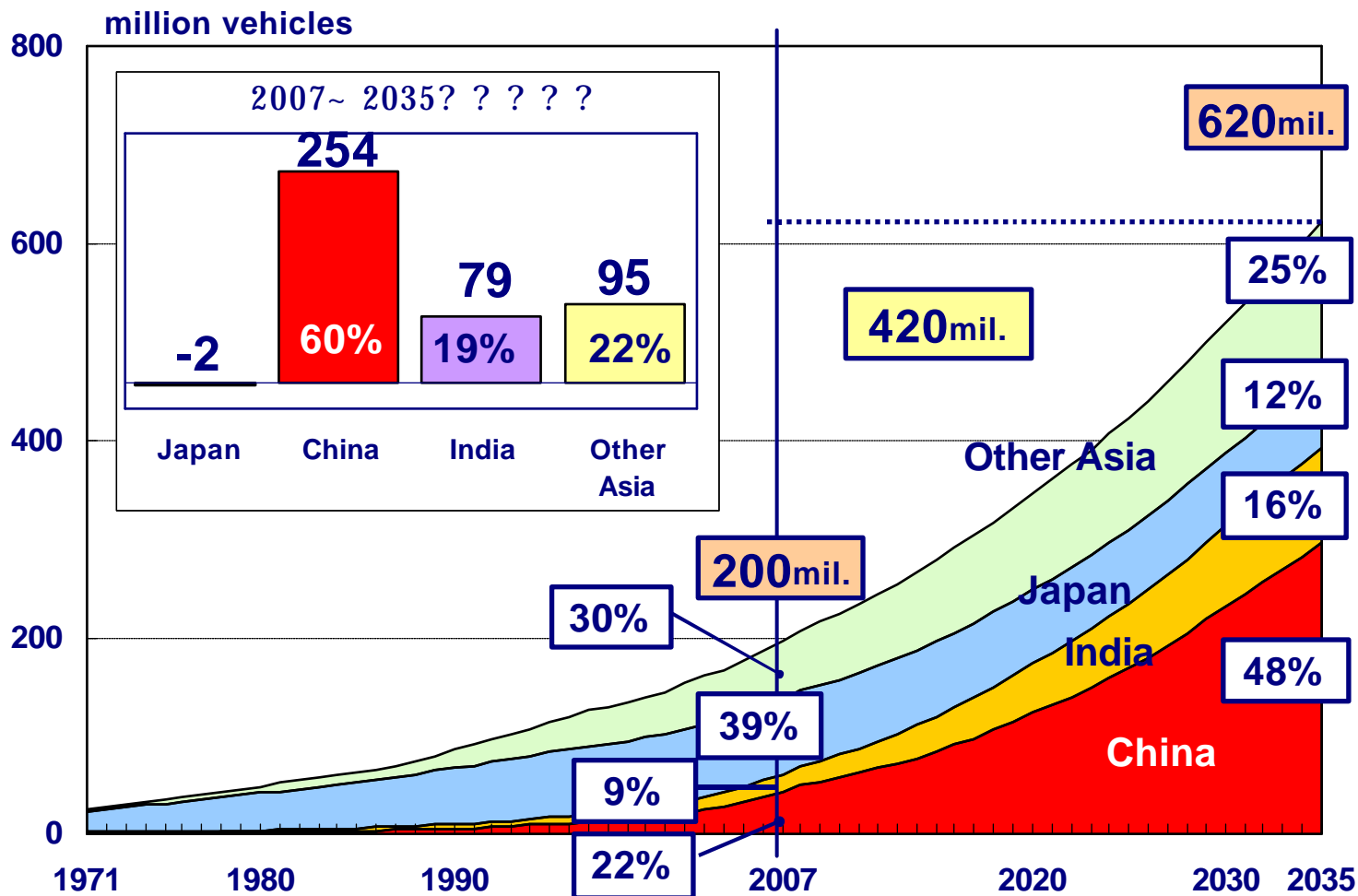
2007
1.1 billion ton
(23 mbd)
?
2035
2.0 billion ton
(42 mbd)

1.9-fold increase
(20 mbd inc.)

2007	2035
China	China
7.4 mbd	19.0 mbd
India	India
2.9 mbd	7.0 mbd
Japan	Japan
4.8 mbd	3.4 mbd

Though the continuous improvement of fuel efficiency of automobile and deployment of advanced vehicle is expected, oil demand in China will boost from 7.4 million B/D in 2007 to 19.0 million B/D in 2035, due mainly to its escalating vehicle possession. The share of China and India together in Asian oil demand will grow from 46% to 61%

Number of Vehicles (Asia)



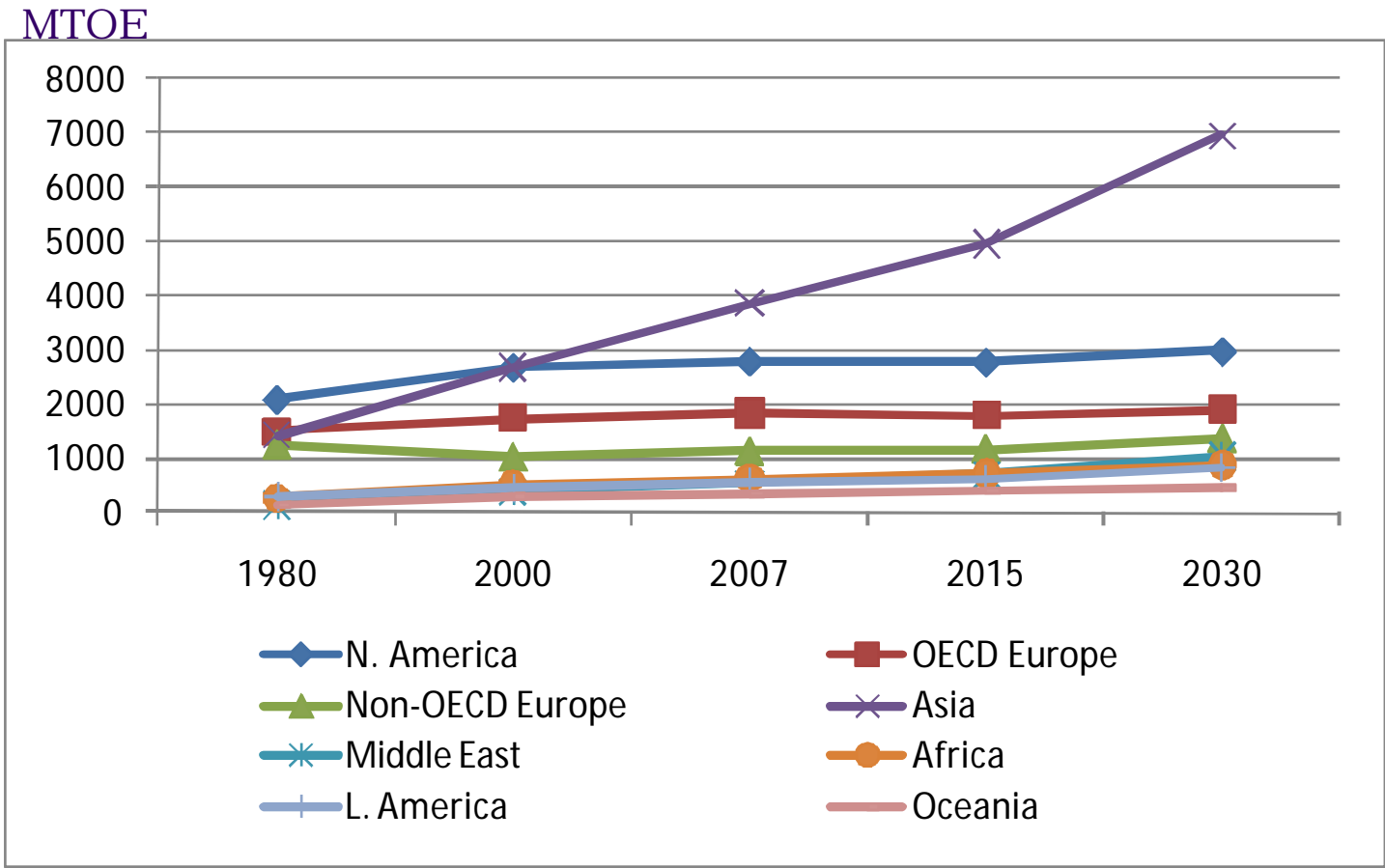
China
2007
 42 mil.
 ?
2035
 300 mil.
 (7.0-fold inc.)

India
2007
 18 mil.
 ?
2035
 97 mil.
 (5.3-fold inc.)

Considerable growth of vehicles is expected in China and India. In Japan, it grows only slightly.



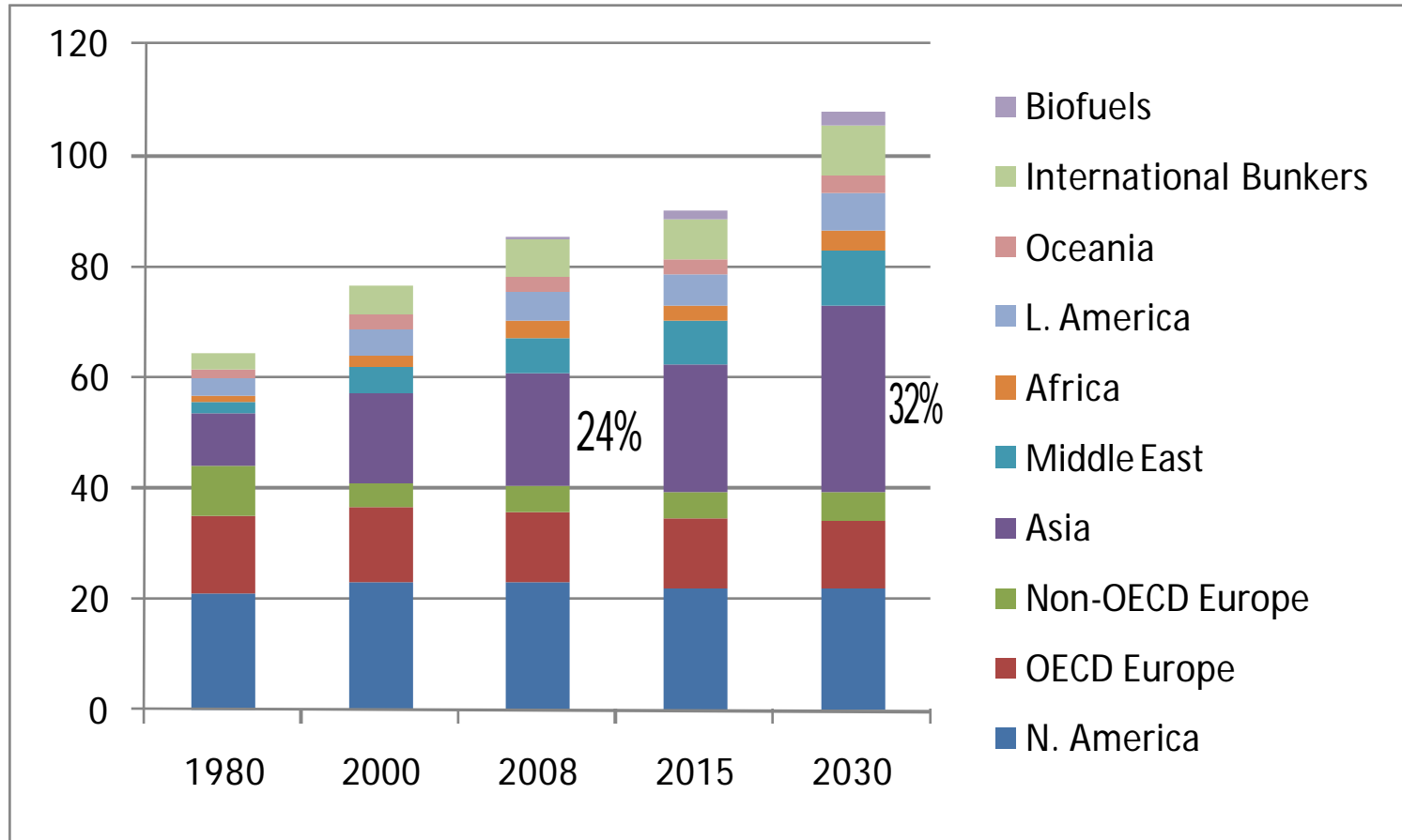
Primary Energy Supply by Region (World)



Source: WEO2009 by IEA

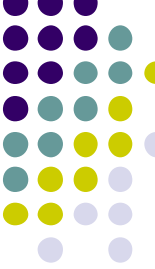


Primary Oil Demand by Region (World)



Source: WEO2009 by IEA

Policy Process on Energy Security



- At the 2nd EAS in 2007 in Cebu, Leaders resolved “Cebu Declaration on East Asian Energy Security”.
- To show ERIA’s value-added to Leaders through policy-oriented recommendations, ERIA will contribute to the implementation of the Declaration.

Cebu Declaration on East Asian Energy Security

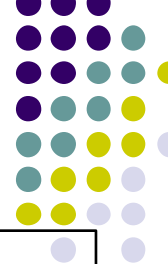
- ✓ Set individual goals and formulate action plans voluntarily for improving energy efficiency,
- ✓ Encourage collective efforts in intensifying the search for new and renewable energy resources and technologies, including research and development in biofuels
- ✓ Encourage the use of biofuels and work towards a standard on biofuels used in engine and motor vehicles,

ERIA’s Contribution through Energy Project

Working Group for Analysis on Energy Saving Potential in East Asia Region

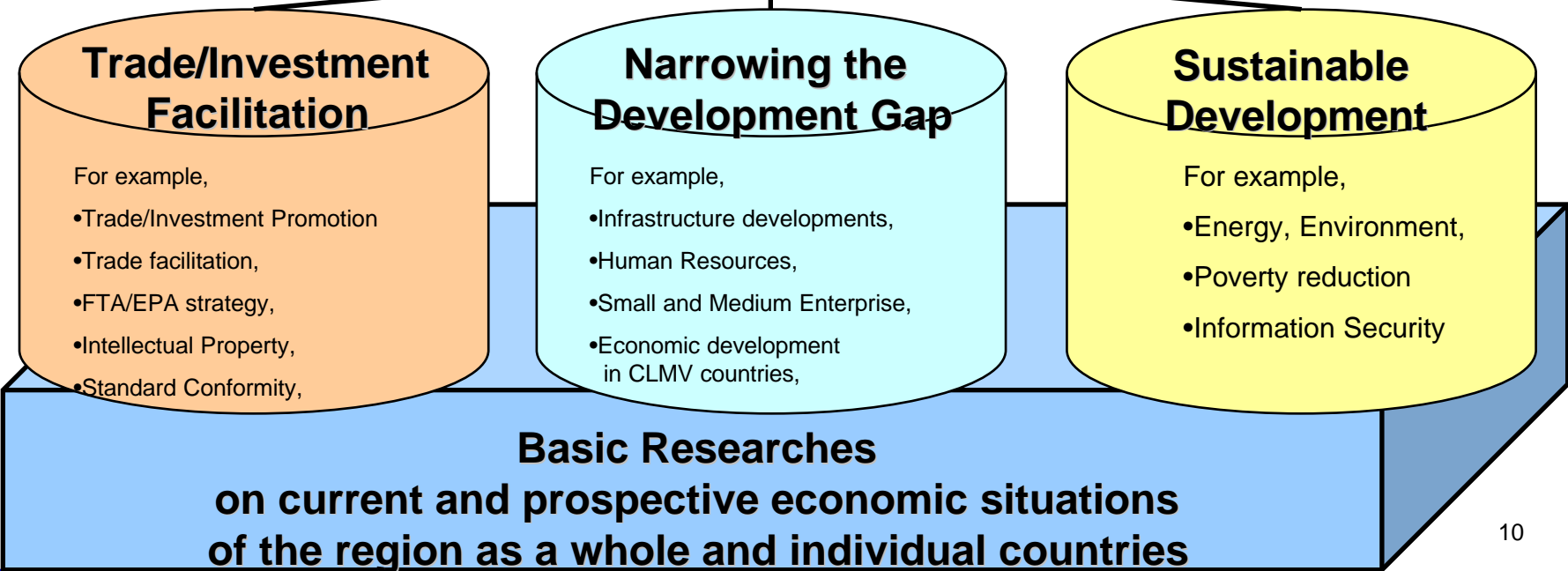
Working Group for Sustainable Biomass Utilisation Vision in East Asia

Working Group for Standardization of Biodiesel Fuel for Vehicles in East Asia

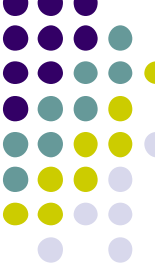


For the sustainable economic growth in East Asia, we have to address not only Trade/Investment liberalization through FTA/EPAs but also wide range of policy issues

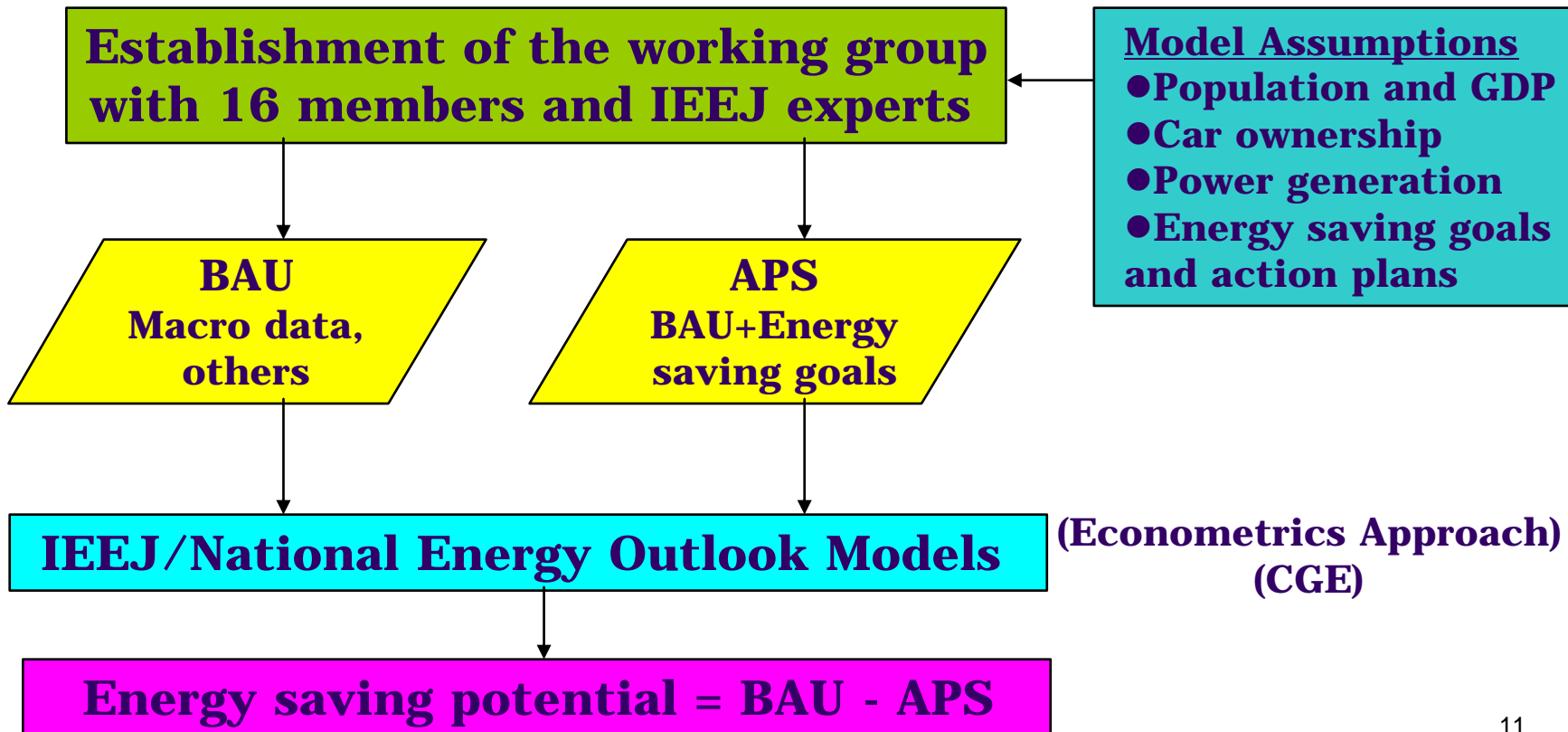
Economic Integration in East Asia



Working Group for Analysis on Energy Saving Potential in East Asia Region



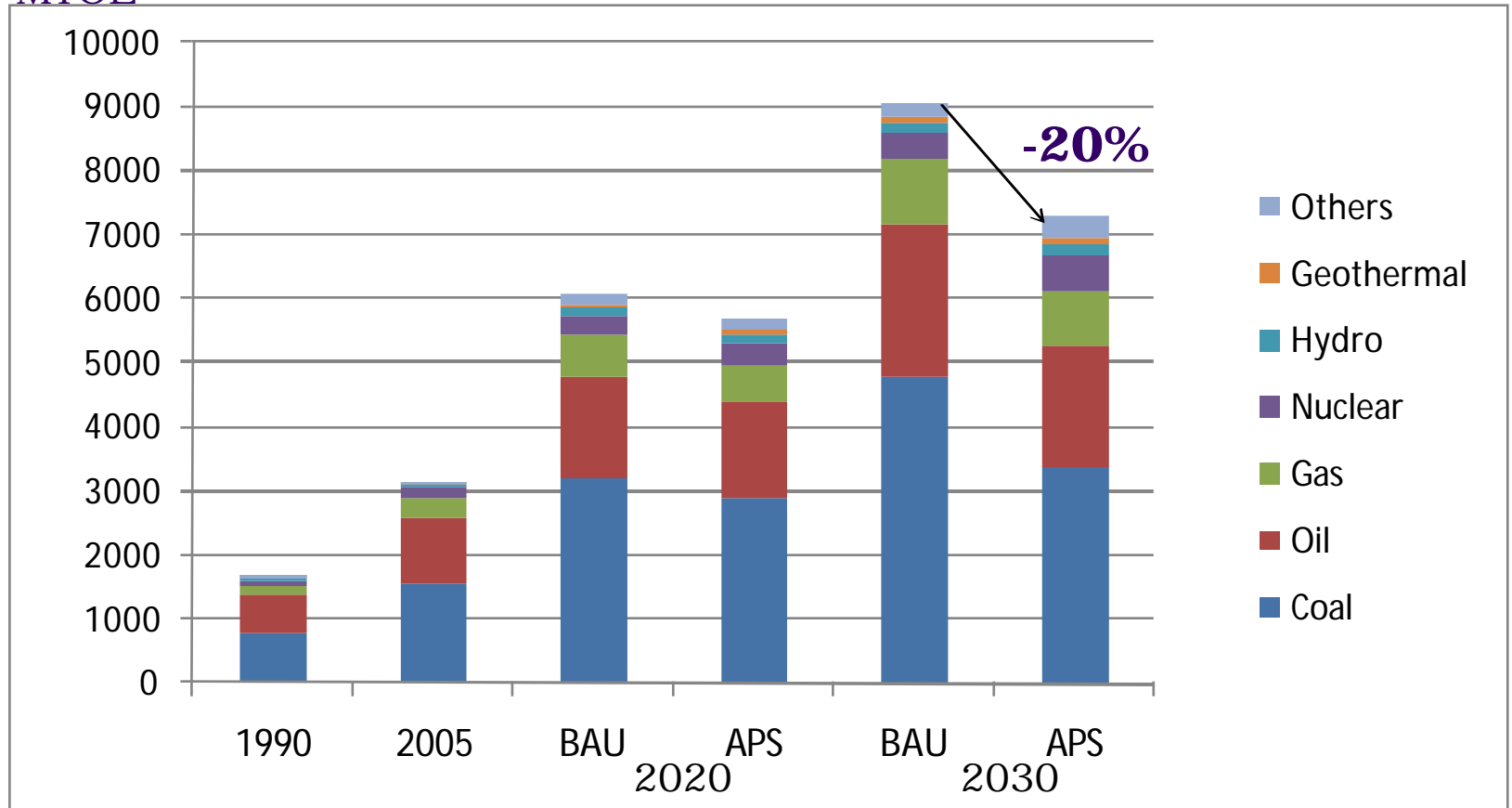
- Methodology for assessing the energy saving potential



Energy Projection of Primary Energy Supply in East Asia

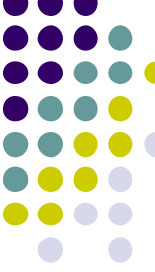


MTOE

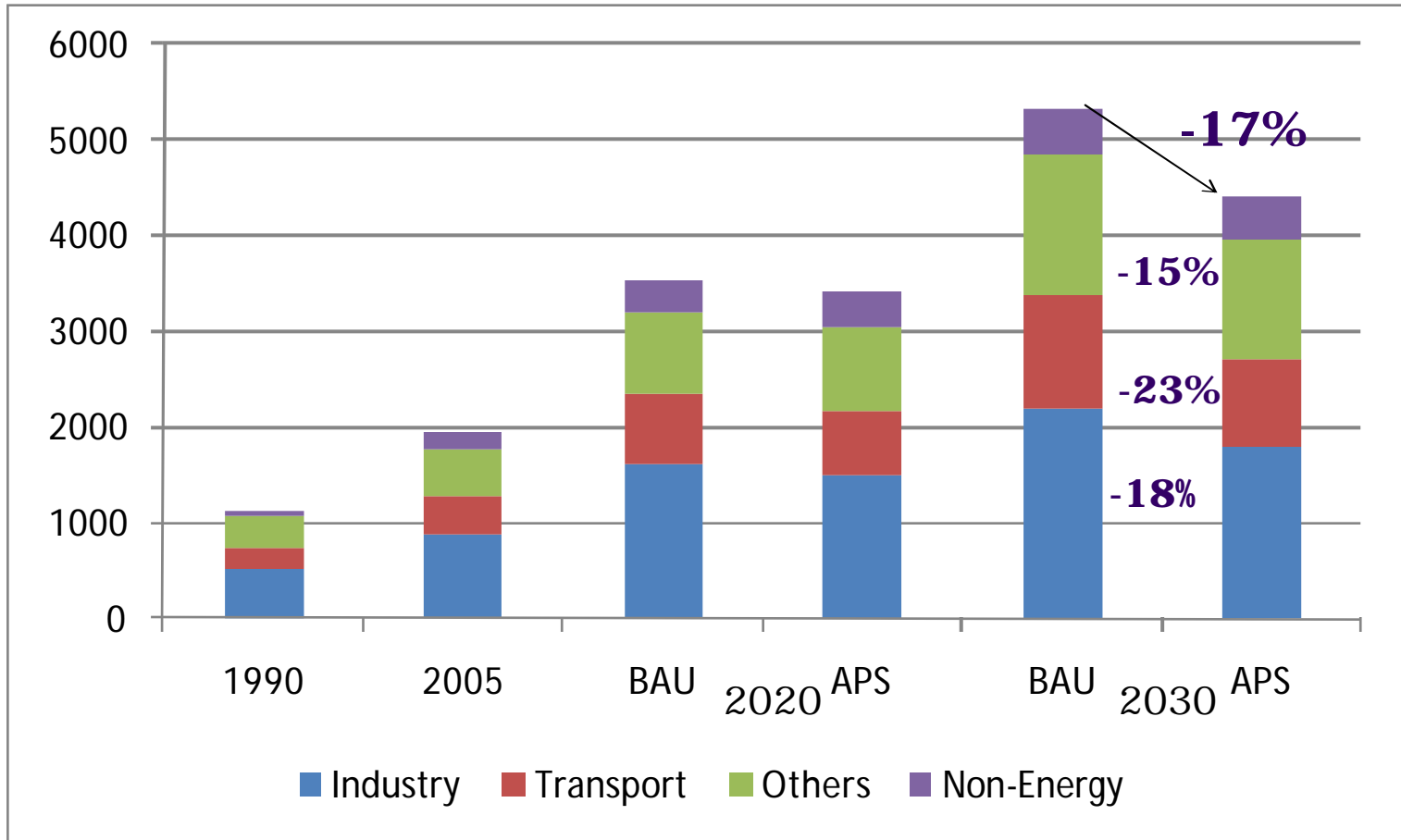


Source: ERIA EEC WG Report 2010

Energy Projection of Final Energy Consumption in East Asia



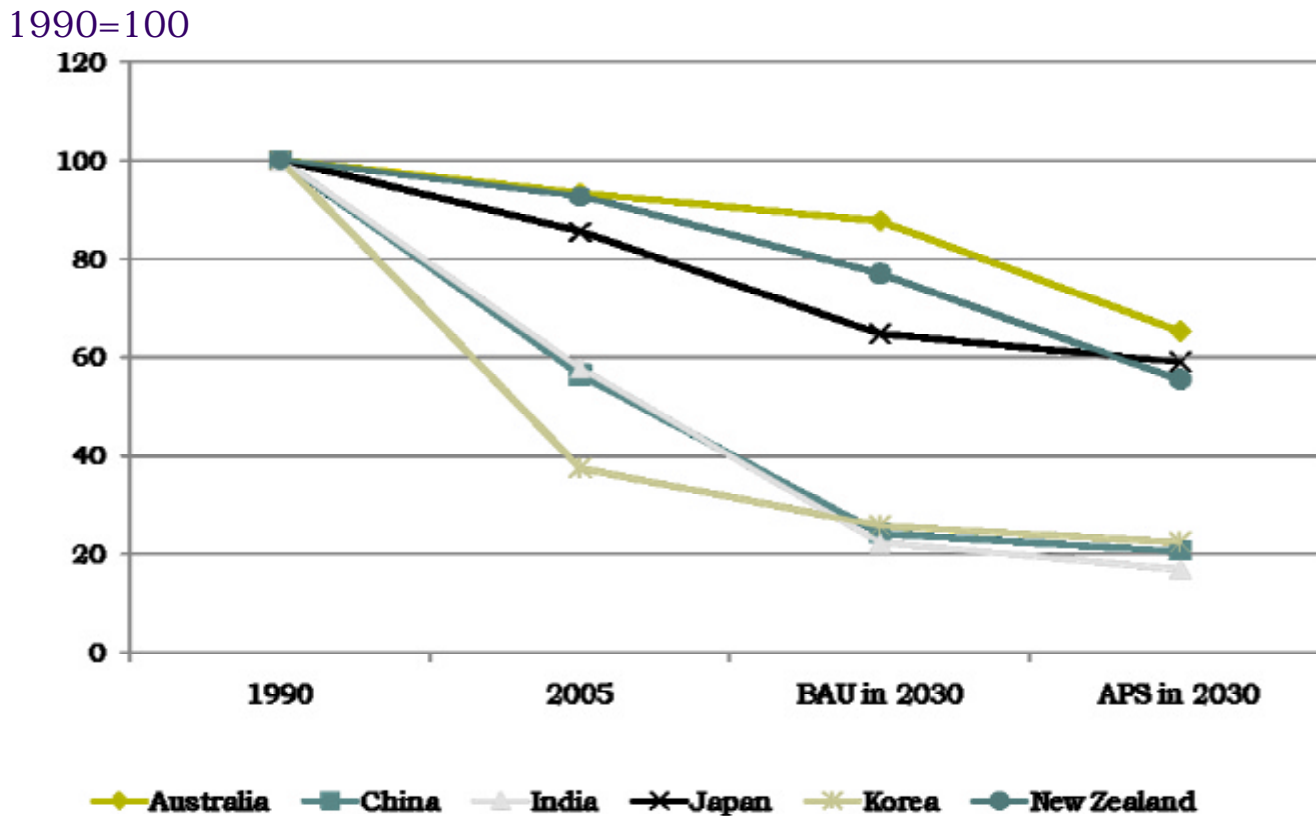
MTOE



Source: ERIA EEC WG Report 2010

Improvement of Fuel Efficiency

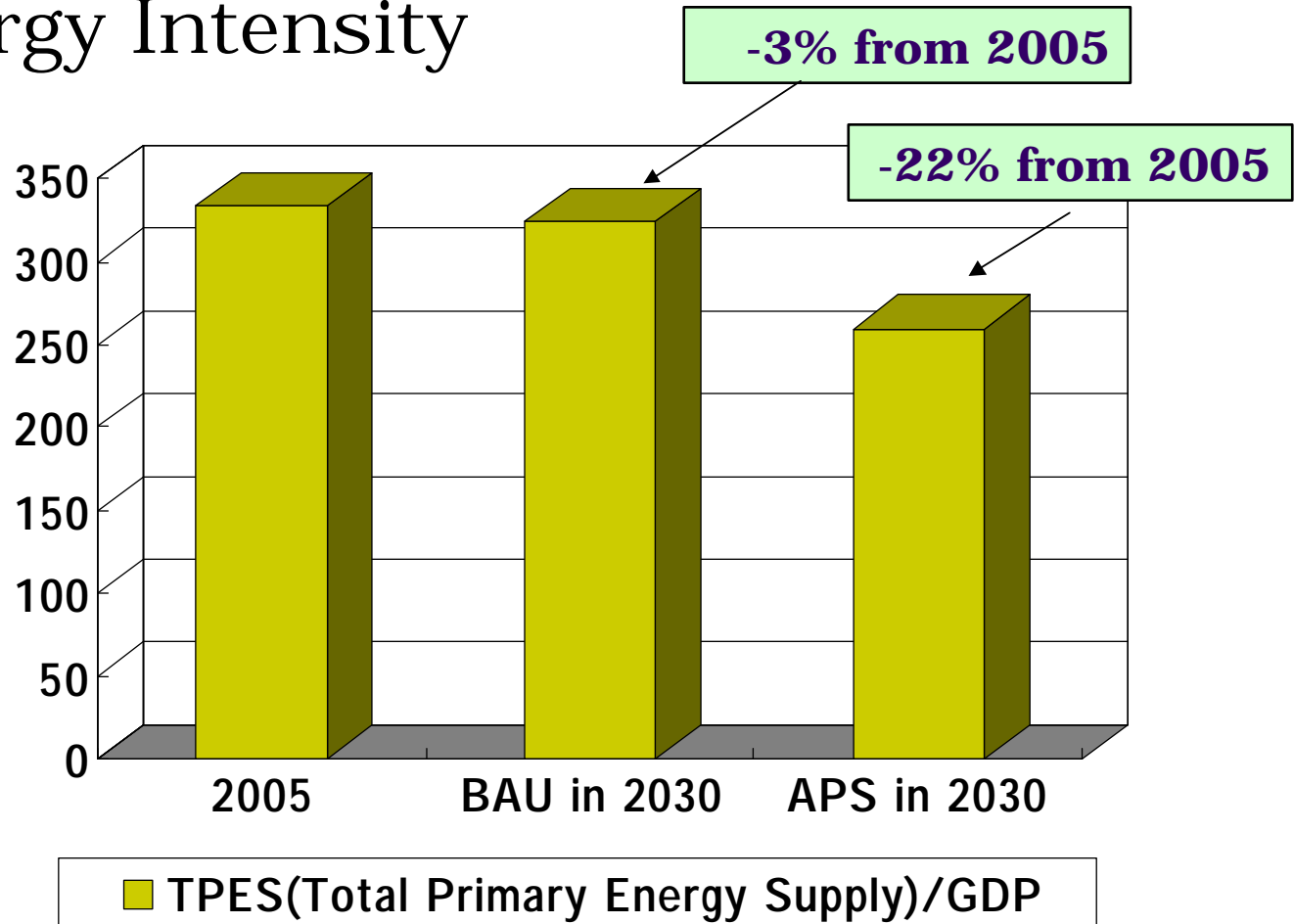
- Fuel Consumption/Number of Vehicles



Source: ERIA EEC WG Report 2010

Outlook Results

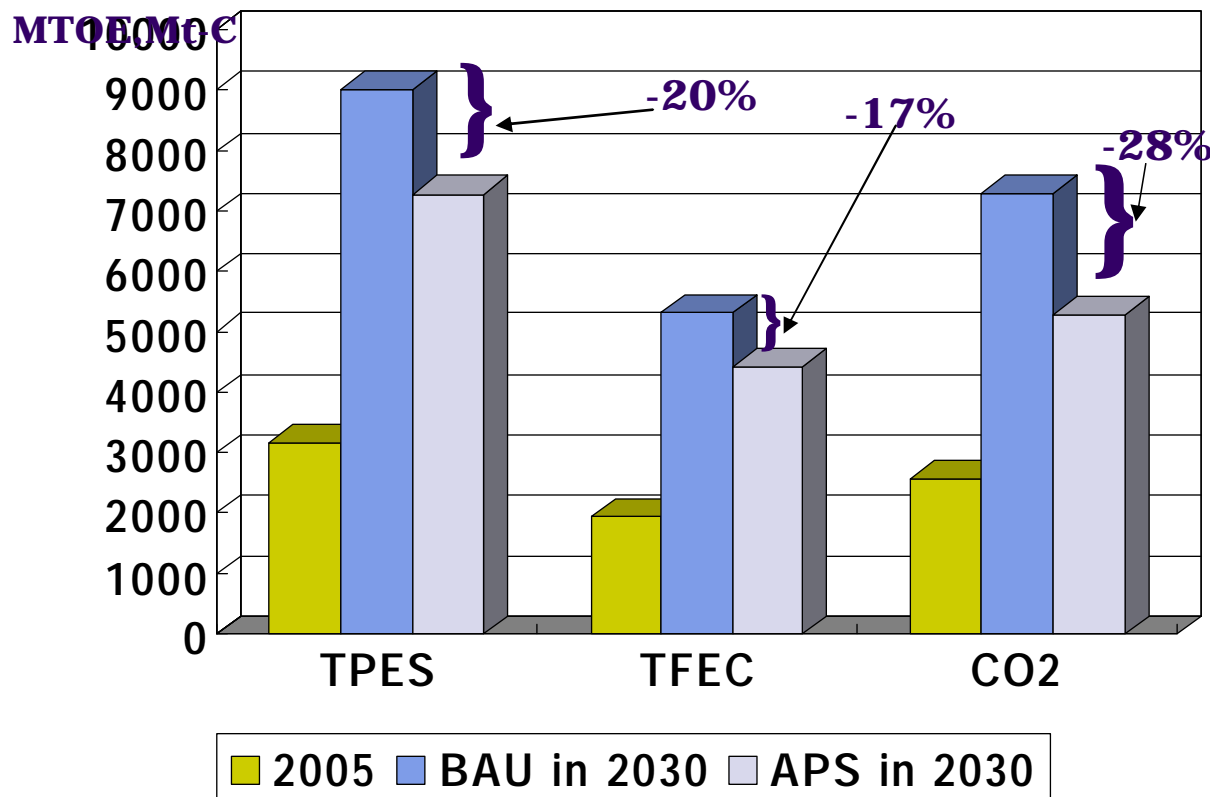
- Energy Intensity



Source: ERIA EEC WG Report 2010

Outlook Results

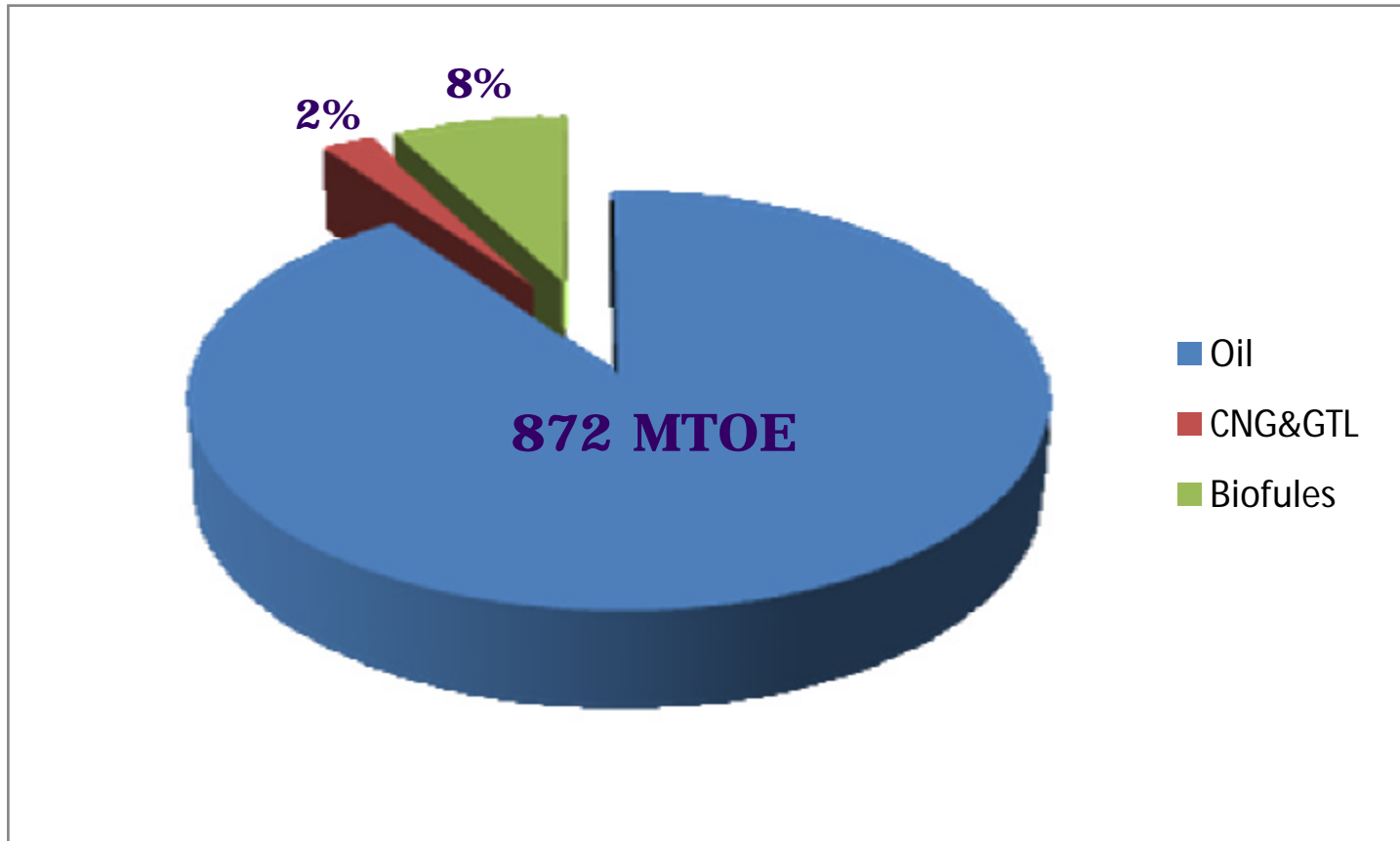
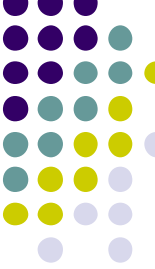
● Overall Result



- **TPES:** Total Primary Energy Supply
- **TFEC:** Total Final Energy Consumption
- **CO2:** Carbon Dioxide Emissions
- **BAU:** Business As Usual case
- **APS:** Energy Saving Promotion case

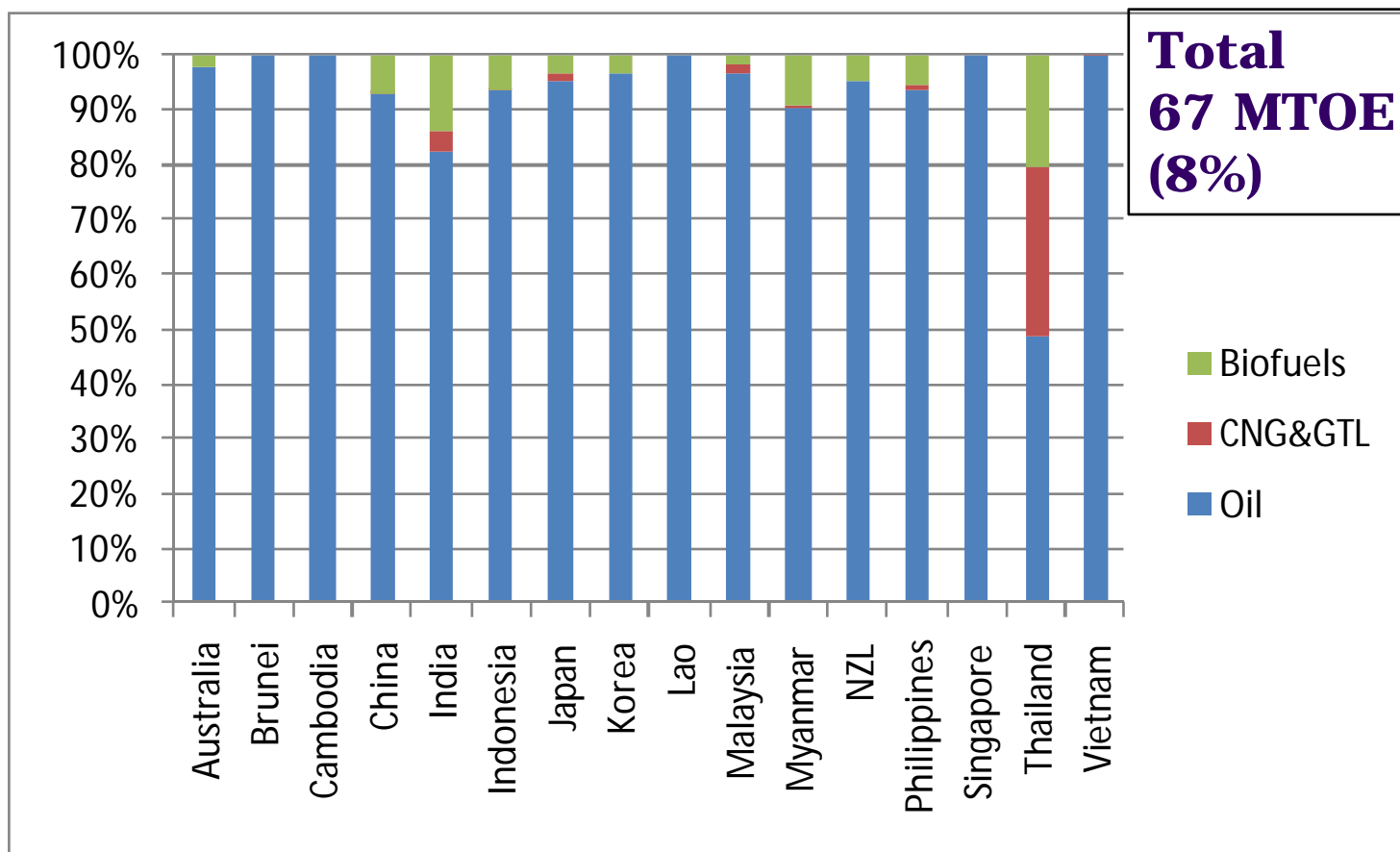
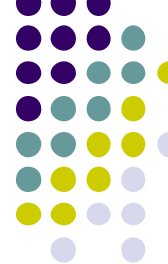
Source: ERIA EEC WG Report 2010

Transport Oil Demand in 2030



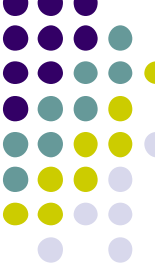
Source: ERIA EEC WG Report 2010

Biofuels Ratio in 2030



Source: ERIA EEC WG Report 2010

Conclusion (1)



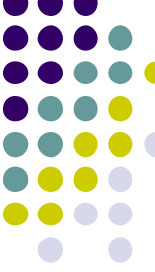
- Energy demand in Asia will surely increase due to strong economic growth. The growth rate of energy demand will be much higher than the world average.
- Coal will remain as the dominant energy in future but oil will also be major energy due to progressive motorization in China, India and ASEAN region.
- Several world energy outlooks indicates same trend mentioned above such as IEEJ and IEA.
- Accepting the situation mentioned above, the EAS leaders requested ERIA to study EEC and Biofuels on the view of energy security issue.

Conclusion (2)



- Under ERIA, one group was established to conduct EEC study and two groups were established to study biomass including biodiesel standardization.
- The EEC group has conducted to estimate energy saving potential applying EEC policies (energy saving goals and action plans).
- According to the study results of the EEC group, the current EEC policies contribute to save energy consumption significantly but are not sufficient to address climate change issues.
- In transport sector, fuel efficiency surely improves due to the EEC policies but will still continue to consume oil and emit CO₂.

Conclusion (3)



- In transport sector, the use of biofuels is one of the solutions to mitigate CO₂ emissions.
- According to biofuels policy of EAS countries, 11 countries consider to use biofuels in future and 2 countries use biofuels aggressively. But its share of total EAS region will only be 8% in 2030.
- Consequently we may need more aggressive biofuel policy paying attention to following issues;
 - Standard specification
 - 2nd and 3rd generation biofuels
 - Establishment of trading network
 - Technology development to decrease its production cost
 - etc



Thank You