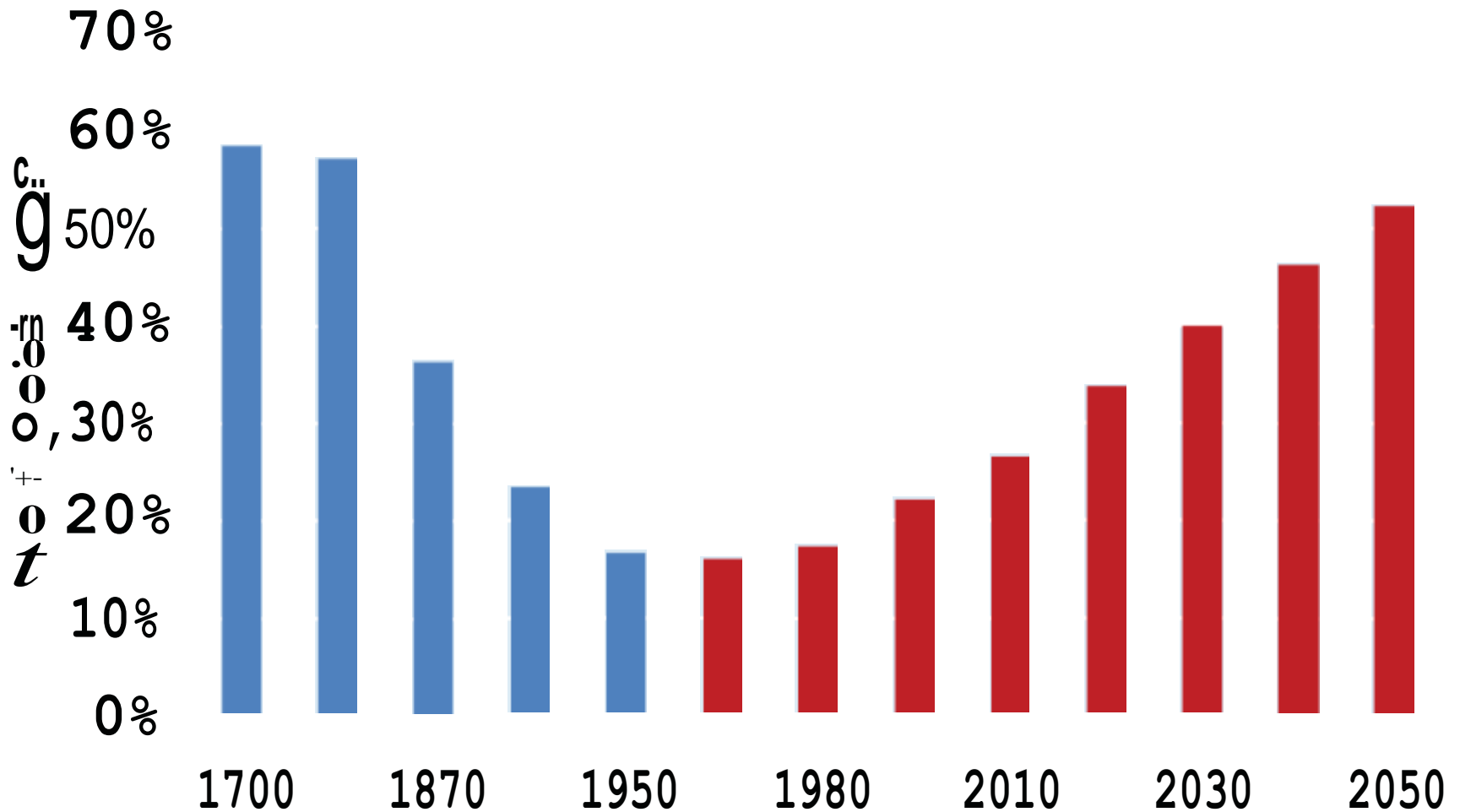


Asia's Energy Security and Energy Outlook

Aiming Zhou
Senior Energy Specialist, ADB

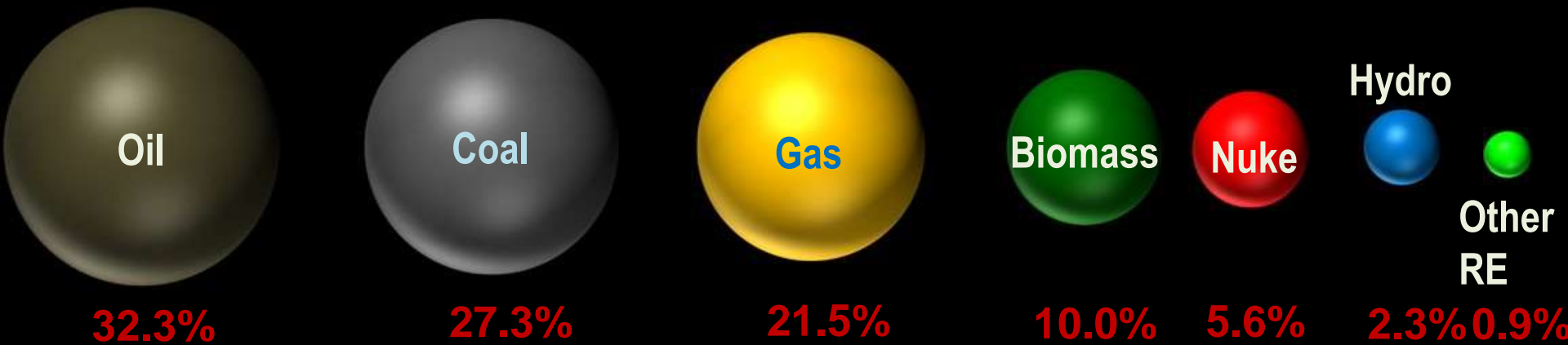
Regional Energy Trade Workshop
8-9 September, 2014

Asia's share of global GDP, 1700-2050

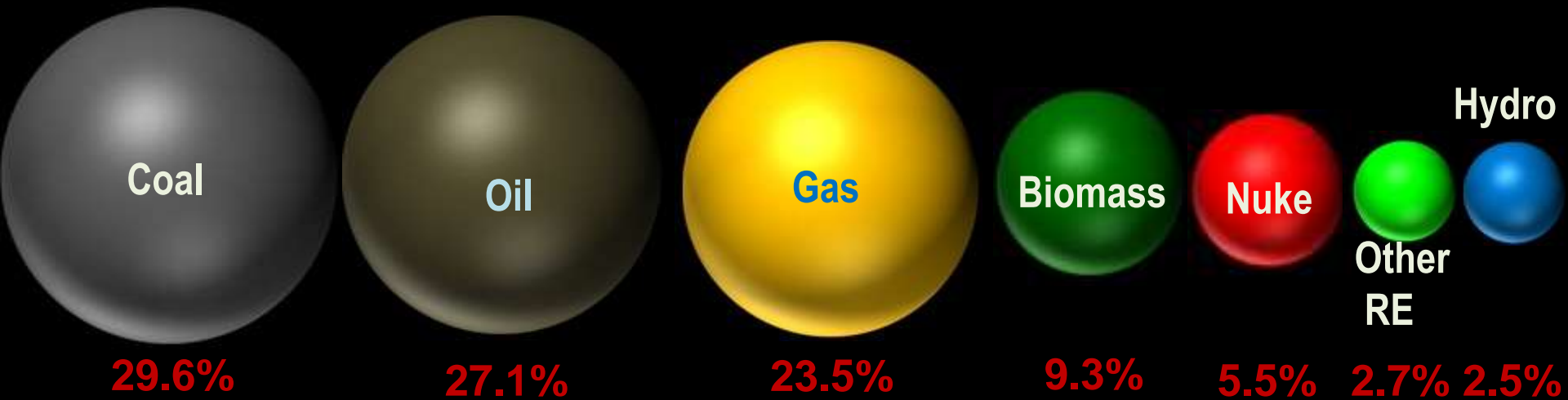


Source: Maddison (1700-1950) (2007); Centennial Group International estimates (1951-2050) (2011). Data for 1750-1790 are PPP and data for 1991-2050 are in market prices.

Today (2010): 12,730 MTOE

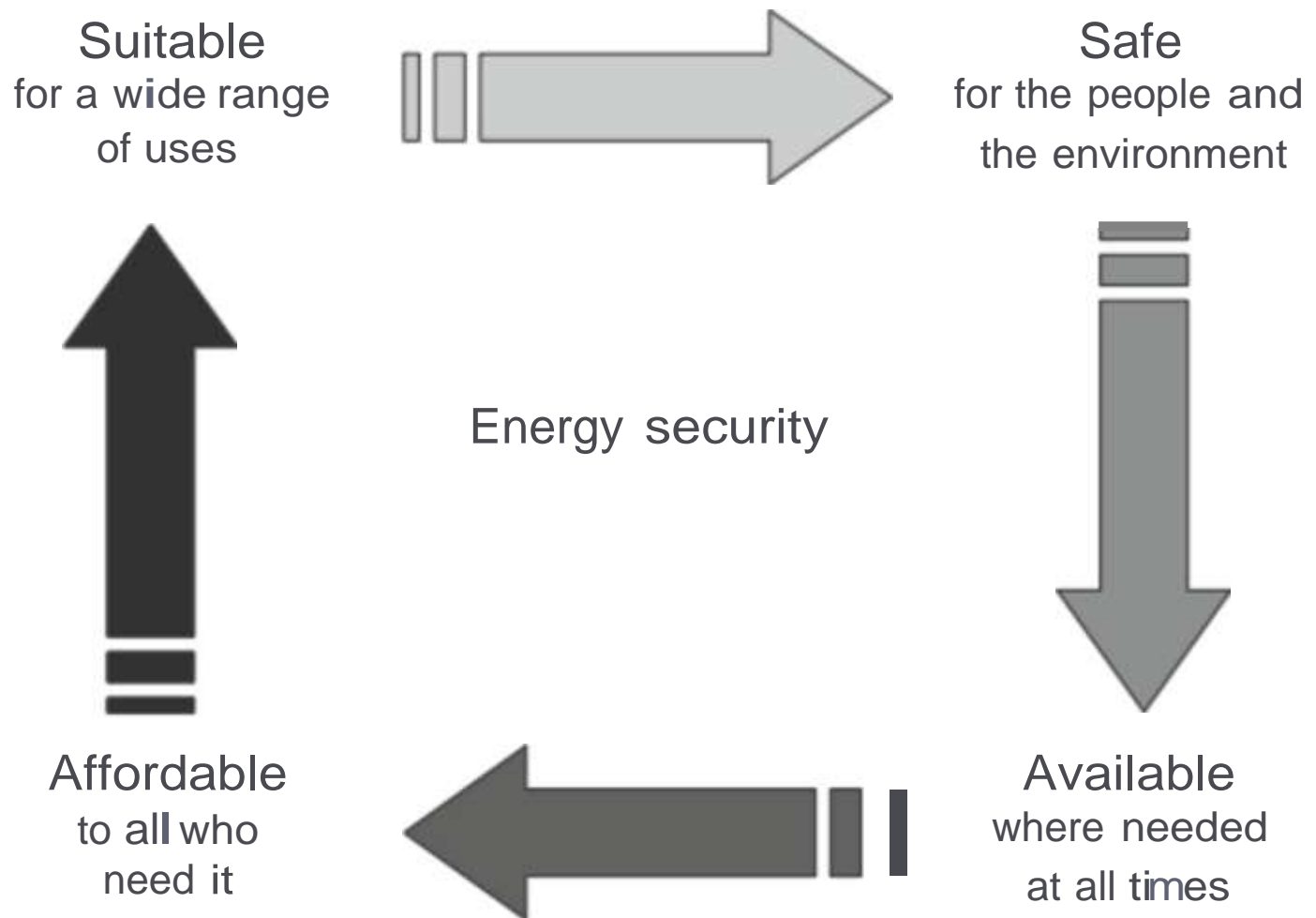


2035: 18,677 MTOE



Source: IEA, 2013

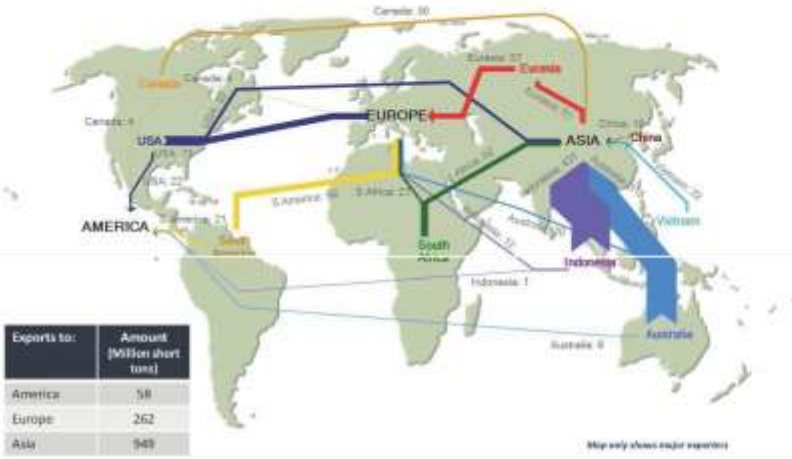
Energy Security Factors



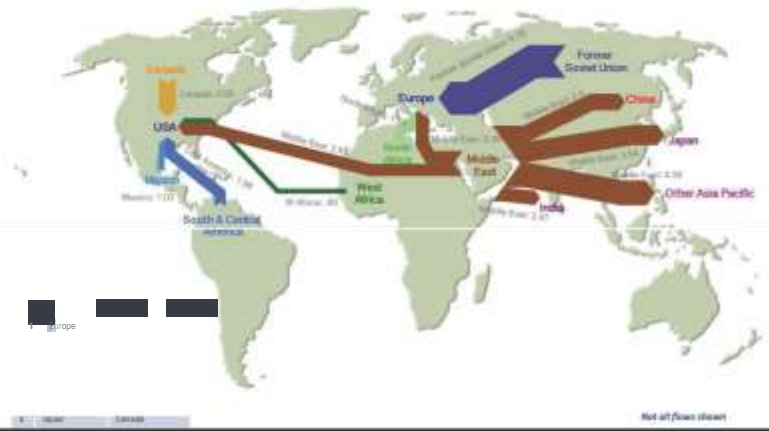
Source: Adapted from ADB (2010).

Major Fossil Fuel Trade Worldwide

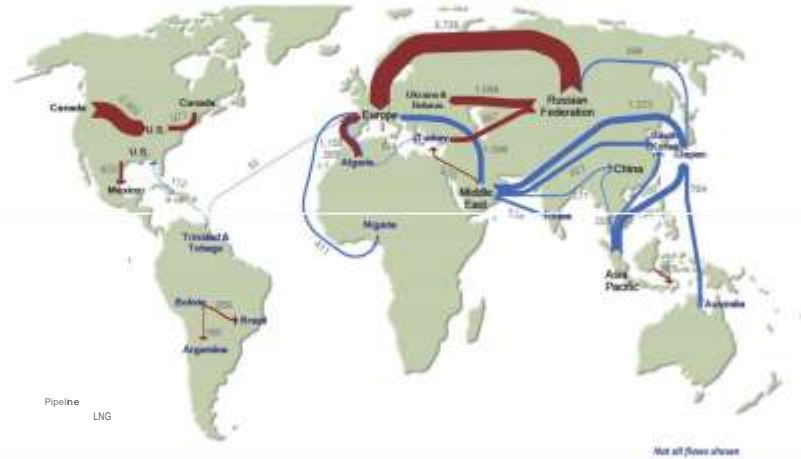
Top Coal Exports to America, Asia, and Europe
Year 2012 in Millions of Short Tons



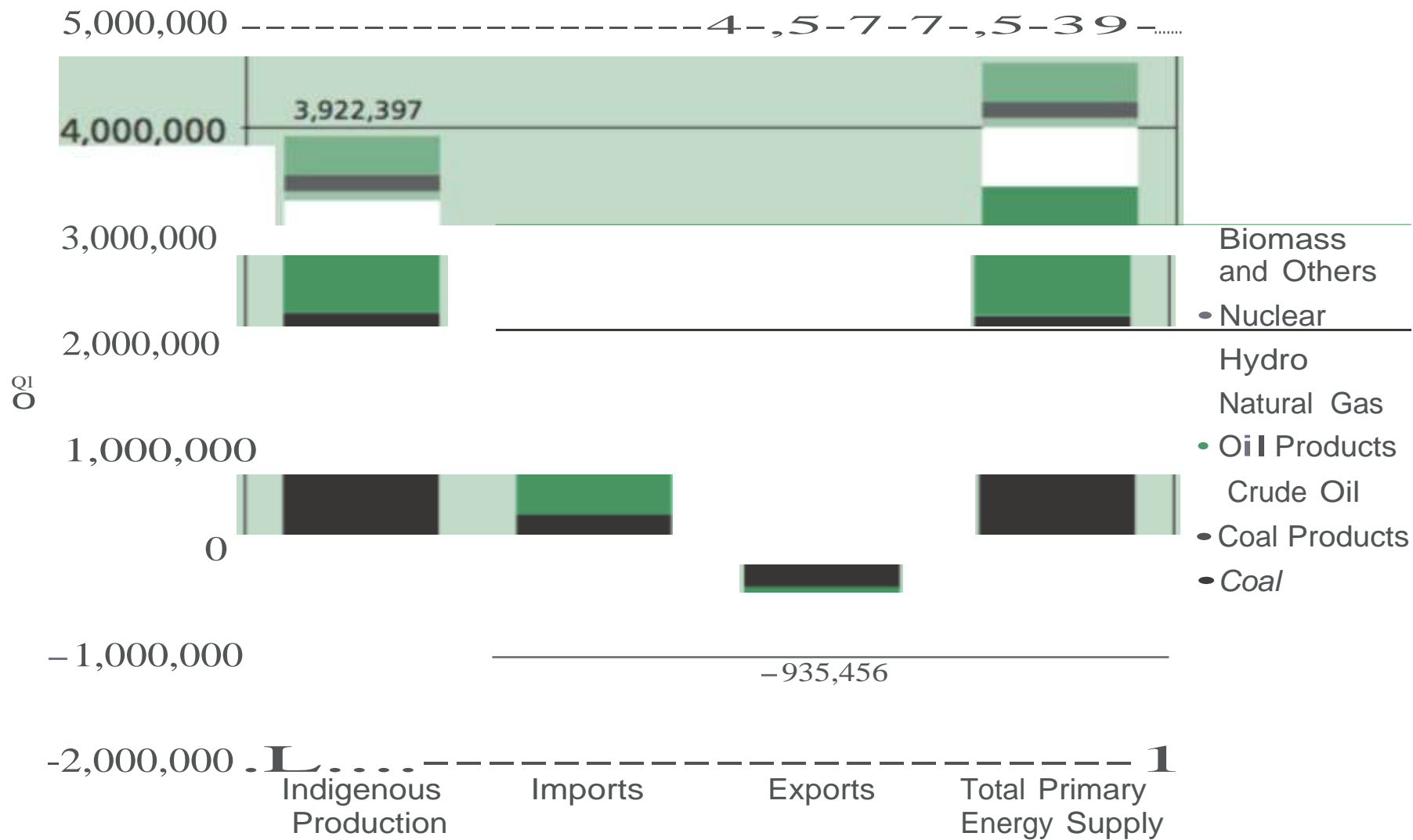
Largest International Oil Market Flows
Year 2012 in Million Barrels per day



Largest International Natural Gas Market Flows
Year 2012 in Billion Cubic Feet

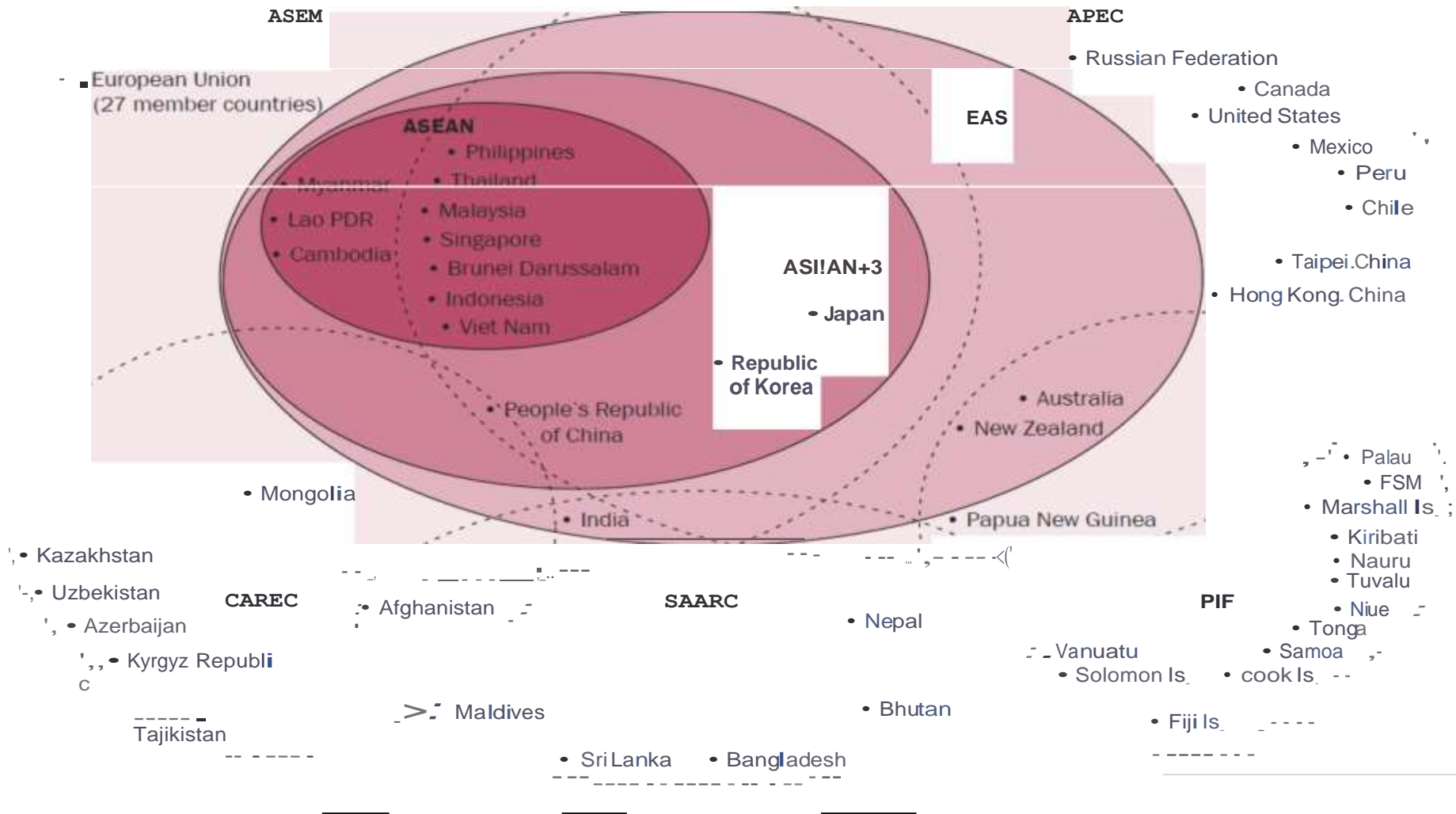


Asian Energy Demand and Supply in 2009



ktoe – thousand tons of oil equivalent

Sources: ADB (unpublished), APERC (APEC Energy Database). EA (2011b). Lao PDR Ministry of Energy and Mines (unpublished). and JNSD (2011a).



APEC = Asia-Pacific Economic Cooperation; ASEAN = Association of Southeast Asian Nations; ASEAN+3 = ASEAN plus three countries, as shown; ASEM = Asia-Europe Meeting; CAREC = Central Asia Regional Economic Cooperation; EAS = East Asia Summit; FSM = Federated States of Micronesia; Lao PDR = Lao People's Democratic Republic; PIF = Pacific Islands Forum; SAARC = South Asian Association for Regional Cooperation.

Notes:
 ASEM includes also the European Commission as a member.

For CAREC, the People's Republic of China's membership is focused on the Xinjiang Uygur Autonomous Region.

Source: Asian Development Bank.

Asia's Energy Related Regional Integration

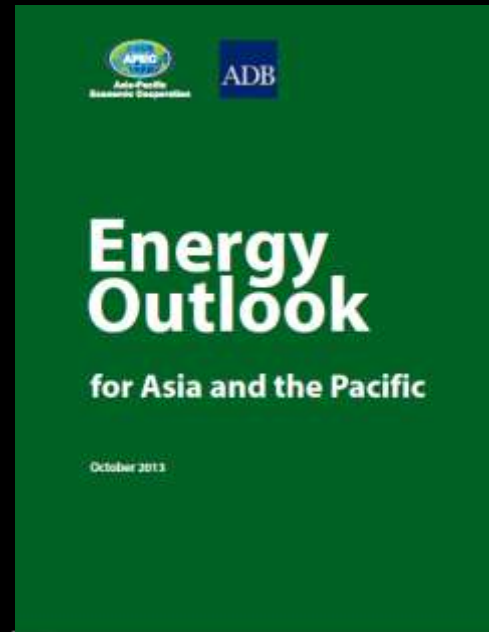
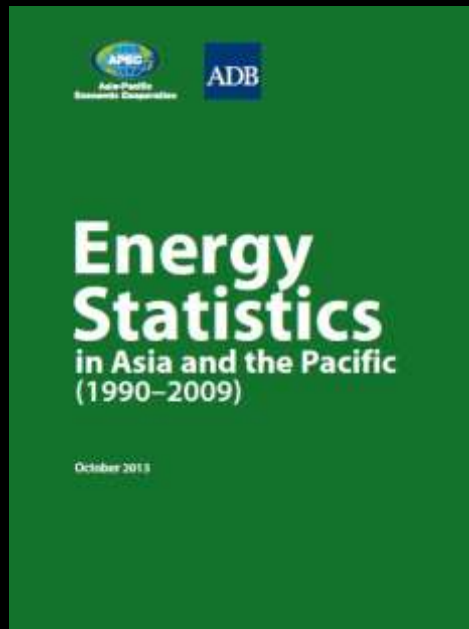
§ □ **Progress of integration:** How far has Asia come?

§ □ **Need for institution building:** What are the gaps?

§ □ **Regional comparisons:** What lessons from other regions?

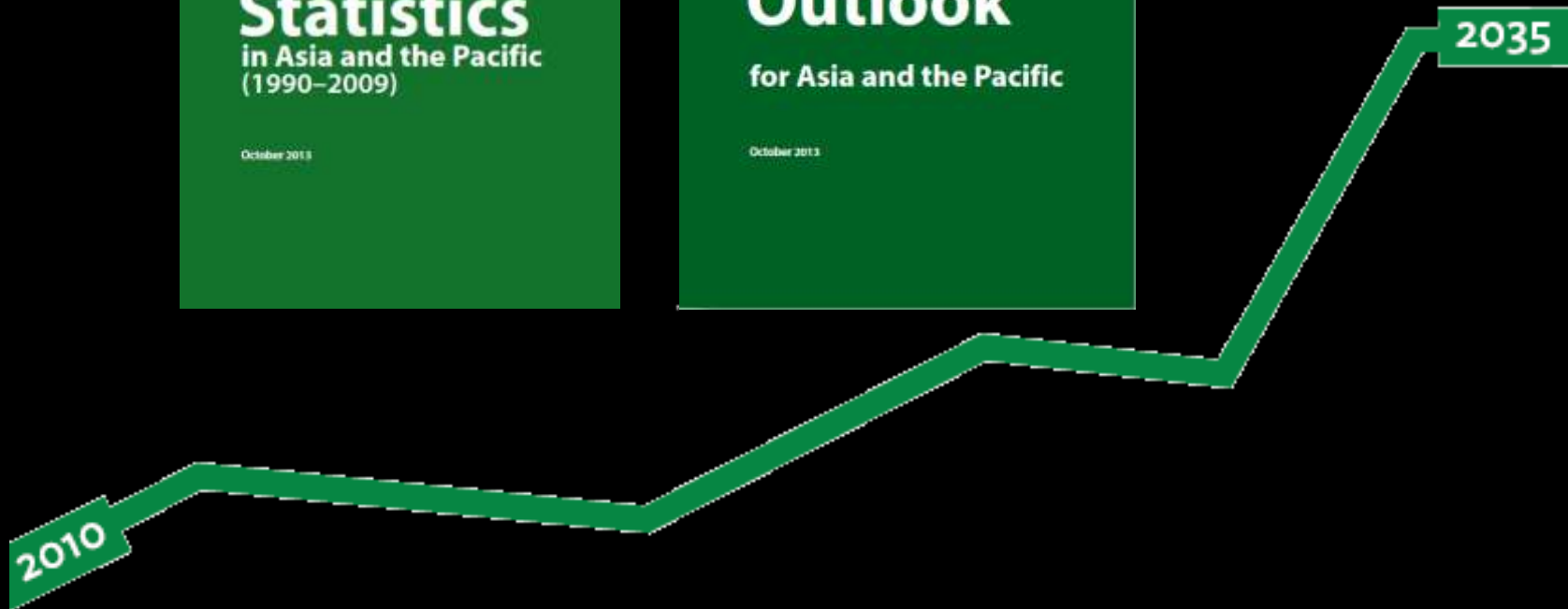
§ □ **The way forward:** What institutional architecture suits Asia? And how to move from goals to strategies?

Energy Outlook for Asia and the Pacific



2010

2035



Coverage of the Outlook

§ Time Frame: 2010–2035

§ Geographic Coverage:

- **Developing Asia**

- Central and West Asia
- East Asia
- Pacific
- South Asia
- Southeast Asia

- **Developed Group:** (Australia; Japan; and New Zealand)

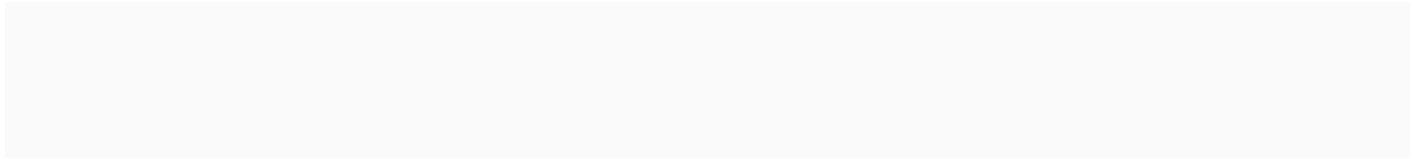
■ **Main Content:**

1. Energy supply and demand outlook
2. Electricity outlook
3. CO₂ emissions outlook
4. Energy investment outlook
5. Policy implications

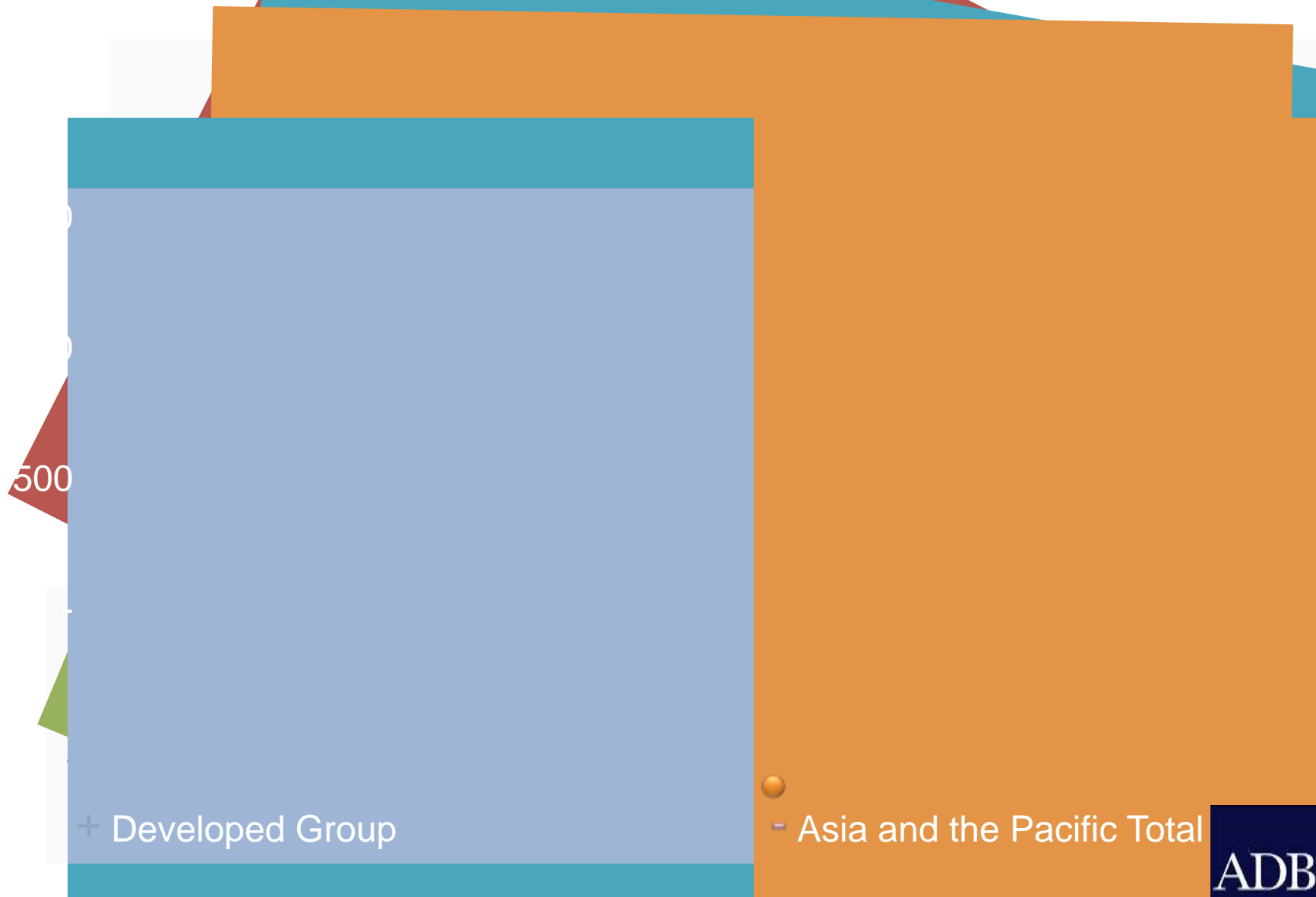
Key Findings

Primary Energy Growth at 2.1%/yr (2010-2035)

Fossil fuels still supply the majority



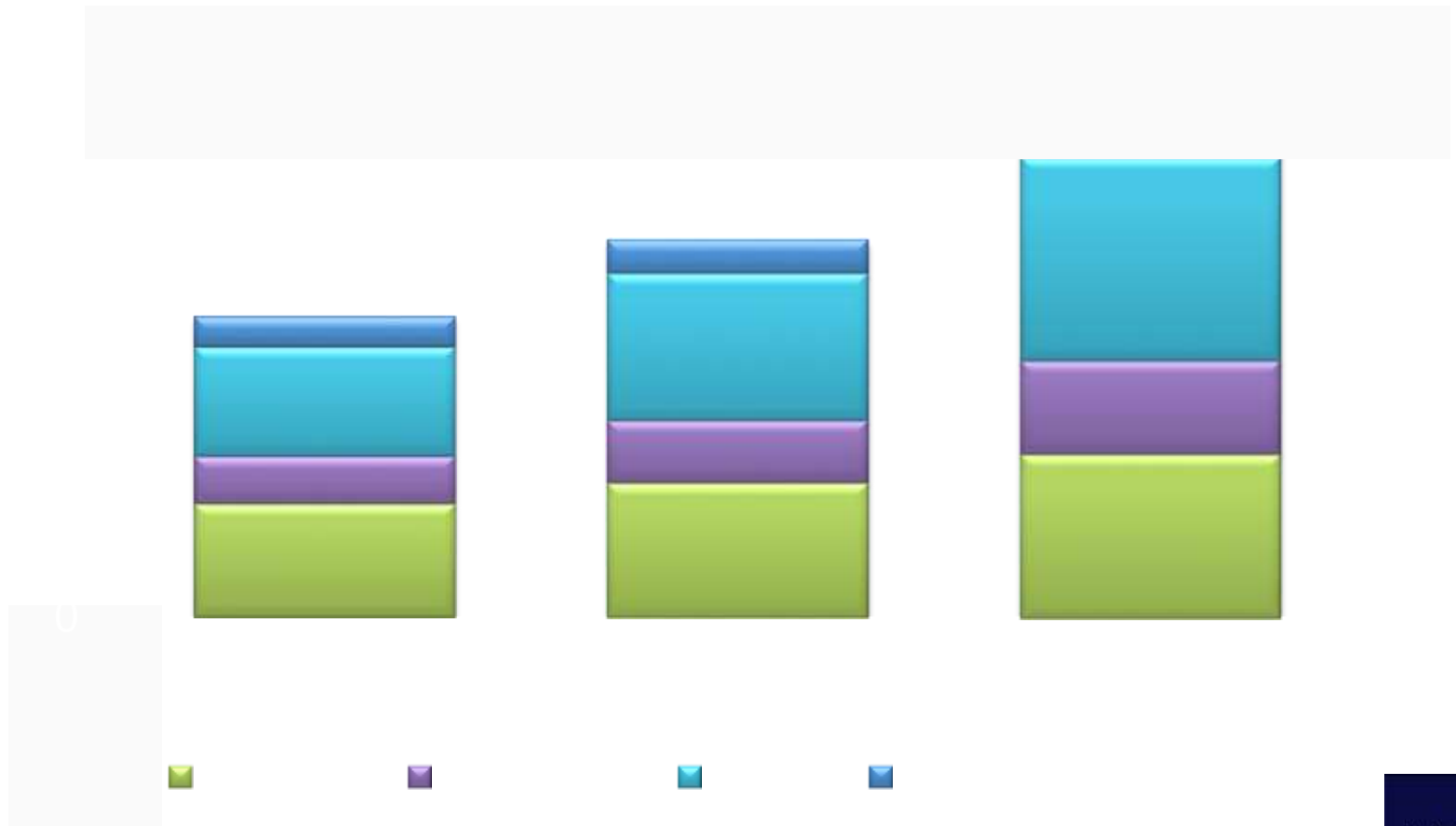
Energy Intensity Improvement Over Time



Increasing Energy Demand

Projection: Final energy demand increase at 2.1% /yr

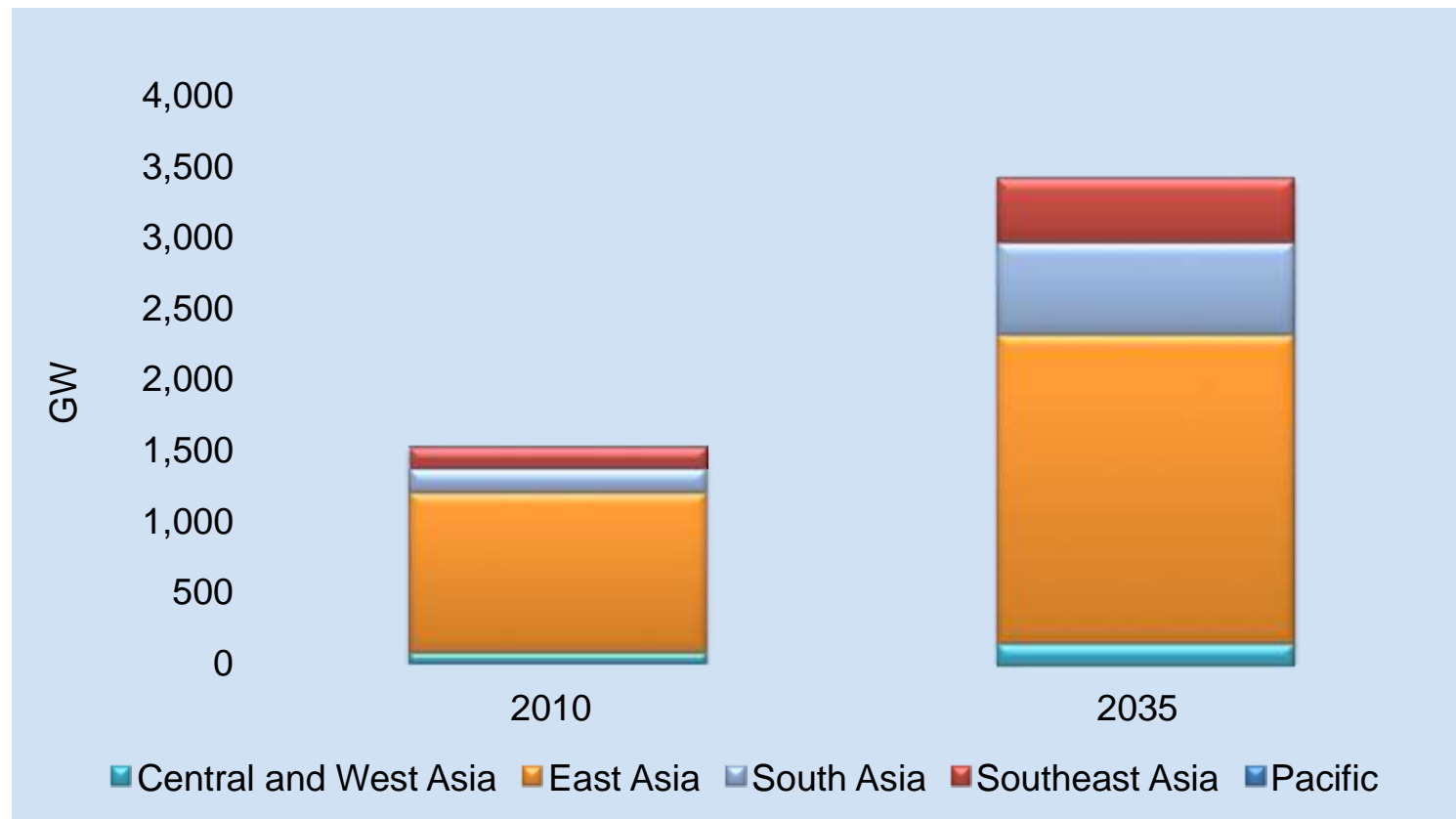
- 2010: 3,238.5 Mtoe ;
- 2035: 5,400.9 Mtoe;



Generation Capacity: Doubled btw 2010 & 2035

Installed Generating Capacity

- 2010: 1,869 GW
- 2035: 3,828 GW

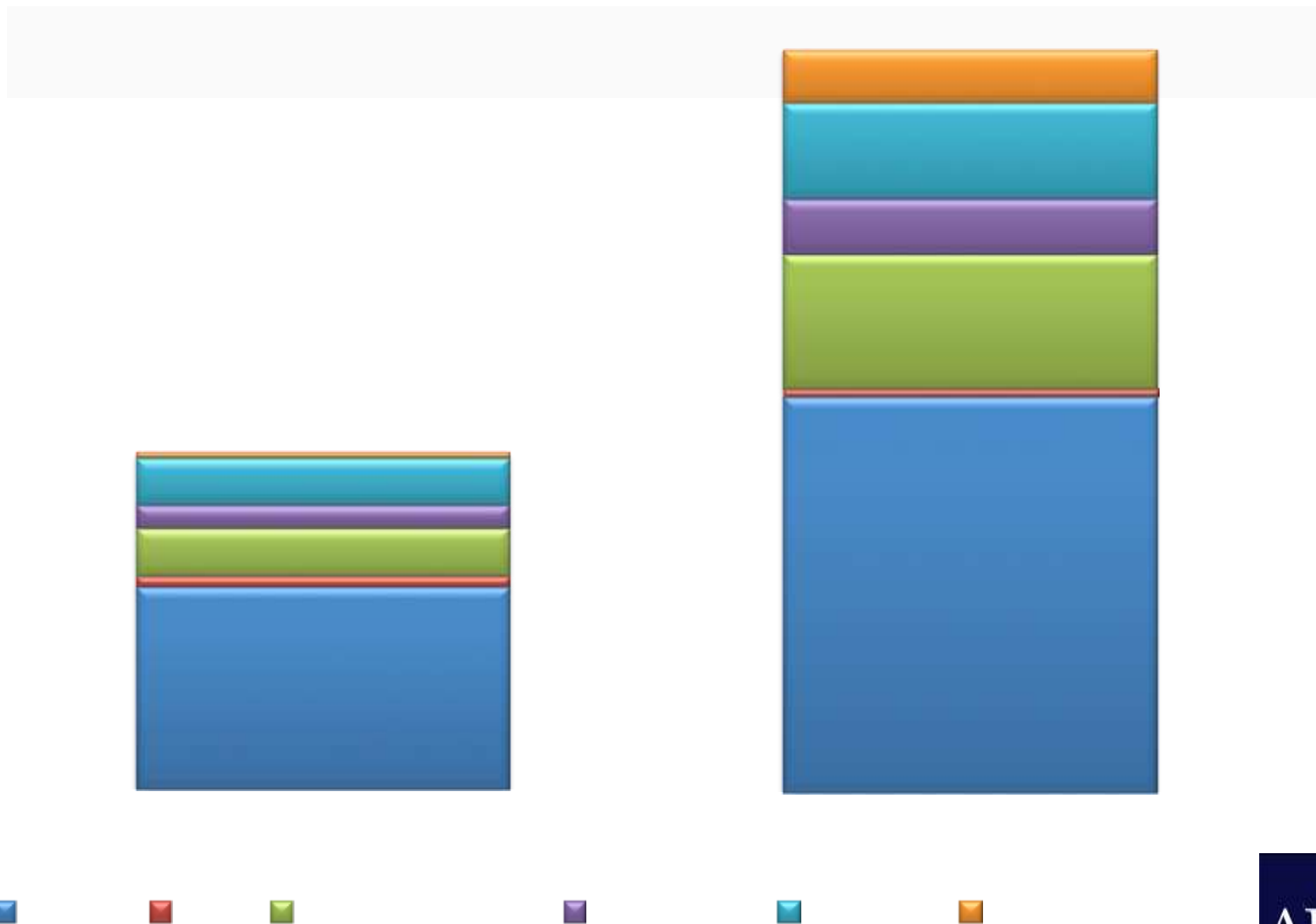


Electricity

- 2010: 7,010 TWh;
- 2035: 16,169 TWh;



Fossil Fuels Still Dominates Electricity Mix



CO₂ Emission (2010-2035)

2010: 13,404.0 million tons

2020: 16,184.8 million tons

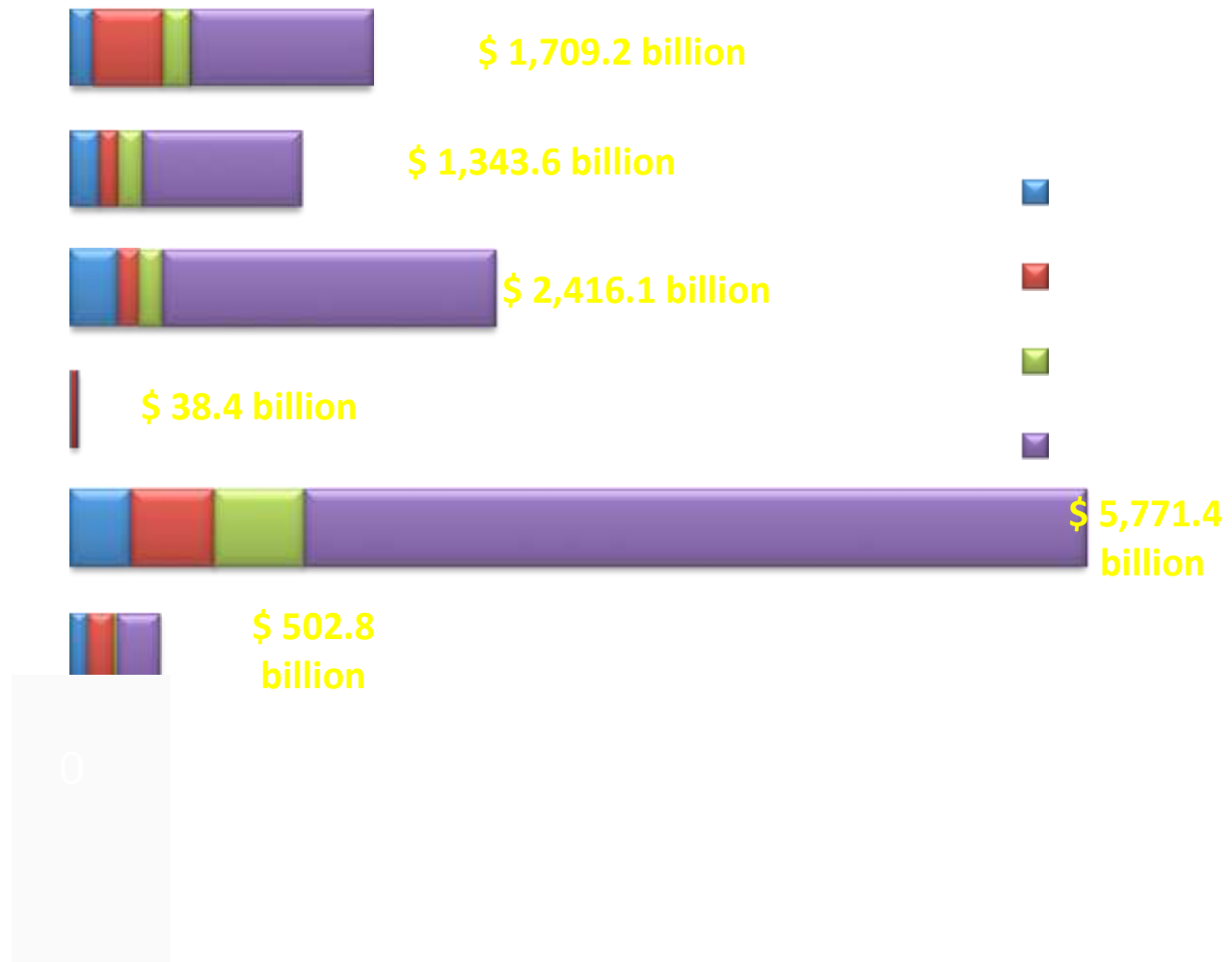
2035: 22,112.6 million tons

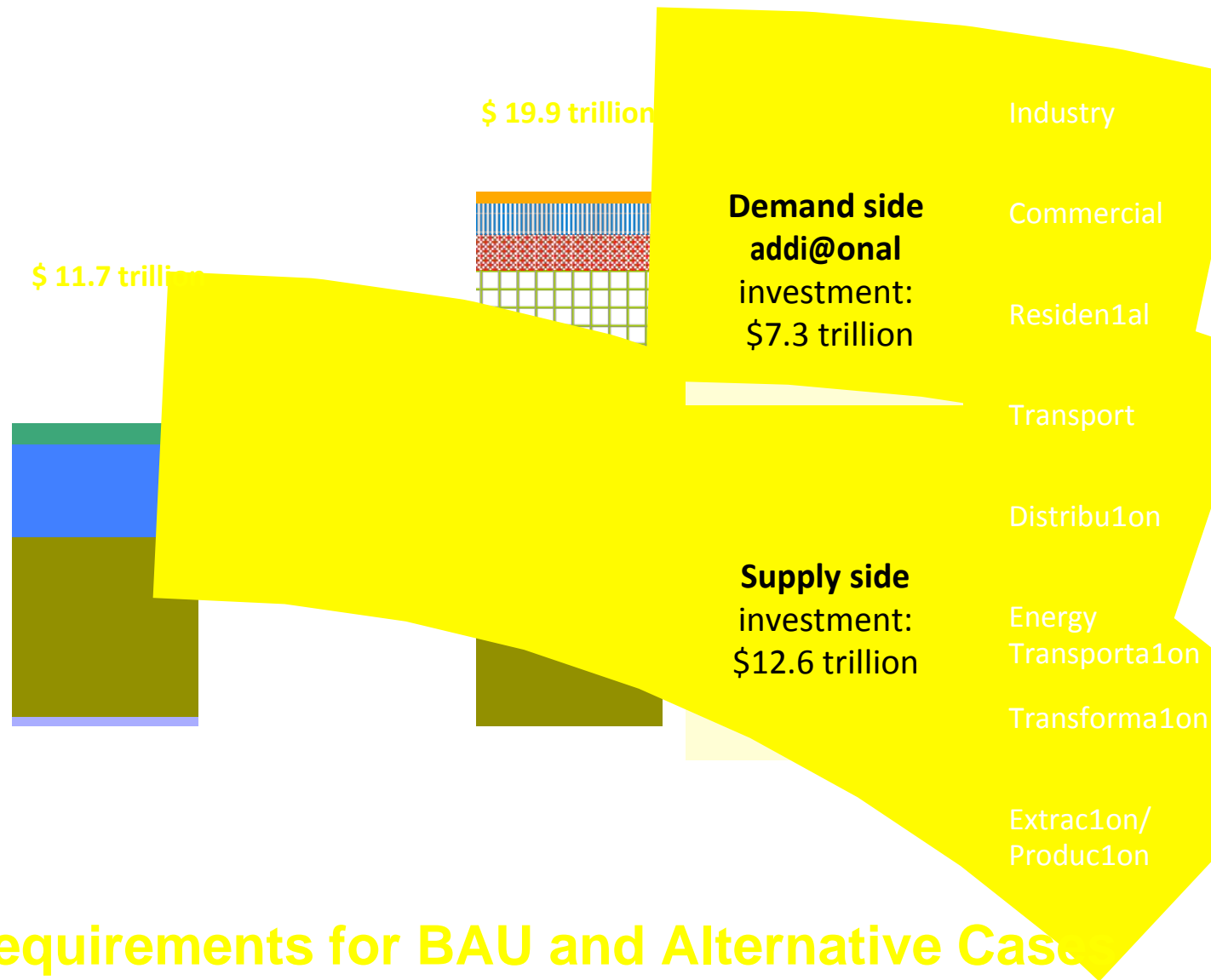
Average growth rate = 2.0%



Projected Investment in Energy Sector by 2035

- **Cumulative investments by 2035 :**
- **More investment in developing members**



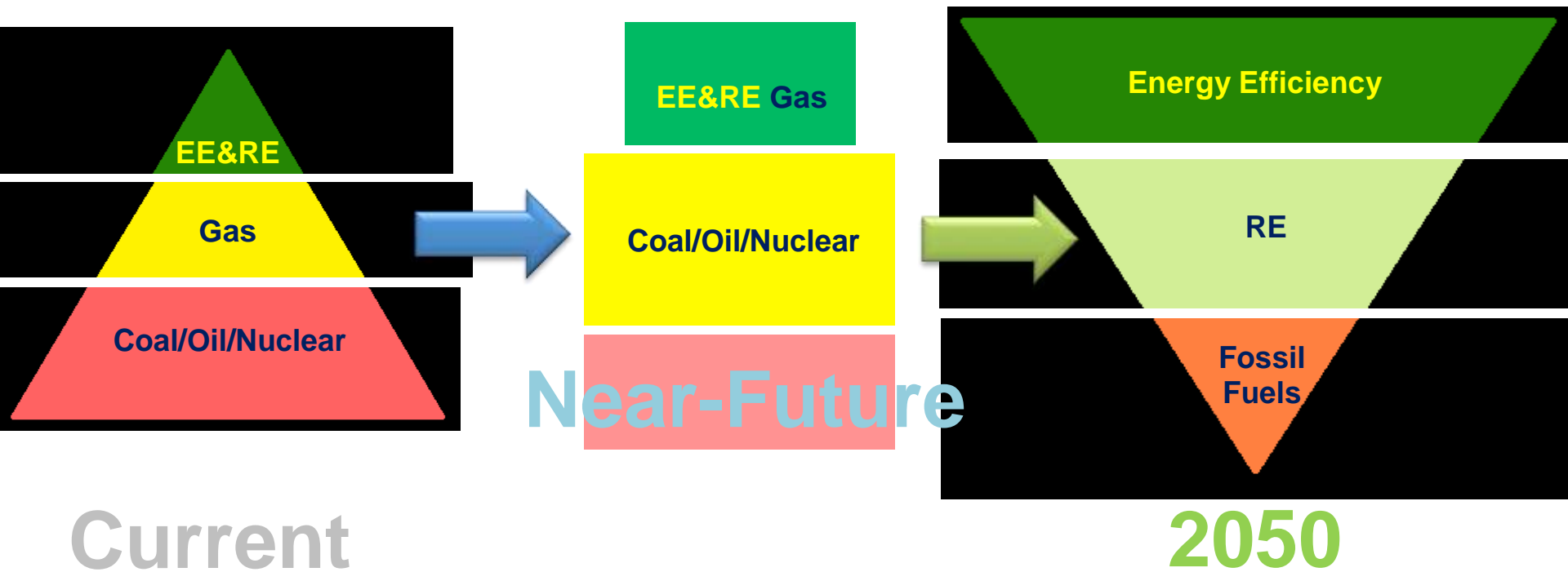


Investment requirements for BAU and Alternative Case

Policy Implications

1. Energy Security: continue rely upon imported fossil fuel, such as oil and gas
2. Demand for coal will grow by 50% for economic and technical needs but at slower pace due to EE and RE development in PRC
3. Demand side energy efficiency is very important
4. Rehabilitate and/or phase out aging, unreliable, and low efficiency power plants
5. Regional cooperation is needed
6. Large amounts of investments for EE/RE is required

Market Transformation: Unlock Asia's Clean Energy Future



For More Details Please Read the Reports

