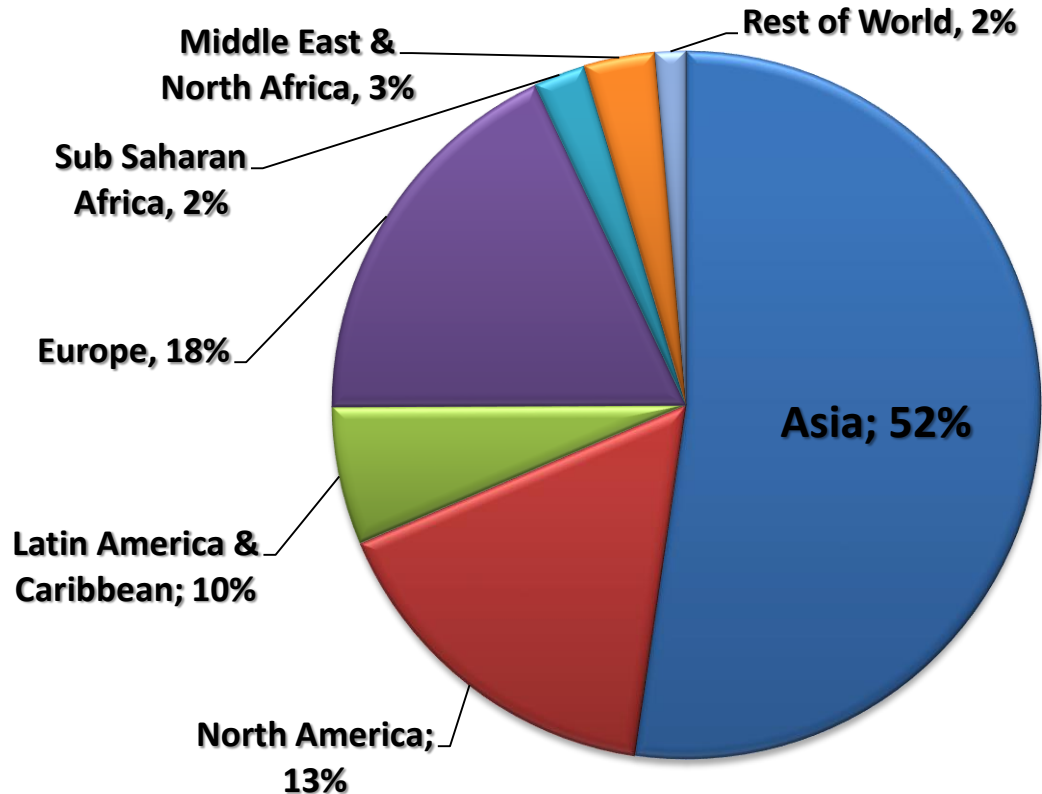


Asia's Energy Challenge: Key Issues and Policy Options

**Revisiting the Role of Coal:
Competitiveness, Climate and Security**
Center for Strategic and International Studies
17 December 2014

S. Samuel Tumiwa
Deputy Representative
North America Representative Office

The Asian Century



Asian GDP: \$174 trillion

Asian GDP per capita: \$40,800

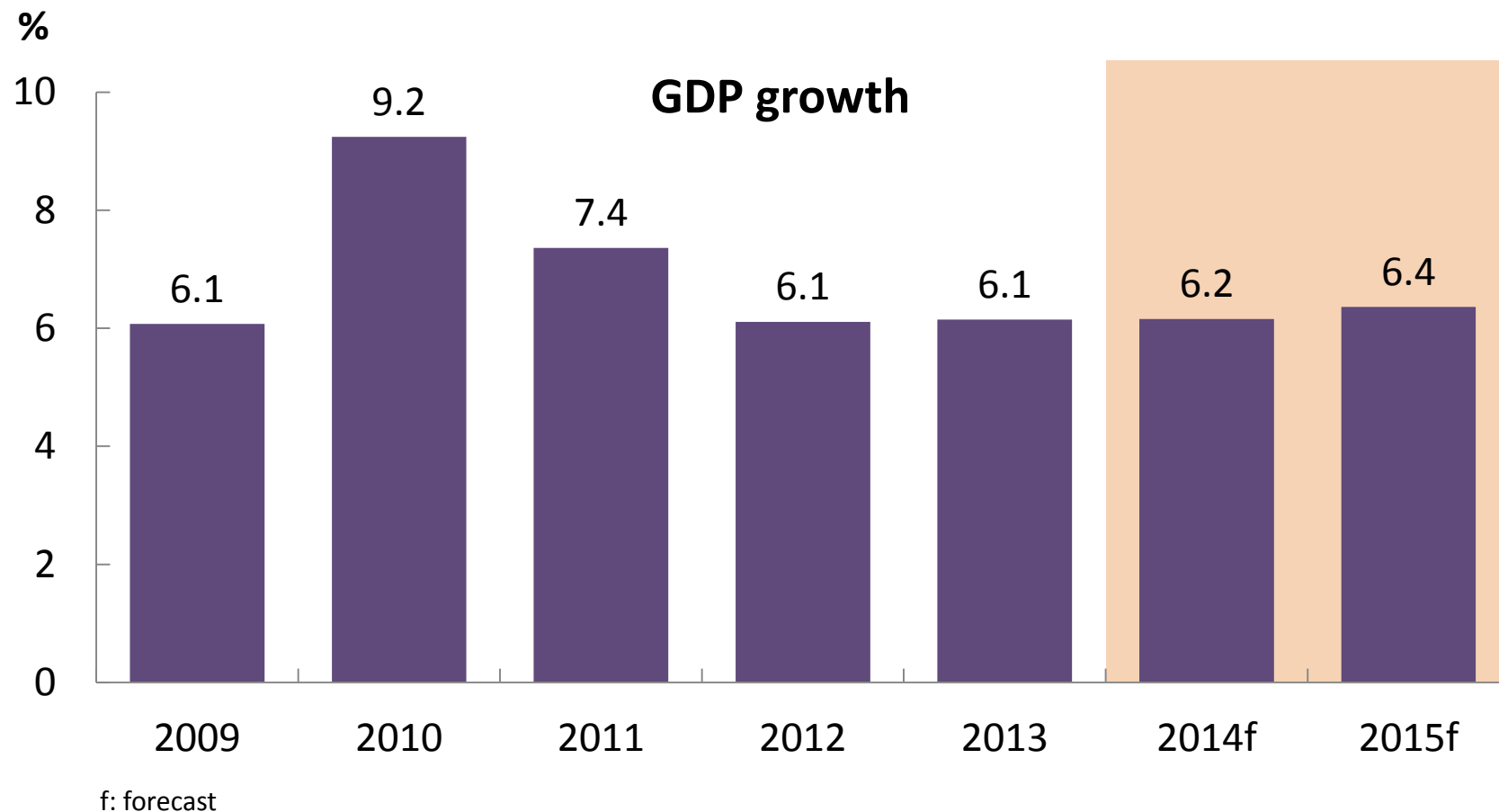
Must Address

- **Inequality**
- **“Middle Income Trap**
- **Competition for Resources**
- **Income Disparity Across Countries**
- **Climate Change**
- **Weak Governance and Institutional Capacity**

**India, Indonesia, Japan, Malaysia, PRC, Republic of Korea, and Thailand
90% of Asia’s growth between 2010 and 2050**

ADO Update October 2014

Developing Asia keeps growth momentum...



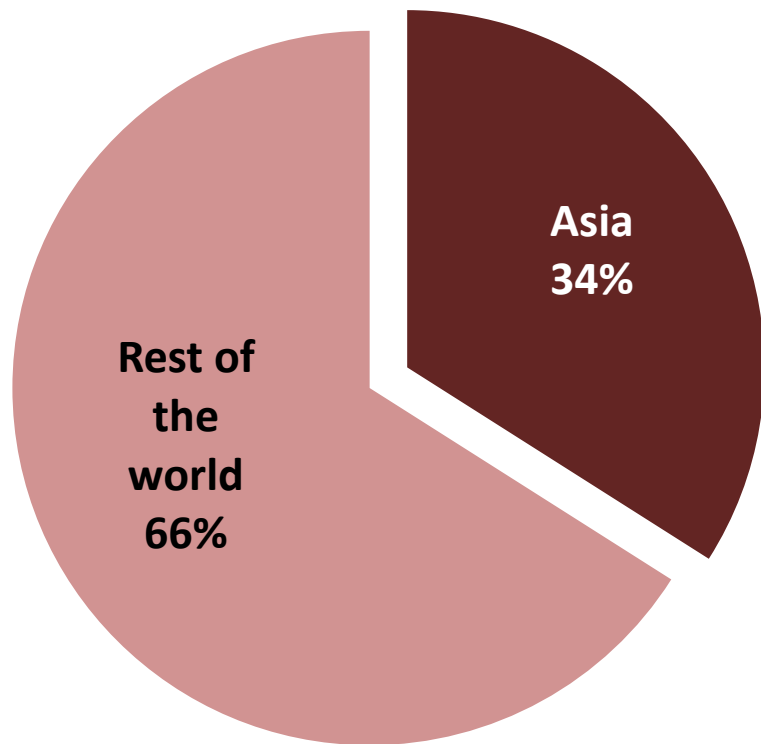
...despite slippage in advanced economies' performance

GDP growth (%)	2012	2013	2014f	2015f
Major industrial economies	1.1	1.2	1.5	2.1
United States	2.3	2.2	2.1	3.0
Euro area	-0.7	-0.4	0.8	1.0
Japan	1.5	1.5	1.0	1.4

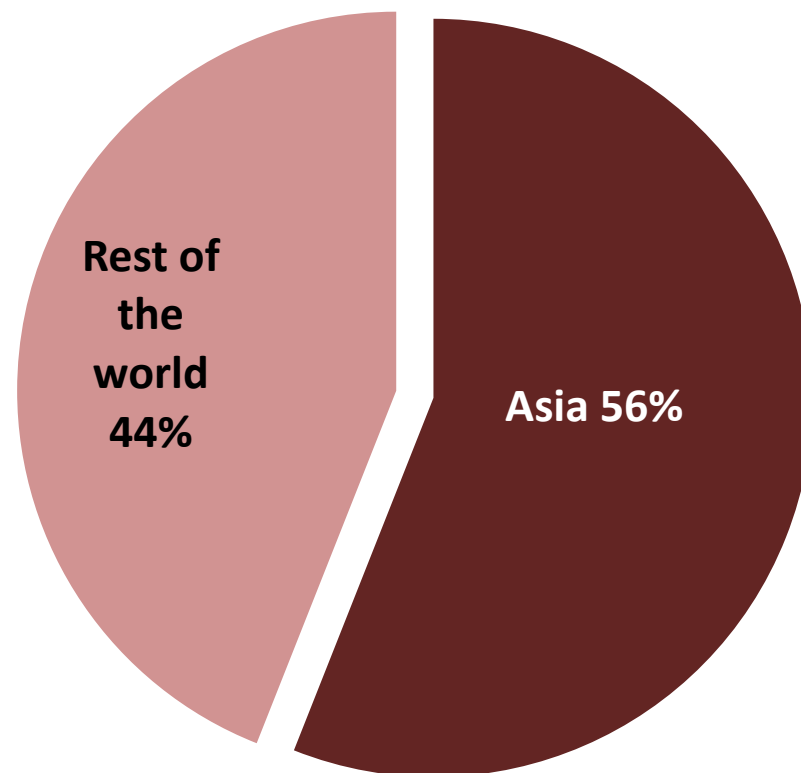
f: forecast

Energy needs for the Asian Century

2010

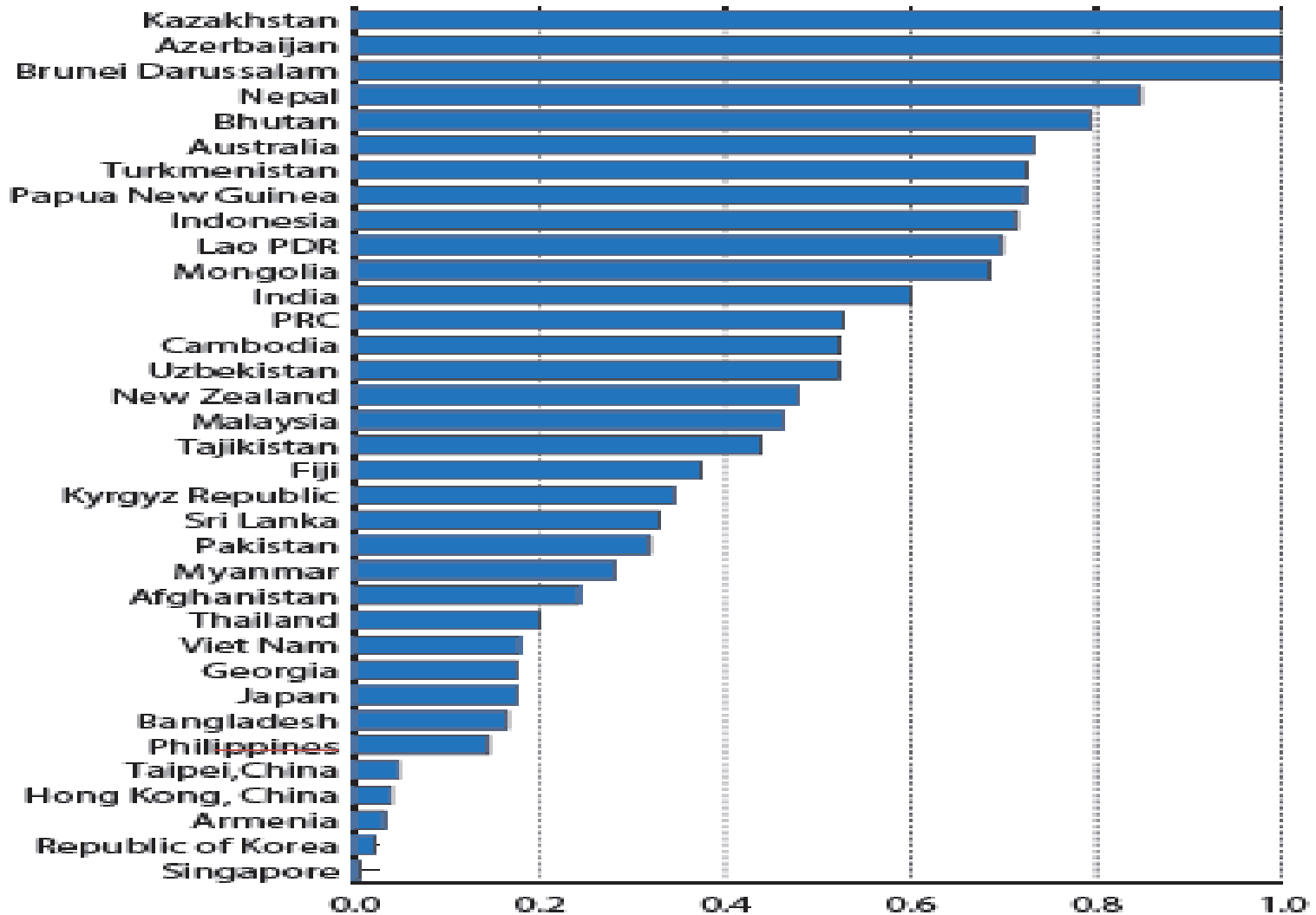


2035



⇒ *Is this energy future realistic?*

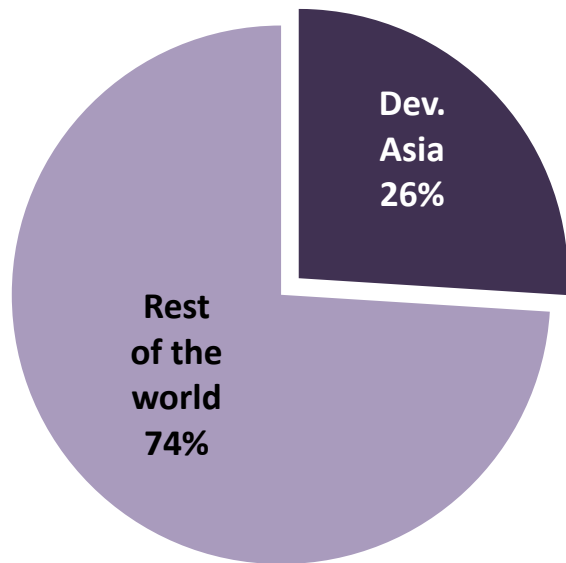
Projected energy self-sufficiency index, 2035



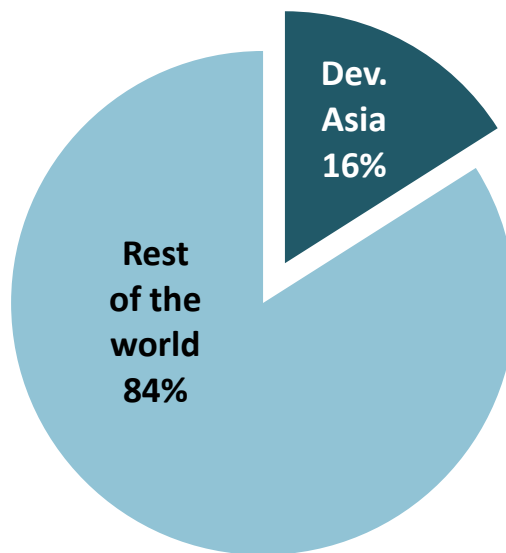
Only 3 economies in Asia will be energy self-sufficient by 2035

“Asia’s Energy Endowment - not Enough”

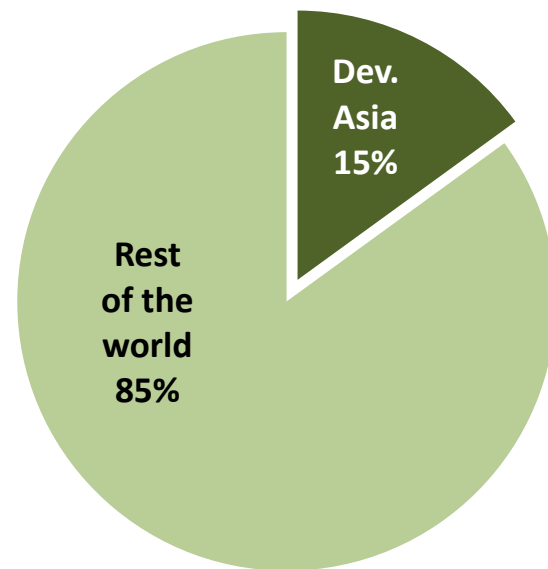
Proven reserves of coal, 2011



Conventional natural gas reserves

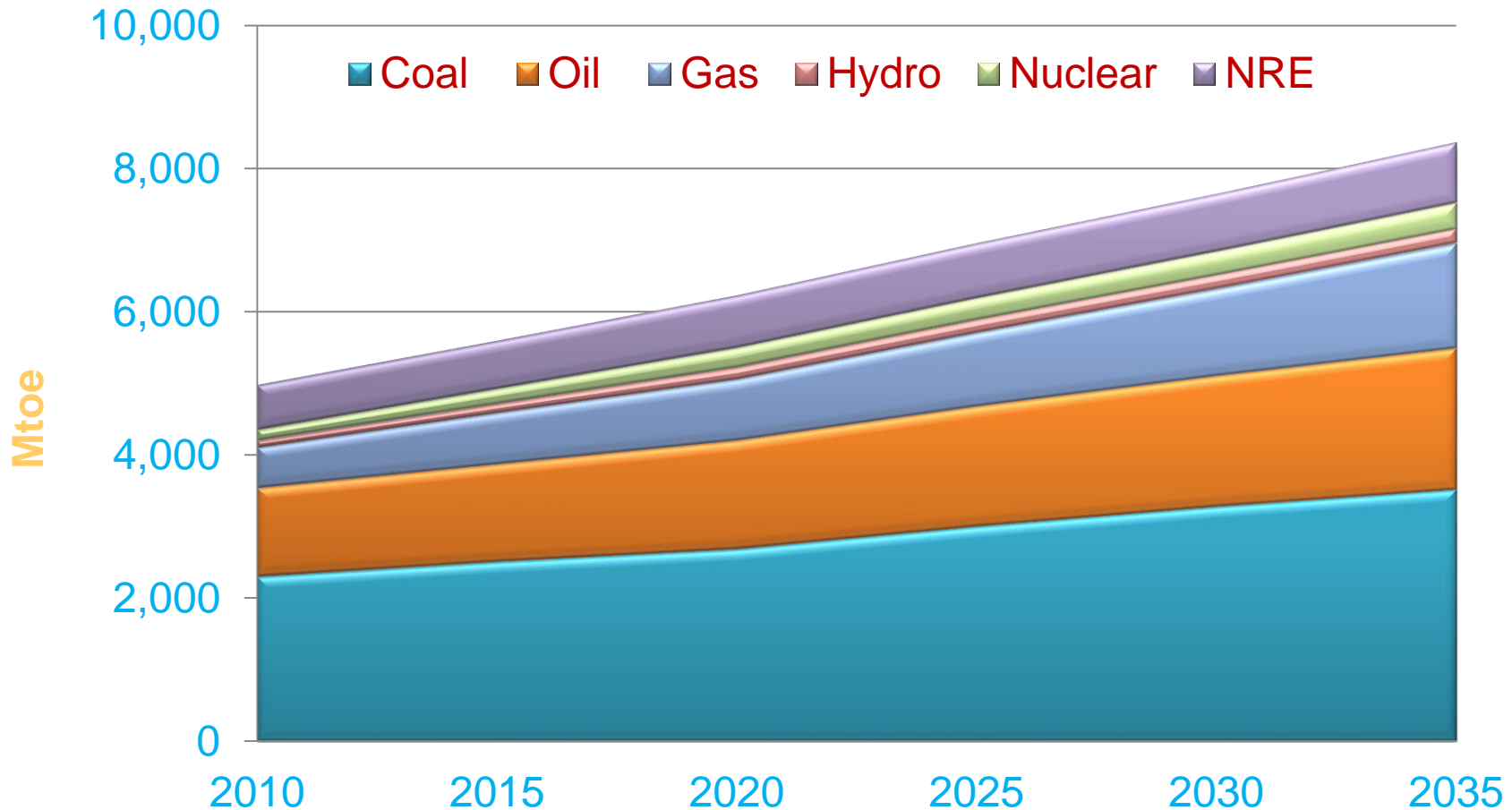


Technically recoverable oil and natural gas liquids



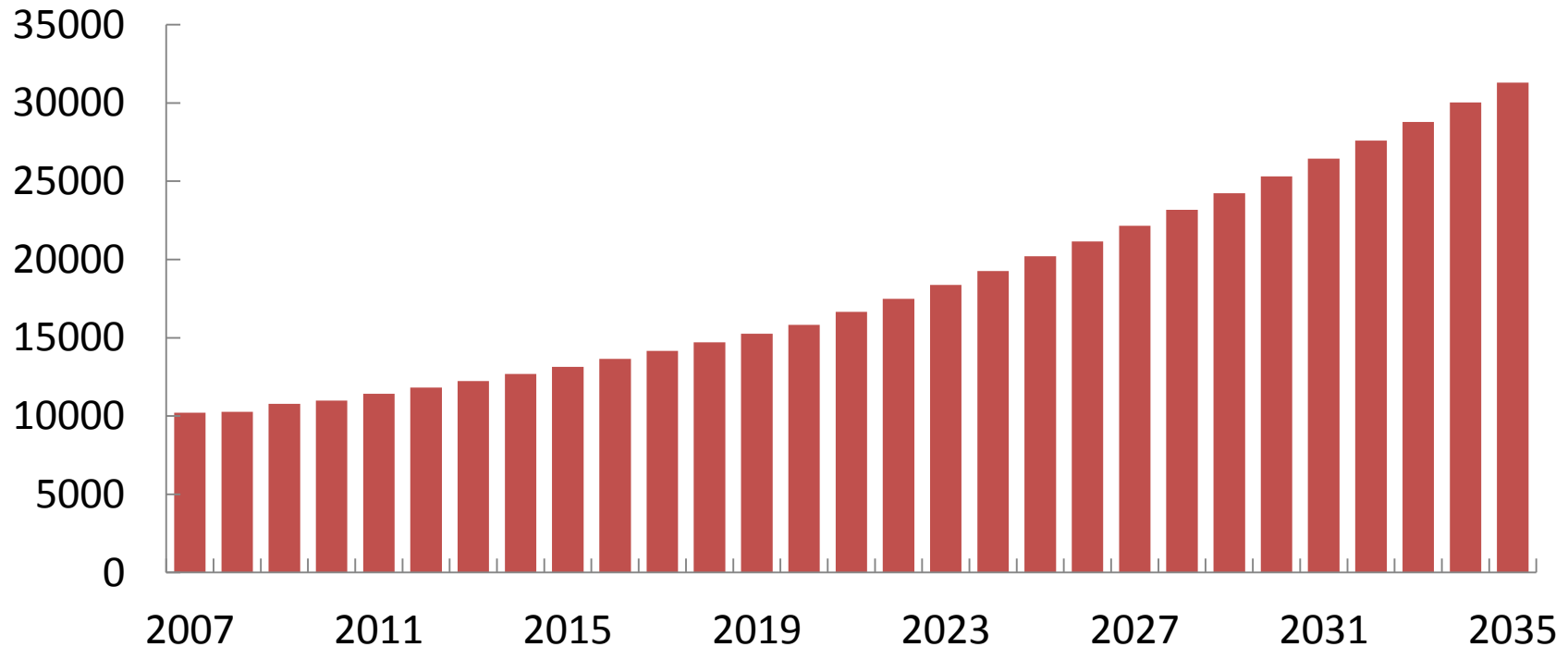
Fossil Fuels - Continue to Dominate

Primary Energy Demand in the Asia-Pacific



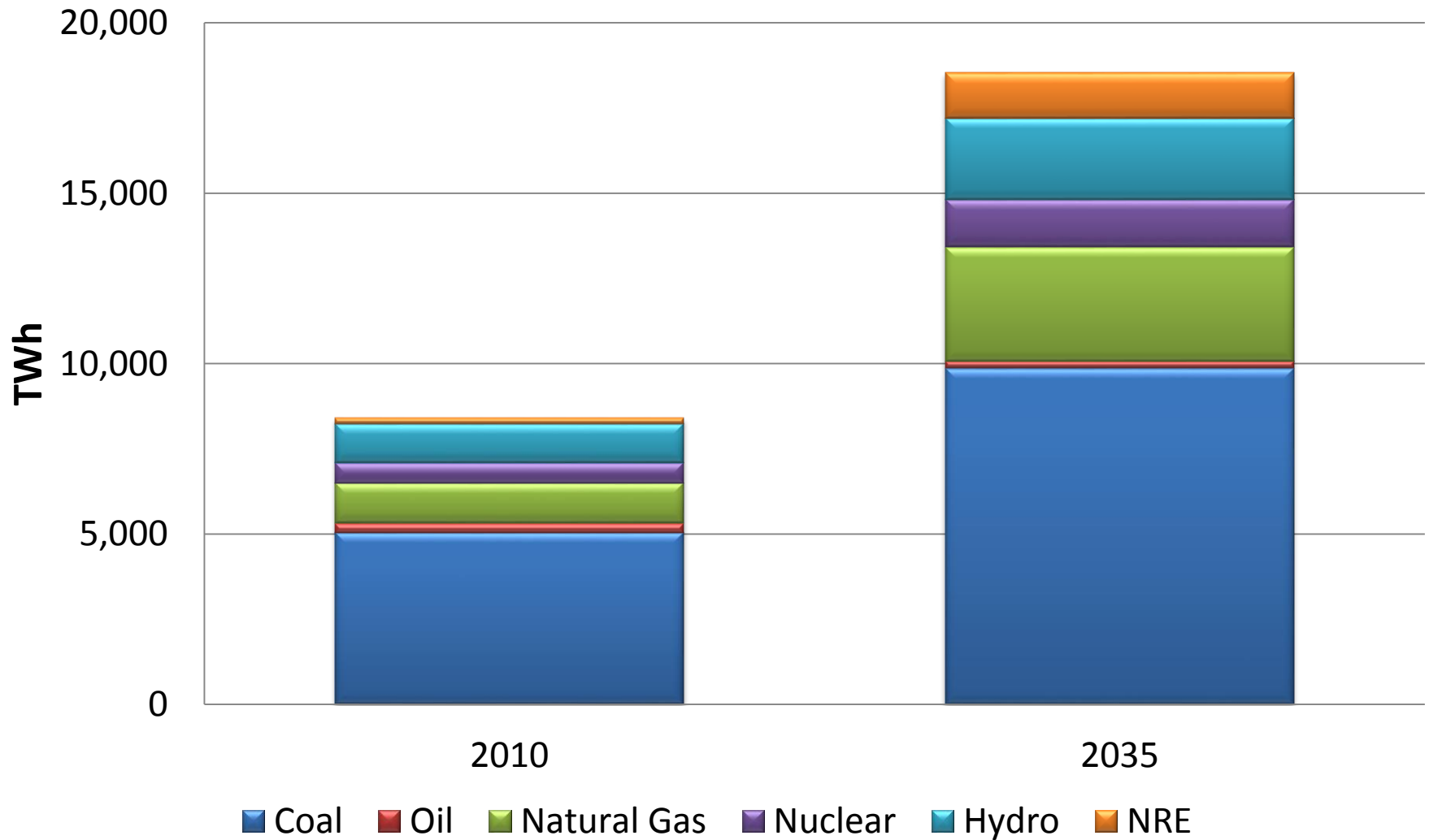
Oil imports will triple by 2035

Projected oil import requirements
(thousands of barrels per day)

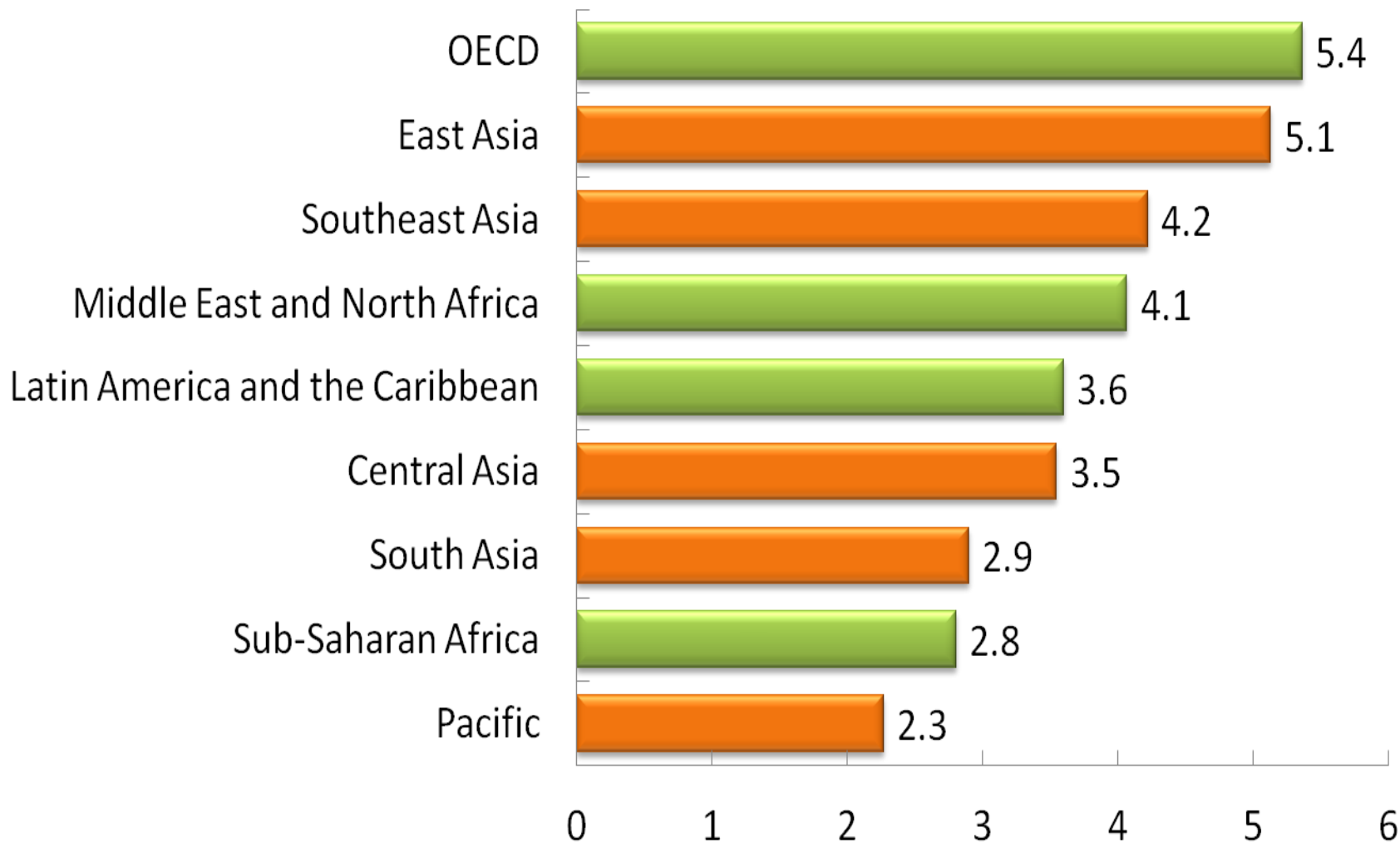


⇒ ***Reliance on Middle East suppliers will increase***

Fossil Fuels Still Dominates Electricity Mix



Asia's infrastructure scores*



Source: Global Competitiveness Report 2012-2013
*1 = extremely underdeveloped to 7= extensive and efficient

Asia's Infrastructure Gap

People without Access to:

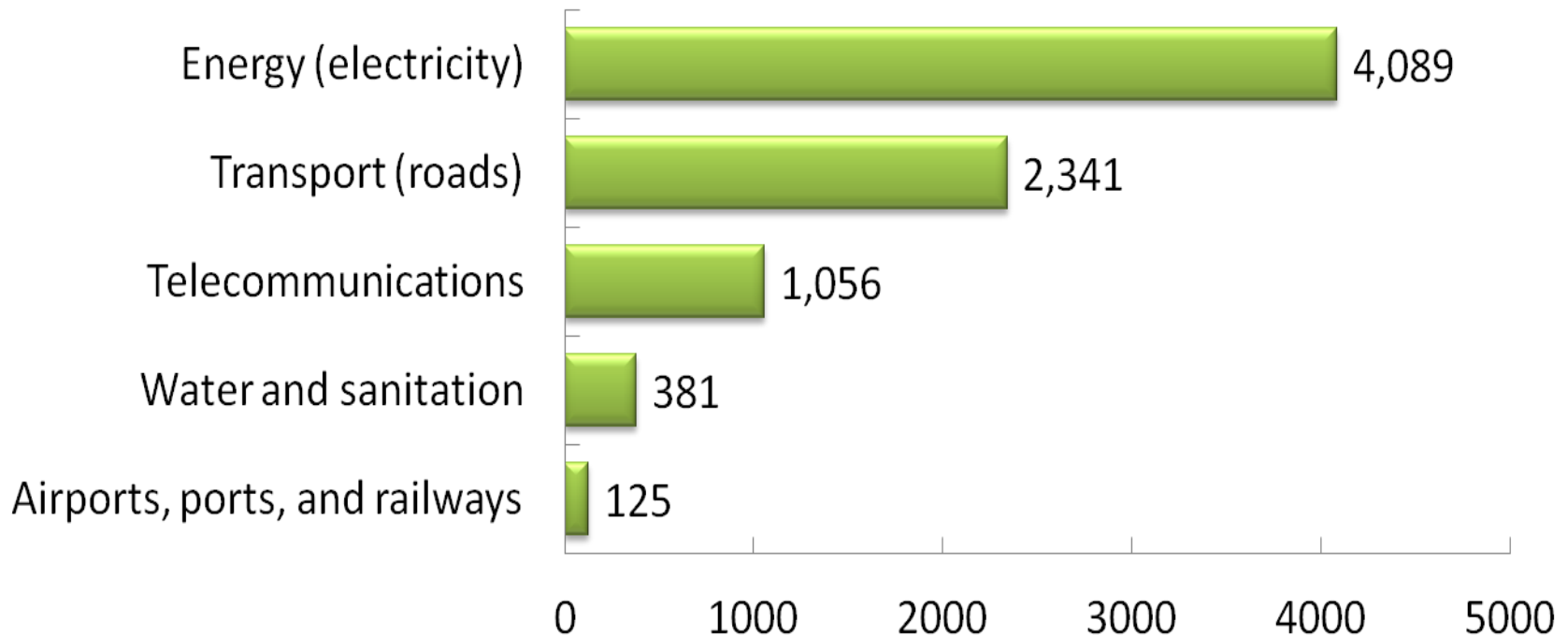
Water and Sanitation	900 million people
Electricity	800 million people
Roads	1.2 billion people
Internet	80% of Asia

Source: Various reports compiled by ADB

Asia's financing requirements are huge

Asia's infrastructure needs, 2010–2020

(in 2008, \$ billion)



Source: ADB, 2009. Infrastructure for a Seamless Asia. Manila

⇒ **Total of \$8.3 trillion (2010–2020) or \$750 billion/year**

Adequacy and Reliability of the Physical Energy Supply

- **Must contain burgeoning demand**
 - **Energy pricing that reflect true costs**
 - **Eliminating consumer subsidies**
 - **Taxing GHG emissions**
 - **Gains from Green Innovation**
 - **Smart cities that save energy**
 - **Clean, green, transportation**
 - **Switch from electricity to gas**
 - **Awareness and conservations programs**

Environmental Sustainability

- **Greater use of cleaner energy supplies**
 - **Expanding Renewables**
 - **Wind/solar/hydro/geothermal**
 - **Biofuels**
 - **Unconventional gas**
 - **Nuclear**
 - **More efficiency in coal**
- **Foster regional market collaboration**
 - **Integrating electricity and gas delivery systems**
 - **Interconnected gas systems**

Affordable Access

- **Government rural electrification programs first.**
- **If that fails, need to attract the private sector. Pro-poor public private partnerships**
 - **Select appropriate technologies**
 - **Select community participation**
 - **Emphasize maintenance and after-sales service**
 - **Couple energy service with income generating activities**
 - **Build local capacity**

The ADB logo consists of the letters 'ADB' in a white, serif font, set against a dark blue square background. The background of the entire slide is a light blue map of the world, with a semi-transparent dark blue diagonal band crossing from the top right to the bottom left.

ADB

Samuel Tumiwa
Deputy Representative
North America Representative Office

900 17th Street, N.W. Suite 900
Washington, DC 2006
202 728 1500
stumiwa@adb.org