



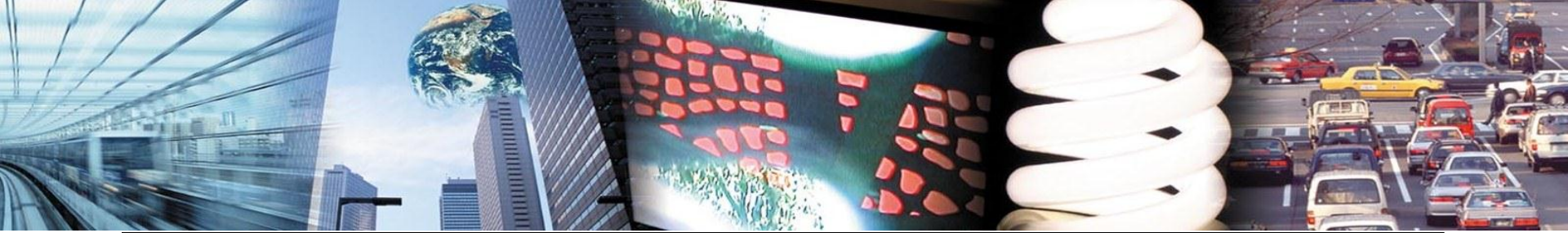
2.1-2.2 APEC Energy Demand and Supply Outlook:

Business-as-Usual and High Gas Scenarios

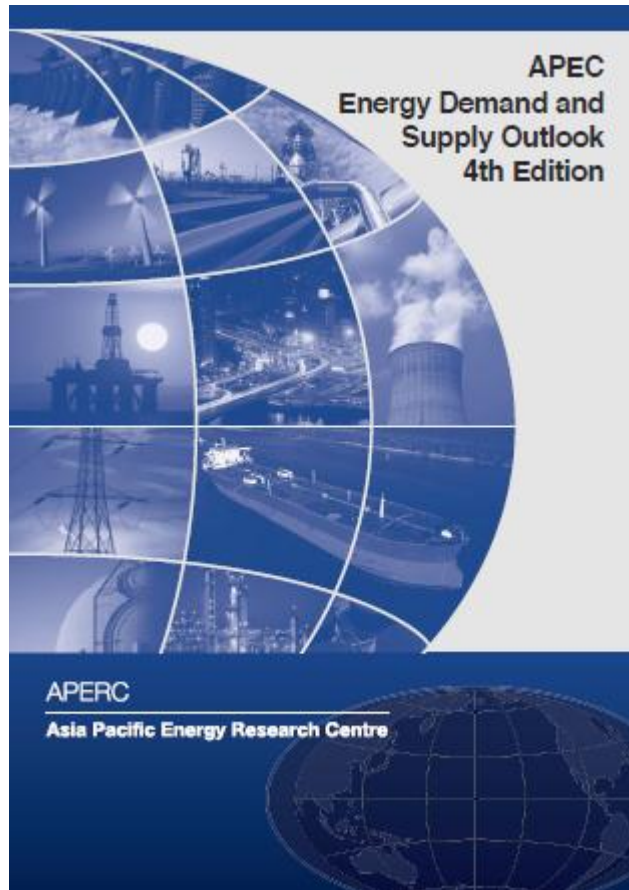
APEREC Workshop at EWG 44

5 November 2012

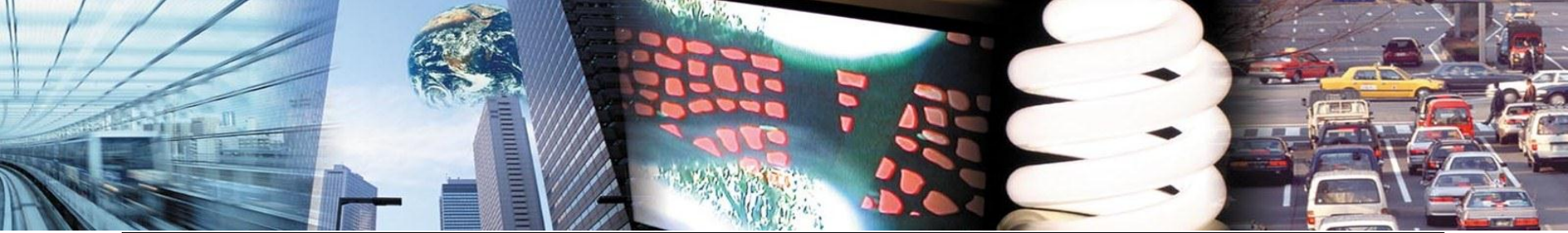
Ralph D. Samuelson



APEC Energy Outlook

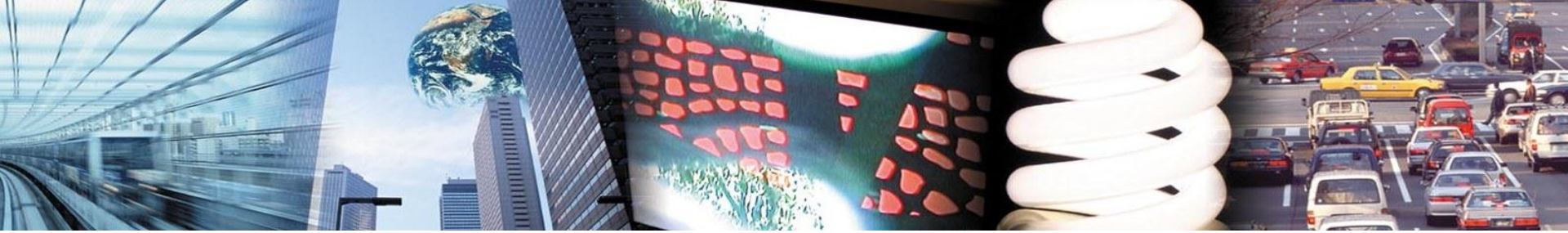


- APERC has historically produced an *APEC Energy Demand and Supply Outlook* every 3 or 4 years
- Work now underway on the 5th edition, to be published in January or February 2013

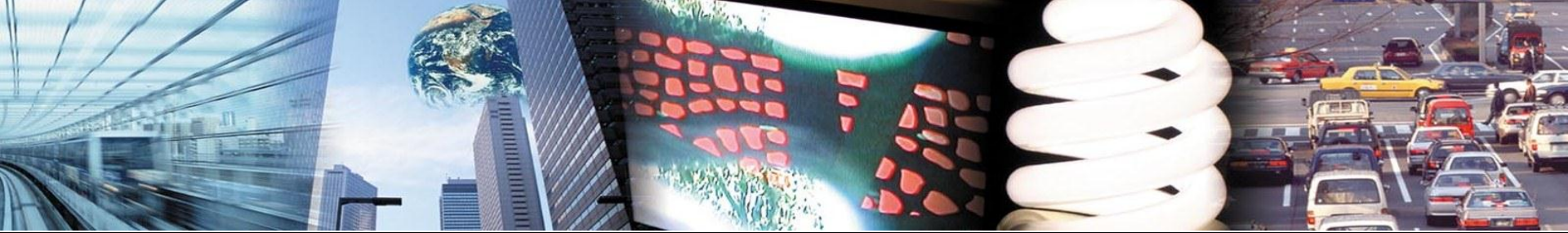


Cases Examined

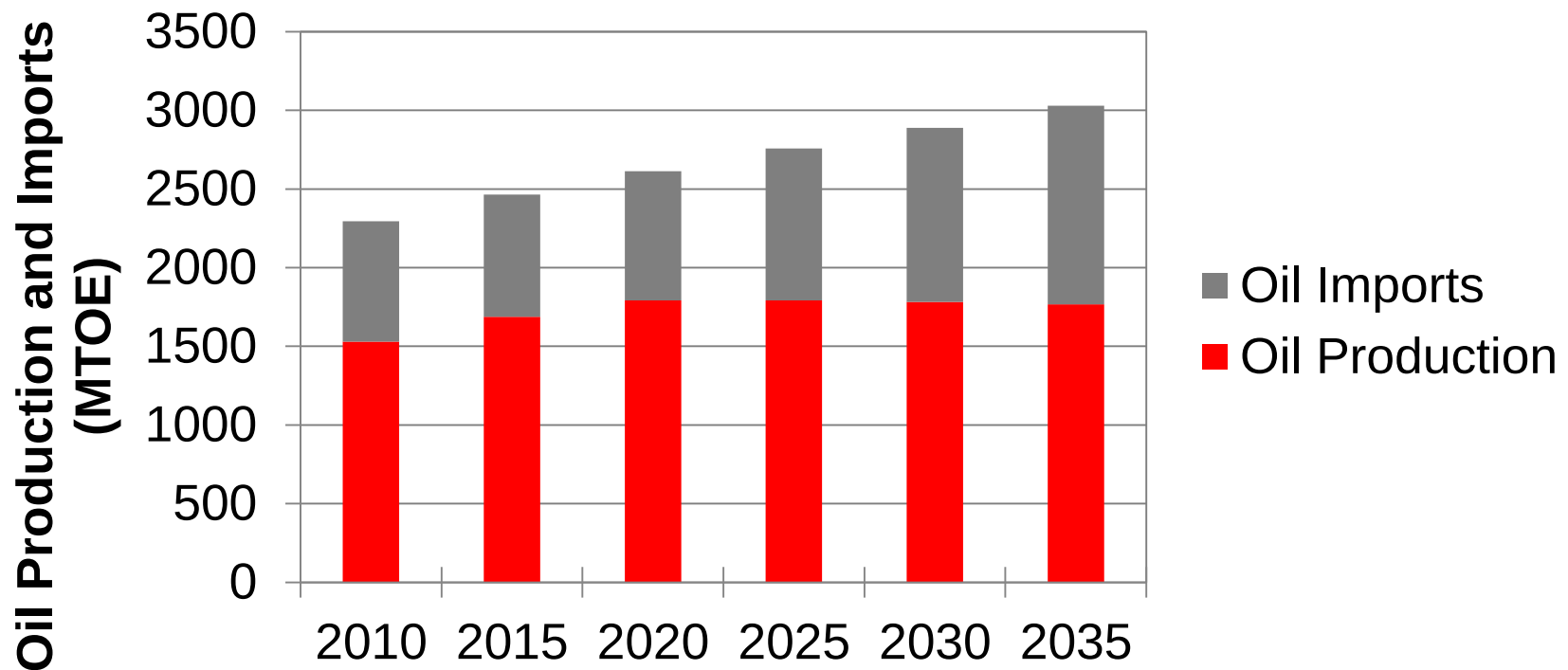
- “Business As Usual” (BAU) – Assumes existing policy continues, including policies in process of implementation (legislation already approved)
- Three Alternative Cases:
 - High Gas Case
 - Better Urban Planning
 - Virtual Clean Car Race

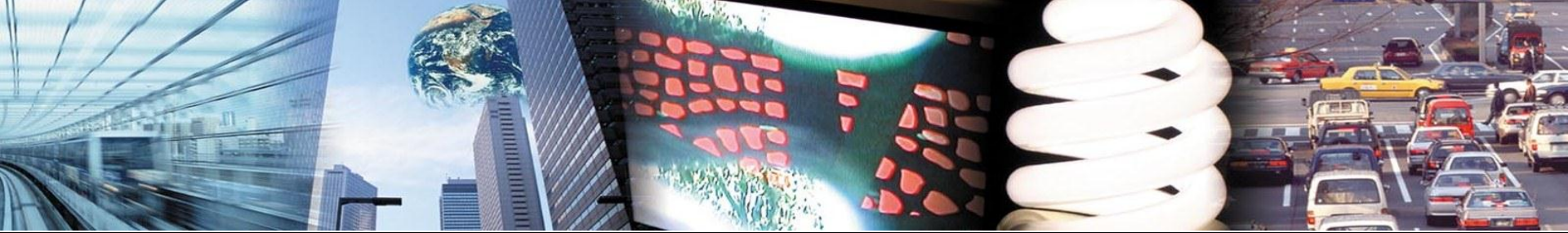


Key Findings

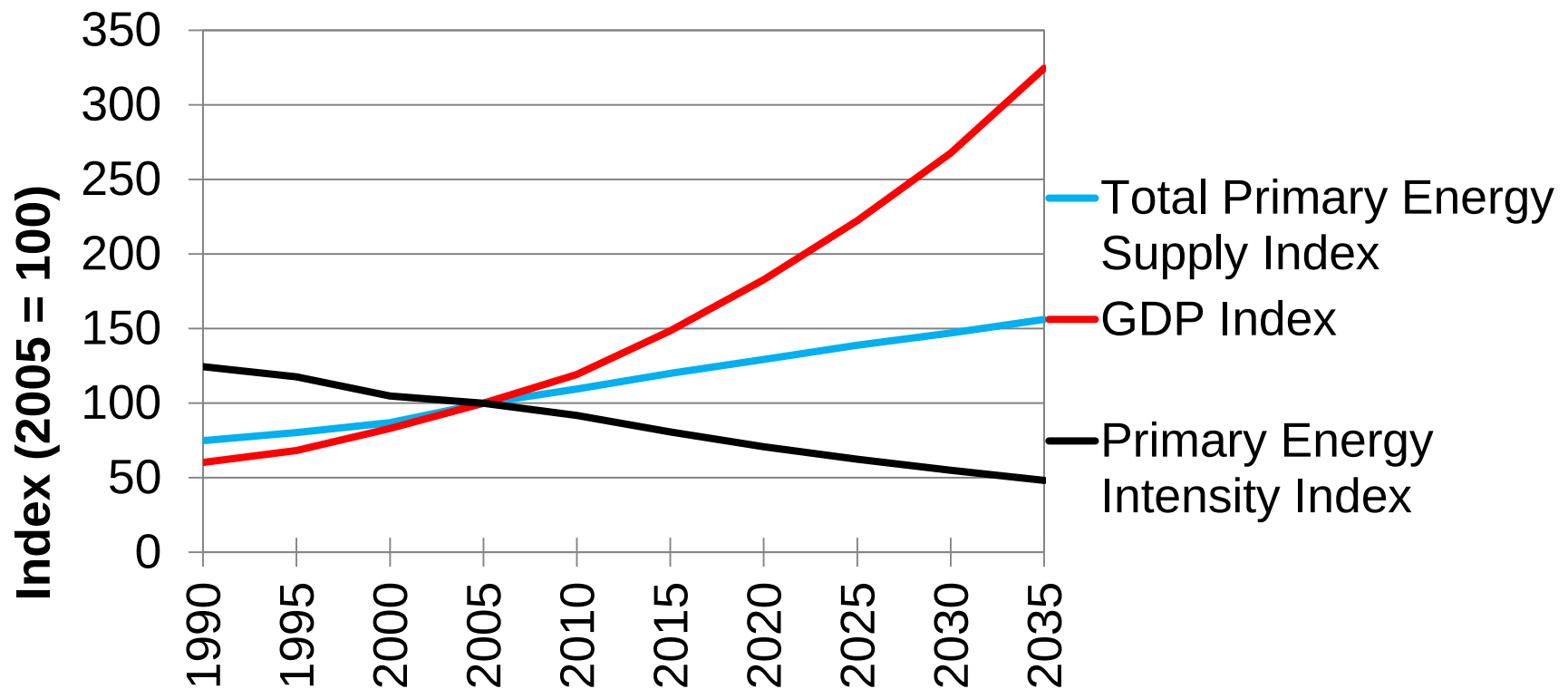


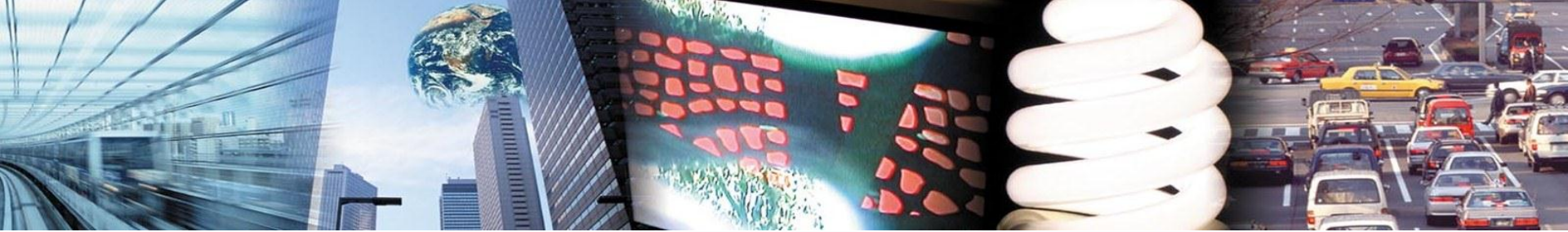
Key Finding #1: Oil security remains a major threat to the economies of the APEC region





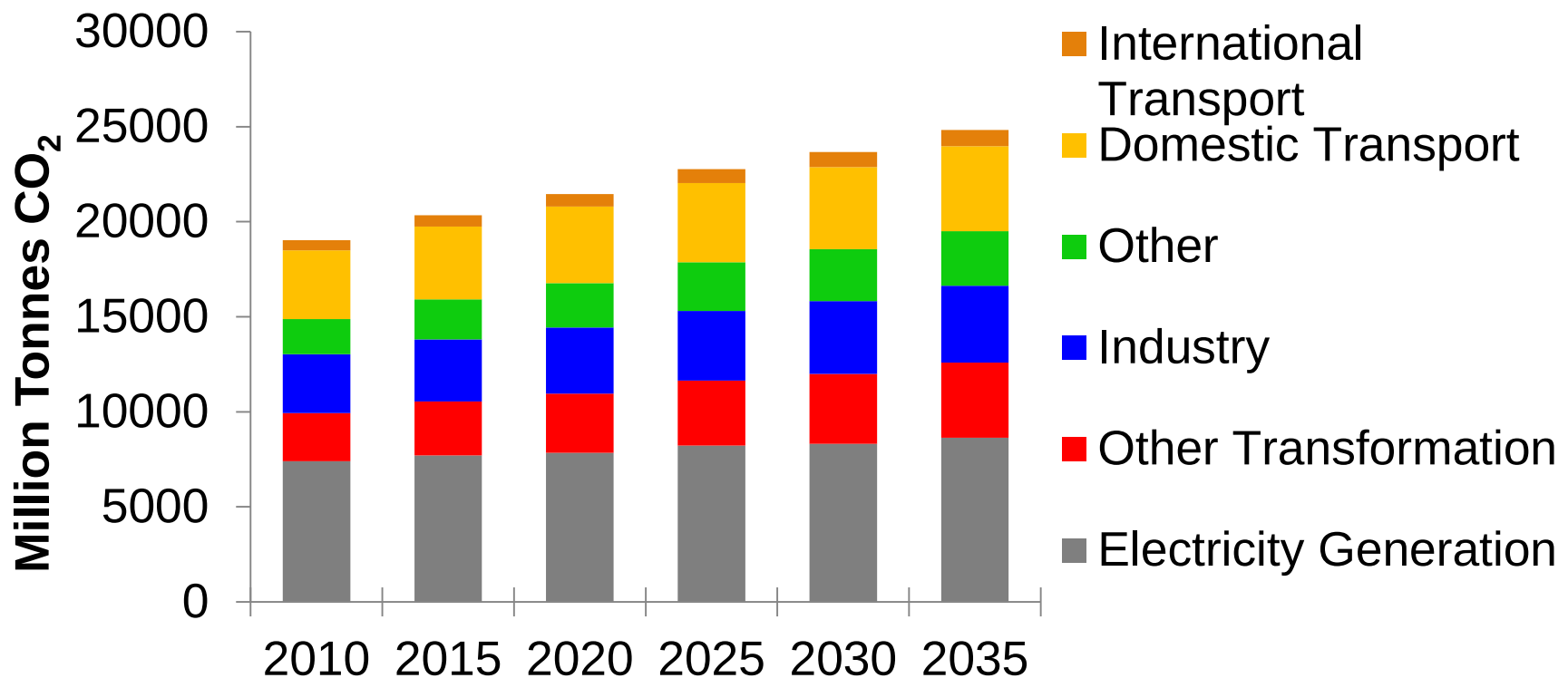
Key Finding #2: APEC's energy intensity goals will probably be met under business-as-usual

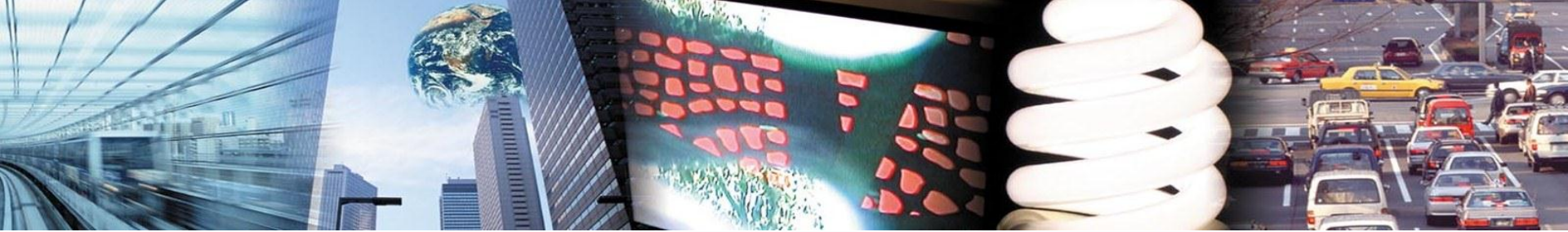




Key Finding #3: Business-as-usual is still environmentally unsustainable

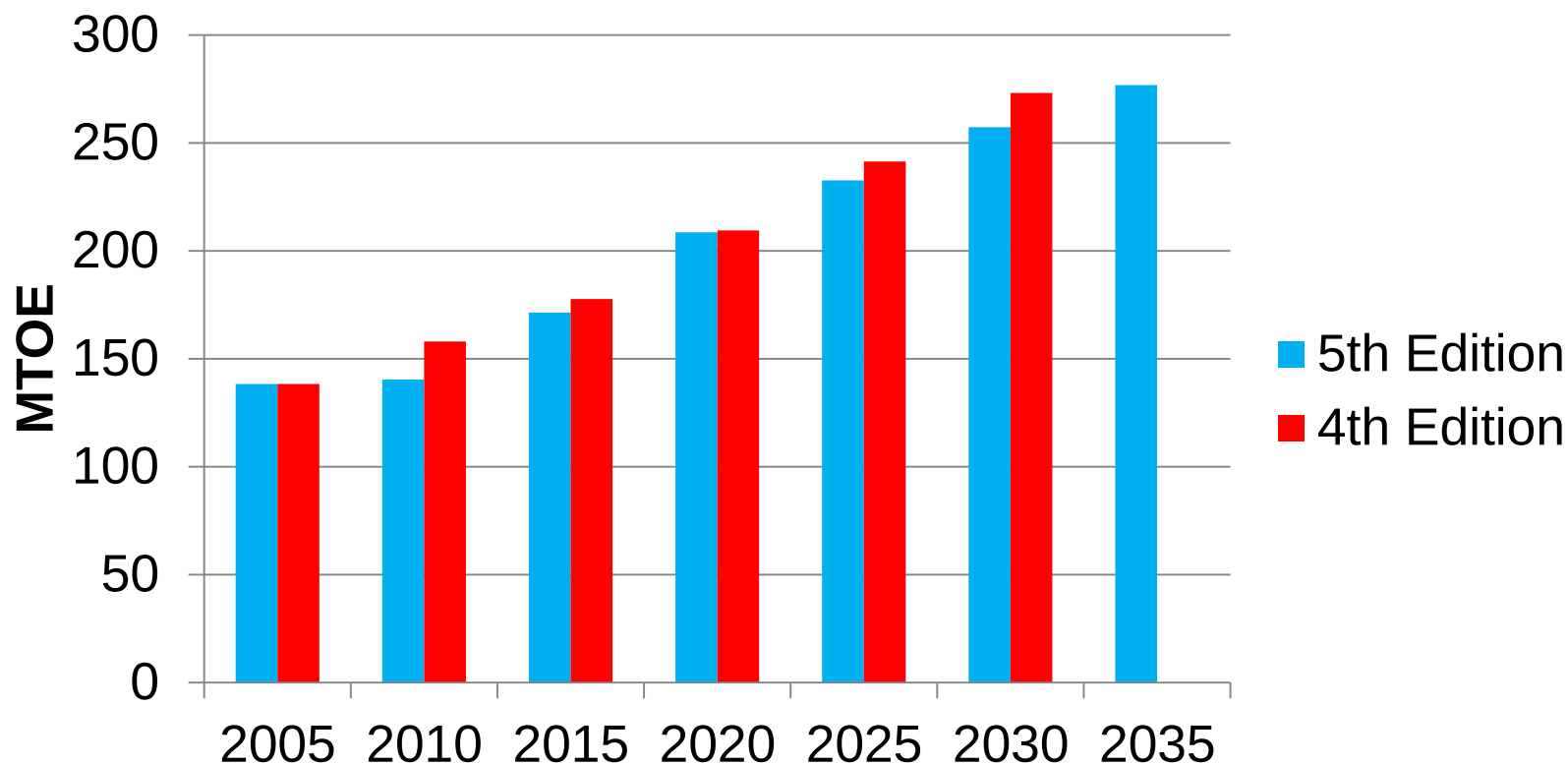
APEC CO₂ emissions from fuel combustion

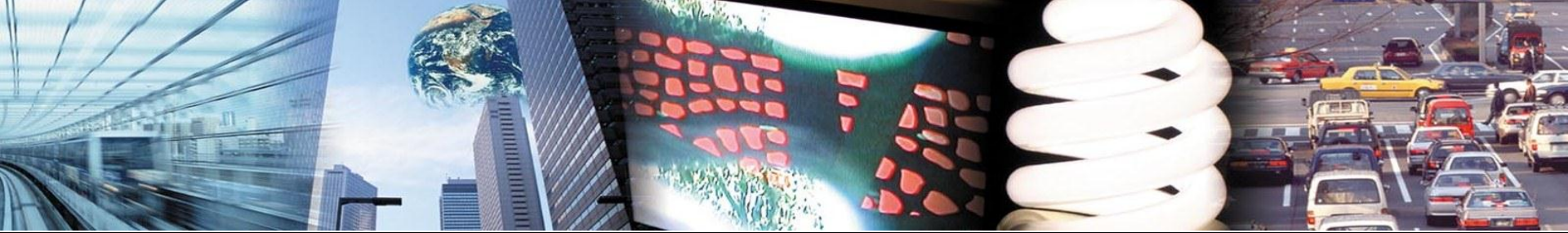




Key Finding #4: Nuclear development slows down, but not by much

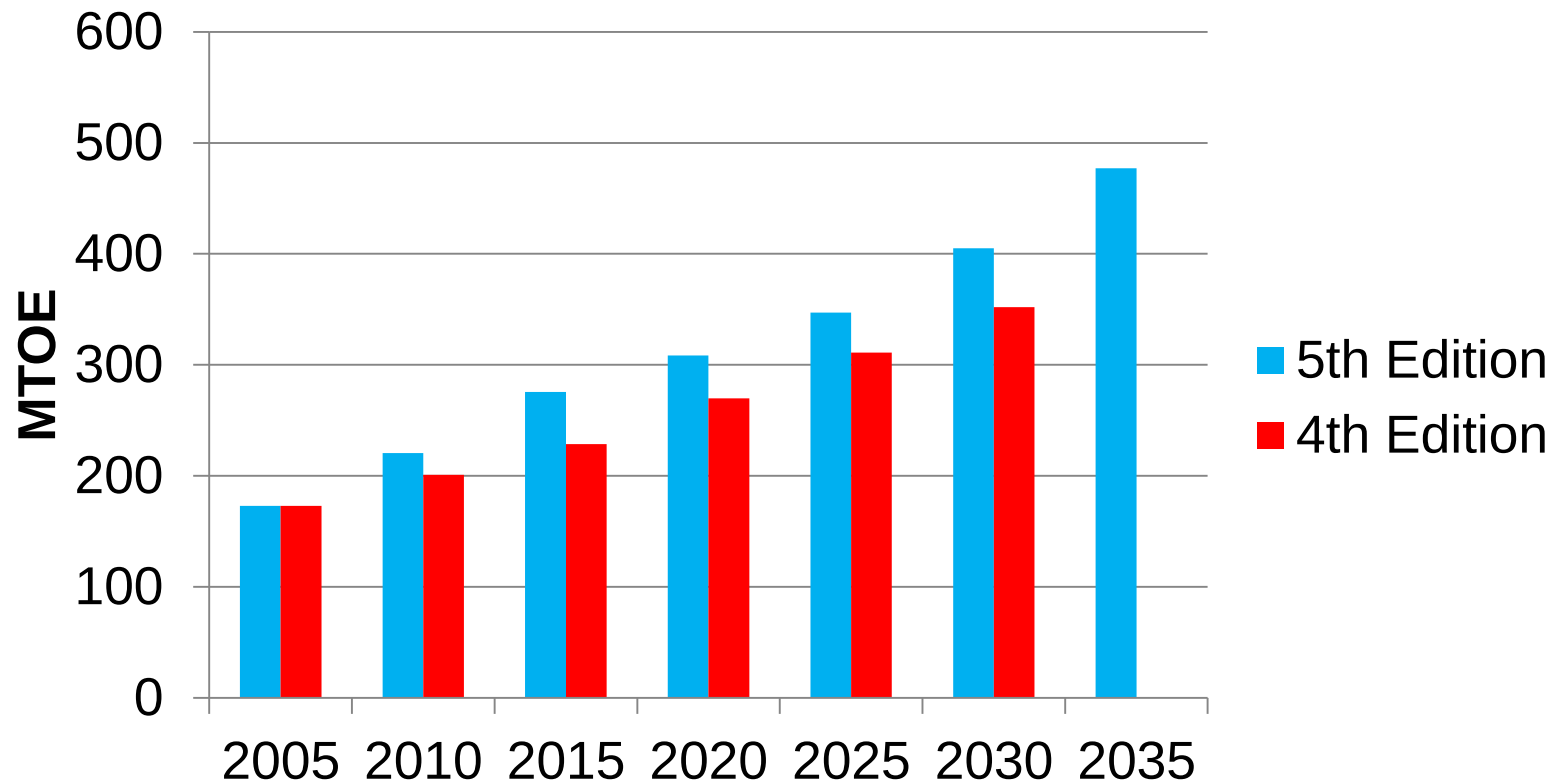
APEC nuclear electricity production

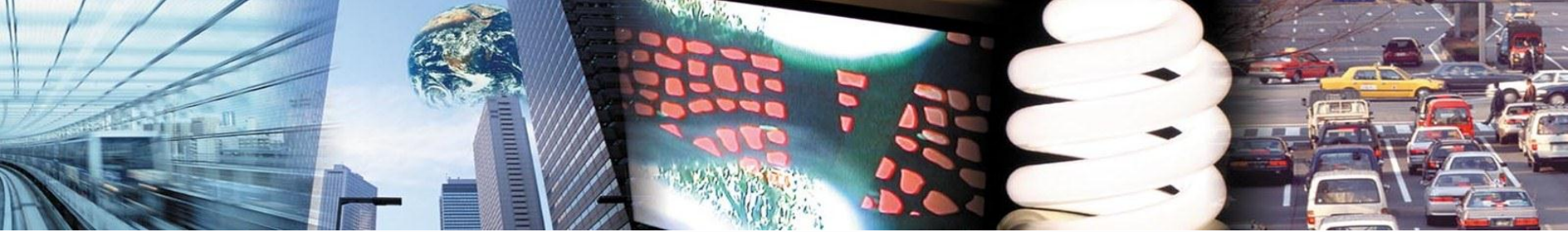




Key Finding #5: Gas production growth speeds up, and could challenge coal

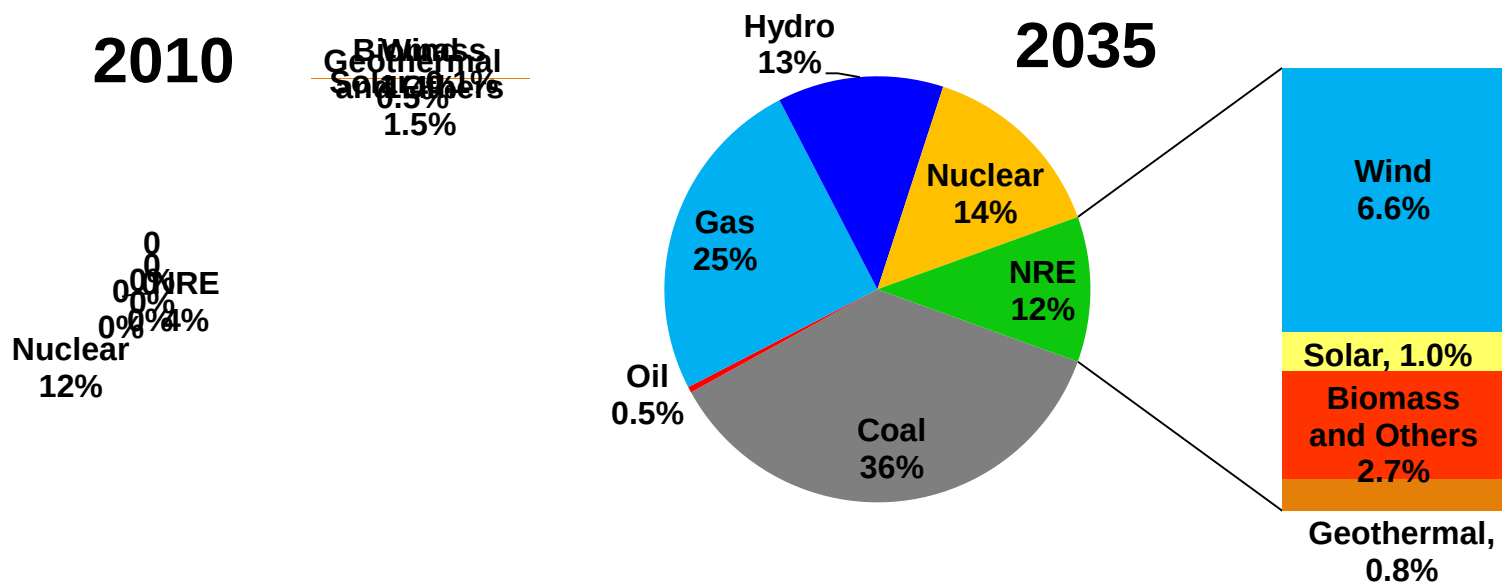
APEC projected gas production

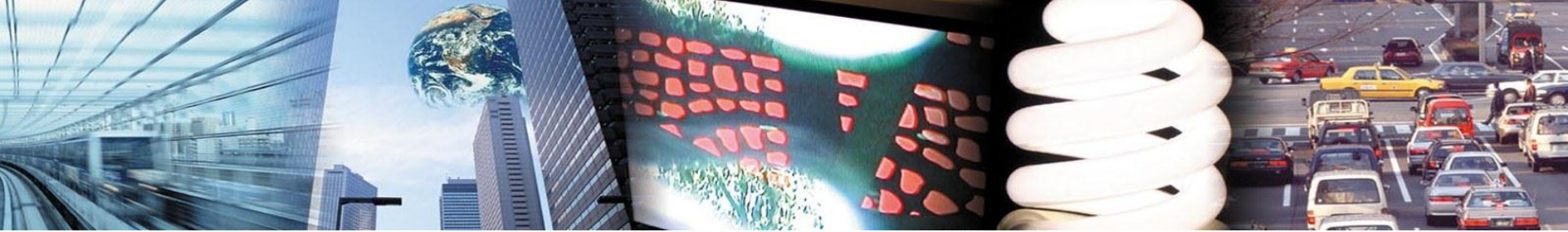




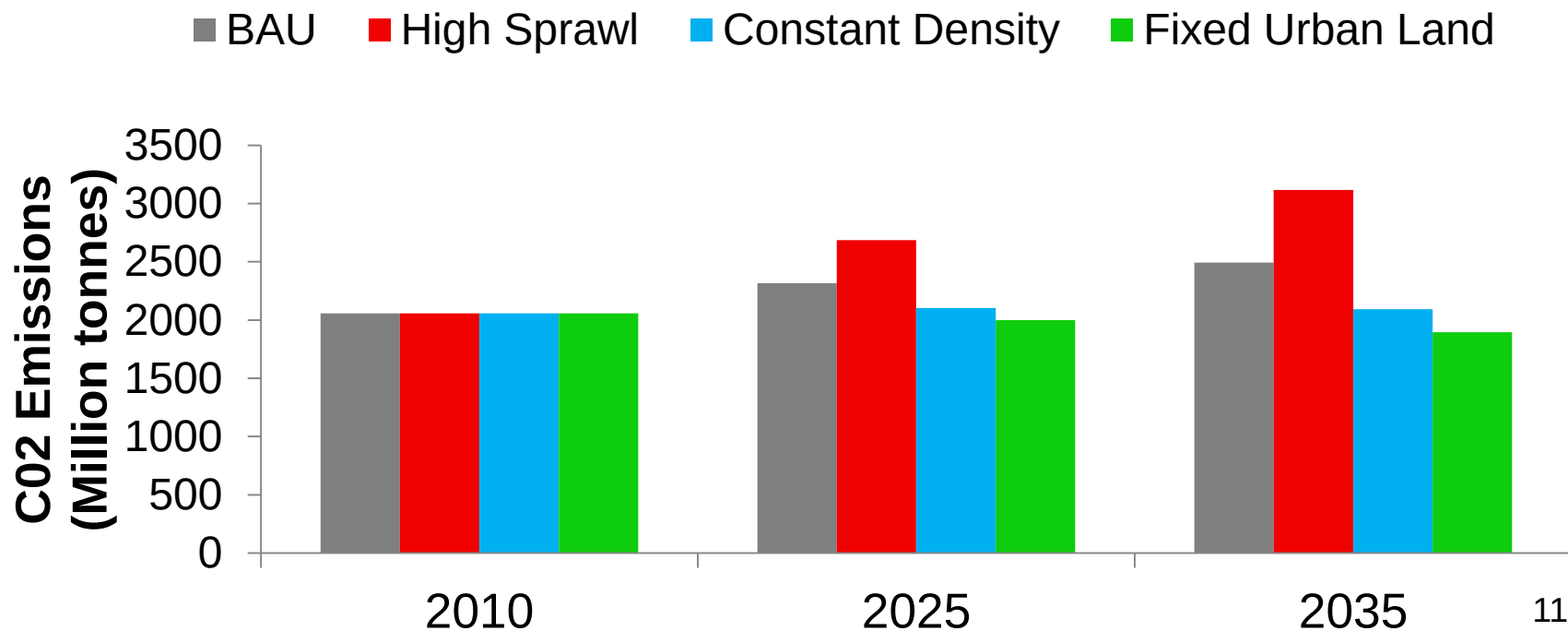
Key Finding #6: New Renewable Energy (NRE) goes mainstream

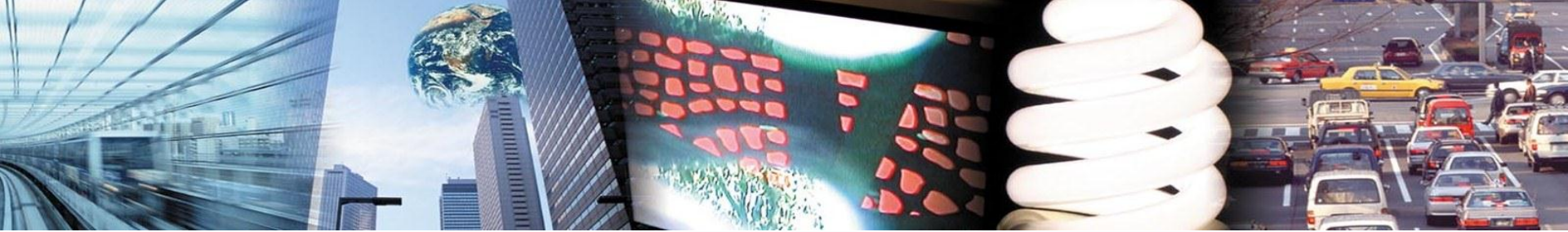
APEC Primary Energy Shares in Electricity Generation



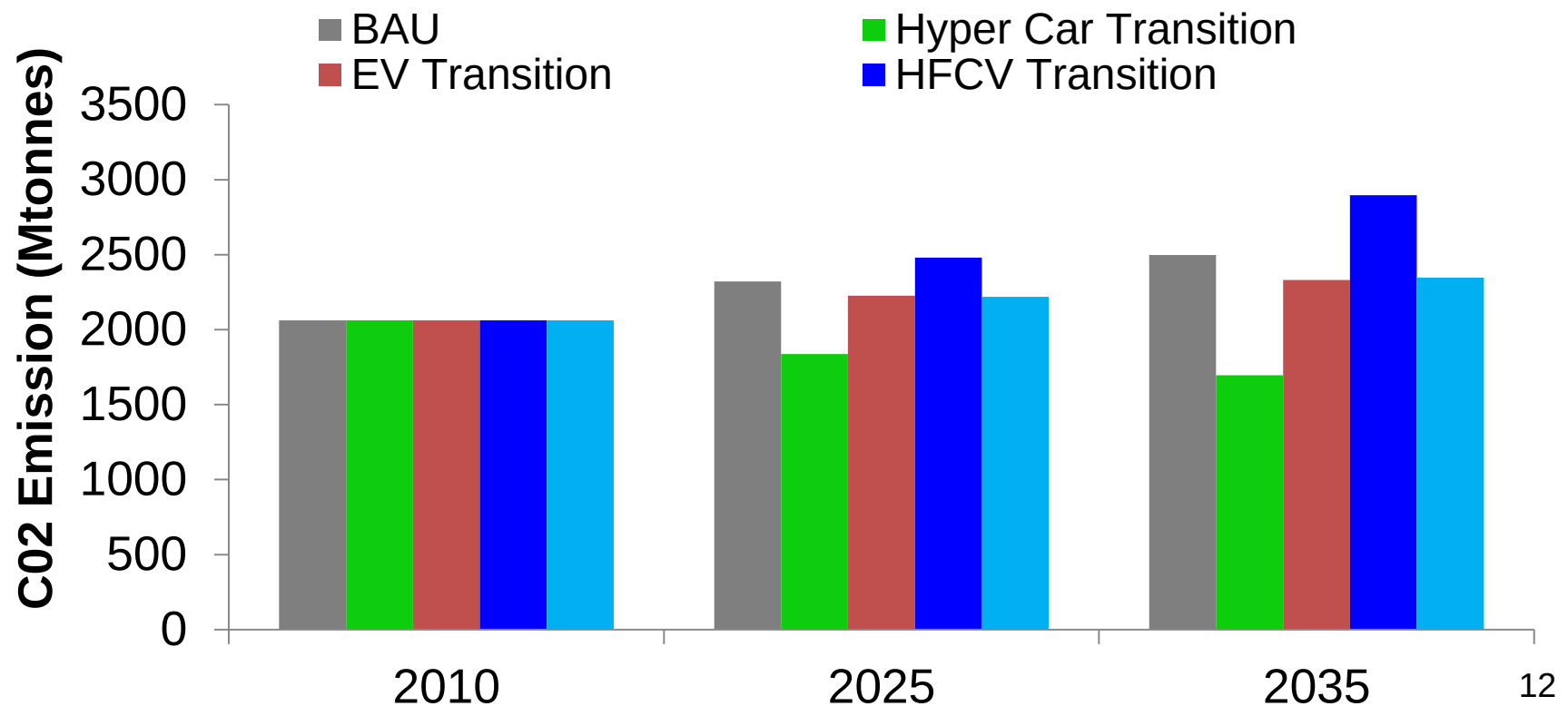


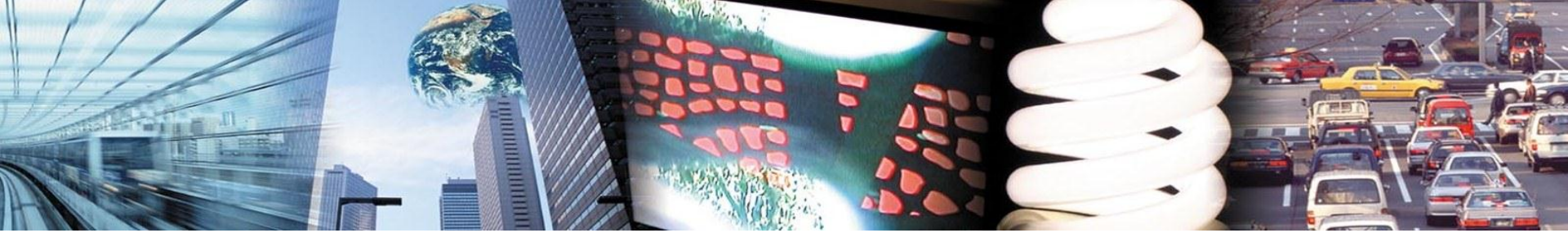
Key Finding #7: Big Opportunities to Improve Efficiency, Especially in Transportation Through Better Urban Planning...



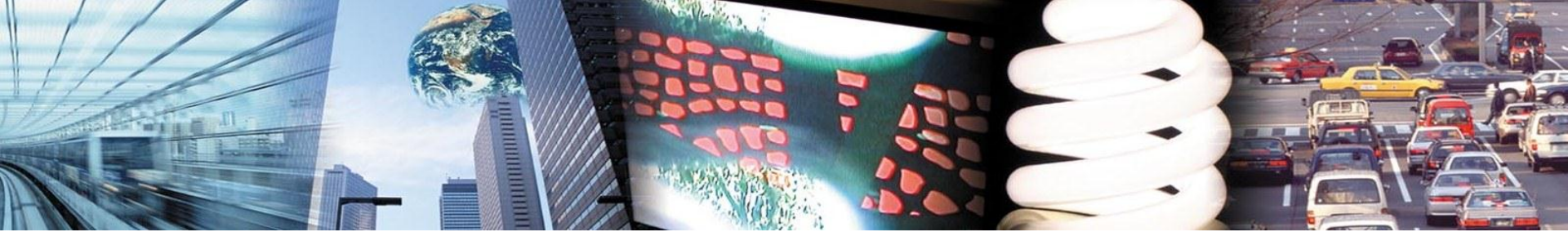


...and Improving the Efficiency of the Vehicle Fleet





The High Gas Alternative Scenario

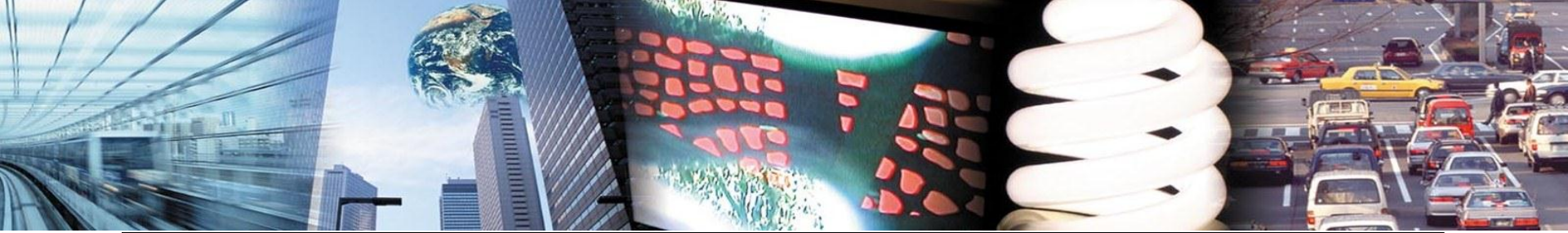


Natural Gas Potential in the APEC Region

APEC Economy	Technically Recoverable Resources (MTOE)			2009 Production (MTOE)	Years of Production
	Conventional Gas	Shale Gas	Conventional+ Shale Gas		
United States	30,750	21,550	52,300	515	102
Canada	8,650	9,700	18,350	140	131
Mexico	2,375	17,025	19,400	45	431
Russia	86,125	N/A	86,125	475	181
China	5,225	31,875	37,100	73	512
Australia	5,700	9,900	15,600	43	326
Chile	87	1,600	1,687	1	>1,600

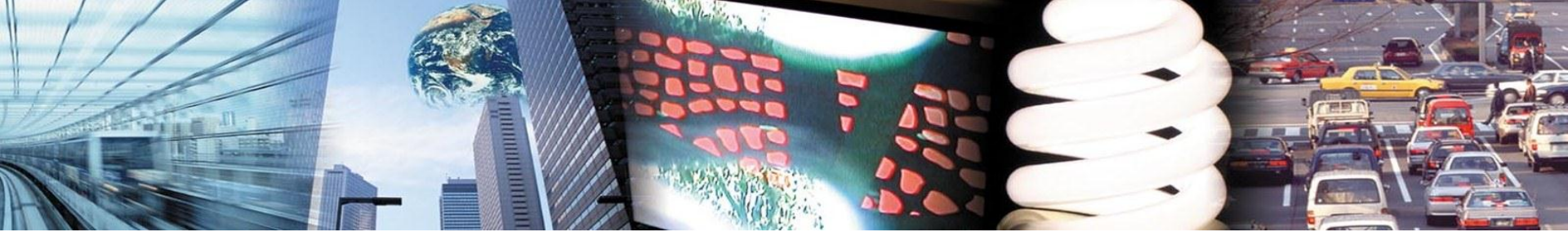
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Sources: Conventional Gas :—MIT, The Future of Natural Gas, 2011
 Shale Gas :— USEIA, World Shale Gas Resources, 2011
 Production:- BP Statistical Review of World Energy 2011

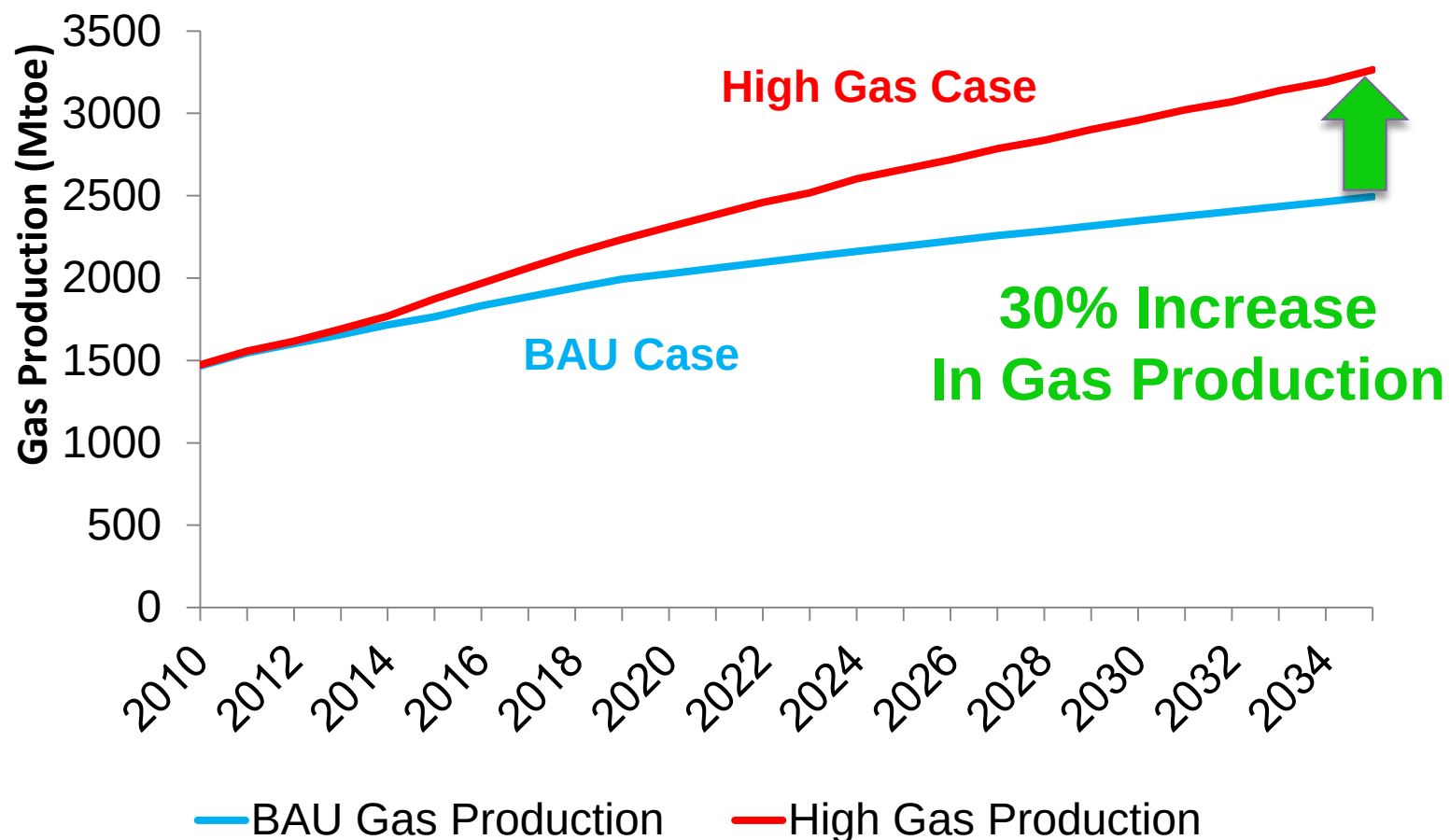


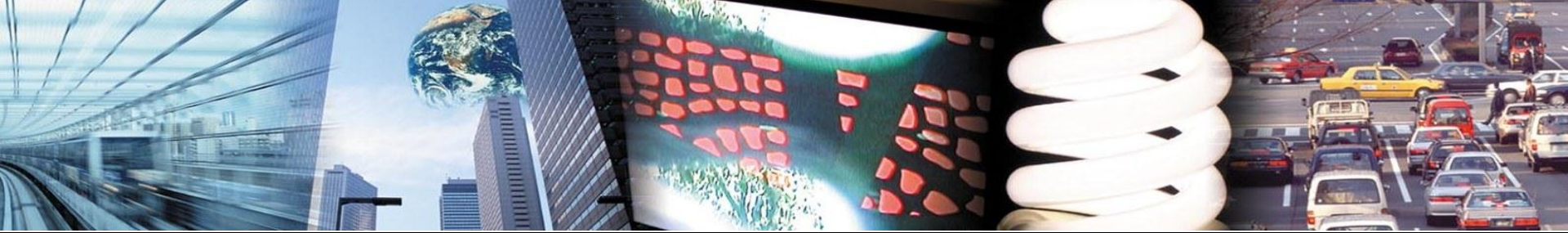
Some Potential Constraints on Gas Production and Trade

1. Policies requiring a **domestic price of gas below market levels** (a form of subsidy)
2. **Limited technology** in some economies for gas development
3. Policies **restricting the export of gas**
4. Policies **limiting competition in gas development**
5. **Slow and cumbersome regulatory approvals** and land access processes for gas producers

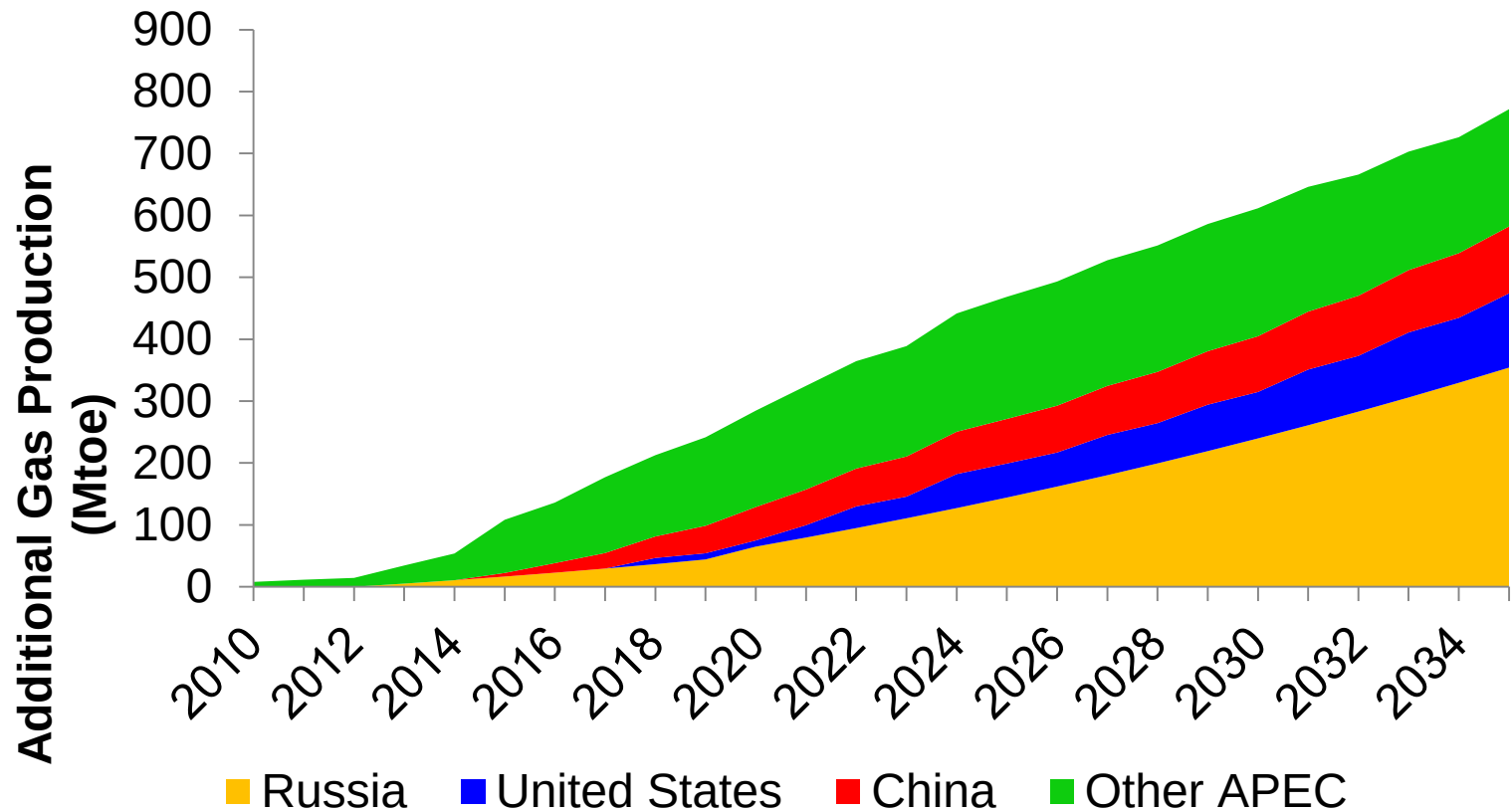


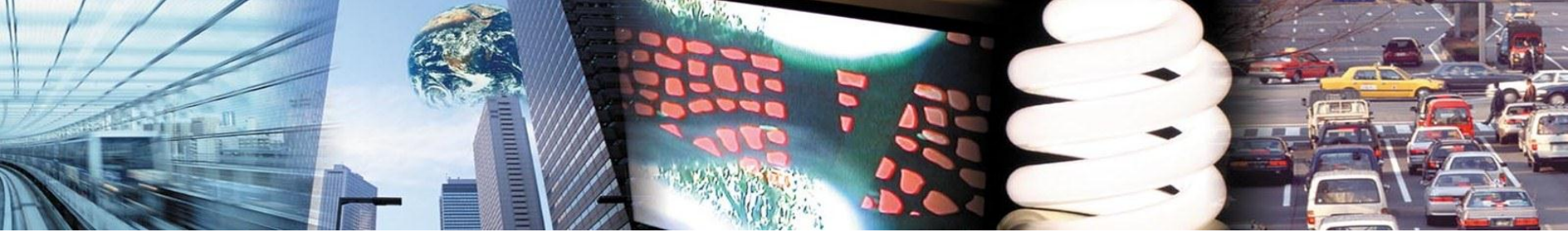
Natural Gas Potential in the APEC Region





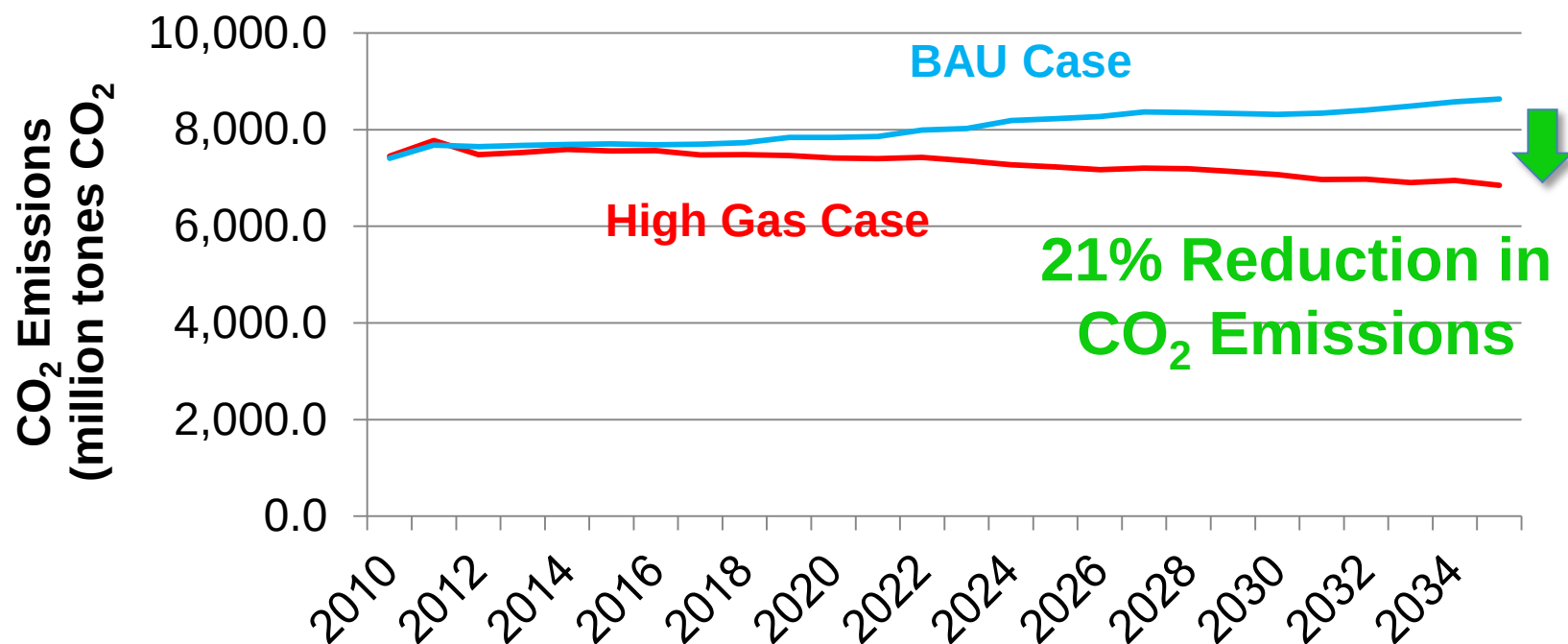
Natural Gas Production Potential in the APEC Region

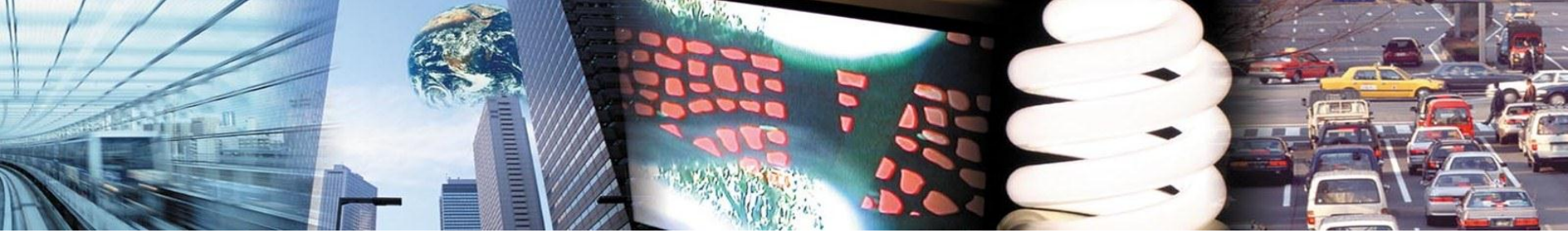




Impact on Electric Sector CO₂ Emissions

Key Assumption: All additional gas is used to **replace coal** in electricity generation → Environmental benefits





And Now Over to Luke!