



Business Council *of*
British Columbia

Does Canada Have an Economic and Environmental Carbon Bubble?

**Background material for remarks by
Jock Finlayson, Executive Vice President,
Business Council of British Columbia
Eco-Pragmatism Summit, Debate with Jeff Rubin**

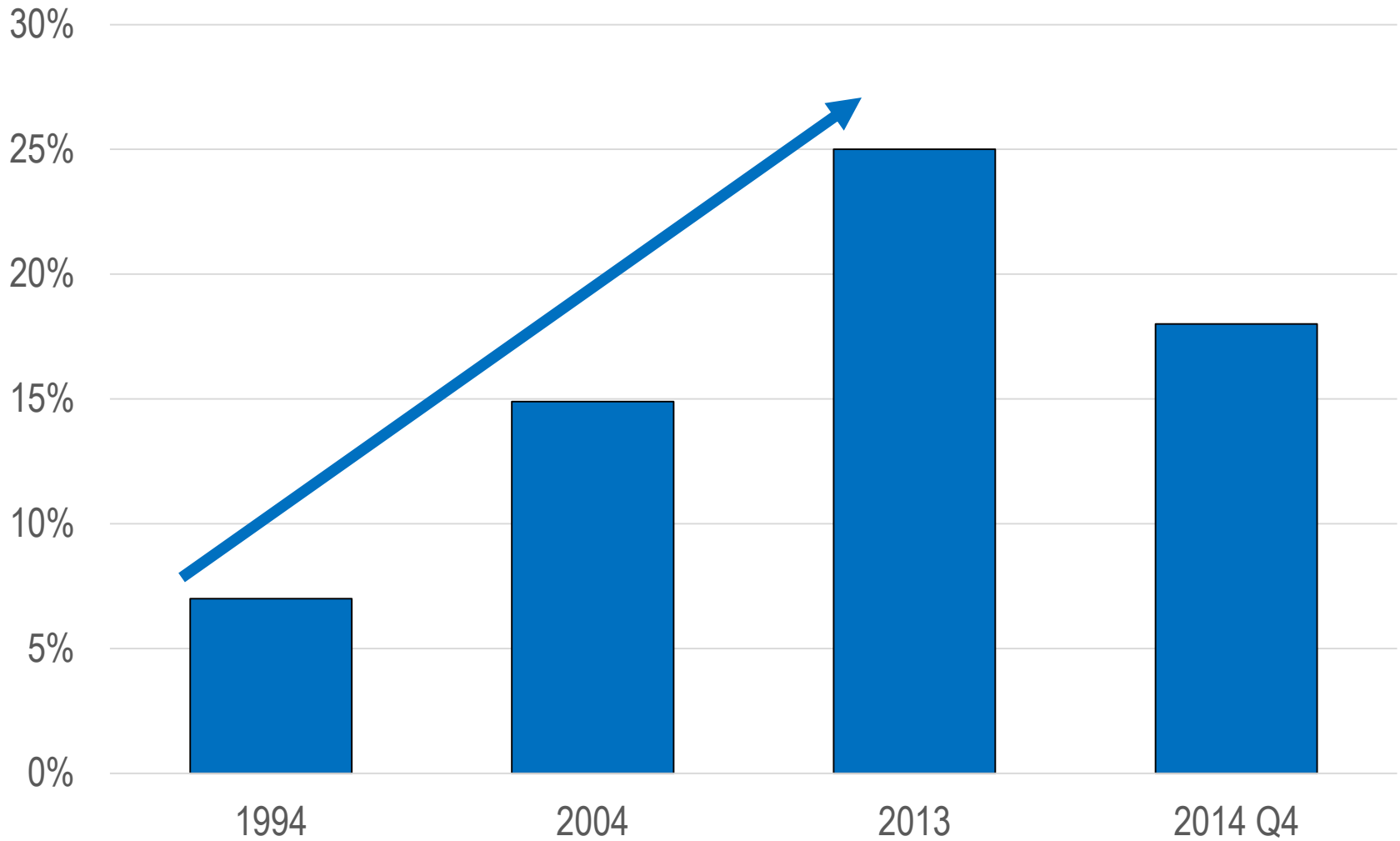
June 15, 2015

Vancouver, BC

Top Global Oil Producers

Top Producers ¹	Crude Oil (mmbpd)	
	2014	1993-2013 Average
US	11.7	8.1
Russia	10.4	8.2
Saudi Arabia	9.7	7.8
Canada	4.3	3.0
China	4.1	3.5
Iraq	3.3	1.8
Iran	2.8	3.3
UAE	2.8	2.1
Kuwait	2.8	2.1
Mexico	2.8	3.3

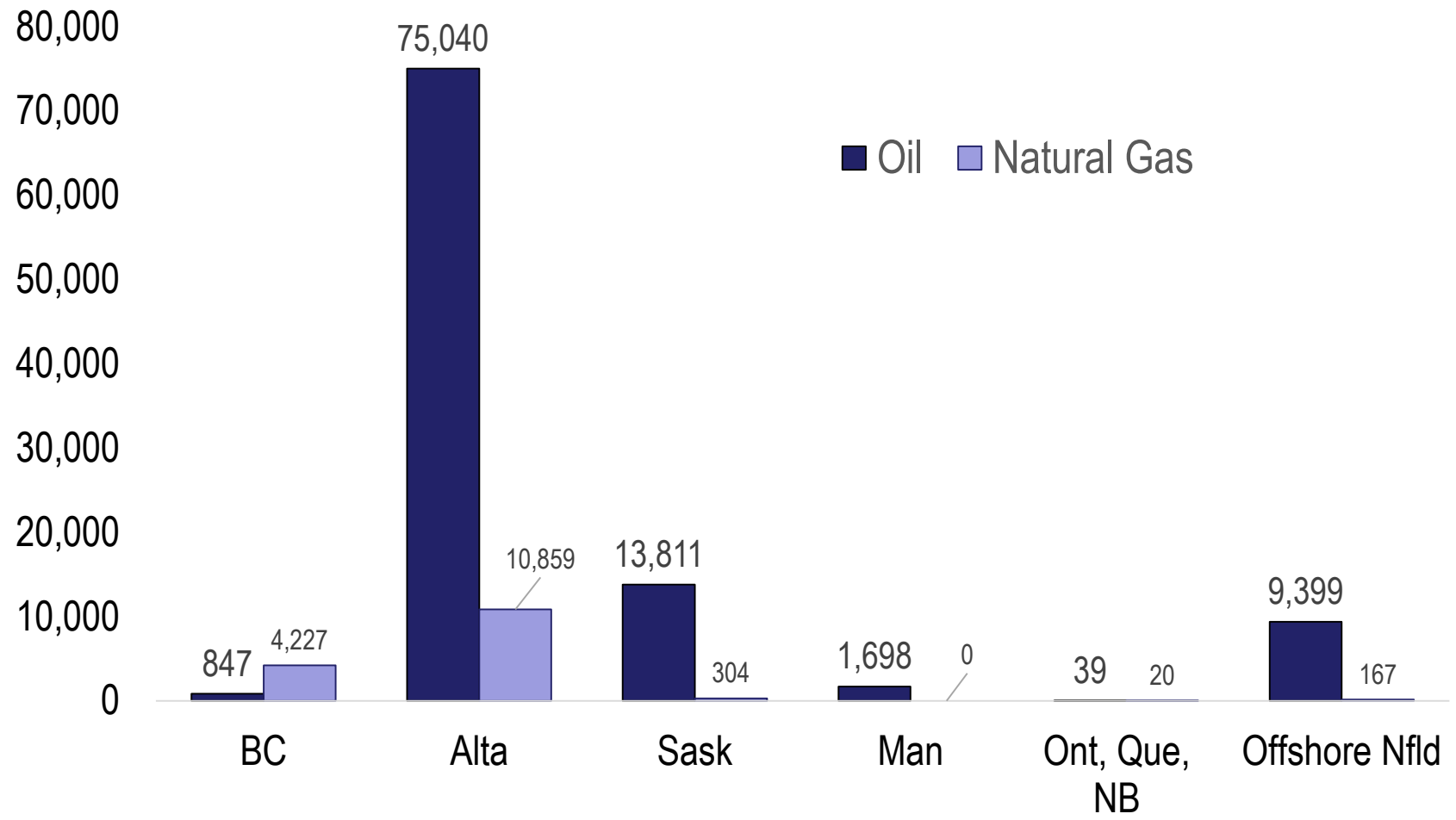
Energy's Place in Canada's Export Mix*



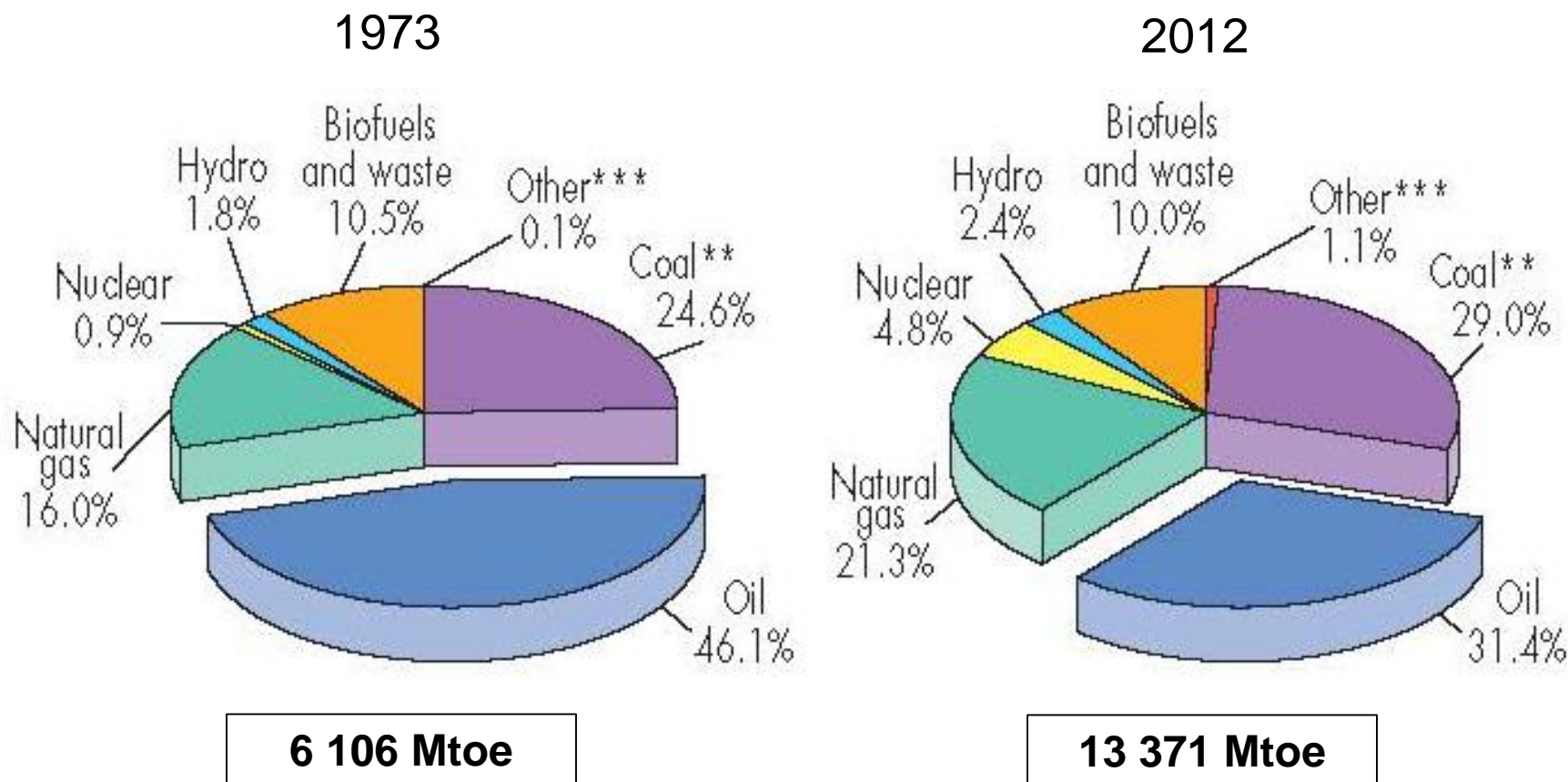
Source: CIBC World Markets. *Merchandise exports only; excludes services. Q4 2014 figure is an estimate

Oil and Gas Production Across the Provinces

Value of Producers' Sales 2013, millions \$



Total Primary World* Energy Supply

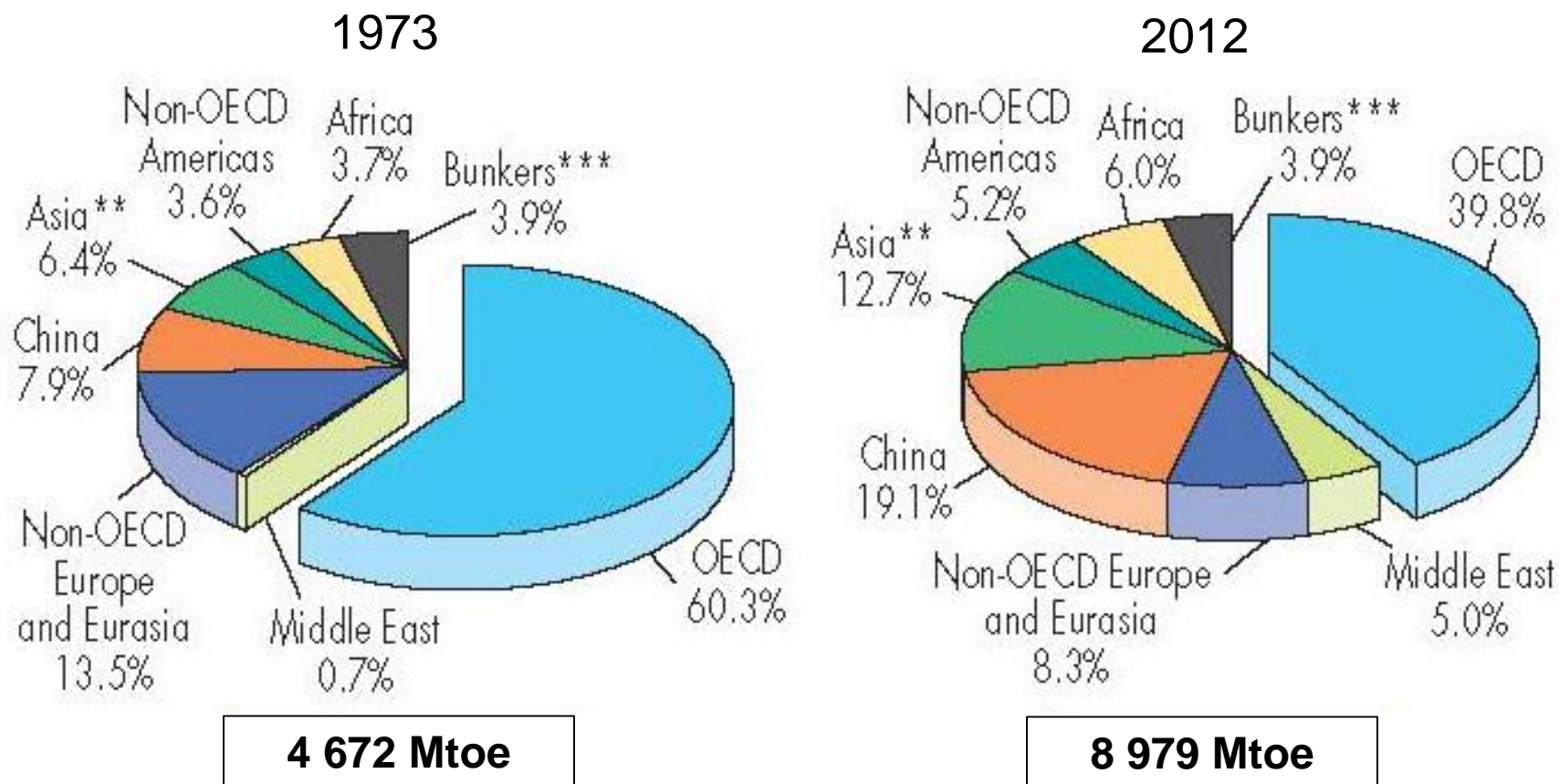


* World includes international aviation and international marine bunkers.

** In these graphs, peat and oil shale are aggregated with coal.

*** Includes geothermal, solar, wind, heat, etc.

Regional Shares of Total Final Energy Consumption

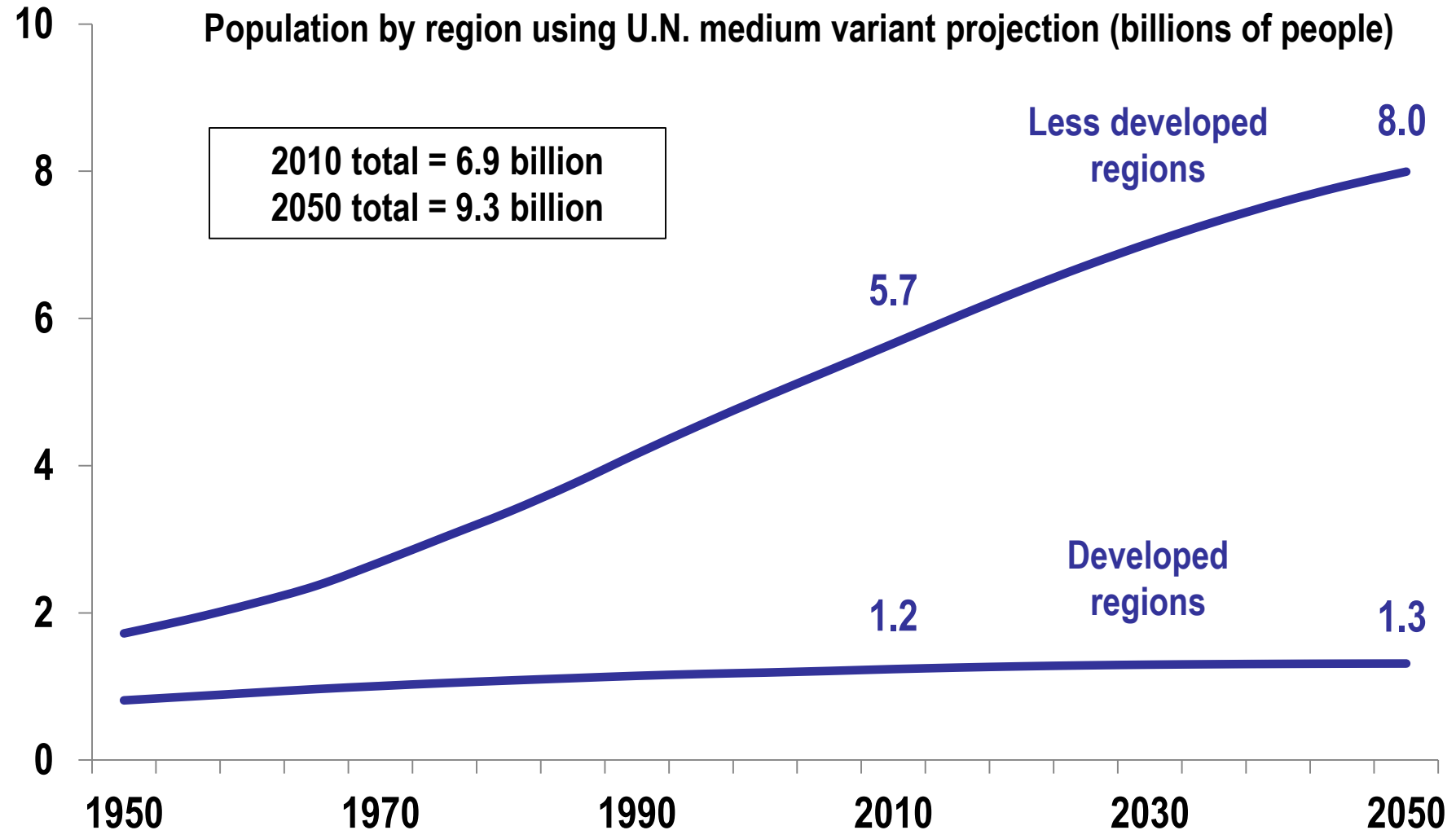


* Data for biofuels and waste final consumption have been estimated for a number of countries.

** Asia excludes China.

*** Includes international aviation and international marine bunkers.

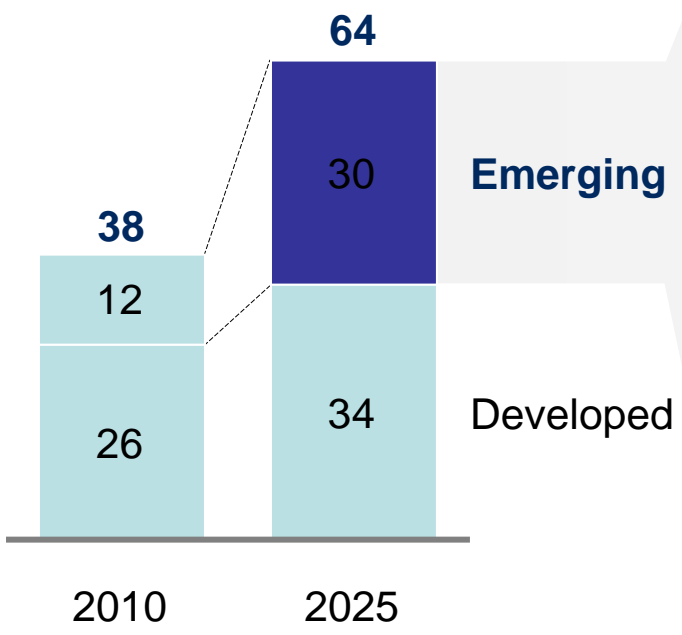
World Population Projections



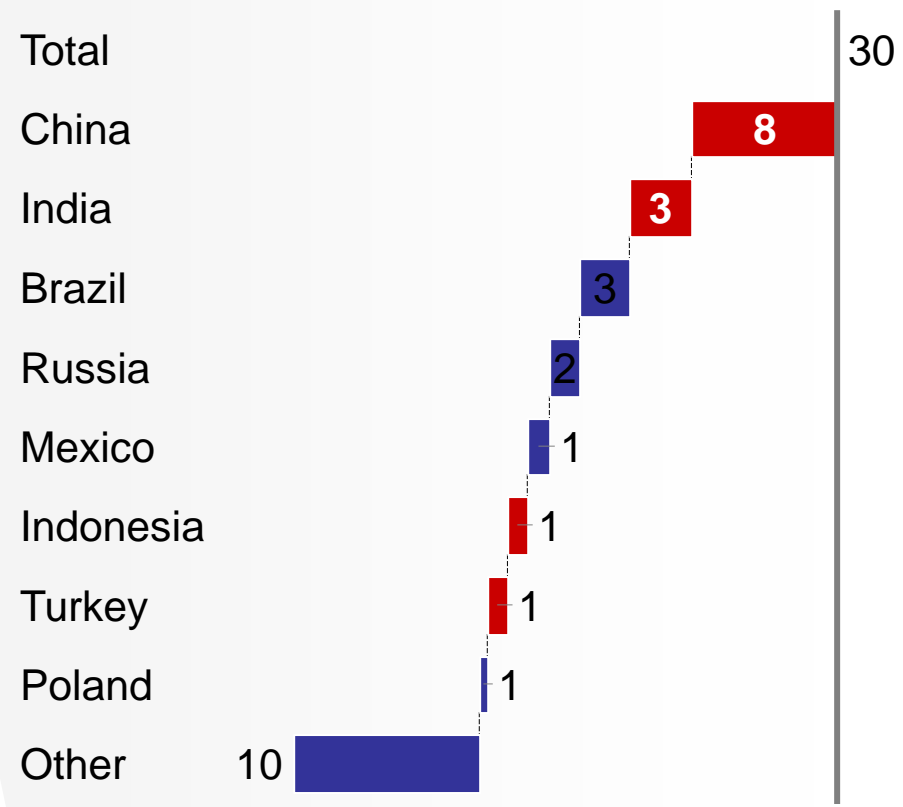
Emerging Market Consumption Will Reach \$30 Trillion by 2025, Nearly Half of Global Total

World consumption

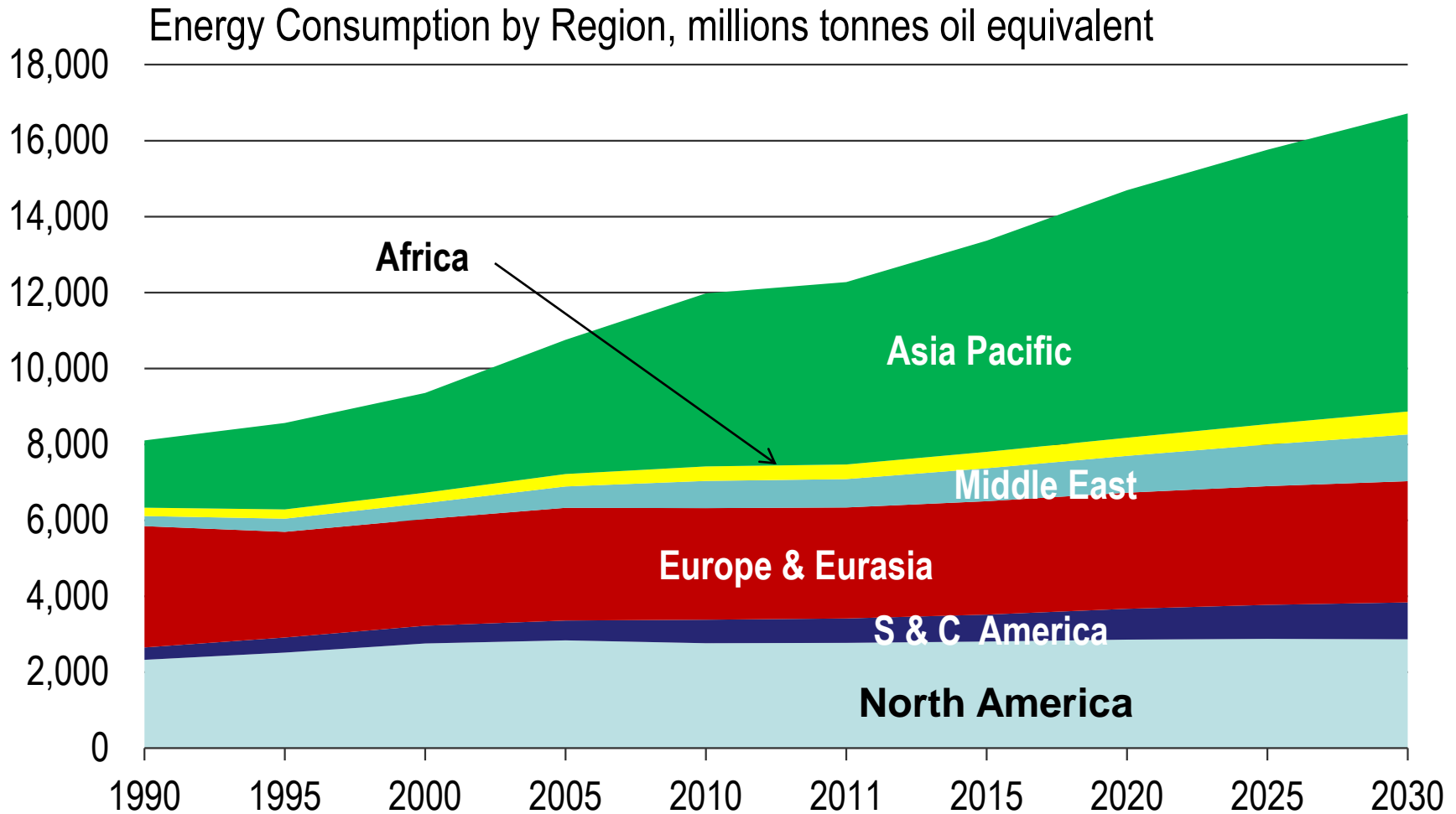
\$ Trillions



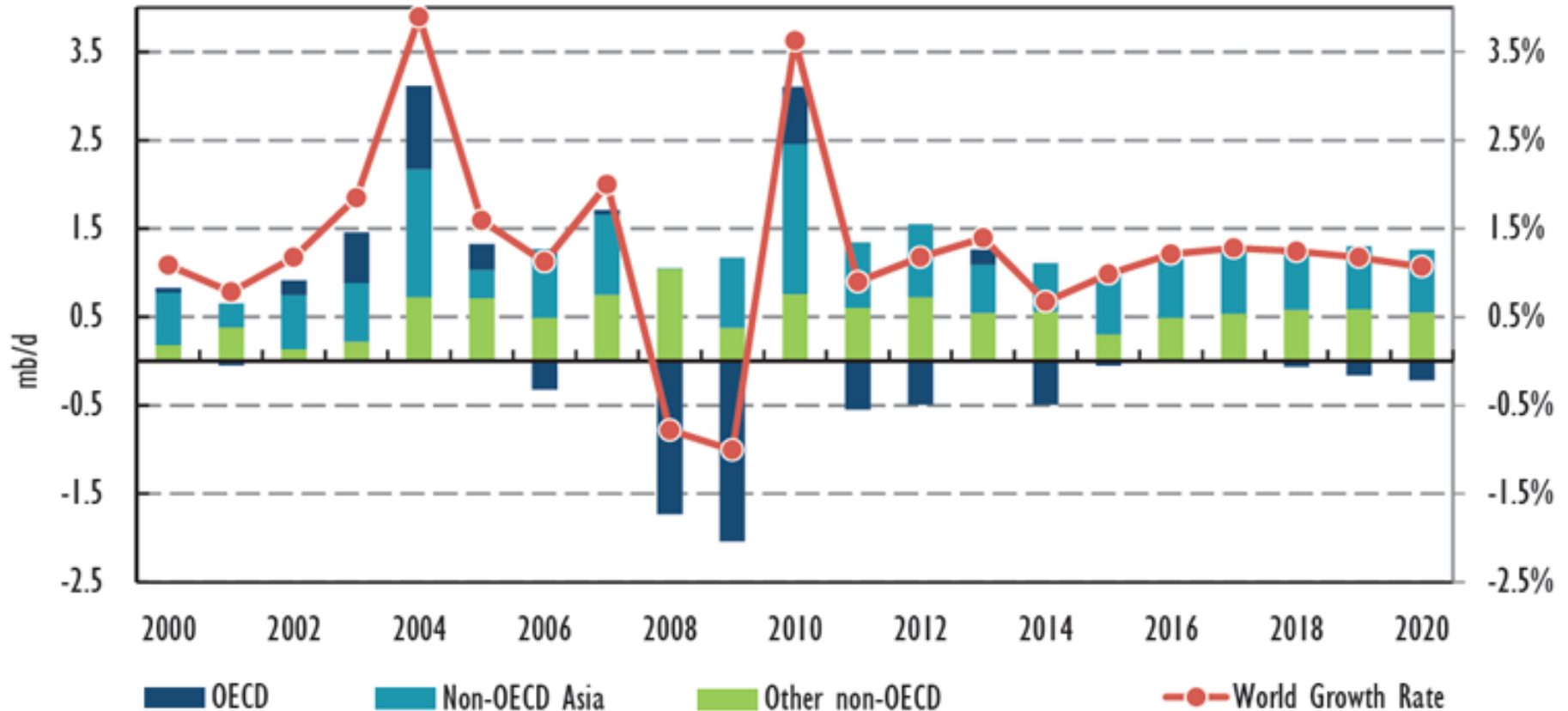
Emerging market consumption in 2025



Future Growth of World Energy Demand Concentrated in Emerging Markets



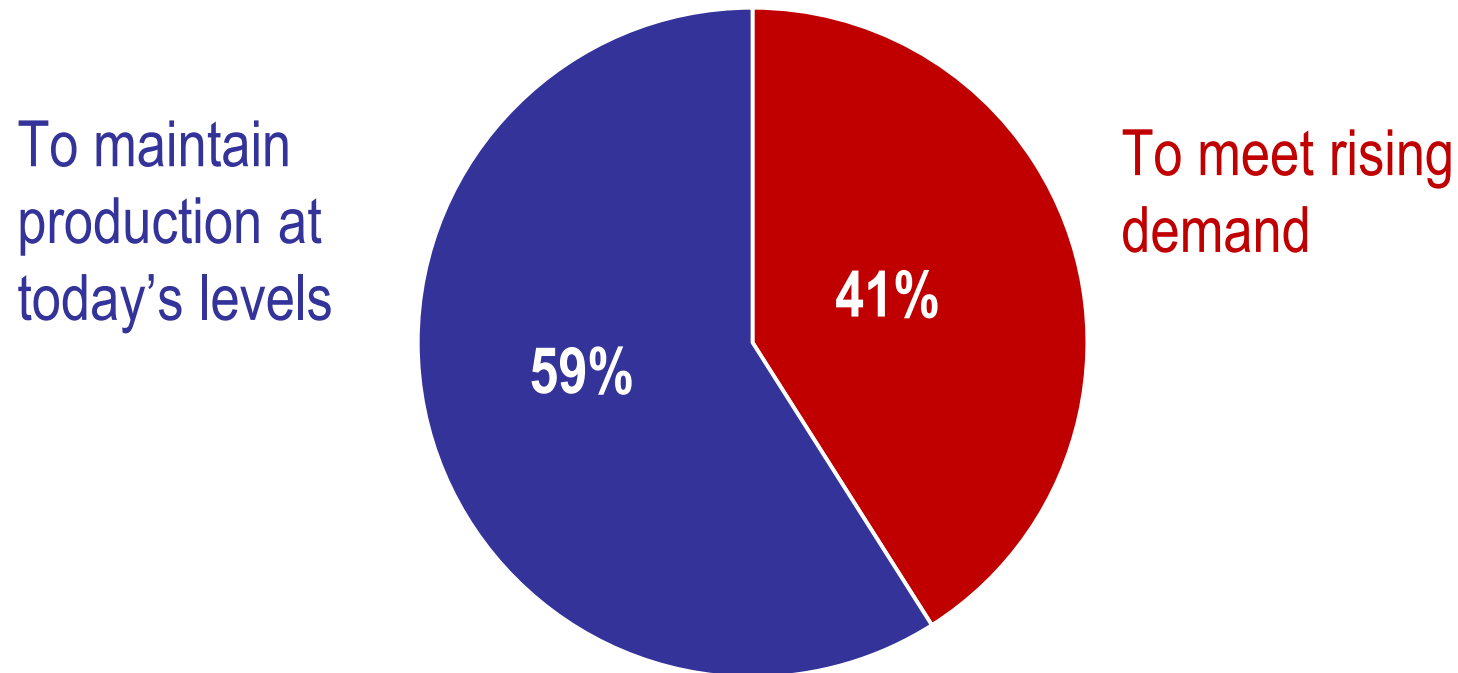
Global Oil Demand Growth (2000-2020)



Outlook for Energy Investment

Investment in energy supply, 2014-2035

Total: \$40.2 trillion



Over 80% of upstream oil & gas investment offsets output declines at today's fields: one-third of power generation investment is to replace plants that retire

The Slow Pace of Energy Transitions

“Energy transitions – be they from coal to oil, from oil to natural gas, or from coal-fired electricity generation to a system relying primarily on renewable(s) – are *inherently prolonged affairs*. New energy sources and conversion techniques become commercially viable only after decades spent establishing often expensive infrastructure.” (emphasis added)

“The history of energy transitions strongly suggests that no grandiose plans aimed at rapid changes in primary energy supply or accelerated commercial adoption...of new conversion techniques will be particularly successful.”

“Wishful thinking, pioneering enthusiasm, and a belief in the efficacy of seemingly superior solutions are not enough to change the fundamentally gradual nature of energy transitions...”

Professor Vaclav Smil, author of Energy Myths and Realities, 2010.

Energy Transitions: The Power Sector

- ▶ Renewables are playing a bigger role in power generation, including in the United States. Renewables now supply a majority of Canadian electricity
- ▶ In the US context, natural gas is displacing coal in the power sector, driven by rock bottom gas prices and also by government regulatory requirements
- ▶ For the US to shift mainly to wind and solar power, assuming the necessary transmission infrastructure was already in place, would entail the creation, within a decade, of as much capacity for new energy generation as the country built in the preceding 50 years
- ▶ Globally, the International Energy Agency predicts world electricity demand/consumption will soar by 80% between 2012 and 2020, with all of the increase occurring in emerging economies. Most of this projected growth in absolute demand is expected to be met via fossil fuels

Some Implications of (Sustained) Lower Fossil Fuel Prices

- Stronger economic growth in net energy-importing jurisdictions...and also for the global economy as a whole
- Also need to consider the knock-on effects in many of the markets for clean(er) energy sources...

“The fundamental problem is that substantial initial success in displacing fossil fuels with zero-carbon energy will drive down the price of the remaining fossil fuel energy. That means that, absent policy, clean energy will face an ever-tougher economic challenge...” (Michael Levi Council on Foreign Relations, “A Clean Energy Revolution is Tougher than You Think,” May 21, 2015.)
- Policy can offset some of the impact of changing relative prices for differing energy sources, but only to a limited extent (short of a Stalinist scale of regulatory intervention)

Low Carbon Transitions: Political Economy Considerations

- Global action on carbon is very difficult not simply because of the short-term costs involved...but also because of coordination and ‘collective action’ challenges and pervasive ‘free-riding’
 - “Free riding occurs when a party receives the benefits of a public good without contributing to the costs. In the case of international climate policy, countries have an incentive to rely on the emissions reductions of others, without taking proportionate domestic abatement. To this is added temporal free riding when the present generation benefits from enjoying the consumption benefits of high carbon emissions, while future generations pay for those emissions in [the form of] lower consumption of a degraded environment.”* (William Nordhaus, President, American Economic Association, in The American Economic Review, April 2015)
- This problem is endemic to global efforts to address climate change; it is also persistent...no ‘solution’ is in sight

Low Carbon Transitions: Political Economy Considerations -- the Case of the US

- ▶ Hypothesis: American legislators, at the national level, will not impose higher energy costs on consumers or adopt aggressive measures to achieve a low-carbon economy
- ▶ Evidence:
 - » Congress has failed to pass legislation on climate change, even in the early Obama years
 - » the federal government's gasoline tax has been frozen at 18 cents/gallon since 1993!
 - » the majority party in American politics, the Republicans, are hostile to tackling GHG emissions through strong government interventions....and they reject the notion of America 'giving up' sovereignty through legally binding international climate change treaties
 - » The Republicans will continue to control the US House of Representatives post-Obama. They currently control the Senate, as well as >3/5 of the state legislatures (a share that has trended higher over time), and they occupy 31 of the 50 state governors' mansions
- ▶ Also note broad US political support for the ongoing (and dramatic) expansion of domestic fossil fuel production – with some calling for the US become an exporter of oil and natural gas (as it is already of coal). No politically influential voices are pressing for a deliberate scaling back of the rapidly growing fossil fuel industry

Conclusion

- ▶ Global demand for energy generally, including oil and natural gas, will continue to grow, even with a slow transition toward lower-carbon energy systems
- ▶ No imminent, large-scale global shift away from oil is likely...despite much talk suggesting otherwise
- ▶ Canada is and will remain a major supplier of energy (oil and gas) for the foreseeable future...
- ▶ But it is less clear how much growth potential exists for Canadian unconventional oil, given infrastructure constraints, our continued inability to access offshore markets, concerns over cost competitiveness, and carbon-related issues