

Global Energy 2010: Emerging Trends, Changing Landscapes, Uncertain Times

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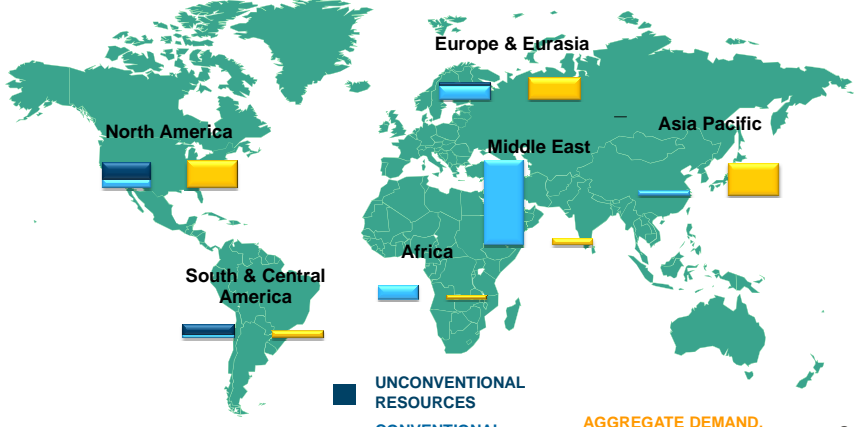
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Beyond Peak Oil: Global resource endowment is enormous, but conventional distribution is uneven and unconventional have technical and environmental challenges

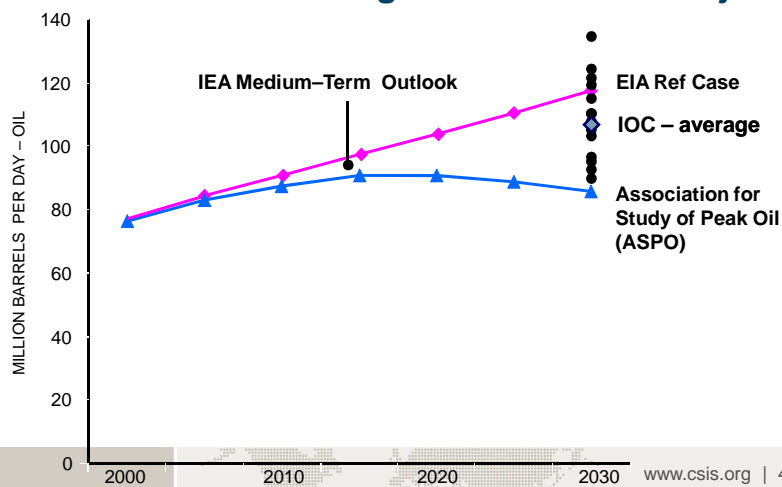


Source: Based on 2009 proved reserves (BP Stat Review) and 2006-2030 demand trends (EIA)

The Hard Truth: Supply

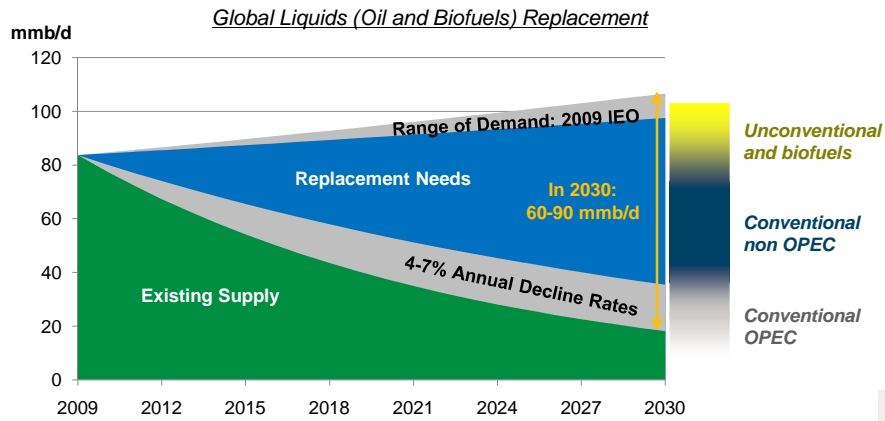
The world is not running out of energy resources, but there are accumulating risks to continuing expansion of oil and natural gas production from the conventional sources relied upon historically. These risks create significant challenges to meeting projected total energy demand.

Risks Reflected in Range of Production Projections



* Source: NPC Data Warehouse

Natural decline rates of oil and gas fields will require massive investment to replace and expand supply



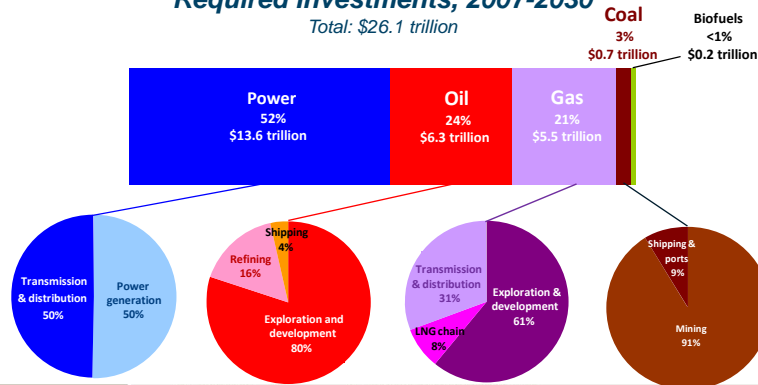
Source: CSIS, EIA

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Massive investments needed to replace, maintain, improve, and expand the energy system – but when, how and by whom will \$ be spent?

Required Investments, 2007-2030

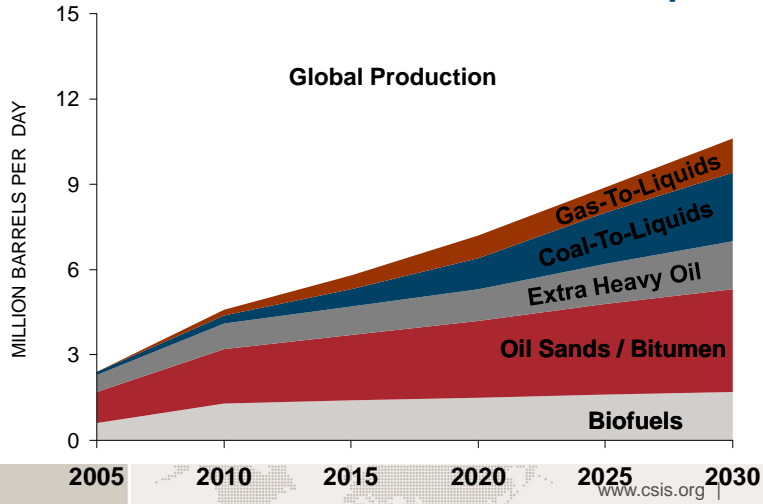
Total: \$26.1 trillion



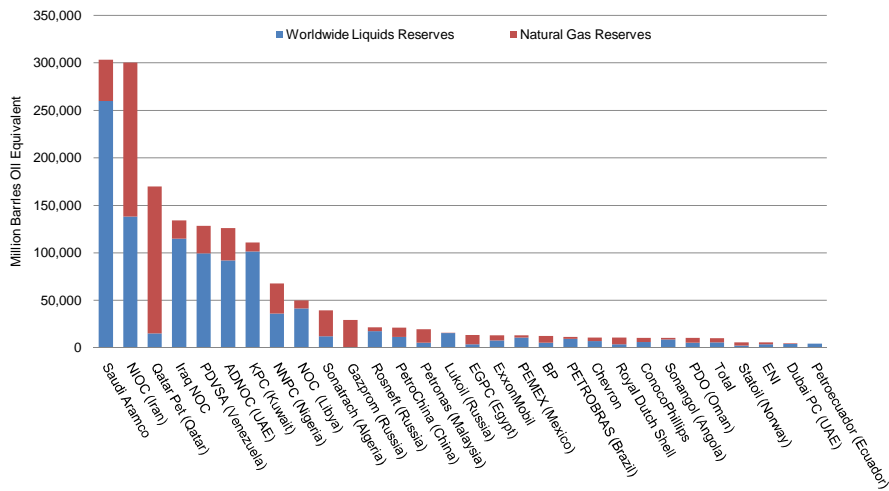
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Sources: IEA WEO 2008

Contribution of Unconventional Liquids



World's Largest Oil and Gas Holders (2007 estimates)



As we grapple with issues of supply reliability, volatile price, shifting geopolitics and climate change, we need an energy policy that is at once sustainable, adaptive, and in the interim uses the current system as much as practicable even as we promote and incentivize new technologies and fuels

Policy choices need to be robust against a variety of factors and outcomes; if technology breakthroughs occur – all the better, but we cannot count on replacements at scale within the 2020 timeframe