

Economic Crisis and Energy Security: A View from the United States

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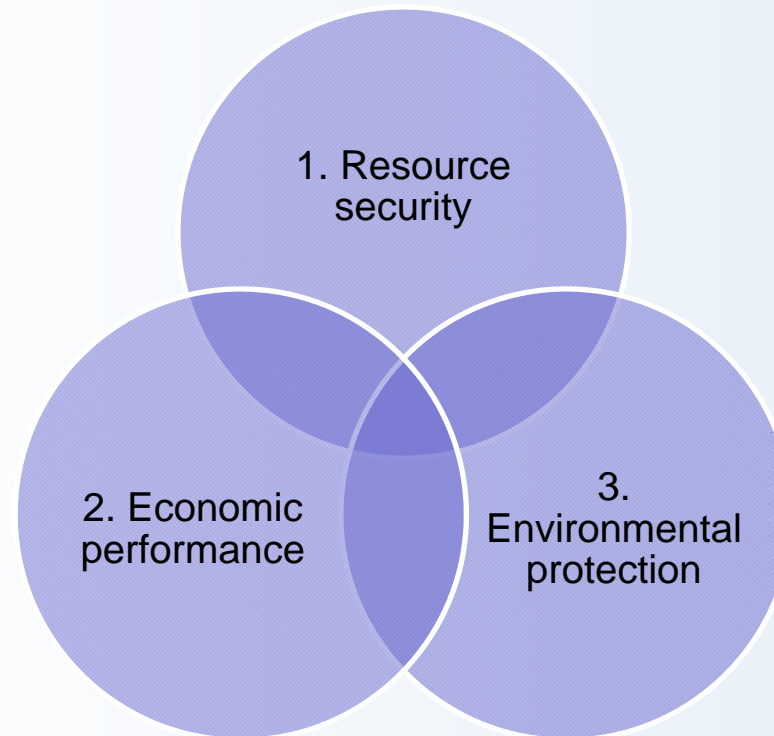
Outline

1. What is Energy Security?
2. Energy Security and the US Energy Mix
3. US Import Dependence
4. Resurgence in US Hydrocarbons
5. US Clean Tech Sector
6. The Outlook for US Energy Security

What is energy security?

“Sustainable access to requisite volumes of energy at affordable prices”

The components of energy security

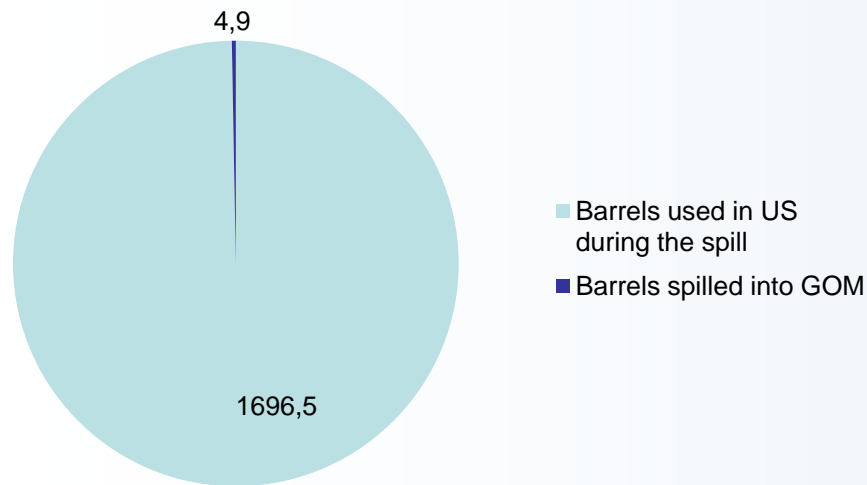


Energy security challenges for the US

- Increasing competition for resources as Asia continues rapid development
- Continued dependency and “path” dependency on oil
- Rising prices and rising volatility in oil markets
- Potential drawdown of nuclear power in the industrialized world
- Risk to weak economies of higher energy costs
- Direct and indirect risks from climate change

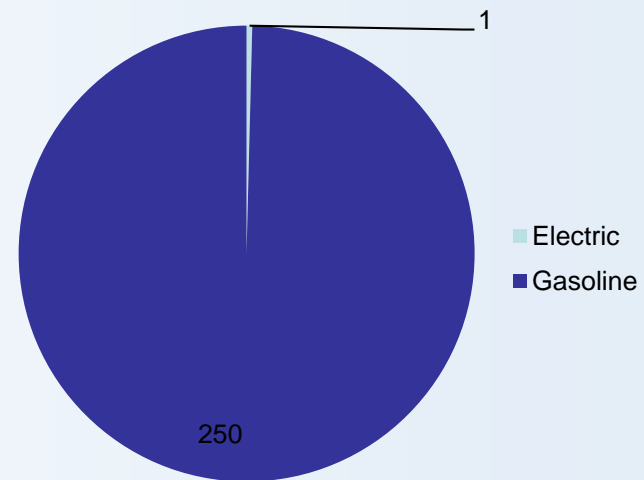
US oil dependence in context

US oil demand in context



Source: EIA/ Interior Dept

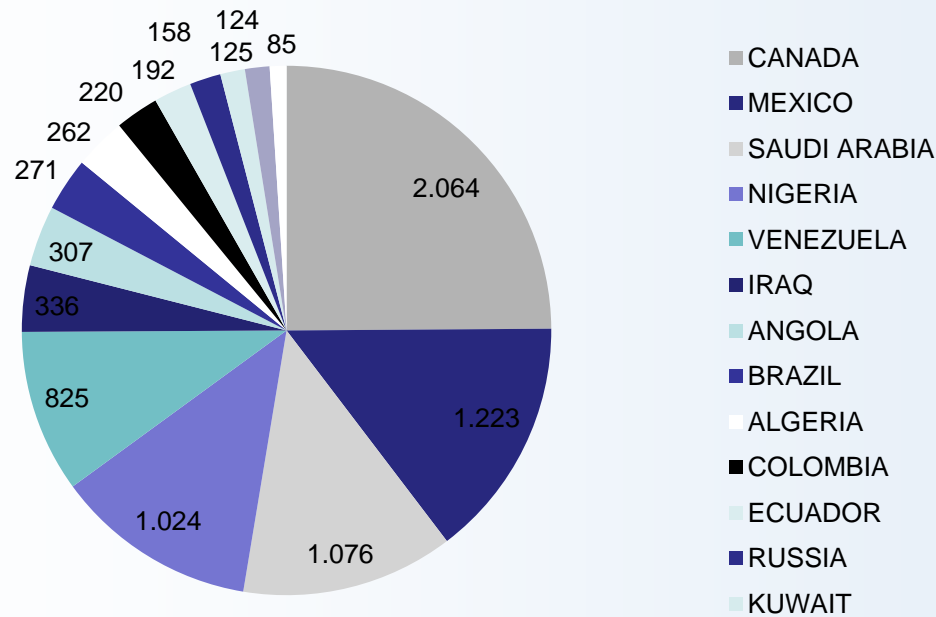
Oil demand in the US vehicle fleet



Source: Earth Policy Institute

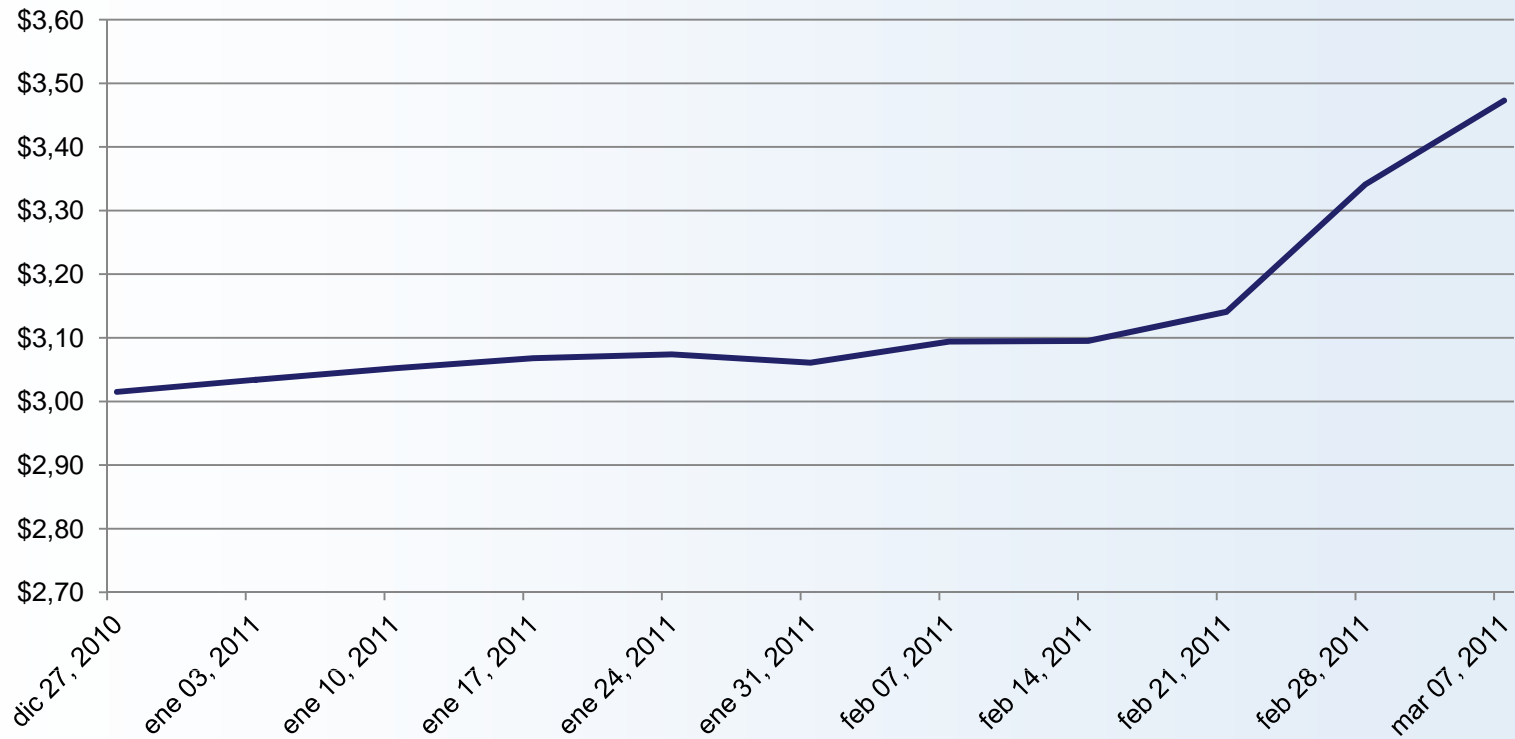
US oil import-dependence by country

US crude oil imports (kbpd) by country



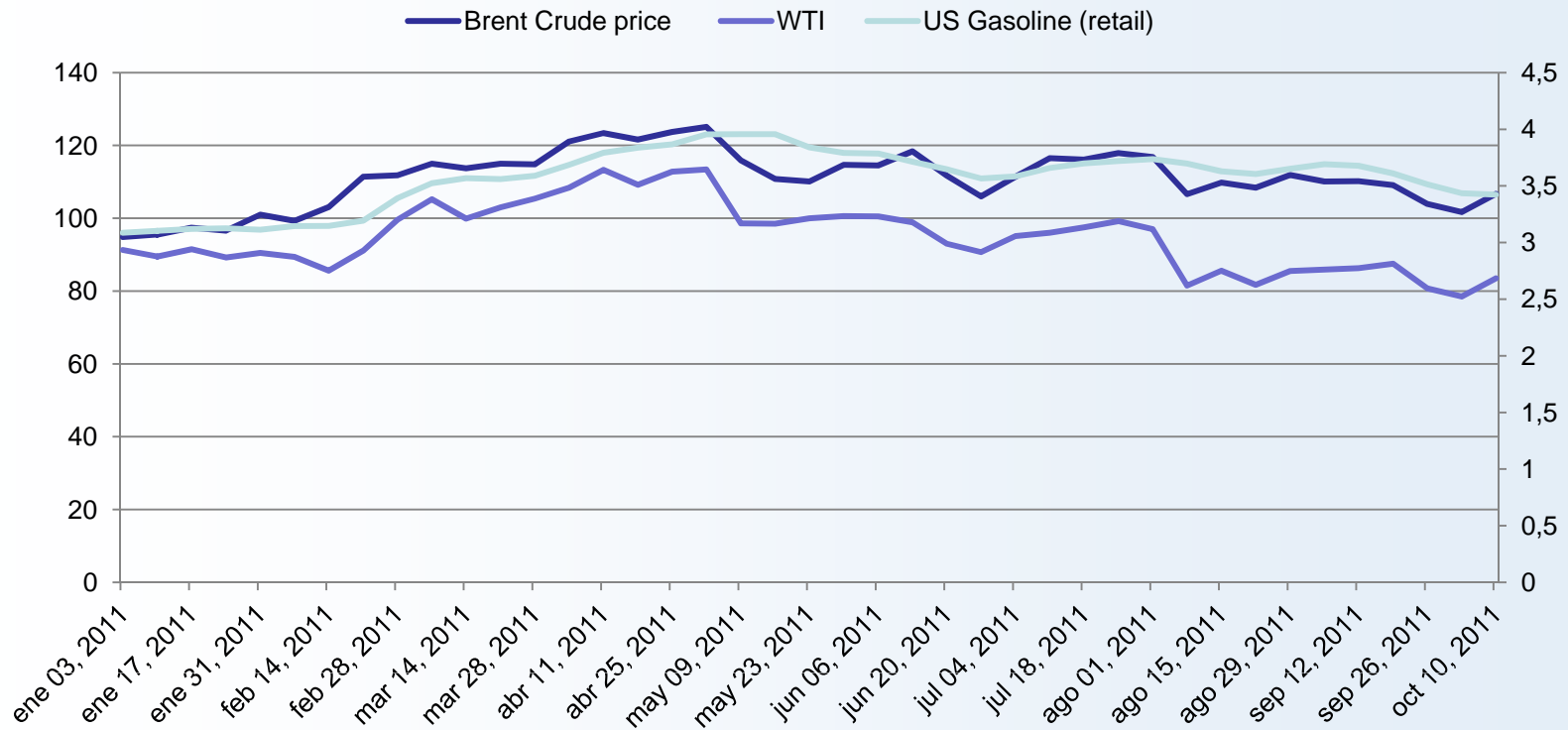
Source: EIA

Local effects of a global oil market



Source: EIA/ BP

Local effects of a global oil market



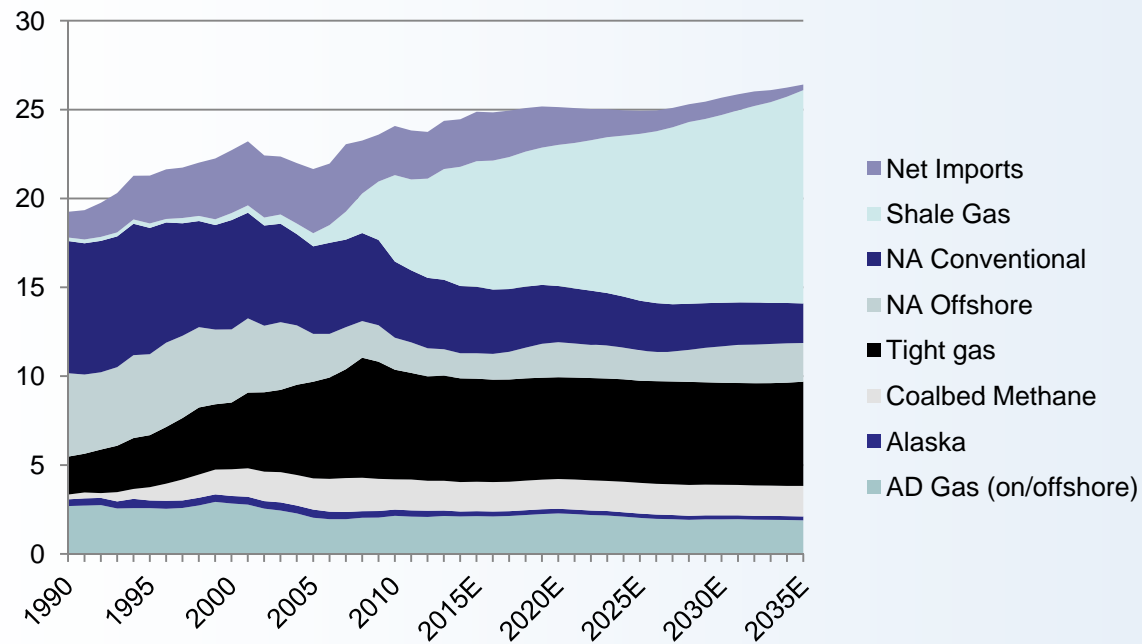
Source: EIA/ BP

Futurology, Policy and Technology

- *“...a major expansion of U.S. [LNG] import capability appears to be under way. These movements bode well for widespread natural gas availability in North America in the years ahead.”*
- Alan Greenspan, Chairman of the U.S. Federal Reserve, 2003
- *“Beginning in 2010, U.S. crude oil production begins to decline, falling to 4.7 million barrels per day in 2025.”*
- U.S. Department of Energy Annual Energy Outlook 2005
- *“My presidency will mark a new chapter in America’s leadership on climate change that will strengthen our security and create millions of new jobs in the process. That will start with a federal cap and trade system.”*
- Barack Obama, U.S. President-Elect, 2008

North American Hydrocarbon Resurgence

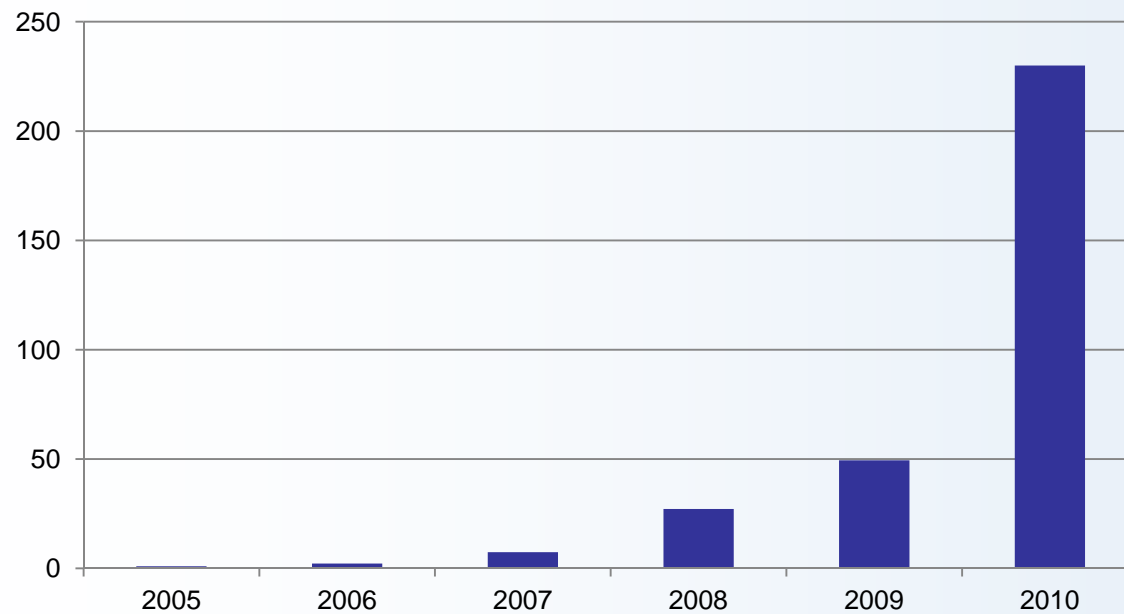
U.S. annual natural gas production (tcf) to 2035



Source: EIA

North American Hydrocarbon Resurgence

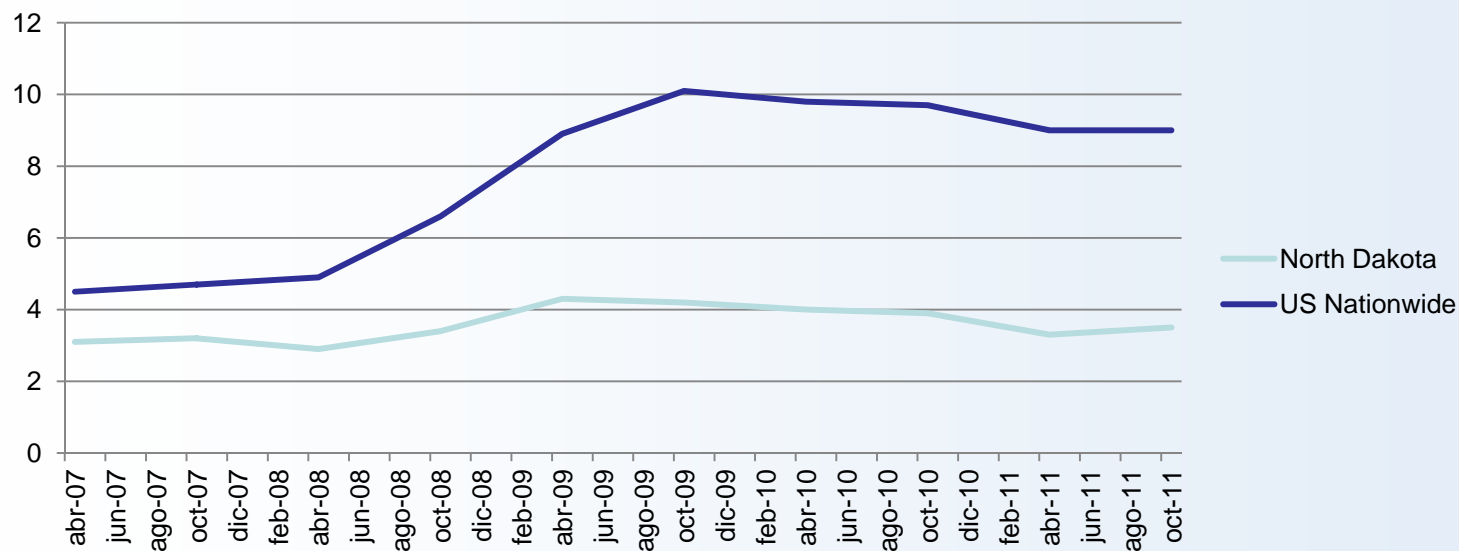
Bakken Oil Production (kbpd)



Source: EIA/ Purvin & Gertz

North American Hydrocarbon Resurgence

Unemployment rates: North Dakota vs U.S. Nationwide



Source: Bureau of Labor Statistics

North American Hydrocarbon Resurgence

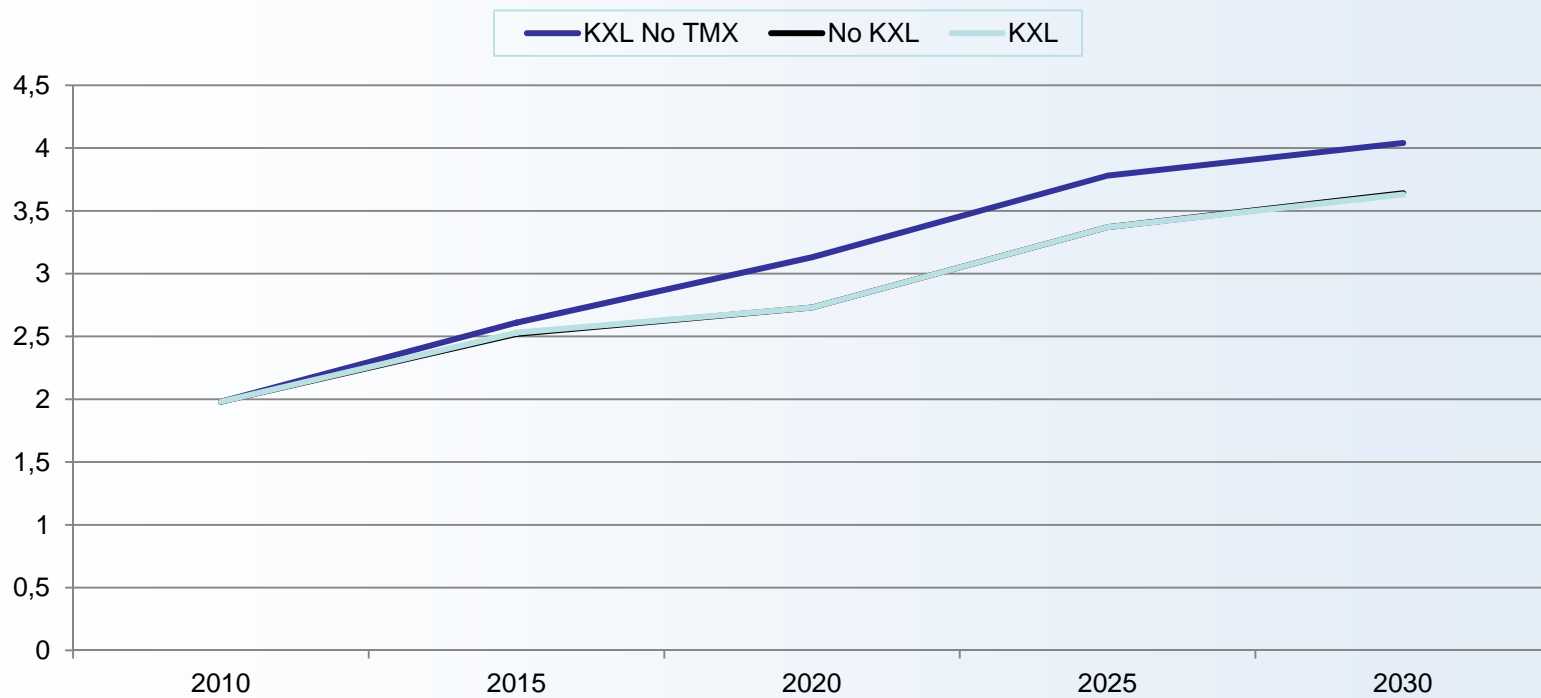
US Imports of Canadian Crude



Source: US State Dept

North American Hydrocarbon Resurgence

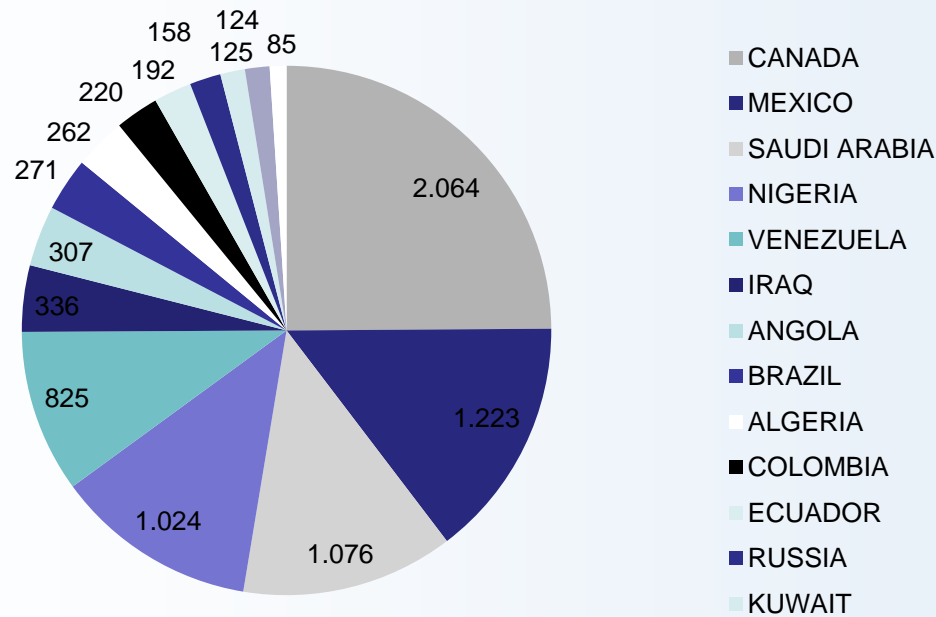
US Imports of Canadian Crude



Source: EnerSys/ US DOE

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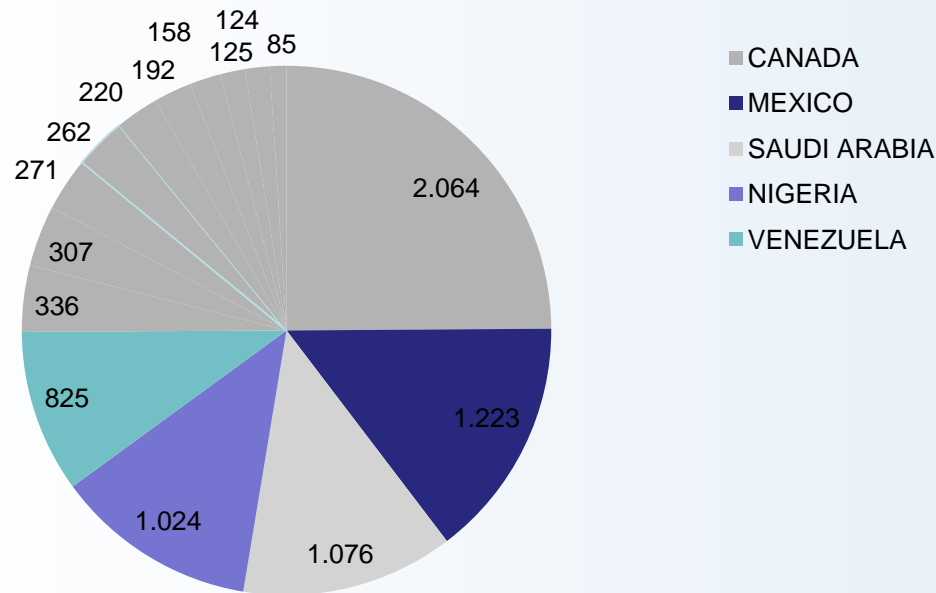
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Source: EIA

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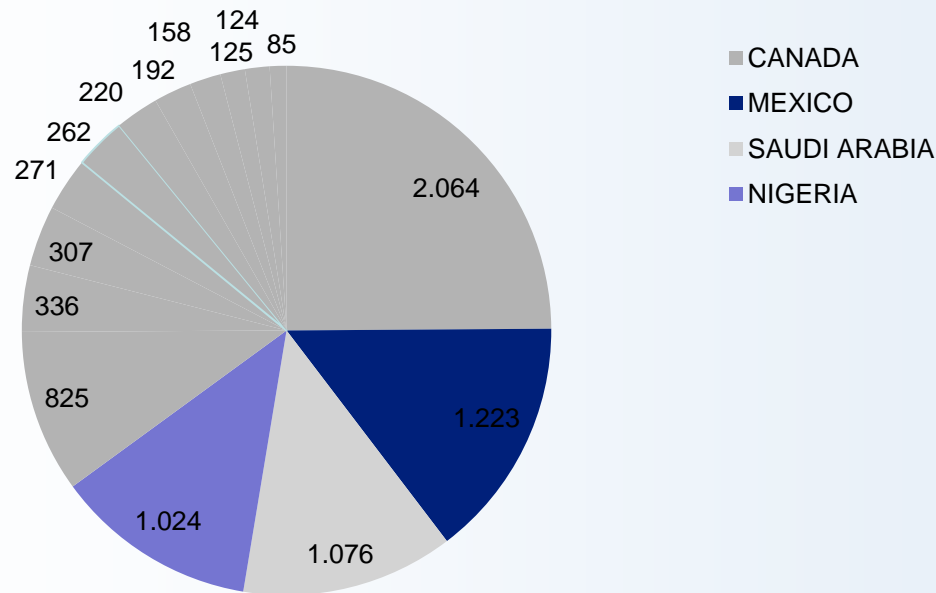
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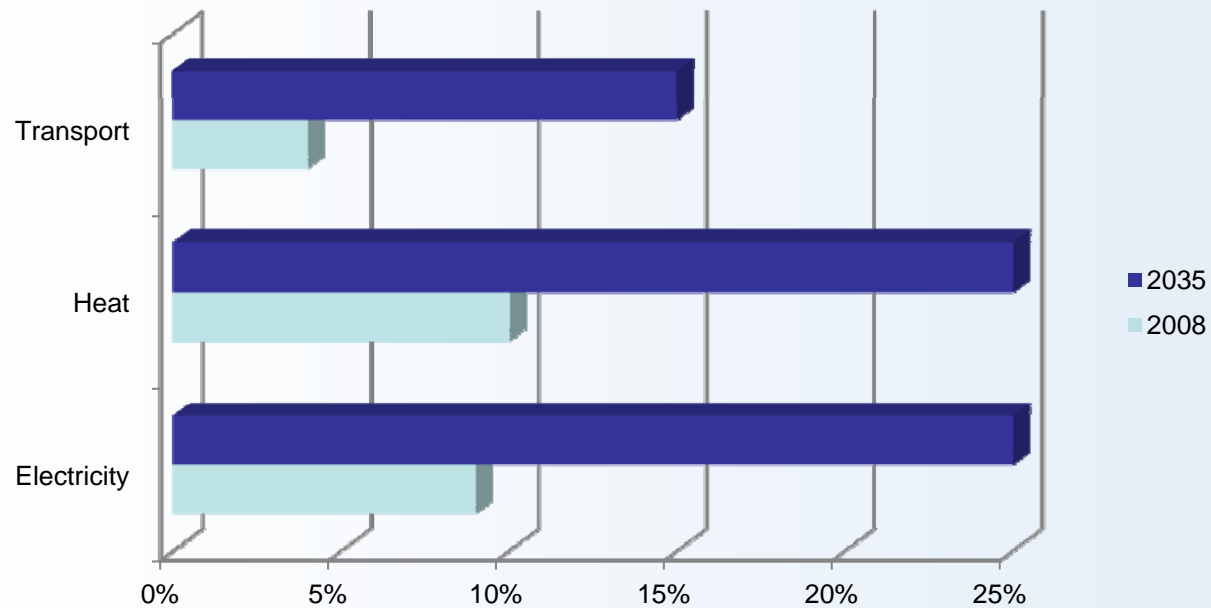
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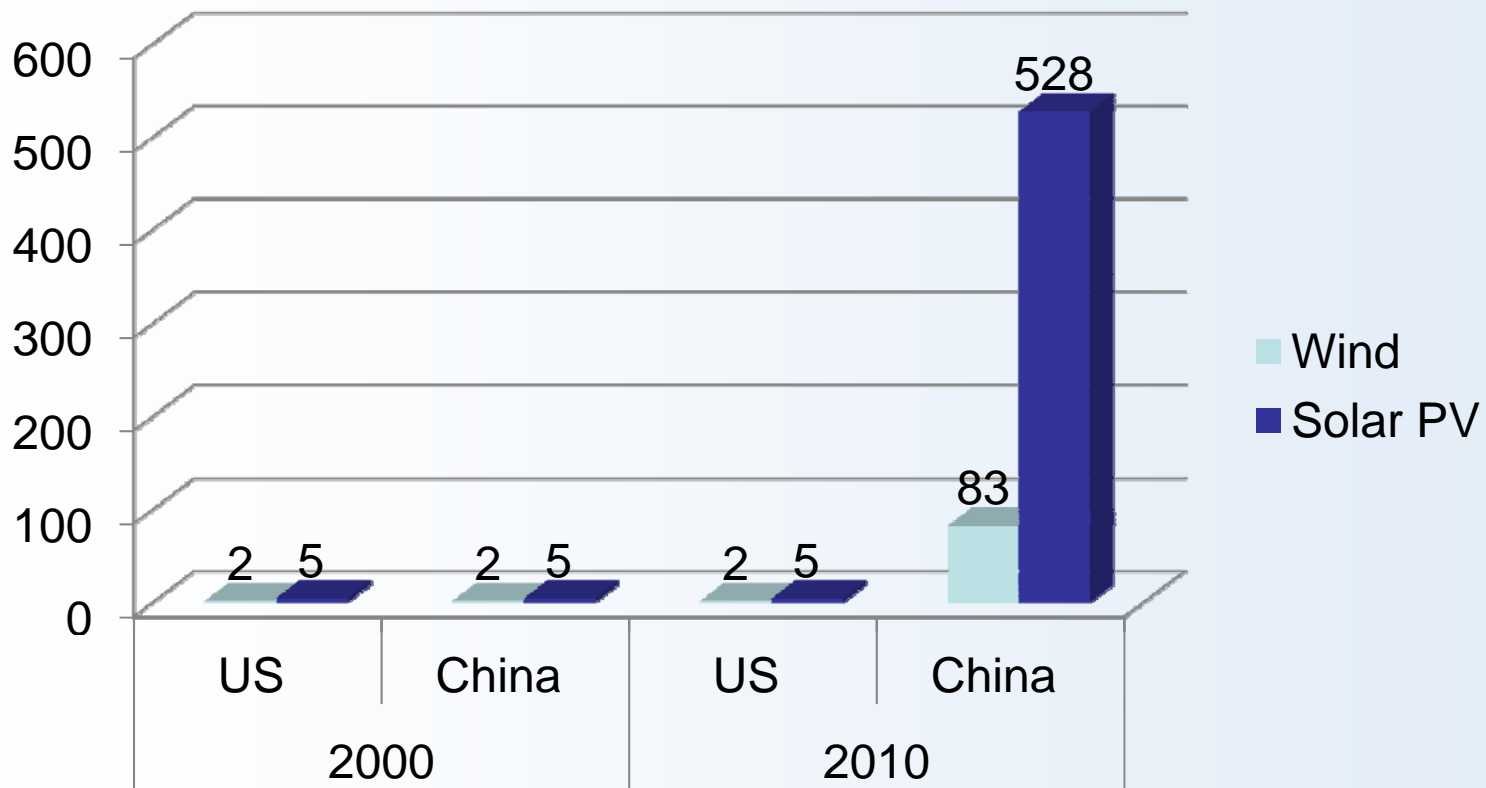
Source: EIA

Renewable energy: a long-term solution



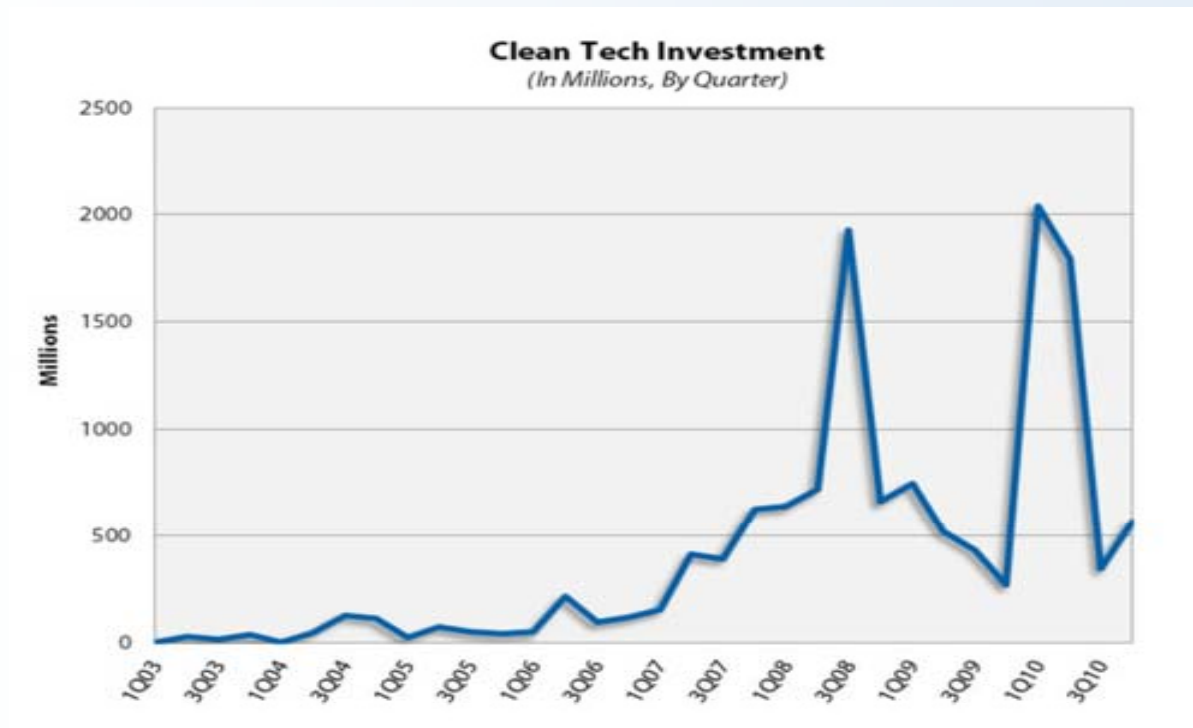
Source: IEA

Renewable energy: the “Sputnik moment”



Source: American Council on Renewable Energy

Politics and Economics of Clean Energy



Source: Third Way

Politics and Economics of Clean Energy



- Fiscal austerity
- Anti-government sentiment
- High-profile bankruptcies
- Growing skepticism over climate change

Conclusions

- US path dependency on oil likely to continue
- Increased US production of oil and gas
- Energy security being linked to job creation
- Clean tech facing political and economic headwinds
- Little prospect for climate legislation
- Supply security set to improve; long-term energy security to remain elusive

Thank You

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