Addressing Uncertainty in Global Oil Demand

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Use of Scenarios at ConocoPhillips
Use of Scenario Planning in ConocoPhillips

• Scenarios are used to:
  • Gain better understanding of external factors that impact our business
  • Test robustness of strategy across different business environments
  • Communicate risks appropriately
  • Adjust prudently to changes in the business environment

• Develop scenarios that are:
  • “Pure” -- to enable improved understanding of impact on ConocoPhillips
  • Sufficiently extreme that you may need to alter your strategy
  • Consider both negative and positive scenarios

• Process recognizes that hybrid scenarios, or moving between scenarios over time, is more likely
  • Premium on capital flexibility and financial strength

• Formal scenario monitoring
Scenario Monitoring System

- Monitor all the scenarios we develop
- Company intranet-based system
- Develop signposts for scenarios
- ~40 internal experts assigned to specific signposts
- System tallies number and intensity of events to indicate scenario vectoring
- Tracking reports sent to the Executive Leadership Team on quarterly basis
Oil and Natural Gas Scenario Framework

- **High Supply Growth**
- **High Demand Growth**
- **Low Supply Growth**
- **Low Demand Growth**

**Quadrants:**
- **High Supply**
  - Shale Renaissance
  - Carbon / Disruptive Technology

- **Low Supply**
  - Supply Constraints

**Low Demand**
- High, High
- Low, Low
- Low Supply Growth
- High Demand Growth
Oil Demand Scenarios
Building resiliency to a range of possible outcomes

3 scenarios follow the IPCC 2 degree trajectory - we use these scenarios to ‘stress test’ our portfolio.
Example of Carbon Constrained Demand Scenario: Key Drivers

Technology

• Breakthroughs improve efficiency and drive the adoption of alternatives to oil and gas
  • Efficiency improvement in transportation and electric power use
  • Electric vehicles adoption
  • Renewable power adoption

Government Policies

• Policies to reduce air pollution and GHG emissions increase the penetration of disruptive technologies
  • Consistent with emission trajectories to limit rise in long-term average global temperature to 2°C
Substitution by non-carbon fuels has been minimal for transportation and industrial uses.

- Electricity only accounts for 18% of final consumption
- Oil and Natural Gas make up 96% of transportation fuels
- Almost two-thirds of industry utilizes fossil fuels

**Notes:** IHS Energy estimated total global primary energy supply and demand by market segment and fuel type in 2014, including the shares of total primary consumption of oil, coal, natural gas, and “other” energy types (nuclear/renewables/hydro/biomass and waste). Fuel inputs into the production of power and heat are captured as well as losses associated with the transformation of the primary fuels. The simplified chart focuses on the main end-user segments: transport; the domestic sector, which includes the residential and commercial subsectors; industry; and feedstocks, and the contributions of different energy types in meeting those segment needs today. Substitution by non-carbon fuels has been minimal for transportation (92% oil) and industrial feedstocks (100% oil, gas and coal).

Source: IHS
Oil demand in 2020 is flat with 2015 demand in IEA’s 450 Scenario but grows in the other scenarios.
Oil demand in 2030 falls by 8% vs. 2015 in IEA’s 450 Scenario but grows in the other scenarios.
Oil demand in 2040 falls by 25% vs. 2015 in IEA’s 450 Scenario and grows by 25% in the Current Policy scenario.

Natural gas demand rises and gains market share in IEA’s 450 Scenario.
New Developments Needed to Meet 450 Oil Demand Scenario

- Even with declining oil demand in IEA 450 scenario substantial volumes of new oil supplies will be needed to meet demand in 2040.
- New Developments needed total nearly 200 trillion barrels by 2040 requiring Investment of approximately $10 trillion USD (2015).

Trends in Oil Intensity & GDP Per Capita

Oil intensity has seen steeper declines than total energy intensity, both in developed & emerging economies.

Source: IEA, World Energy Outlook 2015, slide deck
Lower Oil Prices Affect the Competitiveness of Fuels

Change in global primary energy demand by fuel in the Low Oil Price Scenario relative to the New Policies Scenario

As well as increases in oil, natural gas benefits (for a while), particularly in regions where import prices are indexed to oil: with coal pushed out in the power sector.

Source: IEA, World Energy Outlook 2015, slide deck
Transport Leads the Ramp Up in Demand

Change in global oil demand by sector in the Low Oil Price Scenario relative to the New Policies Scenario

Use of cars and trucks increases, there is a slower pace of improvement in the efficiency of vehicles and aircraft, and more limited switching to alternative fuels.

Source: IEA, World Energy Outlook 2015, slide deck
Lower Prices Complicate the Low-Carbon Transition

Change in cumulative global energy-related CO₂ emissions in the Low Oil Price Scenario relative to the New Policies Scenario, 2014-2040

While coal use declines, the deployment of alternatives to oil in transport decreases, & 15% of energy efficiency improvements are lost, pushing overall emissions up.

Source: IEA, World Energy Outlook 2015, slide deck
COP’s Climate Action Plans
ConocoPhillips’ Climate Change Action Plan

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Building Capacity: Resourcing, Knowledge Sharing, Skill Development

Scenario development and monitoring are key elements of our planning process.
• Understanding our Footprint and Reducing Emissions.
  • Kept GHG emissions flat since 2009: ~28 million tonnes CO$_2$ equivalent (adjusted to remove data for dispositions from all years).

• Focusing Reduction Efforts using Global Prioritization.
  • Key areas for reductions are methane, flaring, and fuel switching.
  • Investing in oil sands emission reduction technology.

• Supporting New Solutions:
  • **COSIA’s XPRIZE**: oil sands industry seeking innovative solutions to CO$_2$ emissions.
Oil and Gas Companies are Taking Action

• Carbon intensity slightly up
  • Mature fields, unconventional reserves, heavier oil, LNG, more remote locations

• Reducing emissions
  • Reducing methane venting, flaring, replacing equipment
  • Cogeneration, fuel switching and innovative energy management

• More companies focus on reducing emissions in specific businesses
  • ... rather than company-wide GHG emissions targets

• Industry advancing carbon capture and storage
  • Involved in 9 of the 13 large-scale operational CCS projects globally
• Company’s analysis of external market uncertainties prepares us to adjust quickly to movements in scenarios

• Company prepares for:
  • Wide range of uncertainty on demand and prices
  • High, short-term price volatility
  • Shorter cycle times

• Little changes to oil demand prior to 2020

• Global natural gas demand holds up better than oil demand in the carbon scenarios

• Low-cost and flexible supply options win