



Managing Energy Risk

Presentation to The Bank of Estonia and GIC

This report contains information that is confidential and proprietary to McKinsey & Company, Inc., and is solely for the use of McKinsey & Company, Inc., personnel. No part of it may be used, circulated, quoted, or reproduced for distribution outside McKinsey & Company, Inc. If you are not the intended recipient of this report, you are hereby notified that the use, circulation, quoting, or reproducing of this report is strictly prohibited and may be unlawful.

Managing energy risk requires a 4 step approach



Managing energy risk – Step 1



Energy risk has distinct energy and risk components that must be identified

Energy type



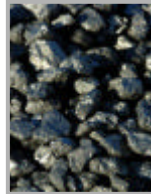
Natural gas



Jet fuel



Crude oil



Coal



Gasoline



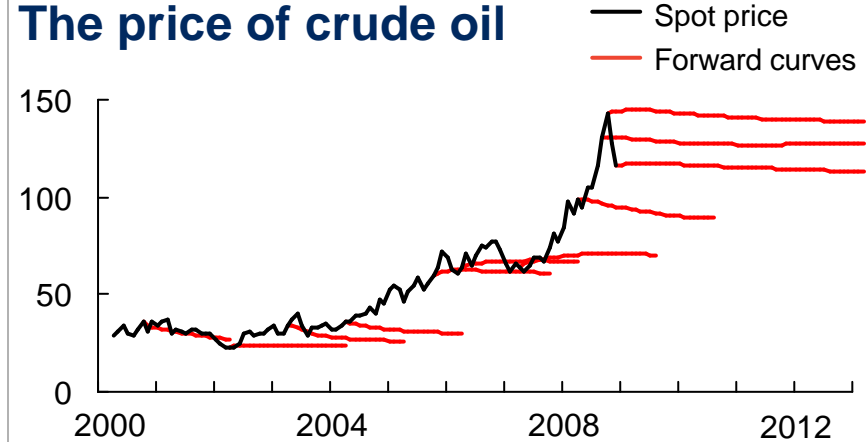
Power



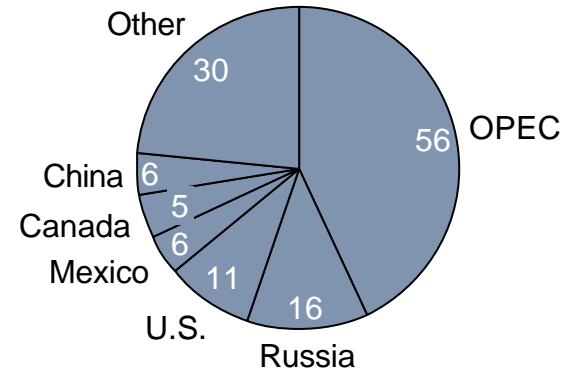
Diesel

Risk type

The price of crude oil



Global oil supply



Managing energy risk – Step 2



There are key requirements, methodologies, and tools to measure energy risk


Type of risk	Requirements for evaluation	Methodologies for measuring risk	Tools to test risk measures and limits
Price	<ul style="list-style-type: none">• Risk books• Current financials• Historical financials	<ul style="list-style-type: none">• VaR• CFaR• EBaR	<ul style="list-style-type: none">• Stress tests• Monte Carlo simulation
Supply	<ul style="list-style-type: none">• Quantity required• Historical quantities	<ul style="list-style-type: none">• Volumetric analyses of needs	<ul style="list-style-type: none">• Stress tests• Monte Carlo simulation


Managing energy risk – Step 3




To identify energy risk mitigation options, identify market participant and key levers


GENERALIZATIONS

Producers
<ul style="list-style-type: none">• IOCs• Coal producers• Natural gas products 
<ul style="list-style-type: none">• Market knowledge• Assets

Processors
<ul style="list-style-type: none">• Refineries• Power plants 
<ul style="list-style-type: none">• Market knowledge• Assets

End Users
<ul style="list-style-type: none">• Consumer goods producers• Logistics 
<ul style="list-style-type: none">• Volume needs• Credit rating

Intermediaries
<ul style="list-style-type: none">• Banks• Trading houses 
<ul style="list-style-type: none">• Credit rating• Balance sheet• Deal flow

Others
<ul style="list-style-type: none">• Governments• (NGOs)• (Other) 
<ul style="list-style-type: none">• Credit rating• Legislative power• Geography

Risk mitigation selection will be driven by risk ownership preferences

Selling risk



Pros

- Should excise risk
- Helps reduce risk through outsourcing
- Can have low costs

Cons

- Requires significant analysis
- Can introduce new risks
- Manages exposures partially
- Short time horizons

Owning risk



- Helps own risk
- Financial instruments still an option

- Requires more investment
- Can tie up more capital

- Should fully own risk

- Requires significant investment
- Can tie up significant capital
- Can introduce new risks

Managing energy risk – Step 4



Evaluating a risk mitigation option can be done by asking 3 key questions

-
- Can I mitigate the amount of risk I want to?
 - Do I have other risks I may have previously overlooked?
 - Will I introduce new risks by my actions? (e.g., Fx, liquidity)
-



Governments can mitigate risk using strategies that may have unintended consequences

NOT RECOMMENDATIONS

Strategy type	Name	Description	Potential unintended consequences
Price	• Subsidies	• Direct financially supporting all or some consumers of a particular commodity	• Increased consumer demand
	• Price caps	• Mandating a price ceilings	• Shortages of supply
Supply	• Education	• Funding a program to educate the public to lower their consumption level	
	• Tax breaks	• Encouraging certain investments by providing government tax breaks	• Investment away from other critical areas
	• Subsidies	• Encouraging certain investments by providing government tax breaks	• Exploitation of loop holes • Investment away from other critical areas
	• National sponsorship	• Providing government backing of an industry to improve credit quality	• International competition issues/challenges
	• National ownership	• Participating in an industry by government investment or purchase	• Crowding out of investors in key industry
	• Nationalization	• Taking control of the assets of a particular industry to control its output and other activities	• Freezing of assets abroad • Scaring away foreign investors in other industries