

# Assessing perceptions of energy security risks

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# Agenda

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- Background
- Objectives
- Survey
- Delphi study
- Progress to date
- Next steps
- Output
- Future

# Background

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- Activities contributing to the Energy Security Dialogue:
  - Survey of the energy security work programmes of international organisations within the UNECE region and the cooperation and coordination between them
  - Assessing perceptions of energy security risks
  - Analysis of sustainable energy policies to mitigate energy security risks
  - Indicators of energy vulnerability
  - Complementary energy security strategies
  - Energy efficiency for secure energy supplies

# Objectives

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- To gain an understanding of how energy security risks are perceived by policy-makers and decision-makers in the relevant constituencies
- To identify perceptions of
  - which risks represent the greatest threat to energy security
  - where efforts to eliminate or reduce risks should be focussed as a matter of priority
- To promote agreement and to stimulate action on
  - what strategies should be pursued in order to mitigate these risks
  - how these strategies should be implemented, and
  - by whom they should be implemented

focused on hydrocarbons (oil and gas)

# Constituencies

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- Governments
- Energy/power industry
- Financial services

in both energy-consuming (importing) countries and energy-producing (exporting) countries

- International organisations

# Definitions of energy security

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- **Consuming/importing countries**

The availability of usable energy supplies, at the point of final consumption, at economic price levels and in sufficient quantities and timeliness so that, given due regard to encouraging energy efficiency, the economic and social development of a country is not materially constrained

- **Producing/exporting countries**

The ability consistently

- to produce and deliver energy resources, at the time and place and in the form and quantity required by customers (domestic and export), and
- to receive payment for this that is sufficient
  - to cover the costs incurred,
  - to maintain and develop production capability and
  - given due regard to the need to manage resources for future generations, to promote the economic and social development of the producing country over the long term

# Survey framework

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- On-line questionnaire-based survey of 250 policy-makers and decision-makers in the selected constituencies
- About 35 risk factors, comprising 150 specific risks, in four categories:
  - Production/transportation
  - Economic and financial
  - Political and social
  - Geopolitical
- About 20 mitigating strategies, with 40 specific applications
- Different questionnaires for producing and consuming countries

# Survey questions

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- Which risks represent a significant threat to energy security for your country?

Significant is considered in terms of social and economic impact

- Which of the selected risks are the most significant, within three given timescales, in terms of
  - probability?
  - impact?
- Which risk strategies would be effective in mitigating the threats to energy security?
- Which strategies should be given priority?

# Delphi study

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- Five potentially disastrous scenarios
  - Physical
  - Legislative
  - Economic
  - Geopolitical
  - Combined (physical, economic and geopolitical)
  
- Five panels of 10 - 12 experts, one from each of the four constituencies plus one combined panel
  
- Questions
  - What are the probabilities of the five given scenarios arising?
  - What probability would constitute a major threat?
  - How should the threat best be mitigated?
  - What factors could hinder the implementation of the preferred mitigating strategy?

# Progress to date

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- A comprehensive identification and mapping of potential energy security risks has been completed
- The scope, framework and methodology for the survey and the Delphi study have been designed, tested and adopted
- For the survey, separate questionnaires for consuming/importing countries and producing/exporting countries have been produced
- For the Delphi study, the five scenarios have been prepared and questionnaires have been developed based on these scenarios
- In both cases the questionnaires have been tested in cognitive interviews with a representative sample from all the applicable constituencies
- Significant progress has been achieved in identifying the respondents to be involved in the full survey and the participants to be involved in the Delphi study

## Next steps

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- Development and initial testing of the web-based versions of the questionnaires Q4 2009
- Second test of the survey questionnaire and the Delphi study scenarios/questionnaire Q1 2010
- Full survey and Delphi study Q2 2010
- Report on the results of the survey and Delphi study Q3 2010

# Output

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- Report on
  - what risks are perceived to represent significant threats to the energy security of consuming and producing countries
  - the top five perceived risks in terms of probability and impact
  - what strategies are considered to be potentially the most effective in mitigating those risks
  - differences, if any, between individual perceptions and generally agreed actuality
- in the context of
  - the market characteristics of different countries (types of energy used, sources of supply, degree of liberalisation, international links etc)
  - prevailing economic circumstances

# Future

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- It is proposed that the survey and Delphi study should be repeated annually
  - to assess how perceptions change in the light of changes in economic circumstances, new/reducing supplies, technological developments and, more particularly, the implementation of mitigating strategies and improved information
  - to measure the effectiveness of the mitigating strategies and any educational processes that have been implemented

# Quantitative analysis of energy security risks

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Taylor-DeJongh

# Analysis of sustainable energy policies to mitigate energy security risks

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- Previous papers:
  - North American perspective on energy security risks across the supply chain
  - Changing roles of international and national oil companies
  - Qualitative assessment of the impact of financial markets on energy security
  
- Objectives of current paper
  - to quantify the impact of the most significant risks to availability, reliability, deliverability, and affordability of energy
  - to identify sustainable policies that are most appropriate for mitigating the most salient energy security risks

# Scope

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- Key risks
  - high potential impact
  - over a long duration
  - in consuming and producing countries
  
- Public sector mitigants
  - not policy recommendations
  - mitigants available to producer or consumer countries to minimize supply impact of each particular risk
  - many of the high - impact risks occur in producer countries; consumer country responses therefore emphasize international engagement
  
- Private sector mitigants
  - mitigants available to private companies to minimize commercial impact of a particular risk
  - most mitigants do not offset lost supplies of oil or gas

# Preliminary observations

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- Priority risks with high impact and long duration tend to affect multiple aspects of energy security: availability, reliability, deliverability, affordability
- Of the priority risks, most provide the opportunity to engage with the private sector to increase investment, enhance stability of supplies, and diversify supply options
- Although the private sector has developed a variety of risk mitigation tools, government support of energy security is critical:
  - effective regulation of financial markets
  - provision of additional liquidity through ECAs and MLAs
  - enforcement of contract rights
  - maintenance of fiscal and regulatory regimes that allow for returns commensurate with risk