Australian Government
Department of Industry, Innovation and Science

Office of the Chief Economist

New Approaches to Managing Energy Security

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May 2016

Rethinking risk management

- The 2007-2009 Global Financial Crisis (GFC) exposed significant flaws in traditional risk management approaches

- Other global events such as pandemics, natural disasters, and social unrest also demonstrate the characteristics of complexity, interconnection, and vulnerability to contagion effects

- OECD review of risk governance for Future Global Shocks… models for aggregate supply and demand:

  — *'Are inadequate for identifying factors such as propagation pathways, possible tipping points, control points, and circuit breakers, and to strengthening the resilience of complex systems more generally'*

  — *'Collect data, develop metrics and fashion tools…that depict functional interconnections, and models that produce a probability of the transmission of risks through complex and interdependent systems. Such tools are the foundation for early warning systems that could be used to activate policy interventions to contains risks before they spread to different sectors and multiply losses'*

Source: OECD Reviews of Risk Management Policies: Future Global Shocks – Improving Risk Governance, page 3

Themes in international risk management frameworks

- A greater emphasis on a **systemic** approach to risk: regulating the system as a whole, not just its individual components

- The risk profile of an individual entity is different to its systemic importance, and significant risk arises from **interdependencies** between individual parts of the system

- A shift in the way risk is conceptualised, from managing negative impacts to **managing uncertainty**. Uncertainty can be positive, neutral or negative, allowing for more flexible ways of thinking about risk: risk can be **taken, tolerated, retained, shared, reduced, or avoided**

- There is an increasing focus on **flexibility** because of the propensity for rapid change as individual economies, markets and other systems adjust to a disruption and due to contagion effects across different systems (social, financial, environmental, health, technological). Flexibility can incentivise participation, spreading the risk burden and promoting greater system stability

Energy security and energy markets

- Energy security is inherently about managing risks throughout the supply chain, from production through to final consumption

- Three fundamental elements and the ‘4 A’s’ of energy security:
  - Physical supply: availability and accessibility
  - Economic: affordability
  - Environmental sustainability: acceptability

- International energy security frameworks were developed primarily following the crude oil supply disruptions of the 1970s

- Three levels of energy security risk management:
  - Market
  - Individual economy
  - International/multilateral.

Energy security and energy markets (cont.)

Significant changes in energy markets over the last 40 years

- Increased diversification of the fuel mix, with oil use displaced by increasing use of coal and natural gas.
- A shift in consumption patterns towards non-OECD emerging economies.
- Changes in the structure of the international crude oil market, from vertically integrated market of the 1970's to the current segmented and highly specialised market.
- The move from long term contracts to an increasing share of spot transactions and the emergence of oil futures and derivatives markets, increasing the depth and liquidity of the market.
- New causes of imbalance between supply and demand beyond geopolitical shocks to crude oil supply. For example, refinery shutdowns (e.g. Hurricane Katrina 2005), demand surges (e.g. Asia 2013) and the loss of specific types of crude (Libya 2011)

Energy security in the APEC region

Key challenges

- Despite some large regional producers, APEC is an overall a net energy importer and host to the world's largest energy consumers
- High reliance on crude and LNG supplies from regions prone to instability, such as the Middle East, which provides 50 percent of the region's crude oil
- An energy demand profile that will remain highly dependent on fossil fuels, particularly oil and gas
- High level of diversity – countries within the region vary in their energy endowments, and physical, social, cultural and economic backgrounds

Energy security in the APEC region (cont.)

APEC energy security initiatives

- Energy security policy in APEC region is currently guided by the 2001 Energy Security Initiative (ESI)
- Establishing a regional framework for energy security has been reaffirmed as a priority for APEC
- Possible priorities for a regional energy security framework were identified in 2008 and 2011 studies, ‘Strategic Framework for Energy Security in APEC’

Energy security indicators

- Work is underway to develop security indicators appropriate to both individual APEC economies and the region as a whole

Methodological approaches to risk management

Towards a ‘network’ approach

- Applying modern risk management approaches to regional energy security could build on the existing indicators work to develop a methodology for assessing the systemic inter-relationships between these indicators

- A network approach may provide a more systemic energy security risk profile for the region to help inform APEC policy development:

  — A flexible framework that can be scaled to capture the key components and relationships at different levels

  — A comprehensive assessment of the risks relating to supply disruptions that includes the potential impacts of contagion effects and causal factors

  — A tool which helps identify regional energy security gaps and areas of priority

  — The capacity to assess the benefits and costs associated with different disruption scenarios and market interventions.

Thank you

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