


Energy Risks and Risk Mitigation

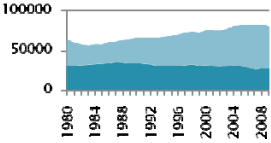
OSCE's Role

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OSCE SPECIAL MEETING ON ASSESSING THE OSCE'S FUTURE CONTRIBUTION
TO INTERNATIONAL ENERGY SECURITY CO-OPERATION
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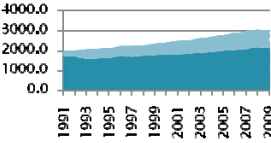


Global Production and Trade in Energy

- ▶ About 85% of energy is fossil (oil, gas, coal)
- ▶ Oil: a global commodity
 - More than 60% of output is exported
 - About 90% of trade in oil is seaborne in tankers
- ▶ Gas: regionally traded
 - Less than 30% of output is exported
 - About 78% of international trade is piped gas
 - Over 60% of LNG trade is in Asia
- ▶ Coal:
 - Only hard coal traded internationally
 - Only about 14% of hard coal is exported, 50% in Asia
- ▶ Electricity: Only 3.1%–3.5% crosses a border (2% in 1980)



Oil production / exports, mbpd
Source: BP, IEA, EIA



Gas production / exports, bcm/y

No Substitutability Except in Heat Applications

	Residential			Commerc.		Industr.		Trans.
	L	H	Appl	H	L	Boil	Proc	
O-NG	-	Y	0	Y	-	Y	S	L
O-E	0	Y	0	Y	0	Y	S	L
O-C	-	Y	0	-	-	Y	0	-
NG-E	0	Y	Y	Y	0	Y	S	-
NG-C	-	Y	0	-	-	Y	0	-
E-C	0	Y	0	-	0	Y	0	-

The Actual Markets, Risks

- ▶ The “energy market” is yet to emerge: a series of overlapping markets
- ▶ Little evidence of energy scarcity risk for ~150 years now:
 - Prices of oil up or flat, coal up or flat for bituminous, down or flat for anthracite, P of gas maybe up – before shale gas: 150 years technology balances scarcity (relax??)
- ▶ Risks: specific by energy, country, region: many “energy securities” depending on nature and magnitude of risks, sensitivity of S/D
- ▶ Risks are difficult to address cross-border:
 - Disparate effects in the energy sector of each country (fuel mix, S/D patterns...)
 - Unpredictable effects on technology deployment:
 - Expectations of higher prices cause consumers to look for “ways around”
 - Expectations of higher cost cause producers to look for “ways around”
 - In both instances, a shift in technology occurs
- ▶ Many factors at play in S/D balance (“energy security”);
 - Prices and income
 - Price vs. value
 - Information
 - Changes in technology (shale gas!)
 - Physical bottlenecks (Bosporus, Central Asian gas)
 - Changes in the price of capital in the long run... and energy as one of bundled inputs
 - Mother nature, inclusive of weather
 - Perceptions about reliability of supplies
 - Population growth
 - Externalities (pollution, global warming, etc.)

Country Risk vs. Project Risk

- ▶ $CRR=0.5*(PR+ER+FR)$, PR weight is 0.5, ER and FR 0.25 each¹
- ▶ Three elements of project feasibility:
 - Profitability
 - Magnitude of risk (probability of events impacting profitability)
 - Sensitivity (magnitude of the impact of risk events upon profitability)
- ▶ Project risk assessment methods:
 - DCF analyses
 - Sensitivity analyses
 - Monte Carlo simulation
 - Gambler's ruin
 - Decision tree analyses
 - Neural network analyses
 - Game theory analyses
- ▶ Risk management: provide for events to which the project is highly sensitive, if possible.
- ▶ Degree of acceptable risk: individual.



¹ Source: Source: Erb, Harvey, Viskanta.

Tractable and Untractable Risks

- ▶ Economic and financial risks are manageable:
 - Hedging and various other financial vehicles
 - Worst-case scenario planning
 - Due diligence
- ▶ Political risks in foreign countries are not manageable, but protection may be available:
 - MIGA – against transfer restriction, expropriation, war and civil disturbance, and breach of contract
 - ECT – against discriminatory treatment, direct or indirect expropriation, breach of individual investment contracts; investor-host government international arbitration

What Can OSCE Do About Energy Risks?

- ▶ Technical toolbox: modeling, forecasting vs.:
 - Scenario planning
 - Policy development
 - Energy security management (if-then)
- ▶ Policy dialogue toolbox:
 - Energy security reviews, special reports, peer-to-peer dialogues, information exchanges, transparency, capacity building...
- ▶ Need to be case-specific:
 - “Energy market” vs. national, regional, energy product markets
 - “Energy sector” vs. energy sectors
 - Energy services, energy technology
 - Access issues (to resources, markets, infrastructure, information)
- ▶ Price vs. value added (approximated by real wages) – “does it make sense” test:
 - Need to carry out country and case-specific cost-benefit analysis
 - Need to seek industry input
 - Need to seek public input

Where Can OSCE Start / Help?

- ▶ Identification: energy security risk perceptions, pinpoint hotspots – exposed countries, sectors, industries, groups
- ▶ Early warning system (data and awareness, transparency) for hotspots perceived as most exposed
- ▶ “Hot line” at Secretariat
- ▶ Monitoring of energy security risk perceptions: structuring a dialogue (seek industry and public participation)
- ▶ Sister organizations: Energy Charter, IEA, Energy Workgroup of APEC, IEF
- ▶ Energy Security Review Round (peer-to-peer dialogue)