

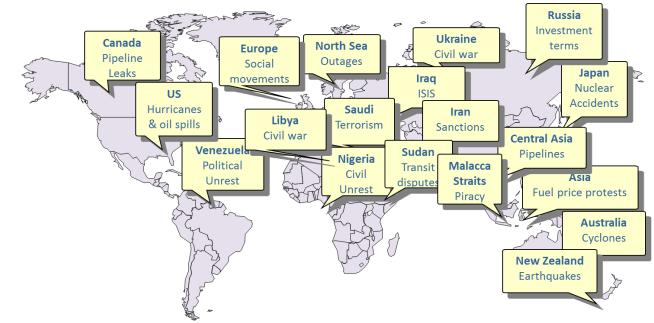
Energy sector resilience

Emergency response measures

www.iea.org

Energy security as urgent as ever

- Countries must prepare for all forms of risk
 - 3 IEA collective actions with 1 in response to weather-related (hurricanes Katrina & Rita in 2005)



Energy security relies on markets

- Market balances supply & demand smoothly
- Sufficient interconnections
- Diversity of supply (countries & fuels)
- Robust infrastructure for seasonal fluctuations (ports, pipelines, storage)
- Appropriate government regulations (e.g. public service obligations)



What can we do to increase resilience?

- Flexible & efficient policies
- Communication, information
- Dialogue with partners
- Emergency Response Reviews
 - Regular reviews of member & partner country emergency preparedness policies / procedures
- Exercises

Robust data

Real-life experience is priceless!

- Gulf of Mexico, two similar sets of events:
 - 2005 Hurricanes Katrina & Rita
 - 2008 Hurricanes Gustav & Ike
- Similar effect, different market conditions
 - IEA Collective Action in 2005, no action in 2008
- Significant difference to consider:
 - Better preparation based on experience -> faster expected recovery



Brief overview of IEA emergency policy

• Key tools for oil security:

- Increase supply: oil stocks (90 days)
- Decrease demand: demand restraint / management measures
 - Short-term can lead to long-term behavioral changes & fuel efficiencies (car-pooling, smart truck logistics etc.)

Gas and electricity security

- Different IEA remit (identify / share best practice)
- Monitoring, policy recommendations



Tools for resilience under development

- Geospatial energy infrastructure disruption analysis
 - Scrape weather/earthquake data
 - Combine with energy data
 - Perform spatial queries
- Real-time alerts



Example of spatial analysis

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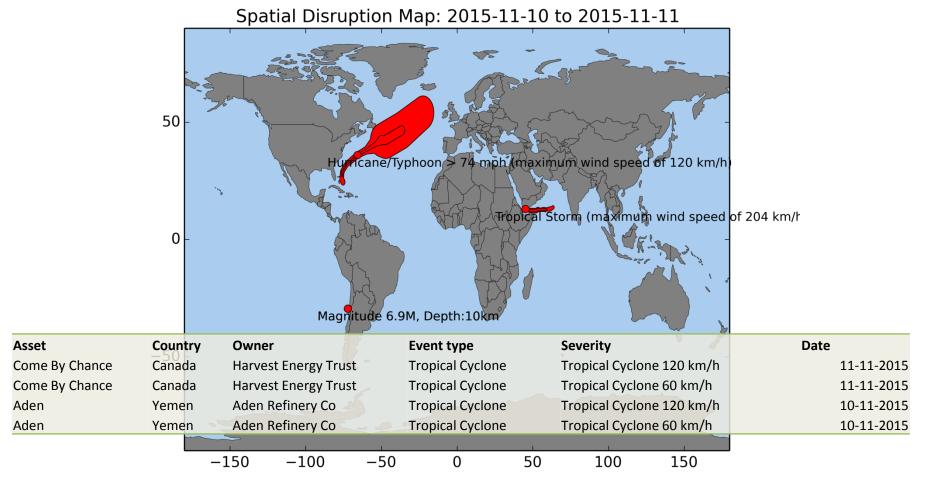


Example of spatial analysis

		PLANT	MW	FUEL	СІТҮ	COUNTRY		
Legend		QINZHOU	1260	Coal	Qinzhou City	CHINA		
J	And the second sec	YANTAN	1210	Hydro	Dahu Yao Autonomous County	CHINA		
• BFG	~ ·····	SANTA RITA BATANGAS	1000	Gas	Santa Rita	PHILIPPINES		
COAL	The areas	HUANENG HAIKOU	1061	Coal	Chengmai County - Haikou City	CHINA		
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Example of a recent alert





Energy Agency Secure Sustainable Together

Way forward

Red alert for Tro	pical Cyclone HAIY	AN-13 2013-06-11					
Category 5 (catastrophic damage	Infrastructure at risk*						
Maximum sustained winds: 315 k	Units	Severe	Moderate	Low	Total		
GDACS weblink for further inform	Oil production	kbd (2014 production)	18	36	-	55	
	China		2	36	-	38	
	Philippines		17	0	-	17	
	Vietnam		-	0	-	0	
	Refining	kbd (ACD capacity)	40	643	-	683	
	China		40	360	-	400	
	Philippines			153	-	153	
	Vietnam			130	-	130	
	Crude oil export ports	kbd (2014 exports)	11	5	-	16	
	China		-	3	-	3	
	Philippines		11	1	-	12	
	Vietnam		-	2	-	2	
	Crude oil import ports	kbd (2014 imports)	-	550	-	550	
man the second second	China		-	398	-	398	
	Philippines		-	82	-	82	
	Z Vietnam		-	71	-	71	
	Gas production	bcmy (2014 production)	5	2	-	7	
in the second se	🖌 China		3	2	-	6	
	Philippines		1	-	-	1	
	Liquifaction plant	bcmy (2014 exports)	-	-	-	-	
	Regasification plant	bcmy (capacity)	-	-	-	-	



Conclusions

- Energy security as urgent as ever
- Threats to energy security from many sources
- Efficient, transparent markets crucial for flexibility
- Government policies must complement efficient markets
- IEA helping members & partners to be ready



2014 publication

ENERGY SUPPLY **SECURITY**

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Emergency Response of IEA Countries 2014



Available for download at: <u>http://www.iea.org/topics/energysecurity/</u>

600 pages describing the emergency response policies for oil and gas of IEA and key partner countries.

Pdf files for whole publication and individual chapters.