

Indian Upstream Scenario: A Snapshot

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Presentation Structure

- ▶ India: A Large Appetite for Energy
- ▶ Regulatory Framework in the Indian Upstream Sector
- ▶ Environmental Concerns in Shale Gas
- ▶ To Sum Up.....

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India- A Large Appetite for Energy

- ▶ India's GDP growing at nearly 8 % annually (2006-11), needs large supplies of energy, from all sources, and has a heavy import dependence. In 2011,
 - ▶ Oil and natural gas consumption grew over 3 % and 15 %, respectively
 - ▶ LNG and Coal imports grew by 40 % (46 MMscmd) and 8 % (118 MMt), respectively
 - ▶ Robust domestic E&P effort underway. In 2010, with reserves of 2 large discoveries:
 - ▶ Crude and gas reserves rose by 55 % and 36 %, respectively
 - ▶ Exploration ongoing in > 200 blocks under the new exploration regime
- Yet, India will continue to be a major importer of energy. It is likely to become world's largest thermal coal importer in 2012.
- ▶ In Unconventional sources, production of CBM has begun, and 24 blocks under exploration/development. Only 9 TCF out of a total of 92 TCF resource base has so far been established. Shale Gas award policy soon to be launched. However, viewed against large demand, it may not be a major player in the near future.

Hence, all gas sources, including through trans – national pipelines and unconventional ones are in sharp focus.

Regulatory Framework In the Indian Upstream Sector

Issue	Present mandate for Onland oil and gas Blocks (including CBM)	Outlook for Shale gas policy
Land rights	Surface rights with the land owner as per land classification	Favourable
Sub-surface	Federal government owns hydrocarbons	Favourable
Acreage award	‘Single window’ award through ICB. Exploration rights given without reference to stratigraphy.	Favourable. The right of existing operators to exploit shale gas ?
Cost recovery	100 % in only in Oil/gas, and not in CBM	Federal concerns on extending this provision to shale gas.
Royalty	10 % on gas, retained by State Government	Favourable
Profit petroleum	As per bid, shared equally by federal and state governments.	A significant discussion issue – to seek or not
Tax incentives	Liberal provisions – income tax and duties	Favourable



Environmental Concerns in Shale Gas

Issue	India specific concern	Implication for Industry
Domain knowledge	Government knows much lesser than operators; fracking/underground E&P practices are new	Evolve best practices
Tremors	Large parts in Seismic Zone 3-5	More data needed
Concerns on chemicals	Federal and state laws quite restrictive and compliance driven, with judicial oversight	Disclosure norms-proprietary issues
Shale in large plays	Difficult to obtain mineral rights in forest area and specified eco-systems	‘Factory approach’ versus ‘sweet spot’
EIA	Prior EIA even before exploration, with public hearing is the norm	Advance screening helpful at later stage
Water	Providing safe and sufficient drinking water is a challenge before the government	May raise cost as water transport likely
Public perception	Knowledge gap of related fallouts-blowouts, water consumption/contamination	Closer interaction with interest groups



To Sum Up.....

- ▶ Until resource mapping/coring is done, shale gas story will not be played out – neither can its role be anticipated – Government committed to pursue this resource.
- ▶ India's complex socio-economic situation will require new intervention strategies – transferring the US experience may not be of much help, both in the regulatory and environmental aspects.
- ▶ At the present growth rate of economy, and concomitant energy consumption growth, India's reliance on conventional oil and gas resources is not likely to diminish.

Indian market is likely to support global unconventional gas agenda, both in exploration pursuit, as well as by keeping gas prices bouyant .

