**6TH ANNUAL** 

# Global Energy Conference 2011

May 19, 2011

#### **Event Presentations**

Shale Gas: Global Implications for Natural Gas Future of Offshore Drilling Overview of Investment Opportunities in Latin America Overview of Investment Opportunities in Asia/Africa



## Panel 1 Shale Gas: Global Implications for Natural Gas

- 1. Mitsui's Strategy: US Shale Gas and Beyond
- 2. US Liquefaction by Cheniere Marketing LLC
- 3. Legal Regime for Shale Gas/CBM in China



## US Shale Gas and Global Natural Gas Business

Mitsui's Strategy: US Shale Gas and Beyond

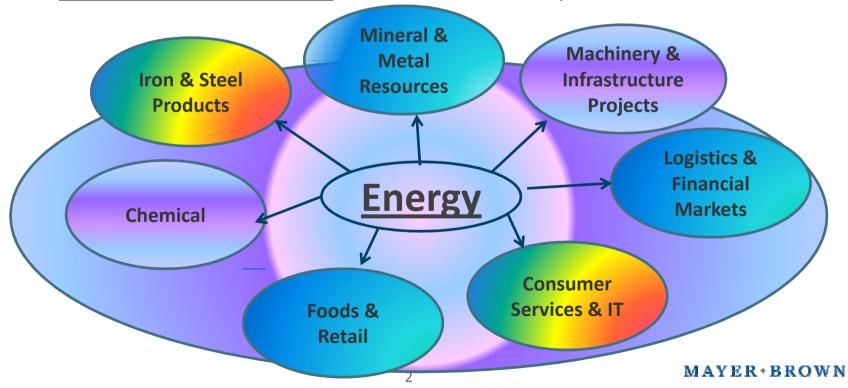
MASAMUTSU SHINOZAKI PRESIDENT & CEO
MITSUI E&P USA LLC



### Mitsui's Business and Global Network



- ♦ International Conglomerate Headquartered in Tokyo
- ◆ Total Asset: \$100 billion
- ◆ Global Network: 151 offices in 66 countries
- ♦ <u>Balanced Business Portfolio</u> Across Various Industry Sectors



# Mitsui's Business Model (Shifting Role from <u>Traditional</u> <u>Trading Intermediary</u> to Total Solution Provider)

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#### **Traditional Business Model**

Mitsui, as one of Japan's general trading companies or "sogo shosha," had contributed to the industrialization of Japan, mainly through its role as a trading intermediary in the goods necessary for the nation's growth and development.

Intermediary function, based in Japan, linking buyers and sellers

Logistics

Mitsui & Co., Ltd.

Export/import handling

Modern American Sellers

Foreign currency settlements

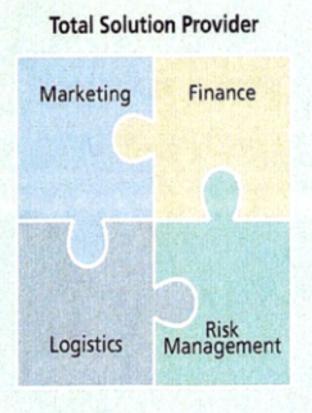
Export transactions from Japan Import transactions into Japan from overseas

## Mitsui's Business Model (Shifting Role from Traditional Trading Intermediary to <u>Total Solution Provider</u>)

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## **Changing the Business Model**

With the rapid changes in the social structure and globalization of markets, Mitsui is shifting from being an intermediary between sellers and buyers to a total solution provider at each stage of the value chain.



## **Energy Business Segment and Its Strategy**



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#### Business Activities

- Resource Development
- Trading and Marketing
- Petroleum Refining and Marketing, LPG
- LNG
- Environmental Business

#### Strategy

- Oil & Gas: Continue to expand global business portfolio by the pursuit of new upstream assets, including unconventional energy resources as well as those in frontier areas
- <u>LNG:</u> Maintain a stable earnings base in existing core projects and aim to participate in <u>new projects</u> by utilizing Mitsui's integrated capabilities in <u>LNG</u> <u>marketing</u> and <u>project development</u>

## Energy/Oil & Gas Upstream Asset Portfolio





### Mitsui's E&P Strategy



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- ◆ Balanced Portfolio of Exploration, Development, Producing Assets
- ◆ Building-up <u>Profit Centers</u> while Seeking Upside Potential
- ◆ Challenge New Opportunities Outside Existing Core Areas
- ◆ Development of <u>Unconventional Energy</u> Fuel Business

#### **Existing Core Areas**:

- ➤ Oceania (Australia, New Zealand)
- ➤ Middle East (Oman, Egypt, U.A.E., Qatar)
  Southeast Asia
- > North America
- ➤ Russia (Sakhalin)

#### New Areas:

- > Africa
- > South America

# Acquisition of First Shale Gas Asset in 2010 (Strategy Behind)



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- ◆ Pursuit of <u>Unconventional Hydrocarbons Asset</u>
- → Global Natural Gas Demand as <u>Cleaner Energy Source</u>
- ◆ Pursuit of Natural Gas and LNG Supply Sources

**→ Marcellus Shale Gas Asset Acquisition in 2010** 

#### Marcellus Shale Gas Asset





Project Outline

Mitsui has entered into a PA with Anadarko to participate in the Marcellus Shale gas project in the state of Pennsylvania via newly established subsidiary("Mitsui E&P USA LLC") in the U.S.A. in February 2010. The details of this deal are the following;

1) Area: Marcellus Shale (Pennsylvania)

2) Assets: 100,000 net acres (32.5% of

Anadarko's interest in the

project leases)

3) Operator: Anadarko/ Chesapeake/Others

4) Production: 360 – 460mmcfd (peak)

40mmcfd (Current)

\* All figures are net to MEPUSA

- MEPUSA has entered into an Area of Mutual Interest (the "AMI") with Anadarko which covers primarily the state of Pennsylvania to jointly acquire new leases for a period of ten years from 2010 to further expand its business.
- ➤ As of December 2010, MEPUSA acquired additional approximately 20,000 net acres based on this AMI. Hence, MEPUSA currently has 120,000 net acres in the Marcellus Shale.



Energy 11

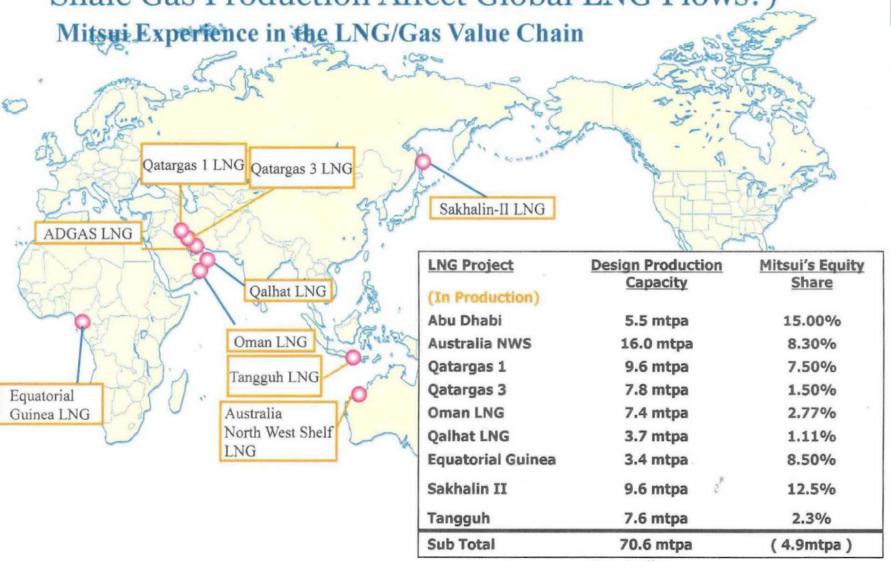
#### Business Plan in US



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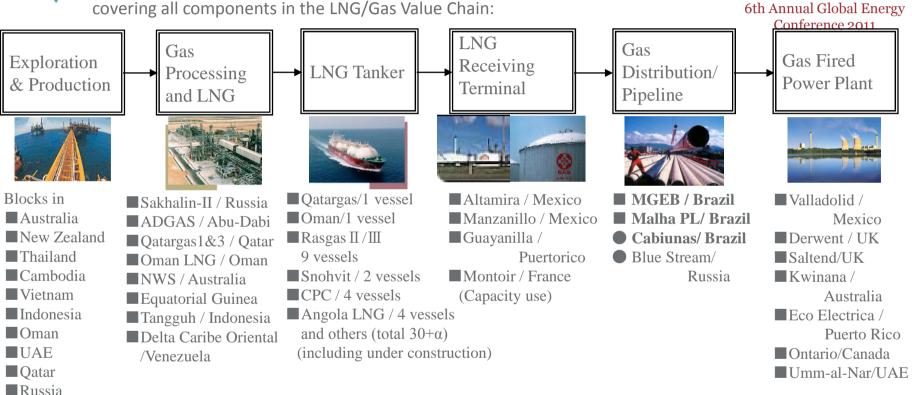
- ◆ Continued focus on <u>shale gas</u> and other unconventional Hydrocarbons (oil sands etc.)
- ◆ US <u>portfolio</u> requires balanced portion of <u>oil</u> <u>producing</u> (liquid rich) assets.
- ◆ Planning to build up <u>additional shale gas assets</u>. <u>Liquid rich</u> shale gas is preferred from the view point of oil and gas ratio in the portfolio.
- ◆ Looking for <u>reliable partner</u> as an operator.

# Implications for Global LNG Business (How will US Shale Gas Production Affect Global LNG Flows?)



## Mitsui Experience in the LNG/Gas Value Chain

Mitsui has wide experience in equity investment, marketing & trading and finance covering all components in the LNG/Gas Value Chain:



- Equity Investment Project (or tanker owned by Mitsui)
- EPC / finance

■Libya ■Namibia ■USA

## Emerging Global LNG Marketplace



- ◆ Growing natural gas demand and new LNG supply sources from various regions in the world.
- Necessity of supply/demand adjustment mechanism due to seasonal demand gap, <u>price</u> <u>differential</u> between Western market and Asian market, <u>uncertainty over nuclear power</u> etc.

## Post Earthquake Energy Sources in Japan



- Loss of nuclear capacity
  - Permanent Shut Down of TEPCO's Fukushima Dai-ichi (#1) Nuclear Power Plant
  - Prime Minister's Request to Suspend Chubu Electric's Hamaoka Power Plant
- ◆ <u>Clouds on nuclear</u> New plant construction is unlikely in short to medium term. Existing plant maintenance requires scrutiny and higher standards.
- Need reliable <u>alternative energy sources</u> in medium to long term.

# Post Earthquake Energy Sources in Japan (continued)



- ◆ Fuel burning, in particular LNG, is expected to increase.
- ◆ Increased Supply is expected from existing LNG sources, including Qatar.
- ◆ Export of LNG from the U.S. may be an option to fill the demand in Japan or other global markets.





#### **US Liquefaction**

Mayer Brown – Global Energy Conference May 2011

Renato Pereira Vice President, Cheniere Marketing LLC

### **Forward Looking Statements**

This presentation contains certain statements that are, or may be deemed to be, "forward-looking statements" within the meaning of Section 27A of the Securities Act and Section 21E of the Securities Exchange Act of 1933, as amended. All statements, other than statements of historical facts, included herein are "forward-looking statements." Included among "forward-looking statements" are, among other things:

- statements that we expect to commence or complete construction of a liquefaction facility by certain dates, or at all;
- statements that we expect to receive authorization from the Federal Energy Regulatory Commission, or FERC, or the Department of Energy, or DOE to construct and operate a proposed liquefaction facility by a certain date, or at all;
- statements regarding future levels of domestic or foreign natural gas production and consumption, or the future level of LNG imports into North America or exports from the U.S., or regarding projected future capacity of liquefaction or regasification facilities worldwide;
- statements regarding any financing transactions or arrangements, whether on the part of Cheniere or at the project level;
- statements regarding any commercial arrangements marketed or potential arrangements to be performed in the future, including any cash distributions and revenues anticipated to be received;
- statements regarding the commercial terms and potential revenues from activities described in this presentation;
- statements that our proposed liquefaction facility, when completed, will have certain characteristics, including a number of trains;
- statements regarding our business strategy, our business plan or any other plans, forecasts, examples, models, forecasts or objectives: any or all of which are subject to change;
- statements regarding estimated corporate overhead expenses; and
- any other statements that relate to non-historical information.

These forward-looking statements are often identified by the use of terms and phrases such as "achieve," "anticipate," "believe," "estimate," "example," "expect," "forecast," "opportunities," "plan," "potential," "project," "propose," "subject to," and similar terms and phrases. Although we believe that the expectations reflected in these forward-looking statements are reasonable, they do involve assumptions, risks and uncertainties, and these expectations may prove to be incorrect. You should not place undue reliance on these forward-looking statements, which speak only as of the date of this presentation. Our actual results could differ materially from those anticipated in these forward-looking statements as a result of a variety of factors, including those discussed in "Risk Factors" in the Cheniere Energy, Inc. and Cheniere Energy Partners, L.P. Current Reports on Form 8-K filed with the Securities and Exchange Commission, which are incorporated by reference into this presentation. All forward-looking statements attributable to us or persons acting on our behalf are expressly qualified in their entirety by these "Risk Factors". These forward-looking statements are made as of the date of this presentation, and we undertake no obligation to publicly update or revise any forward-looking statements.



### Sabine Pass Liquefaction Project\*

#### Sabine Pass to become bi-directional import/export facility

- Market fundamentals create opportunity to expand into exports
- Export services provide customers with an attractively priced option to access U.S. natural gas supply
- Sabine Pass facility location is strategically situated
  - Many existing assets in place needed for an export terminal reduces capital required, cost estimates comparable to liquefaction expansion economics
  - Abundance of supply and existing infrastructure in surrounding regions, proximity to Henry Hub
- Powerful tool for industry players to manage their portfolios
  - Early indications of interest from both buyers and sellers of natural gas and LNG



<sup>\*</sup> Commencement of construction is subject to regulatory approvals and a final investment decision contingent upon Cheniere obtaining satisfactory construction contracts and long-term customer contracts sufficient to underpin financing of the project.

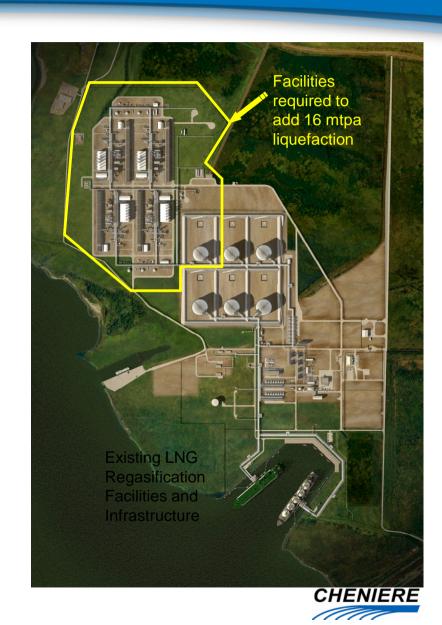
## **Sabine Pass Liquefaction**

**Combined Facilities Plot Plan** 

- Up to four liquefaction trains with a total liquefaction capacity of approximately 16 mtpa
  - ConocoPhillips' Optimized Cascade<sup>®</sup> LNG Trains
  - Six GE LM2500+ G4 gas turbine driven refrigerant compressors per train
  - SAC water injection for emissions control
  - Gas turbine inlet air humidification
  - BASF aMDEA acid gas removal unit

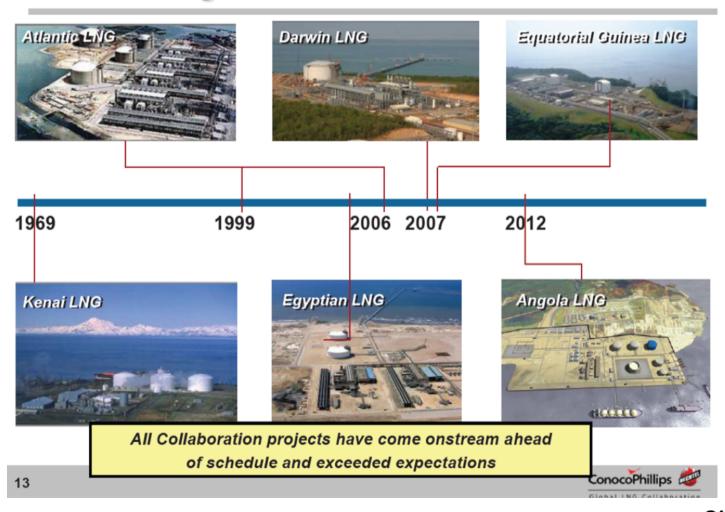
#### Additional Equipment to include

- Gas receipt metering and treatment systems
- New compression on Creole Trail pipeline to permit gas receipts
- New in-tank pumps loading pumps and piping modifications for 12,000 m<sup>3</sup>/hr loading rate
- Refrigerant and amine storage tanks
- Tie-ins to existing storage and piping systems
- New wet/dry and ship flaring systems
- New power generation (supplementing existing on-site power)
- New buildings and modifications to existing buildings for control, O&M, warehousing, security, and remote I/O



## ConocoPhillips-Bechtel - Global LNG Collaboration

#### **Proven Designs**





### **LNG Project Support & Regulatory**

- Very strong local support: Cameron Parish officials, Louisiana state and federal congressional delegations, parish & state agencies
- Strong support from most gas producing states
- Cheap ethane by-product means added competitive landscape for chemical industry (\$35/Bbl for ethane vs \$90/Bbl for naptha)
- Job implication 30,000 to 50,000
- Balance of trade improvement ~\$7 B
- Positive foreign policy implications of U.S. role in global gas markets

#### Regulatory

#### **FERC: Authorization to Construct**

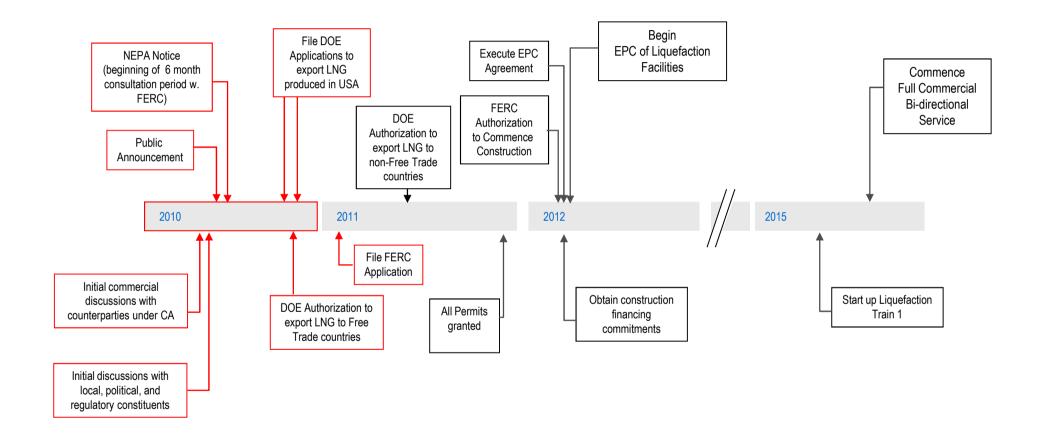
- Base site permitted
- NEPA pre-filing 7/10 for expansion
- Some agencies already in agreement
- Formal application filed
- Estimated approval 2012

#### **DOE: Authorization to Export**

- Filing in two applications in 8/10 & 9/10
- Approval to export 2 Bcf/d for 30 years to Free Trade nations received 9/10
- Public comment period to export to non FT nations closed 12/13/10
- Approval to export to non FT nations pending



# Sabine Pass Liquefaction Project Timeline





## Commercial Structure Proposed Terms for LNG Sales Agreements

Capacity fee includes regasification and liquefaction services - provides customer option to import or export

#### Estimated cost to purchase U.S. supply:

- + Capacity Fee: \$1.75/MMBtu
  - Capacity fee for both liquefaction and regasification service
  - Includes all facilities and Creole Trail Pipeline
- + Feed gas Cost: \$HH /MMBtu
  - Prevailing price for eastbound flow in local pipelines
  - Bought by Customers and delivered to terminal
  - Customer option for feed gas to be delivered by designee
- + Liquefaction Fuel: 8%-12%
  - Delivered by customers in addition to fuel gas
- + Delivery Terms: FOB
  - Any destination permitted under export licenses



## Bi-directional Service at Sabine Pass Provides Opportunity to Arbitrage Henry Hub vs. Oil

#### Worldwide LNG prices predominantly based on a percentage of oil

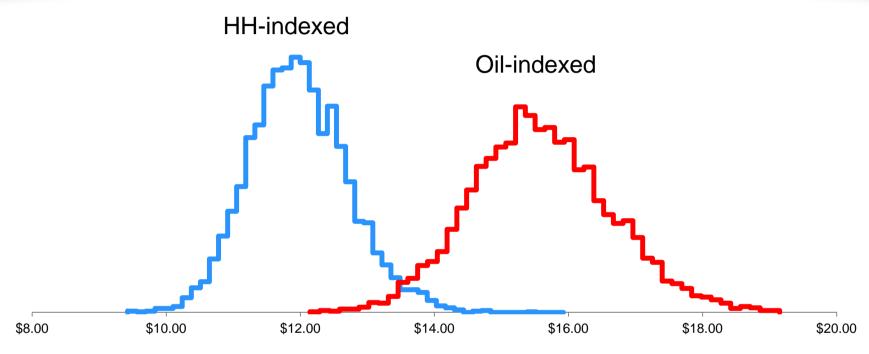
		Europe		Asia	
High estimate of Henry Hub	\$	6.50	\$	6.50	
Capacity Charge		1.75		1.75	
Shipping		1.00		2.80	
Fuel		0.65		0.65	
<b>Delivered Cost</b>	\$	9.90	\$	11.70	
<b>Equivalent Oil Price</b>	\$	58	\$	69	
<b>Equivalent Oil Indexation Rate</b>					
at \$90/bbl		11.0%		13.0%	
at \$150/bbl		6.6%		7.8%	

#### Sabine Pass bi-directional service primary targeted customers

- Long standing purchasers of pipeline gas and LNG indexed against crude oil prices (11 - 15% of crude)
- Power generators (mostly in developing economies) who burn fuel oil and diesel for electric generation at a current cost of \$13.50 to \$19.00/mmbtu



## 20-Year Life Cycle Delivered Cost



- Henry Hub-indexed DES prices are significantly lower than traditional oil-linked prices
- Although volatility in percentage terms is lower for oil, distribution width in absolute price terms is less for Henry Hub-indexed LNG
- Assumptions
  - Henry Hub DES price = 120% HH, \$1.75 capacity fee, and \$2.50 of shipping
  - Oil linked DES price = 15% Brent
  - Henry Hub volatility = 46%, Crude Oil Volatility = 25%, Correlation = 0.20, Futures a/o 2/22/11
  - Mean reverting model with reversion speed factor of 1.6 for HH and 1.2 for oil



## Benefits of US LNG Supply

- Lower LNG delivered cost: based on current forward US natural gas and oil prices, LNG delivered cost is significantly lower than oil-related long term supply alternatives.
- 2. Reduced volatility of portfolio cost: adding to an existing portfolio some LNG volume purchased based on a different indexed price such as Henry Hub price that has a low correlation to the other price indexes will reduce the volatility of the whole procurement cost.
- 3. Free destination flexibility: The combination of cargoes sold on an FOB basis with total free destination flexibility and buyer's right to cancel lifting of cargoes gives the buyer the ability to arbitrage global natural gas / LNG prices.
- 4. **Economical option**: The buyer's right to elect not to lift a cargo, and even import into the US, provides him with an economic option to optimize his deliveries by purchasing replacement cargoes at a lower price if Henry Hub prices rise over world prices, therefore reducing the overall cost of procurement and risk of Henry Hub indexation.



## **Highly Successful MOU Process**

















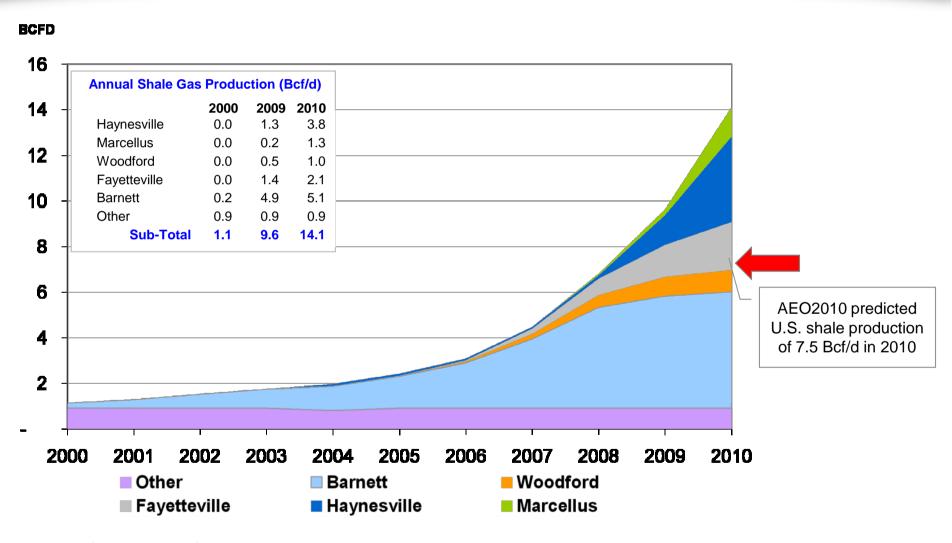
- We have entered into MOU's with 8 customers for 9.8 mtpa of capacity commitments
- These customers are representative of the widespread interest in the project
  - Asia, Europe, Americas
  - Traders, Utilities, End Users
- Targeting 3.5 mtpa of customer commitments for commercial viability of each train
- Continuing discussions with other parties focused on processing capacity, FOB, and DES sales



## **US Gas Supply**



#### **U.S. Shale Production**

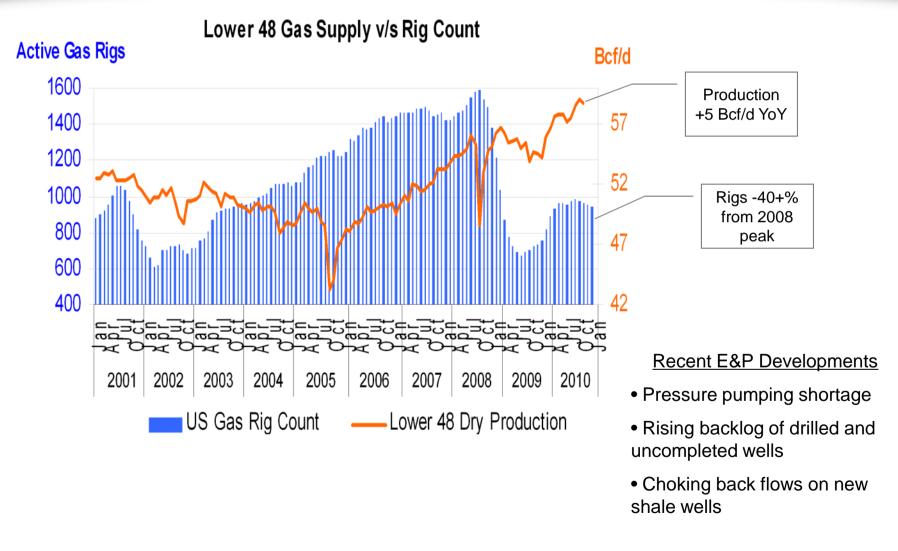


Source: Lippman Consulting



## **U.S. Gas Rigs & Production**

#### **Unconventional Productivity has Broken Drilling "Treadmill"**





### Shale is Expanding the Supply Curve

Figure 49 Annual (Conventional and Unconventional) Lower-48 Non-Associated Natural Gas Wellhead Cost Curves

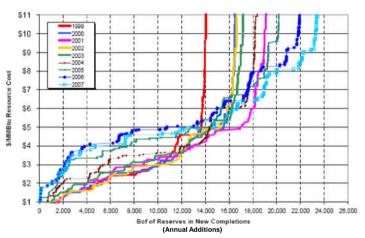
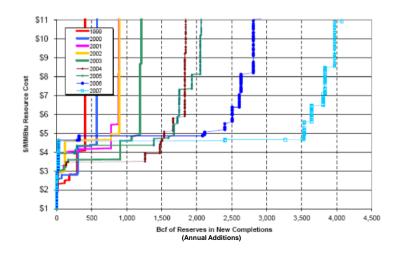


Figure 52 Annual Lower-48 Shale Gas Wellhead Cost Curves



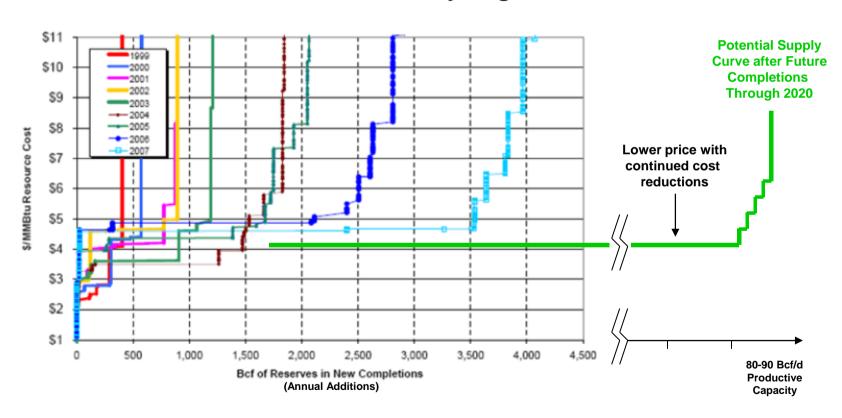
- <u>Top:</u> INGAA supply curves from 2007 for total U.S. conventional and unconventional natural gas
- Bottom: Same curve for shale only, reflecting initial stage of the advances being developed in the Barnett shale
- Prior to recent revolutions in horizontal drilling, multistage fracturing, and recent advances in operating efficiencies
- Key takeaways
  - Advances in unconventional gas production lower costs, increasing quantity of recoverable resources at the same price
  - Effect is to widen the quantity of supply available at the same price, creating a broad "flat spot" in the supply curve
  - Represents a practically unlimited quantity of new supply at a fixed price

Source: Availability, Economics, and Production Potential Of North American Unconventional Natural Gas Supplies, Prepared for INGAA by ICF International, 2008.



## **An Extrapolated Supply Curve**

Hydraulic Fracturing and Horizontal Drilling have produced a very wide band of what is effectively fixed-cost supply over an extraordinarily large reserve base



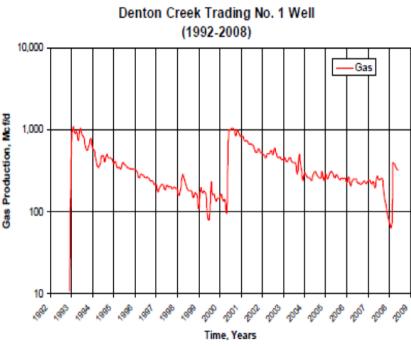


## Unconventional F&D Costs Most Plays Profitable Below \$6 Henry Hub

#### **Break-Even Henry Hub Price (15% ROR, BT)**

#### \$/MMBtu \$7 \$6 = Liquids Play \$5 NYMEX 12-month HH - \$4.20 \$4 \$3 \$2 \$1 \$0 Haynesville Shale Core Marcellus Shale Core **EagleFord NW Liquids** EagleFord NE Liquids Green River TGS **Uinta Basin TGS** GraniteWash Core TGS Fayetteville Shale Barnett Core Piceance TGS EagleFord Dry Core Powder River CBM East Texas TGS Woodford Shale (\$1)

#### **Refractured Barnett Shale Well Profile**



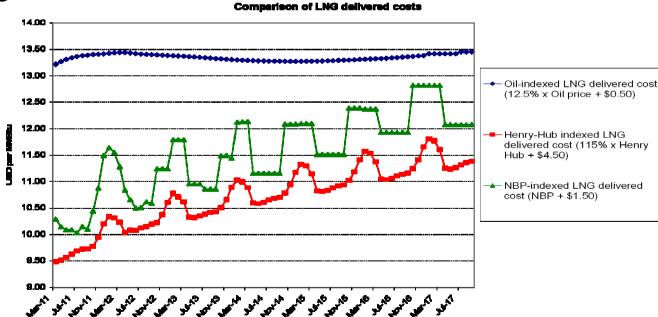
- Unconventional formations provide multiple opportunities to refracture old wells
- The full life-cycle benefits of future refracs are not considered in F&D cost estimates

Source: Assessed from Advanced Resources International 2008-2011 presentations, Cheniere Estimates



### **Example of LNG Delivered Cost**

- Based on forward oil & gas prices, Henry-Hub priced LNG offers the lowest delivered cost compared to alternative oil-indexed or NBP-indexed LNG:
  - 115% HH + \$4.50 (i.e. \$2.50 for shipping and \$2.00 for monthly sales charge)
  - 12.5% Oil + \$0.50
  - NBP + \$1.50
- Over the next 7 years, Henry-Hub priced LNG generates an average saving of \$2.6 per MMBtu versus oil-indexed LNG and \$0.80 per MMBtu versus NBP-indexed LNG





### **Conclusions**

- The U.S. natural gas industry has "cracked the code" on low-cost gas production
- New production technology
  - Creates just under 100 Bcf/d of productive capacity by 2020
  - Results in a broad band of supply that is effectively fixed price in the \$4 to \$5 range
- U.S. demand is not growing due to a number of factors
  - Energy efficiency improvements in the commercial and power gen sectors
  - Flagging industrial demand as lower-cost manufacturing moves overseas
- Radical change in consumption behavior will not significantly increase consumption
  - Climate policy in the aggregate has no effect on gas consumption
  - Vehicle fuel consumption mitigated by long transition periods, but only amounts to 5% of current demand after 25 years
- The U.S. has a tremendous amount of productive capacity available at low prices
- The US flexibility can be transferred to the LNG customer under the right contract structure
  - Ability to modulate deliveries utilizing the flexibility of the US gas market
  - Henry Hub indexation with lower delivered cost and volatility
  - Tremendous depth and liquidity for risk management activities



# Sabine Pass LNG

## Legal Regime for Shale Gas and Coal Bed Methane in China

Xiangyang Ge
Partner/Head of Projects, China
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# Ownership of Underground Natural Resources in China

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Pursuant to Constitution of The People's Republic of China (1982), Mineral Resources Law of The People's Republic of China, and Measures for Regional Registration and Administration for Exploration of Mineral Resources, the State owns all underground natural resources. Shale gas and coal bed methane ("CBM") are subject to the aforesaid laws.

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# Ownership of Underground Natural Resources in China

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The State has the authority to grant qualified natural person, legal person and other organization mineral right (consists of exploration right and mining right) to explore, exploit, and extract mineral resources within certain regions and time limits.

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### Mineral Right Market in China



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### (1) Primary market (license and registration system)

Mineral right is licensed by Ministry of Land and Resources ("MOLR") to qualified natural person, legal person and other organization, which, for the purpose of shale gas, only refers to CNPC, SINOPEC, CNOOC and Shanxi Yanchang Petroleum Corp, through registration and/or tendering for certain mineral blocks.

### Mineral Right Market in China



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### (2) Secondary market (transfer system)

Subject to laws and administrative regulations and rules, the rights and obligations under the mineral right can be transferred from the licensee to other qualified transferee by means of selling, investment contribution, public listing and joint operation etc.

### Mineral Right Market in China



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### (3) Cooperation with IOC (particularly for oil/gas projects)

Subject to laws, regulations and relevant foreign investment approvals, the rights and obligations under the mineral right for oil/gas blocks can be carried out by IOC(s) through Production Sharing Contract ("PSC") signed between IOC and NOC, who is authorized to represent the State in this regard. Exploration license and mining license (if any commercial discovery is found within exploration term and in the contract area) are issued by MOLR.

# Basic Laws, Regulations and Administrative Procedures for Domestic Investment



- Mineral Resources Law
- Measures for Regional Registration and Administration for Exploitation for Mineral Resources
- Approval of State Council (NDRC) certifying the qualification of licensee holding exploration license (usually not issue to non-NOC) except for CBM projects
- MOLR grants Exploration License

# Basic Laws, Regulations and Administrative Procedures for Domestic Investment



- Mining License granted by MOLR to the holder of Exploration License after reserves have been registered with MOLR
- Approval of MOLR for any transfer of mineral right
- Other approvals and/or procedures with respect to environment, capital fund and tax etc. (preferential policies for CBM project such as subsidy, reducing and waiving tax; possibly the same for shale gas project in the near future)

# Basic Laws, Regulations and Administrative Procedures for Domestic Investment



- Mineral Resources Law
- Measures for Regional Registration and Administration for Exploitation for Mineral Resources
- Regulation of the People's Republic of China on Chinese-Foreign Cooperation in Exploiting On Shore Petroleum Resources, as amended on 18, Sept. 2007

### Basic Laws, Regulations and Administrative Procedures for Foreign Investment



- Catalogue for the Guidance of Foreign Investment Industries
- Foreign investment approvals for shale gas and CBM (NDRC, MOFCOM and local counterparts)

### Basic Laws, Regulations and Administrative Procedures for Foreign Investment



- IOC should set up branches, subsidiaries or representative offices in China
- PSC with authorized NOC (at present, authorized NOC means CNPC, SINOPEC, CNOOC and Shanxi Yanchang Petroleum Corp, which have been granted 6 shale gas blocks recently and have the right to exploit the 6 blocks in cooperation with IOCs)
- MOLR grants the consortium (IOC and NOC) under PSC the Exploration License

### Basic Laws, Regulations and Administrative Procedures for Foreign Investment



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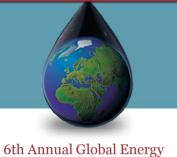
 Other relevant permits, approval or contracts with respect to the operations such as land lease, environment protection, tax, foreign exchange permit, products sale/export permit (for domestic and international market) and labour issues etc.

# Current Status of Shale Gas Development in China



- Shell and PetroChina agreed to jointly develop shale gas in Fushun-Yongchuan Block in Southwest Sichuan on 11, Nov. 2009. First well in December 2010.
- First auction by Chinese government for 6 shale gas blocks in various provinces in November 2010. Only four Chinese companies (Sinopec, CNPC, CNOOC, Shanxi Yanchang Petroleum) were allowed to bid.

### What are the Motivations for NOCs?



Conference 2011

- NOCs are looking for shale gas projects in the US and/or home country.
- NOCs need technology from the US shale gas players to develop shale gas in home country.

### Possible Business Opportunities for US Companies in China



- Technical service/assistance
- Partnership with one of the four Chinese designated shale gas developers to participate in upstream activities
- Partnership with Chinese designated CBM developers to participate in CBM upstream and downstream activities

# Panel 2 Future of Offshore Drilling

- 1. Helix: Spill Containment
- 2. Noble Energy: Opportunities to Improve Offshore Safety







### **Helix Deepwater Scope of Operations**





Wellbore Drilling

Wellhead Installation

Pipeline / Flowline / Umbilical Installation

PLET / Manifold Installation

Jumper Installation



Trenching and Burial

Well Intervention

**ROV Services** 

Decommissioning, Plug & Abandonment

Wellhead / Tree Recovery

### **Vessel selection**



### Working in Gulf of Mexico

- Meet USCG requirements
- Certified for operations in Gulf (Helix Producer I)
- Jones Act compliant (Q4000)

Equipment operational and maintained

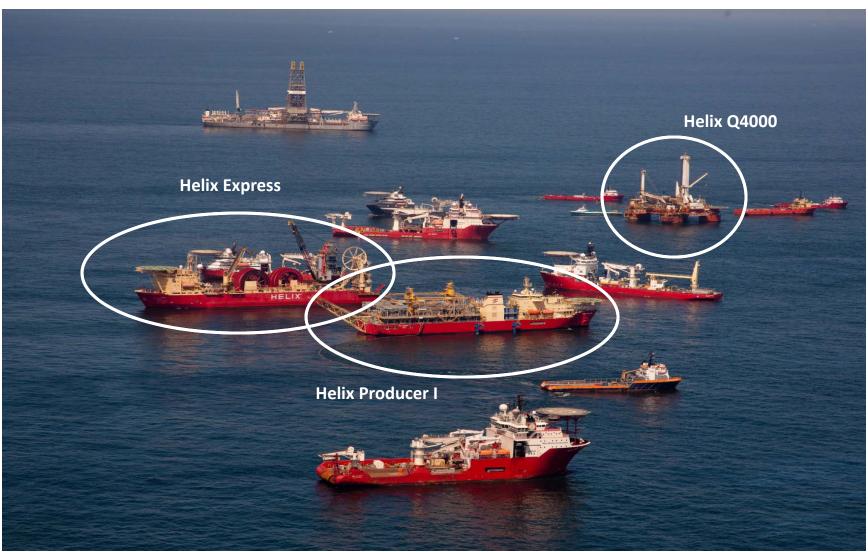
Expert knowledgeable crew

Multi faceted – reducing number of vessels in the field

Able to mobilize on short notice

### **Helix Vessels at Macondo**





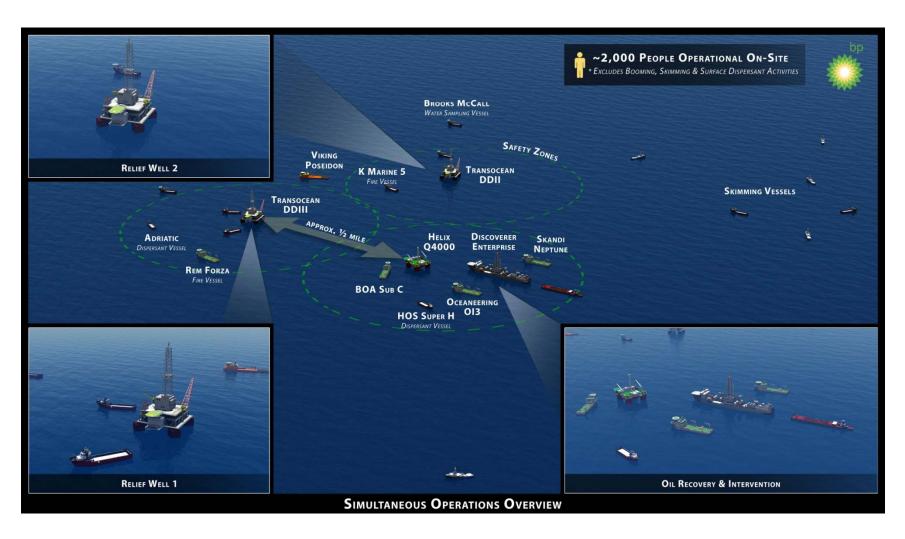
### Helix Q4000





### **SIMOPS** on the Surface





### **Q4000 Macondo Response**











- Arrived in staging area within3 days of call-off
- Multi functional and ease of adaptability between operating modes
  - Containment
  - Dynamic Kill
  - Flaring
  - Static Kill
  - Recovery
  - Control platform for LMRP/BOP yellow pod

### **DP 2 FPS Helix Producer I**



### **HPI Macondo Deployment**



Called to action on June 12, 2010. Departed Phoenix / Typhoon location in GC237 within 2 days and was operational in MC252 30 days later. Helix plans to make permanent modifications to the HPI to shorten response time from 30 to 10 days.



270 te. Buoy designed and built in two weeks..

### Our goals

- Call-off on Day 1
- Response time of 10 days from call-off to in-service

### **HPI Modifications for Macondo**

- Fabrication of new buoy
- Fabrication of water curtain system to cool the flare boom
- Fabrication of off-loading systems

### **Future Response**

- HPI is GOM based and is the best suited vessel for hydrocarbon containment
- Key is to keep the vessel in the GOM and make permanent modifications to meet response time goal

### **MSV DP2 Express**



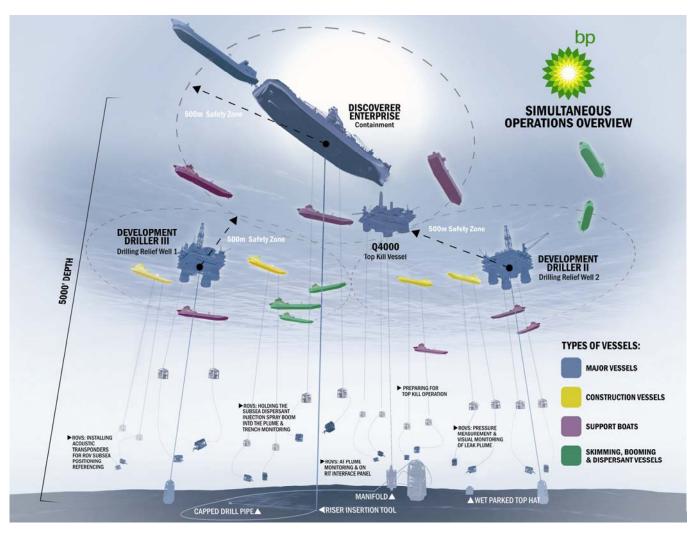


- 520 foot long DP2 reel lay vessel
- 450 Te. deck crane; 250 Te., A&R cable and 150 Te. AHC deepwater crane capable of reaching 10,000 ft.

- Reels hold 3,000 tons of rigid steel pipe up to 14 inches in diameter
- Open deck allows the vessel to carry multiple reels of flexible flowlines
- Carries up to three WROVs

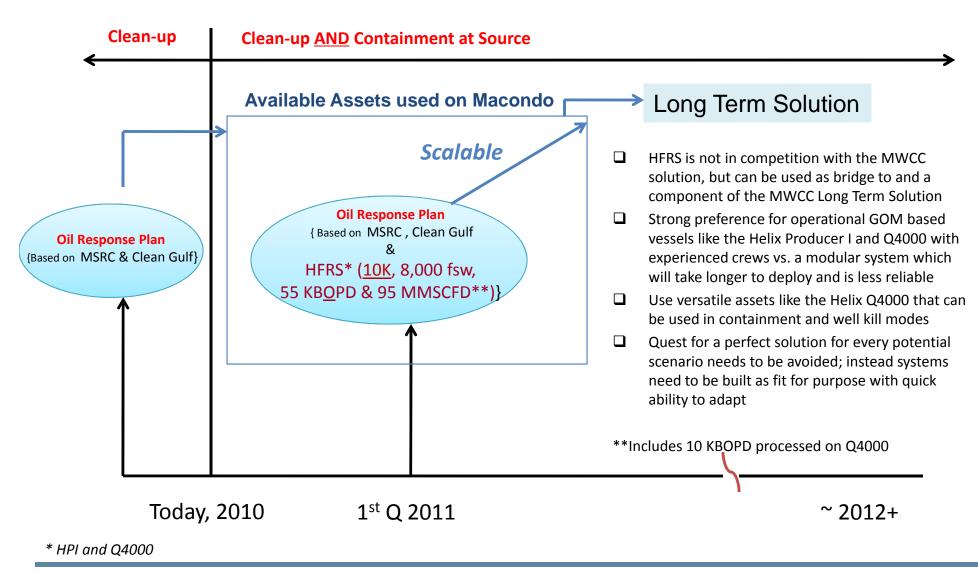
### SIMOPS subsea





### **Helix Fast Response System (HFRS)**





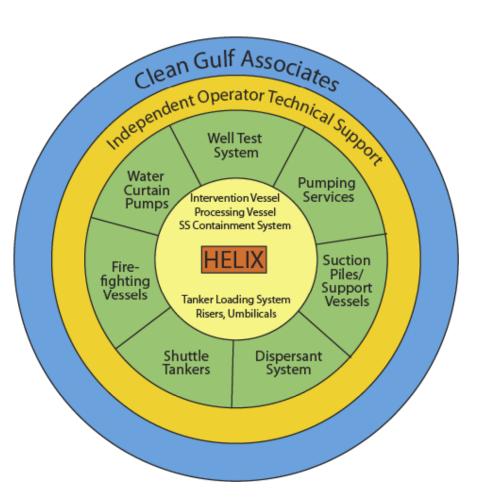
### Helix Fast Response System (HFRS)Administration



Helix Maintains and Stores Major Components

Pre-set Call-out Contracts with Multiple Providers of Support Services

Single Point Administration and Call Out by Clean Gulf



### **Industry Engagement**



Anadarko Petroleum Corporation Marathon Oil Company

ATP Oil and Gas Mariner Energy

BHP Billiton (Americas) Marubeni Oil and Gas (USA), Inc.

Cobalt International Energy, LP. Murphy Oil Corporation

Deep Gulf Energy, L.P. Nexen Petroleum USA

Ecopetrol Noble Energy, Inc.

**ENI US Operating Co.** Petrobras America, Inc.

ERT REPSOL USA

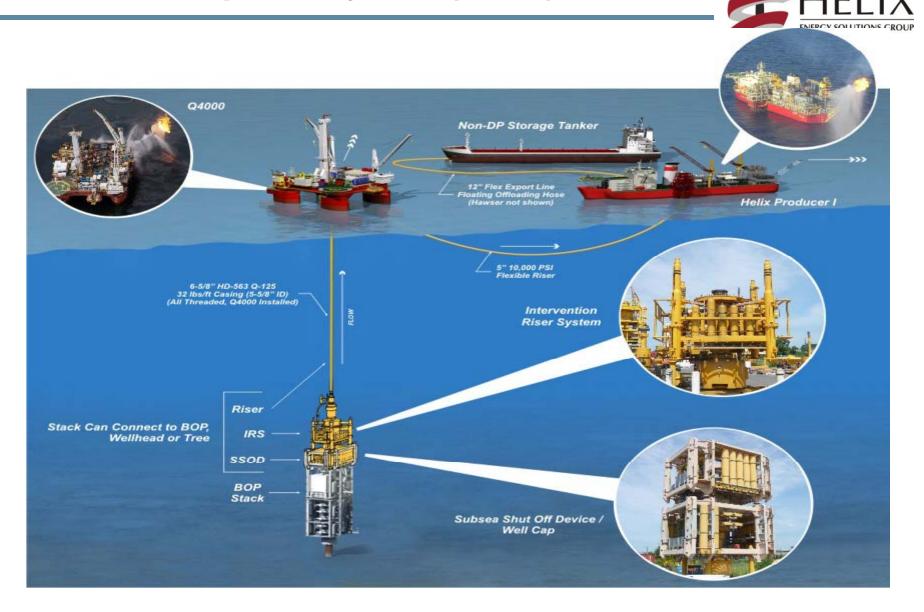
Hess Stone Energy

Houston, Energy, L.P. Walter Oil and Gas

LLOG Exploration Company, L.L.C. Woodside Energy USA

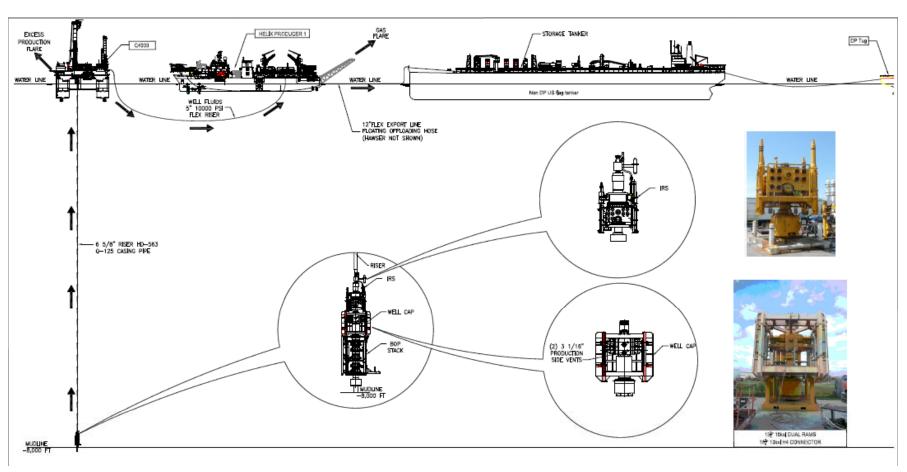
Maersk Oil Houston, L.P.

### **Helix Fast Response System (HFRS)**



### **Helix Fast Response System (HFRS)**

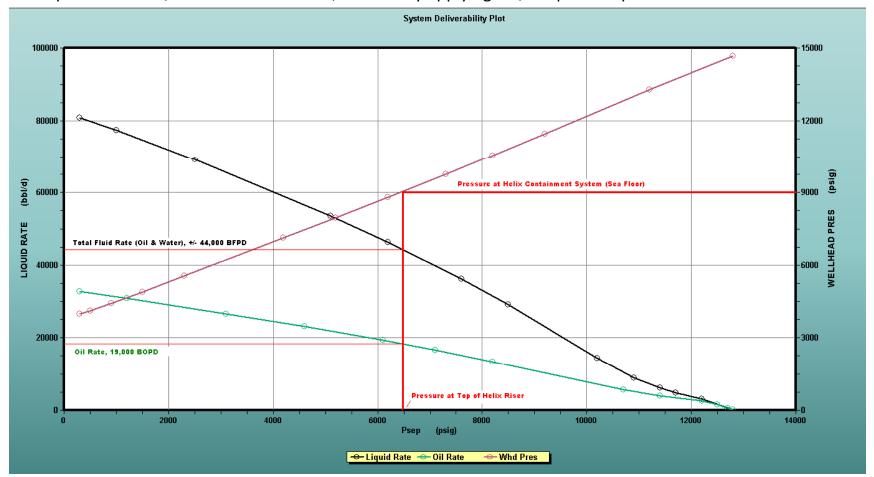




### **Containment Capacity Required << Well WCD**



Real scenario of deepwater Miocene well: WCD = 92,000 BPD liquid (38,000 BOPD). Helix containment system reduces overall liquid flow to 44,000 BPD and oil to 19,000 BPD by applying a 6,500 psi back pressure at the Q4000



Open hole flow rate as parameter to size containment response capacity is not correct

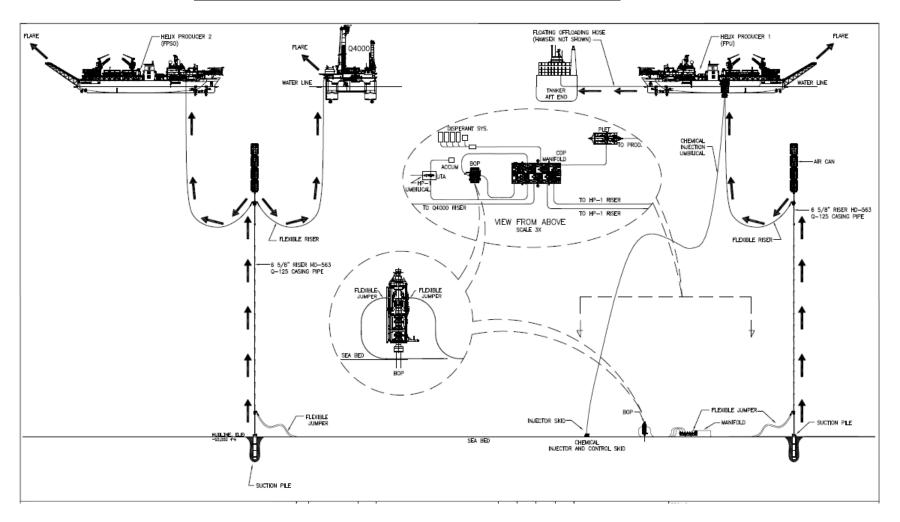
### Helix Fast Response System – Planning Stages

	HFRS	HFRS Expanded
MAOP (psi)	5,000	10,000
SIP (psi)	10,000	15,000
Max. Water depth (ft)	8,000	10,000
Well Control & Riser	Helix IRS, Helix SSOD	Helix IRS, Helix SSOD Freestanding Riser (HPI) Pipeline to host facility (extra)
Processing Facilities with estimated capacity	Total: 55,000 BPD and 95  MMCFD Q4000 @ 10,000 BPD and 15  MMCFD  HPI @ 45,000 BPD and 80  MMCFD	Total: 110,000 BPD and 330 MMCFD Q4000 @ 20,000 BPD and 60 MMCFD HPI @ 45,000 BPD and 135 MMCFD HP2 @ 45,000 BPD and 135 MMSCD Plus pipeline capacity
Deployment time	10 days	17 days
Available	1 <sup>st</sup> Q - 2011	2012 / 2013

### **Helix Deepwater Containment System – Phase 2**



### Target in-service date of 17 days from call-out



Additional production capacity and system redundancies will become available as the system evolves.



280,000 bbls.
Oil burned on
Q4000 over 33
days operation







### **Macondo by the Numbers**



**80 Barrels** of kill fluid pumped every minute through four vessels daisy chained to the Q4000 during the Top Kill operation

**285,000** – Man hours Helix ESG and BP staff onboard the Q4000 during the blowout response

**32,000** – Barrels of fluid used during the Static Kill and cementing operation

135 – Days Q4000 worked at response site

### **Macondo by the Numbers**



1,000,000 lbs.

Deepwater Horizon's BOP lifted from the sea-floor to the Q4000's deck



### **Key Take-Aways**



- Ideal response resources are GOM based, self supporting and able to respond quickly in event of a subsea spill
- Industry participation is necessary to modify and prepare assets for specialized response
- HFRS and MWCS are not mutually exclusive. Containment response will expand and require industry standardization and research/development
- A staged approach must be taken in order to obtain early permitting wherever containment capability is appropriate
- The perfect solution for every conceivable scenario cannot be prepared. Focus should be on flexible systems with to adapt and respond.



# 6<sup>th</sup> Annual Global Energy Conference





### **Evolving Opportunities To Improve Offshore Safety**

### **Recipe for Success**

- Improving Offshore Safety is a Continual Improvement Process
  - Developing and Applying New Technologies
  - Indentifying and Assessing Industry Successes and Failures
  - Working Together with our Regulators to Problem Solve
  - Applying Resources in a Productive Way Moving Forward
  - Meeting Challenges Head On

# **Department of Interior Stated Reasons For The Moratorium**

- ► First, the Suspension Allowed Time for the Bureau of Ocean Energy Management, Regulation and Enforcement (BOEMRE) to Implement Appropriate Workplace and Drilling Safety Measures
- Second, the Suspension was Intended to Provide the BOEMRE, the Industry and Others Time to Develop Strategies and Methods of Containment of Wild Wells in Deepwater
- ► Finally, the Suspension was Necessary to Ensure that Appropriate and Sufficient Response Resources Would be Available in the Event of Another Major Oil Spill

## 150 Legislative Proposals; 32 Hearings in 10 Committees of the House of Representative; 27 Hearings in 8 Senate committees.

- May 28, 2010 Department of Interior Issued a Memorandum Suspending all Pending, Current and Approved Deepwater Operations in the GOM
- May 30, 2010 MMS Issued NTL 2010-N04 Detailing Moratorium
- ► June 8, 2010 MMS issued NTL 2010-N05 Requiring Increased Safety Rules
- June 18, 2010 MMS Issued NTL 2010-N06
- ▶ June 22, 2010 Judge Feldman Issues a Decision to lift the Moratorium
- ▶ July 12, 2010 the Secretary of the Interior Imposed a Second Moratorium

- ► September 30, 2010 Issued Emergency Drilling Safety and Workplace Safety Rule
- October 12, 2010 BOEMRE Finalize an NEPA EA and Issues a FONSI to Lift Moratorium
- ► October 19, 2010 Judge Feldman Vacated NTL 2010-N05
- November 8, 2010 BOEMRE Issues NTL 2010-N10
- ► February 28, 2011 BOEMRE Issues First Deepwater Permit

### **Drilling and Workplace Safety Rule**

- ► It will Provide Oversight and Enforcement of SEMS Provisions. Although Many Large Operators on the OCS Currently have a SEMS Program, the Voluntary Nature of the Programs Limits their Effectiveness;
- ► It will Impose the Requirement for a SEMS Program on all OCS Operators;
- ► It will Address Human Factors Behind Accidents not Reached by Current Regulations; and
- ► It will Provide a Flexible Approach to Systematic Safety that can Keep up with Evolving Technologies

### **GOM Permitting NTL 2010-06**

### ▶ June 18, 2010

- NTL 2010-06 Rescinded Certain Limitations Previously Put in Place by MMS NTL 2008-G04, Which Limited Information Required to Submit Regarding Blowout and Worst Case Discharge Scenarios
- Vacating 2008-G04 Also Expanded the Calculation of Worst Case Discharge for Purposed Oil Spill Response Plans (OSRPs)
- A Expanding the OSRP Also Effected the Amount of Oil Spill Financial Responsibility that an Operator Must Demonstrate to Qualify Lease Operations.
- A NTL-06 Also Put Forth Requirements that the Worst Case Discharge be Required on all Exploration and Development Coordination Documents Approved or Pending Prior to June 18, 2010.

### **Updates to Oil Spill Response Plans**

- NTL-10 Requires Operators to Demonstrate Adequate Spill Response and Well Containment Resources
- Operators are Not Required to Change Their OSRP but Need to Address the Following Prior to Receiving Permit Approval:
  - Subsea Containment and Capture Equipment, Including Containment Domes and Capping Stacks
  - Subsea Utility Equipment, Including Hydraulic Power, Hydrate Control, and Dispersant Injection Equipment
  - Riser Systems
  - Remotely Operated Vehicles
  - Support Vessels
  - Storage Facilities
  - ▲ Tactical Spill Response Plan for Skimmers and Boom Deployment

### Rules that govern where to extract

(1) Marine Mammal Protection Act

(2) Endangered Species Act

(3) Marine Protection, Research, and Sanctuaries Act

(4) Coastal Zone Management Act

(5) Fishery Conservation and Management Act

(6) Outer Continental Shelf Land Act

(7) National Environmental Policy Act

(8) International Law

### Rules that govern how to extract

(1) BOEMRE

(2) National Environmental Policy Act

(3) Clean Water Act

(4) Marine Protection, Research and Sanctuaries Act

(5) Shore Protection Act

(6) BOEMRE air quality standards

(7) Clean Air Act Amendments of 1990

### Rules that govern transportation and storage of petroleum

(1) Mineral Management Service regulations

(4) 1990 Oil Pollution Act

(2) Int. Convention for the Prevention of Pollution from Ships

(5) Deepwater Port Act

(3) National Environmental Policy Act

(6) Shore Protection Act

### **Shallow Hazards Required – 6 to 7 Months Before EP Submittal**

- ► EP Approvals 90 days
  - ▲ NTL 06, WCD 30 to 60 days
  - ▲ EA 90 days
- ▶ OSRP Certification 30 days (can coincide with EP approval)
- Permit Approvals 60 days
  - $\triangle$  APD 30 to 45 days
  - ▲ NTL 10 60 days
- ▶ BOP compatibility testing & approval 17 days
  - BOP compatibility testing 10 days
  - ▲ BOP compatibility approval 7 days

### Permit can not be submitted until the EP is approved.

3 months to approve EP, 2 months for permit approval, 3 wks for BOP compatibility testing and approval....need to submit EP about 6 - 7 months before ready to drill.

Estimate  $1 - 1 \frac{1}{2}$  years of "pre-work" before actual spud date for a prospect.

Wrong decisions account for 99.9999% of all incidents. The other .00001 % are acts of God

- ► At-Risk Behaviors = Wrong Decision; Right Time!
- Near-Misses = Right Decision; Wrong Time!
- ► Incidents = Wrong Decision; Wrong Time!

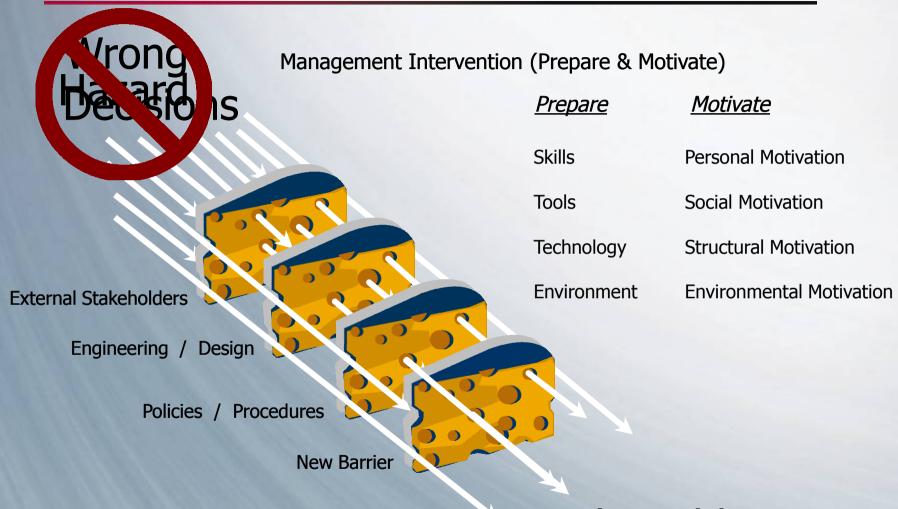
(They) tell us, even people prepared and motivated to make right decisions, still average 5 wrong decisions per hour

► How many wrong decisions do you think we make when we are not properly prepared and motivated?

### Wrong decisions happen when;

- People Don't Know (Skills / Ability)
  - Management has not adequately trained (not educate) the employee
- People Don't Care (Cool Kids / Risk Takers)
  - Management tolerating non-performance
- People Don't Trust (Lively Hood)
  - Management talks the talk but doesn't walk the walk
- ► People are Human (Act of God)
  - Complacency
  - ► Act on Irrational Thoughts
  - Wrong Decision meets Wrong Time (Luck Runs Out)

### **The Swiss Cheese Model is Broke**



Undesirable Event

### **▶ Prescriptive vs. Performance Based Regulations**

### Prescriptive Regulations

- → Pros
  - Sets a Minimum Safety Requirements for Enforcement
- → Cons
  - Does Not Allow Flexibility to Utilize New Technology Without Regulation Change
  - Tendency for Industry to Focus on Meeting Regulation not Performance
  - Does Not Encourage Safety as a Business Goal
  - Does Not Address Human Performance

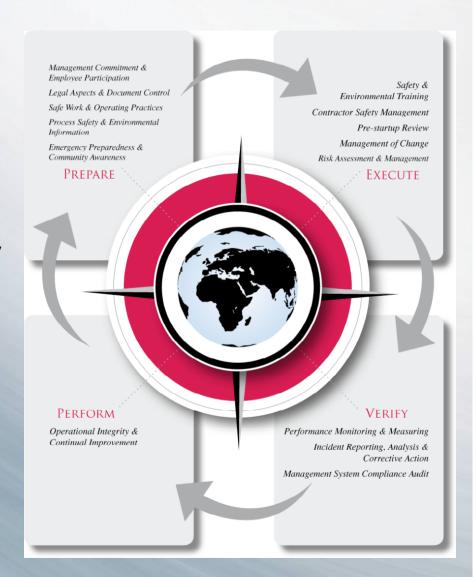
### Performance Based Regulations

- → Pros
  - Sets Safety Goals Instead of Minimum Requirements
  - Allows Flexibility to Utilize New Best Available Technologies
  - Places Clear Responsibility and Accountability on Company Decision Makers
  - Focuses On Human, Technical and Organizational Performance
- → Cons
  - Difficult to Enforce



### **Noble Energy – Hybrid**

- Global EHS Management System
  - Creates Common Language
  - Clearly Defined Roles,
     Responsibilities and Accountability
  - Manages Technical, Human and Organizational Factors
  - Integrated Risk Model
  - Applies Prescriptive Standards
     Worldwide Where Applicable
  - Goal Based Performance
  - Continues Improvement Model
  - Consistent Worldwide Standards



# Panel 4 Overview of Opportunities in South America & Mexico

1. Latin America Upstream Market Update by Scotia Waterous



## Latin America Upstream Market Update

Mayer Brown 6th Annual Global Energy Conference 2011

Houston, Texas: May 19, 2011

Joe Amador

Director, Latin America

- 1. E&P M&A Trends
- 2. Latin America Upstream Market Perspectives



## **E&P M&A Trends**

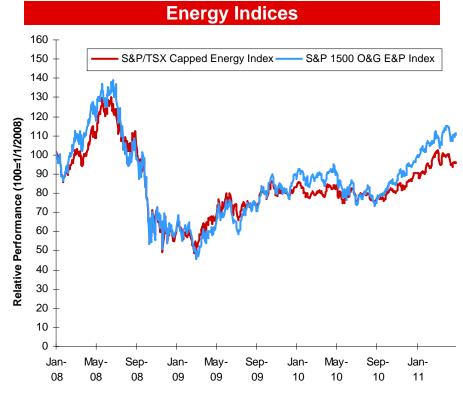
When insight matters.™

#### International E&P Financial Picture

## The global economy, including the energy industry, has continued to recover from the 2008 meltdown of the global financial markets.

- Oil prices hovered in the \$70/bbl \$85/bbl range for several years
  - Have exceeded the band following political instability in the Middle East / N. Africa
  - Expectations are that prices will drop once the region stabilizes
- Debt and equity markets are open, but continue to be selective



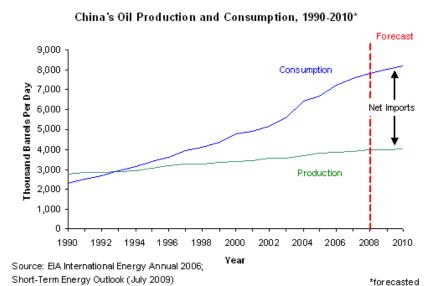


(1) Source: Bloomberg

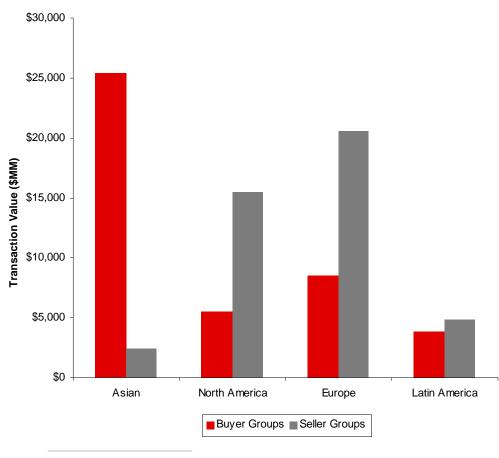
### **International E&P M&A Market Dynamics**

### The large Asian buyers have continued to act aggressively.

- Need to supply growing demand
- Represent ~50% of the transaction values since 2006
- In Latin America have typically sought material oily transactions
  - Have recently also completed smaller bolt-ons



#### Latin America Transactions – Buyers vs. Sellers Domicile (2006 – 2011 YTD)



Source: Bloomberg. IHS Herold, Scotia Waterous

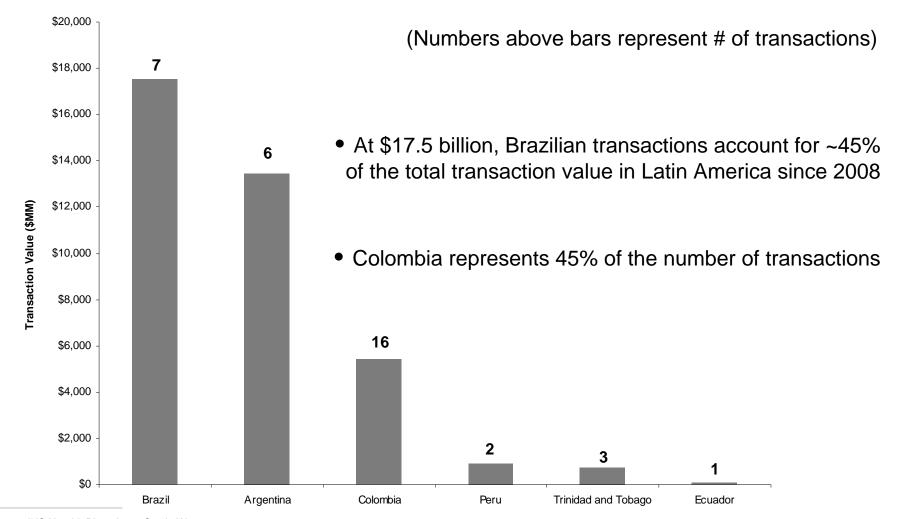
Note: Based on completed transactions from January 2006 – present. Excludes fairness opinions.





### **Latin America Transactions by Country (2008 – 2011 YTD)**

The Brazilian market has seen the largest transactions but the Colombian market has been most active.



Source: IHS Herold, Bloomberg, Scotia Waterous.

Note: Excludes transactions < \$20 MM.

Scotia Waterous

### Latin American E&P M&A Transactions (2008 – 2011 YTD)

### With over \$30 billion in transactions, 2010 was a banner year for E&P M&A in Latin America.















	Date						Transaction
	Announced	Buyer	Advisor	Seller Seller	Advisor	Country	Value
							(US\$MM)
	3/31/2011	Pacific Rubiales		Maruel et Prom		Colombia	\$185
	1/18/2011	Gran Tierra		Petrolifera	RBC	Argentina, Colombia, Peru	\$193
	12/23/2010	Maersk Oil	BAML	SK Energy	Scotia	Brazil	\$2,400
	12/10/2010	Sinopec	Scotia	Occidental Petroleum		Argentina	\$2,450
_	11/29/2010	Bridas / CNOOC	JP Morgan	BP	Standard Chartered	Argentina	\$7,060
	10/1/2010	Sinopec	Scotia	Repsol		Brazil	\$7,109
	8/18/2010	Sinopec		Hupecol	Scotia	Colombia	\$281
	8/3/2010	Talisman / Ecopetrol	Goldman Sachs	BP	Barclays	Colombia	\$1,895
	5/21/2010	Sinochem	UBS	Statoil	Jefferies	Brazil	\$3,070
	3/14/2010	CNOOC	JP Morgan	Bridas		Argentina	\$3,100
	3/11/2010	BP		Devon	Scotia, JP Morgan, DB	Brazil, GOM, ACG	\$7,000
	9/3/2009	Pluspetrol	Macquarie	Petro Andina	Scotia, First Energy	Argentina	\$372
_	8/12/2009	Sinochem	Standard Chartered	Emerald	Harland Capital	Colombia	\$805
	7/1/2009	BG		Canadian Superior	Scotia	Trinidad	\$143
	4/29/2009	Sinopec / CNOOC	Jefferies	Talisman	Scotia	Trinidad	\$312
_	3/10/2009	Ecopetrol	Citi	Hocol, Maurel et Prom	BNP Paribas	Colombia	\$570
	2/6/2009	KNOC, Ecopetrol	Scotia, Citi	Petro-Tech Peruana	Morgan Stanley	Peru	\$992
	7/29/2008	Gran Tierra	Blackmont Capital	Solana	Macquarie	Colombia	\$595
	7/8/2008	Pacific Rubiales	GMP	Карра	Citi	Colombia	\$168
_	4/29/2008	Delta Hydrocarbons		Trefoil		Argentina	\$205
	3/17/2008	CEPSA		Hupecol	Scotia	Colombia	\$920
	3/4/2008	StatoilHydro		Anadarko	Jefferies, UBS	Brazil	\$1,400

Source: Bloomberg. IHS Herold, Scotia Waterous; reflects transactions in excess of \$140 MM Note: BP / Devon transaction also includes assets in the GOM and Azerbaijan





## **Latin America Market Perspectives**

When insight matters.™

### **Argentina Overview**

#### **Market Overview**

- Historically a very liquid M&A market, but generally smaller opportunities
- Gas Plus and Petroleo Plus in addition to improving business conditions are renewing interest
- Contract extensions successfully negotiated with provinces has also fueled interest
- Labor issues continue to haunt producers
- CNOOC's acquisitions of Bridas and Pan American Energy, together with Sinopec's acquisition of Oxy Argentina, highlight renewed interest in region
- Repsol has been selling minor stakes in YPF to investment funds
- Provinces continue to offer areas for bidding
- Recent Neuquén shale gas offering attracted significant interest

### **Key Argentina Basins**



#### **Recent Transactions**

Date	Buyer	Seller	Price (US\$MM)
18-Jan-11	Gran Tierra	Petrolifera	\$193
10-Dec-10	Sinopec	Occidental	\$2,450
29-Nov-10	CNOOC / Bridas	BP	\$7,060
14-Mar-10	CNOOC	Bridas	\$3,100
03-Sep-09	Pluspetrol	Petro Andina	\$372

Source: IHS Herold, Bloomberg, Scotia Waterous.

Note: Excludes transactions < \$20 MM.





#### **Brazil Market Overview**

#### **Market Overview**

- Several significant transactions announced in 2010
- Pre-Salt basin is developing as a world class play
  - One of the world's largest accumulations of hydrocarbons
  - Acreage currently held by a select group of companies
  - New legislation recently passed
- Smaller players focusing onshore
- Brazilian IPO market very active
  - > Petrobras: Successfully raised \$70 Bln
  - > HRT Participações; Raised \$1.3 Bln; onshore blocks
  - Quieroz Galvão E&P: Raised \$774 MM
  - Brasoil and Karoon Gas: Unsuccessful IPOs.
- ANP announced 11<sup>th</sup> licensing round will be held in September 2011
  - Includes nine basins Barreirinhas, Ceará, Paranaíba, Espírito Santo, Foz do Amazonas, Pará-Maranhão, Potiguar, Recôncavo, and Sergipe-Alagoas
  - Pre-salt blocks not included

### **Key Brazil Basins**



#### **Recent Transactions**

Date	Buyer	Seller	Price (US\$MM)
23-Dec-10	Maersk	SK Energy	\$2,400
1-Oct-10	Sinopec	Repsol YPF	\$7,109
30-Aug-10	Gran Tierra	Alvorada Petroleo	\$23
21-May-10	Sinochem	Statoil	\$3,070
11-Mar-10	BP	Devon Energy	\$3,200 <sup>(1)</sup>
28-May-09	Sector Asset Management	Norse	\$63

Source: IHS Herold, Bloomberg, Scotia Waterous.

Note: Excludes transactions < \$20 MM. (1): Pre-tax proceeds as per Devon





#### Colombia Overview

#### **Market Overview**

- Most active M&A market in Latin America
  - Typically smaller transactions
  - Perceived as minor country risk
- Key source of funding is the Toronto Stock Exchange (TSX and TSX-V)
  - Over 20 oil & gas companies with Colombian assets listed with a combined market capitalization of \$50 billion\*
- Heavy oil blocks in Llanos and offshore exploration lured majors back
- Infrastructure has become an issue
- National Hydrocarbon Agency (ANH) likely to slow down acreage offering pace
- Ecopetrol active both in-country and outside

**Key Colombia Basins** 



### **Recent Transactions**

Date	Buyer	Seller	Price (US\$MM)
07-Apr-11	Alange Energy	Columbus Energy	\$25
25-Mar-11	C&C Energia	Nabors/Ramshorn	\$89
13-Dec-10	Sinopec	Hupecol	\$281
03-Aug-10	Ecopetrol; Talisman	BP	\$1,895
05-Apr-10	Benchmark Energy	Bolivar Energy	\$34
13-Nov-09	Alange Energy	Columbus Energy	\$20
30-Sep-09	Alange Energy	Delavaco Energy	\$88
10-Jul-09	Cierra Pacific Ventures	Alange Corp.	\$99
31-Jul-09	Alange Energy	Montecz	\$30
27-Jul-09	Alange Energy	Prospero Hydrocarbons	\$33
12-Aug-09	Sinochem	Emerald Energy	\$403
10-Mar-09	Ecopetrol	Hocol; Maurel & Prom	\$748

Source: IHS Herold, Bloomberg, Scotia Waterous.

Note: Excludes transactions < \$20 MM.

<sup>\*</sup>Source: TSX, as of 8/31/10; excludes Ecopetrol S.A. - Market cap ~\$88 billion





#### **Peru Overview**

#### **Market Overview**

- Historically quiet M&A market but has potential
- Attractive fiscal terms and historically pro business environment have attracted strong international interest
  - But recent presidential elections have generated concern
- Three E&P "business" provinces
  - East of Andes: mostly high-potential immature exploration but with infrastructure and social issues
  - West of Andes onshore: access to infrastructure but smaller plays
  - Offshore: very complex geology
- World-class gas discovery recently announced by Petrobras in Block 58, north of Camisea
- Perupetro continues to offer acreage
  - Peru has ~100 blocks under contract

### **Key Peru Basins**



### **Recent Transactions**

Date	Buyer	Seller	Price (US\$MM)
6-Feb-09	Ecopetrol; KNOC	Petro-Tech Peruana	\$900
9-Dec-09	Petrominerales	Pan Andean Resources	\$29

Source: IHS Herold, Bloomberg, Scotia Waterous.

Note: Excludes transactions < \$20 MM.





#### **Mexico Overview**

#### **Market Overview**

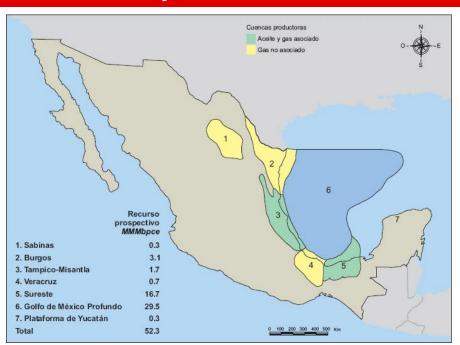
- No M&A transactions to date
- All operations conducted by Pemex
- Awarded Multiple Service Contracts in 2003 to promote investment in non-associated natural gas E&P in the Burgos Basin
  - More like a service contract, with fees paid in cash for each "Work" conducted, not for production
- Announced "incentive" contract terms last year
  - Key changes in the country's legal framework
    - Approved by Mexican Supreme Court in late 2010

Monclova Pirineos Gas

Construcciones Mecanicas Monclova

Allows contractor compensation based on performance

### **Key Mexico Basins**



**Production Testing Services** 

MSC Participants					
Date	Block	Company 1	Company 2	Company 3	Contract Value (US\$MM)
16-Oct-03	Reynosa-Monterrey	Repsol-YPF			\$2,437
23-Oct-03	Cuervito	Petrobras	Teikoku (Inpex)	D&S Servicios Petroleros	\$260
20-Oct-03	Mision	Tecpetrol	Industrial Perforadora de Campeche		\$1,036
19-Nov-03	Fronterizo	Petrobras	Teikoku (Inpex)	D&S Servicios Petroleros	\$265
15-Jan-04	Olmos	Lewis Energy	. , ,		\$344
9-Nov-04	Pandura-Anahuac	Industrial Perforadora de Campeche	Compañía de Desarrollo Petrolero (CDP)		\$900
24-Feb-05	Pirineo	Monclova Pirineos Gas	,		\$645

Source: IPD Latin America

Neio

Monclova



18-Mar-07

22-Mar-07



\$912

\$434

Administradora de Proyectos de Campos

Grupo Cobra

#### MAYER · BROWN

# Panel 4 Overview of Opportunities in Asia & Africa

- 1. Iraq and Kurdistan
- 2. Angola
- 3. Vietnam
- 4. China



# Emerging Energy Markets: Iraq and Kurdistan

Robert Hamill
Partner
Mayer Brown
International LLP
London

Victor Galante Associate Tauil & Chequer Rio de Janiero Murat Yazici Managing Partner Yazici Law Office Turkey



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## Market Background



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- ◆ Unique oil & gas production profile, a succession of collapses and recent recovery
- Causes:
  - wars
  - religious and cultural divisions (political landscape)
  - Kurdistan semi-autonomy
  - differing oil and gas laws (and contracts, TSAs and PSCs)
- ◆ Exploration risk
- Political improvements

# Kurdistan Today



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- **♦** PSCs
- → Wells, production and reserves
- ◆ Other infrastructure e.g. refineries, power plants, pipelines

# Emergence of Kurdistan



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- ◆ Early 20th Century to 1991
- → 1991 to 2005, the Washington Agreement



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- ◆ Articles 110 and 112 and 141 of the Constitution
- need for federal oil and gas law governing contracts (TSAs, PSCs) and revenue sharing
- validity of PSCs

# Production Sharing Contracts vs. Technical Service Contracts



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◆ PSCs v TSCs

#### Future



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- ◆ Exports re-started, payments for contractors
- → Political uncertainties remain eg. general unrest in ME, corruption, Kirkuk

# Emerging Energy Markets: Angola

Opportunities for oilfield service providers

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### Angola – Economical Overview



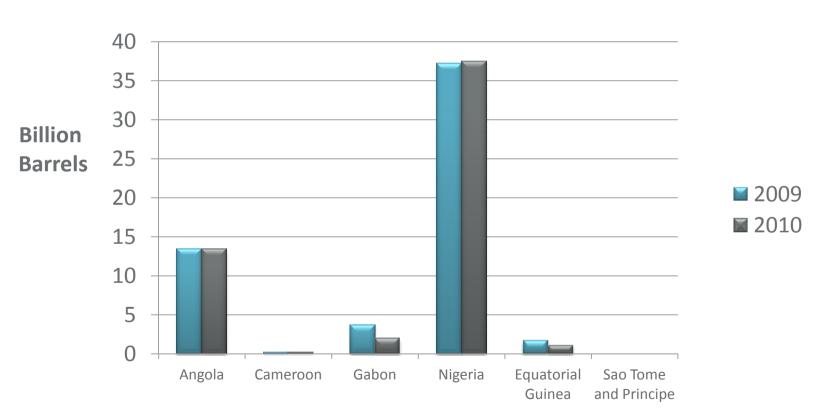
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- Angola has been a member of OPEC since January 1st, 2007
- Proved Oil Reserves: 13 billions of barrels
- ◆ Proved Natural Gas Reserves: 9.6 trillion cubic feet
- Medium and high quality 30° to 40° API
  - Low Sulphur 0.12 to 0.14%
- The production of oil has been increasing extraordinarily
  - 1986 roughly 280.000 barrels per day (bbl/d)
  - 2006 roughly 1,4 million barrels per day (bbl/d)
- ◆ In 2008, Angola's crude oil production will reach 2 million barrels per day. (EIA)
- ◆ Low internal market consumption
  - Petroleum represents 91.92 % of the total exportations in Angola



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#### **Proved Crude Oil Reserves**

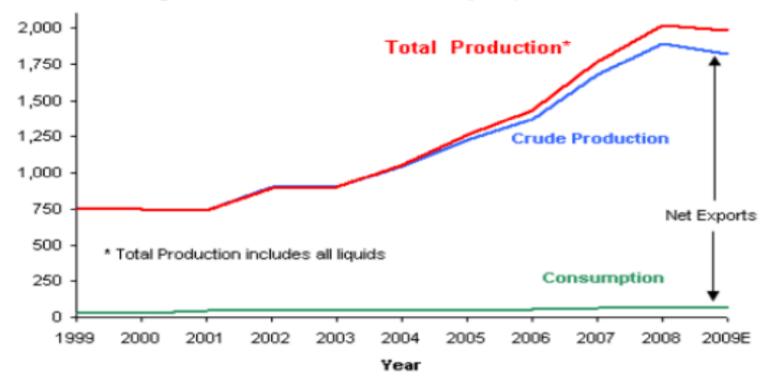


Source: BP Statistical Review and Oil and Gas Journal and CIA World Factbook



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#### Angola's Oil Production and Consumption, 1999 - 2009

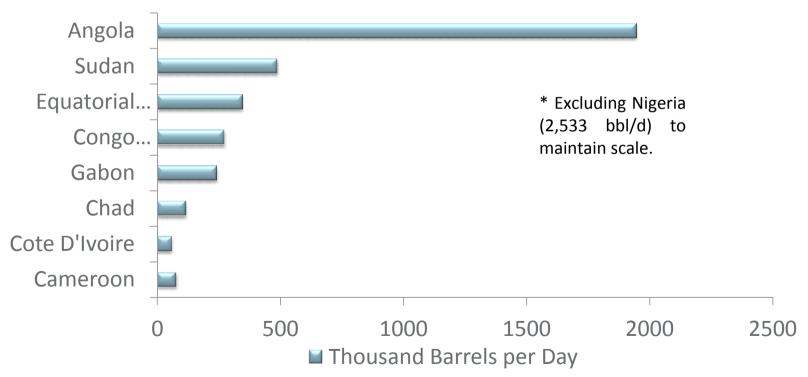


Source: ElA International Energy Annual; Short-Term Energy Outlook



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# Top Sub-Saharan Africa\* Oil Production, by Country January 2009

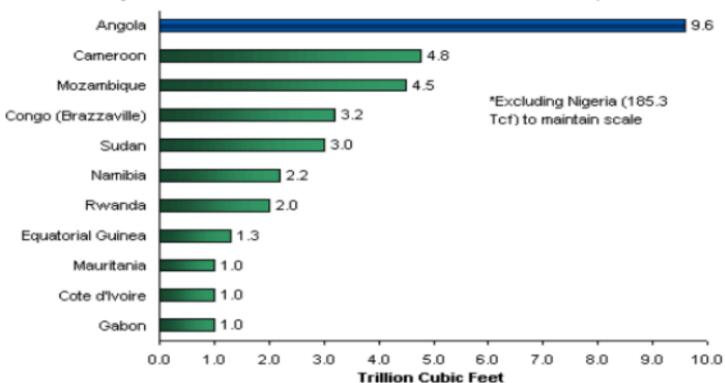


Source: CIA World Factbook



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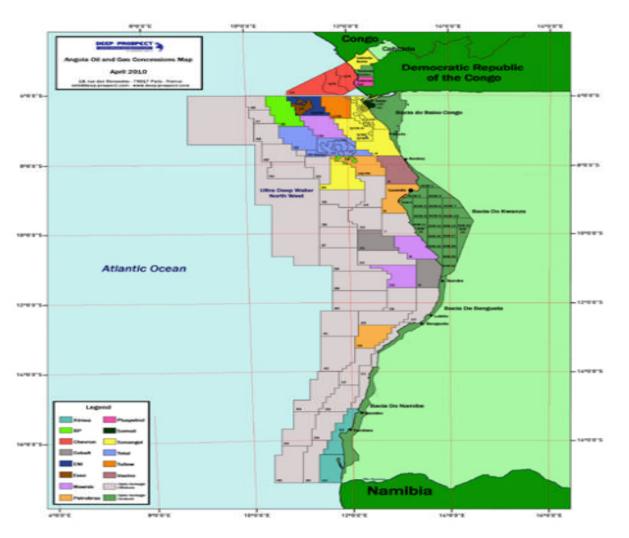
Top sub-Saharan Africa' Proven Natural Gas Reserve Holders, 2010



Source: Oil and Gas Journal



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- ◆ Last bidding round suspended in 2008, new round took place in 2010 covering exploration of Angola's pre-salt areas for the first time
- Average investment per well estimated at \$120 million
- This type of exploration demands a higher level of technological capacity due to the great depth of reservoir, the high operating risks and costs of research and production
- ◆ 13 companies with proven technological and financial capacity participated in the limited bidding:
  - British Petroleum Angola, Chevron, China Sonangol, Cobalt International Energy, Conoco Philips, Eni Angola, Galp Energia, Maersk Oil, Petrobras, Repsol, Statoil ASA and Total E.P. Angola.
- Sonangol Pesquisa e Produção participates in all blocks offered in this bid



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◆ Operators for the new blocks are as follows:

Block 19 – BP Angola

Block 20 - Cobalt

Block 22 – Repsol

Block 24 – BP Angola

**Block 25 - Total Angola** 

Block 35 – ENI Angola

Block 36 – ConocoPhillips

Block 37 – ConocoPhillips

Block 38 – Statoil

Block 39 - Statoil

**Block 40 – Total Angola** 



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- The existing and new blocks just awarded represent opportunities for oilfield service providers
- Most of the oilfield service providers doing business in the country have been there awhile, however, to increase competition and reduce prices newcomers are welcome
- Entering the Angolan energy market has certain requirements from both a legal and "political" standpoint
  - Local content regulations are interpreted in a very conservative fashion to boost participation of local partners
  - In practice, this means that service providers are, in most cases, allowed to bid or awarded contracts to the extent they comply with the local content requirements to Sonangol's (Angola's National Oil Company) satisfaction



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- ◆ Sonangol plays a pivotal role based on its powers under the Angolan framework on public tendering for the petroleum industry and the Production Sharing Agreements
- ◆ As per the above statutes/contracts, Sonangol has the power to pre-approve the bidders lists and cost recovery for service contracts
- Upon identifying a valid business opportunity for a given oil block in Angola, oilfield service providers should approach the relevant oil operator and Sonangol to discuss the business structure for that particular project
- ◆ If all parties are not aligned (notably Sonangol), it would be rather difficult for a oilfield service provider to be allowed to bid on a project

#### **Investment Climate**



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- Political stability is not currently an issue in Angola
- Private investment is strongly regulated
- ◆ Repatriation of profits is allowed although subject to some pre-conditions
- ◆ Foreign exchange restrictions may apply
- Operational costs are still extremely high
- → Immigration requirements are cumbersome and time-consuming
- ◆ Labor Law is not flexible highly employee protective
- ◆ Court system still unreliable however, arbitration is allowed

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# Challenges and Opportunities in Emerging Energy Markets: Vietnam

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# Agenda



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Entering Vietnam's energy market

Investment climate

Legal issues

Other issues



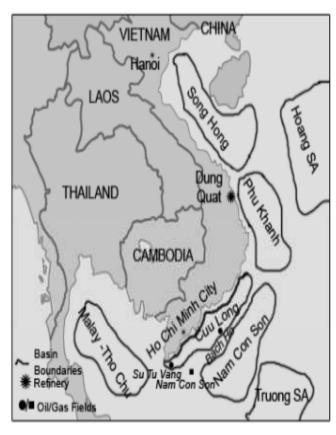
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#### Energy market overview

 Energy is one of the top priority sectors in Vietnam for development being central to national economic growth and energy security

#### Oil

- Crude oil has been one of the key exports of Vietnam; in 2010, 7.976 million tons of crude oil were exported. Vietnam's proven oil reserves are estimated at 4.5bn bbl (BP Statistical Review of World Energy, June 2010)
- The offshore Nam Con Son and Cuu Long basins provide the bulk of the oil from about a dozen fields
- Oil production, however, is forecasted to decrease by 22.5% from 400,000b/d in 2010 to 310,000b/d by 2020 (BMI, Vietnam Oil & Gas Report Q1 2011)
- VN's first refinery (Dung Quat) commenced operations in Q109 processing local and imported crude oil. 5 other projects are under development by PetroVietnam and foreign investors





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#### Energy market overview (cont'd)

- Gas
  - Natural gas production is forecast to increase from the estimated 2010 figure of 9.1 to 22 billion bcm by 2015 (BMI, Vietnam Oil & Gas Report Q1 2011). Exploration success has been on the rise in respect of gas
  - Currently, VN only has one operational pipeline operated by BP at Nam Con Son.
  - PetroVietnam is investing or has plans to invest in a number of additional pipelines
  - VN encourages investments in gas pipelines (in March 2101 Chevron signed a deal with PetroVietnam to build what will become VN's longest pipeline (400km) with estimated investment of US\$1 billion)



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### Energy market overview (cont'd)

Vietnam's Oil & Gas Business Environment Rankings by BMI (Q1 2011)

- Composite Business Environment rating: 4<sup>th</sup> behind Australia, India and China respectively due to its strong upstream position. Only a 1 point gap between VN (57) and China (58)
- Upstream Business Environment rating: 3<sup>rd</sup> behind Australia and India.. The ranking reflects "reasonable resource position, better-than-average growth outlook, attractive licensing terms and an IOC-friendly competitive environment." According to BMI, "the number of non-state operators in the upstream segment is above average for the region, with direct access for IOCs better than the regional norm." Vietnam got the second highest scores for gas output prospects and oil reserves-to-production ratio is the region's highest with the gas RPR not much less
- ❖ Downstream Business Environment rating: 9<sup>th</sup> with Pakistan. Ranking reflects its "modest (but growing refinery capacity, above-average oil and fast demand growth outlook and low level of retail site intensity". On the downstream data alone, VN actually ranks 4<sup>th</sup> behind Indonesia but loses points because its downstream oil and gas market still immature as is the downstream legal framework. This will change with recent efforts to open the downstream market: recent privatization of PVGas D, future privatization of Petrolimex, draft legislation on downstream market allowing private sector to import oil and invest in refineries; reduction in import tariffs on fuels.

(Source, BMI Vietnam Oil & Gas Report Q1 2011)



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#### Energy market overview (cont'd)

#### Power

- It is estimated VN will need an addition 50,000MW in installed capacity by 2020, according to the Ministry of Industry and Trade (MOIT). According to the master plan for the power sector, at least US\$ 80 billion in investment will be required of which US\$ 52 billion will be in generation. Foreign investment is highly encouraged
- Electricity generation is largely based on hydro, gas and coal. The MOIT has ordered local authorities to limit investments in hydro plants
- To diversify, VN is considering nuclear and a large number of legislation has been passed in this regard in 2101
- Laws have also been passed encouraging investment in renewables
- Electricity price is subsidized but the Govt has issued regulations allowing price to be reviewed every 3 months. In Feb and March, price increased by 15.28%
- Reforms are under way to convert VN's electricity market currently monopolized by the State-run, Vietnam Electricity, into a competitive power market



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#### Energy market overview (cont'd)

- Ministry of Industry and Trade: key regulatory Government agency
- Vietnam's oil sector is dominated by the state-owned Vietnam Oil & Gas Group (PetroVietnam) which is under the control of the MOIT. It has formed partnerships with other IOCs (ConocoPhillips, Korea National Oil Corporation (KNOC), Malaysia's Petronas, Nippon Oil (Japan), and Talisman)
- PetroVietnam also dominates the natural gas sector, with main foreign partners being (BP, Chevron, ConocoPhillips, KNOC, Petronas, Thailand's PTTEP, and Talisman).
- PetroVietnam Exploration Production Corporation (PVEP) is PetroVietnam's subsidiary which enters into petroleum contracts with foreign contractors
- Since 1998, PetroVietnam signed over 60 oil and gas exploration and production contracts with foreign contractors



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#### **Opportunities**

- ❖ Vietnam has been one of the fastest-growing economies in Asia in recent years, with GDP growth averaging 7.2% annually between 2003 and 2010
- Amendments to the Petroleum Law in 2000 and 2008 paved the way for more open and transparent licensing for international investors and instituted management reforms at PetroVietnam
- ❖ According to Vietnam's oil and gas Master Plan toward 2015, and with a vision to 2025, the industry will require an investment of \$203 billion to achieve the goals set forth by the Government for the 2006-2025 period, in which PetroVietnam's share will be \$81.54 billion (accounting for 40%)
- ❖ Privatization of State owned companies can offer new entry points for foreign investors (Petrolimex, the State-owned and country's largest fuel distributor will be privatized and 25% of its shares will be offered to the public)



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#### Challenges

- Weak infrastructure, but improving
- Crude oil export could turn into an import requirement
- Double digit inflation and substantial trade, current account and fiscal deficits, but the Government is addressing this by recently announcing it will put less emphasis on stimulating growth and has instituted tight monetary measures to curb inflation to stabilize the economy
- Complicated procedures and approval process and lack of sufficient Government resources and skills to expedite project development and negotiation processes but the Government is continuing to streamline the procedures (Project 30)
- Corruption but Vietnam has ratified the 2003 UN Anti-Corruption Convention in 2009 and has enacted additional anti-money laundering regulations in 2009 to address this systemic problem

#### Investment climate



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### Openness to Foreign Investment / Legal Framework

- 2006: New investment and enterprise laws take effect to eradicate discrimination between local and foreign-invested companies, and to create equal investment opportunities for all investors and with key changes:
  - guaranteeing:
    - autonomy in investment
    - uniform application of price rates for goods and services controlled by the State
    - right to resources, import/export, advertise, purchase foreign currency
  - containing investment protections for change-in-law and against confiscation of assets by the State
  - confirming that certain "important" projects in certain sectors (including energy) will be entitled to Govt
    guarantees of foreign exchange availability as well as for the performance of the obligations of State owned VN
    project counterparties
  - allowing foreign investors to acquire 100% of Vietnamese companies in non-WTO restricted sectors or sectors not subject to conditions set by the Government
- WTO: Services incidental to the oil & gas sector (being "services rendered on a fee or contract basis at oil and gas fields: drilling services, derrick building, repair and dismantling services, oil and gas well casings cementing services") are now opened to foreign investors and, at this stage, they may invest in the form of JVs with foreign equity not exceeding 51%
- Vietnam continues to introduce and amend legislation in an effort to remedy the perceived shortcomings in current legislation, including amendments to the Petroleum Law, Securities Law, new Banking and Arbitration Laws, etc



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#### Key legal issues – How to secure a E&P right?

- Any organization or individual wishing to engage in exploration and production of oil and gas must enter into a petroleum contract through a *tendering* process
- In special cases, the Prime Minister can directly appoint a foreign contractor
- Minimum requirements for a tenderer:
  - Having financial/ technical capability
  - Having professional experience in petroleum operations
  - Having at least 2 contracts for exploration and production of petroleum anywhere in the world
- The Petroleum contract must be entered into within 90 days from the date of selection; time limit can be extended for up to an additional 60 days subject to approval from the Prime Minister



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#### Key legal issues – How to secure a E&P right?

- A petroleum contract is based on a model form and deviation from this requires Prime Minister approval
- ❖ A petroleum contract once negotiated and signed must be approved by the Prime Minister
- An Investment Certificate must also be obtained which is a fairly straightforward process being a mere formality; petroleum contract takes effect in accordance with the Investment Certificate



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#### Key legal issues - How to secure a E&P right?

- \* The petroleum contract together with the Investment Certificate grants the following:
  - exclusive right to explore for petroleum in a defined area
  - exclusive right to exploit petroleum in such area for a specific period of time
  - ownership right in petroleum after extraction
- Key obligations:
  - technology transfer; training and employment of Vietnamese workers (usually at the cost of the investor and amount is negotiable)
  - reporting; removal and dismantling of installations, equipment and facilities upon termination of activities, at the request of the Government
  - sale of petroleum in Vietnam at the request of the Government at an internationally competitive price (circumstances to be negotiated)



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#### Key legal issues - Key petroleum contract issues

- Form: The petroleum contract can be entered as a product sharing contract or joint venture, the former being more common
- Duration:
  - normal projects 25 years (exploration period: 5 years)
  - encouraged projects 30 years (exploration period: 7 years)
  - Extension of entire term allowed for an additional 5 years but the exploration period may not extended for more than 2 years
- **Contract Area**: Up to 2 blocks (4 in special cases)
- **PetroVietnam's Participating Interest**: negotiable
- Profit sharing: incremental tranches with agreed ratio between PetroVietnam and the contractor



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### Key legal issues - Key petroleum contract issues

- **Work program and budget**: negotiable
- \* Management and control: Certain issues require the final approval from PetroVietnam (such as work programs and budget; expenditures exceeding a certain amount; development plan, etc.)
- Recovery of expenses: can agree on level of recovery of expenses for exploration, development and exploitation (encouraged projects: 70% of annual petroleum output and 50% for all others)
- Pre-emptive right: may fully or partially assign with the approval of the Prime Minister but PetroVietnam (and the other contracting parties, if any) has pre-emption right



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#### Key legal issues - Key petroleum contract issues

❖ Preference to Vietnamese contractors: Preference must be given to Vietnamese organizations and individuals in respect of petroleum related services. PetroVietnam in practice pressures the foreign contractor to enter into such contracts with its subsidiaries (e.g., in insurance and in labor supply)

#### Bonuses:

- A one-time commercial discovery bonus must be paid to PetroVietnam after commercial discovery;
- Another one-time bonus is also payable following the first commercial production in the contract area
- Another one-time bonus must also be paid to PetroVietnam after a certain sustainable production level is reached for a minimum consecutive period. The amount will depend on the production level
- These payments are not regarded as petroleum operation costs for cost recovery



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### Key legal issues – Government guarantee

- Available only if project is designated as "important" by the Prime Minister
- May cover foreign exchange availability guarantee as well as obligations of State-owned project counterparties

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### Other issues



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#### **Profit Remittance**

- Profits, revenues, and all other lawful income may be repatriated
- Annual repatriation only
- No approval is required
- No profit remittance taxes

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#### Other issues



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#### Upstream taxation regime

- Corporate Income Tax: 50% (32%- encouraged projects)
- **Tax on capital gain for transfer of participating interest**: 25%
- ❖ VAT: 5% or 10% refundable at the exploration stage only
- **Export/import tax:** 
  - 0-10% for crude oil, 0% for gas
  - equipment, machinery necessary for petroleum activities are exempt from import taxes
  - goods temporarily imported for re-export for petroleum activities are exempted from export and import taxes
- Natural resource tax: depending on rate of production in each royalty payment period
  - crude oil: 10-29% (normal projects); 7-23% (encouraged projects)
  - natural gas: 2-10% (normal projects) and 1-6% (encouraged projects)
- Additional surcharge for crude oil as of 10 March 2010
  - 50% if price increase is from 20-50% higher than the base price
  - 60% if price increase is more than 50% of base price
  - 30% for encouraged projects if prices increase is from 20% higher than the base price

#### Other issues



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#### Dispute resolution

- Offshore arbitration is permitted in the model petroleum contract
- VN is the signatory to the 1958 NY Convention for Recognition of Arbitral Award

### Governing law

- In general, choice foreign law permitted as long as it does not violate the basic principles of Vietnamese law
- The model petroleum contract specifically requires Vietnamese law

# Emerging Energy Markets: China

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#### Market Access

- Conventional energy
  - extensive coal reserves, largest coal industry worldwide, safety concern
  - few foreign investment in thermal/hydro power projects
  - few oil/gas exploration blocks for IOCs other than shale gas
  - State encourages shale gas and CBM development in cooperation with foreign companies



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#### Market Access

- ★ Renewable energy (solar, wind, geothermal and biomass, nuclear etc.) :
  - State encourages development of renewable energy industry
  - opportunities for international players comparing to conventional sector
  - uncertainties over preferential treatment tariff, subsidy, tax
  - strong competition from major local players



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#### **Regulatory Consideration**

- Conventional energy (coal and petroleum):
  - well established legal regime
  - foreign investment mostly permitted with some exceptions:
    - Catalogue for the Guidance of Foreign Investment Industries (Amended in 2007)
    - (1) prospecting, exploitation and utilization of CBM is encouraged EJV or CJV; (2) prospecting and exploitation of unconventional petroleum is encouraged
  - PSCs for petroleum



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#### **Regulatory Consideration**

- ◆ Renewable energy
  - State improves legislation on renewable energy industry encouraging domestic and foreign investment
  - Catalogue for the Guidance of Foreign Investment Industries (Amended in 2007) includes construction and operation of nuclear power plants (Chinese must hold majority) and new energy power plants (solar, wind, magnetic, geothermal, tide and biomass, etc.)
  - favourable tax treatment and financial subsidies





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Structure issues to be considered for renewable energy:

- ♦ What entity China basics
  - Service/license
  - Joint Venture
  - Wholly Foreign-Owned Enterprise (WFOE)
- ♦ What entity alternatives to new set up
  - acquisition
  - regulatory approvals
  - share deal/asset deal





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Structure issues to be considered for oil/gas:

- ♦ What entity China basics
  - Service/license
  - PSC or JV?
- ◆ Acquisition of participation interests under PSC
  - NOC consent/government approval
  - satisfy all requirements as a qualified IOC