

行政院及所屬各機關出國報告

參加 Total Focus Conference 公司舉行之天然氣合約協商訓練課程

服務機關：中國石油股份有限公司天然氣事業部

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報告名稱:

參加Total Focus Conference公司舉行之天然氣合約協商訓練課程

主辦機關:

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出國類別: 實習

出國地區: 新加坡

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內容摘要: 以管線輸送的天然氣合約價格主要維持以石油產品為計價指標，也可能結合各種油品的平均價格，這些指標的相對權重在不同合約中差異很大。主要液化天然氣進口國—日本、韓國及台灣，因缺乏管線天然氣及便宜之競爭能源，致進口之液化天然氣價格較歐美地區之天然氣價格高出許多。而最近中國大陸廣東及福建兩件液化天然氣採購案，因多數液化天然氣供應商競想進入此新興市場，所提出之價格計算方式與過去不同，未來亞太地區之液化天然氣價格將可望因此逐漸下降。亞太地區因面臨能源市場自由化，多數能源公司面臨市場之不確性；而天然氣長期合約“不提貨亦需付款”的條款將使天然氣市場無法如油品市場般的快速開放與競爭。新進入的買方為因應市場之不確定性，故爭取天然氣合約能提供較大之供氣彈性，且已獲賣方善意回應。超越過去之傳統商業習慣及買賣雙方在合約上的對立，近期的天然氣合約關係已趨向生產階段、處理工場及天然氣運輸各方的聯盟。透過合資的關係，供需雙方對天然氣鏈之風險與利潤都將有更平衡的承擔。合約協商談判過程，其實就是買賣雙方對作業風險處理的安置，經檢視各自所需承受之作業風險，雙方協商以合約條款規範權利義務，以達作業風險可控，成本最低之雙贏局面。未能以合約規避之作業風險，佐以內部控制與稽核的功能可確保風險管理措施的有效執行，進而達成組織之獲利目標。

本文電子檔已上傳至出國報告資訊網

參加天然氣合約協商訓練出國報告

前言：

Total Focus Conferences 公司在新加坡舉辦三天（九十一年十一月四日至十一月六日）有關「Natural Gas Negotiation & Contracts」之訓練課程。訓練課程主要研討天然氣買賣合約之重要條款、合約協商之要點，並探討天然氣供應鏈與天然氣買賣合約之關係。

面對國內天然氣市場環境之變化，經由學習觀摩國外天然氣相當合約之重要條款規定，合約協商之注意要項、合約執行之管理並於訓練期間與講師學員交換開發天然氣市場之經驗，可供未來執行天然氣業務之參考。

出國行程：

十一月三日：啟程

十一月四日：天然氣市場在整體能源市場之角色及天然氣之市場之開發交易模式研討

十一月五日：介紹天然氣生產處理過程、研討天然氣買賣合約及天然氣管線合約

十一月六日：講解合約管理內容及說明政府對天然氣產業之管制方式及稅負訂定

十一月七日：回程

訓練內容：

訓練內容可區分為三部份：

壹、天然氣開發計劃之可行性研討

天然氣之開發計劃往往需投入大量金錢，故投資者需先確認消費者之消費意願及投資風險；而天然氣消費者則比較天然氣與其他能源之價格及使用之方便性決定消費量。

天然氣從氣田到消費者使用，其相關之作業自天然氣之探勘、氣田生產開發、管線鋪設監控至天然氣輸送、計量及銷售均有廠商提供

相關服務。服務廠商與業者先行協商服務範圍、時程及利潤後，以合約方式表達共識以保障雙方之權利與義務。

貳、天然氣買賣合約

天然氣的買賣雙方倚賴長期合約進行交易是必需的，因為天然氣鏈的投資金額非常龐大而且天然氣設備不易變更。長期合約的簽訂，買方的天然氣來源得以確保，賣方的投資因有固定收入而得以回收獲利。附錄一為天然氣買賣合約重要條款之查核單，買賣雙方依此查核單規定協商雙方之權利與義務。

合約中有關價格公式的條款用語通常會確保其在最終消費市場上仍具競爭性。天然氣沒有特定市場所以也沒有一個能操作能源市場價格的決定性角色。競爭能源（重油、家庭取暖用油、煤）的價格與其他經濟指標，如貨幣的兌換率，操縱了天然氣價格。理論上，天然氣價格的計算類似於原油的逆算合約，生產者銷售之天然氣價格與最終消費市場上的價值有關。其價值約等於各消費部門使用各種競爭能源的價格，減去配銷公司的全部操作成本（運輸、儲存、配銷、LNG 船的運輸及氣化）。供應商之利潤取決於市場競爭，供應高於需求時，買方往往有較高之談判籌碼。

適應性與彈性條款是為了天然氣工業受到可預見或不可預見的氣候、工業或經濟環境變動而設計的，包括季節調整、全年運送的彈性及合約協商的次數等。全球已有的天然氣合約的基本原則都是採用“不提貨亦需付款”的方式，以年度固定的天然氣量為交易標準。然而現代的合約型式為配合需求的改變而有較進步較合理的修訂條款，提供買方在年度中依合約名目數量提貨 80% 至 110% 的權利。其他條款則給予更大彈性，包括各種偶發事件的條款，例如，轉帳次年的條款容許買方將一年中超量的提貨轉帳到次年以為沖銷。

超越傳統商業習慣及賣方、買方的對立，近期的合約關係已趨向生產階段、處理工場及天然氣運輸各方的聯盟。透過合資的關係，供需雙方對天然氣鏈之風險與利潤都將有更平衡的承擔。

參、合約之風險辨識與管理

多數國家已逐漸瞭解能源事業之自由化為不可擋之趨勢，在政策宣示之後天然氣產業亦有小幅度之修法提供實質之競爭環境。亞太地區天然氣產業之自由化為天然氣之買方及賣方提供相當多之機會，惟產業環境之變化，雙方對天然氣買賣合約之要求已逐漸改變。許

多天然氣之開發計劃延後甚或取消，歸因為參與者在天然氣相關合約協商過程中未能彼此瞭解。

天然氣進口必需面對所有天然氣鏈（gas chain）上所可能發生的不確定因素（天然氣蘊藏量，市場，輸運等）。在風險不能夠被避免的地方，意外事故的影響應該被緩和。天然氣進口風險模型（附件錄）呈現與每個風險類目有關的數個經營風險管理策略。

落實合約風險管理的第一步就是加強對作業風險的辨識力，如此才能有效衡量與控制風險。由於作業風險無所不在，因而使得風險辨識的難度提高。大抵而言，藉由自我診斷或評估方式，輔以內部控制與稽核功能，將有助於作業風險的辨識。

合約協商談判過程，其實就是買賣雙方對作業風險處理的安置，經檢視各自所需承受之作業風險，雙方協商以合約條款規範權利義務，以達作業風險可控，成本最低之雙贏局面。未能以合約規避之作業風險，佐以內部控制與稽核的功能可確保風險管理措施的有效執行，進而達成組織之獲利目標。

結論與建議：

此訓練課程讓受訓者瞭解天然氣產業供應鏈上各供應者扮演之角色，從上游之探勘開發、天然氣輸儲至最後消費者之觀點；並探討天然氣相關合約協商時應用之核對表及重要條款單及合約執行與管理等相關議題。

以管線輸送之天然氣合約主要維持以石油產品為計價指標，也可能結合各種油品的平均價格，這些指標的相對權重在不同合約中差異很大。主要液化天然氣進口國—日本、韓國及台灣，因缺乏管線天然氣及便宜之競爭能源，致進口之液化天然氣價格較歐美地區之天然氣價格高出許多。而最近中國大陸廣東及福建兩件液化天然氣採購案，因多數液化天然氣供應商競想進入此新興市場，所提出之價格計算方式與過去不同，未來亞太地區之液化天然氣價格將可望因此逐漸下降。

亞太地區因面臨能源市場自由化，多數能源公司面臨市場之不確定性；而天然氣長期合約“不提貨亦需付款”的條款將使天然氣市場無法如油品市場般的快速開放與競爭。新進入的買方為因應市場之不確定性，故爭取天然氣合約能提供較大之供氣彈性，且已獲賣方善意回應。

超越過去之傳統商業習慣及買賣雙方在合約上的對立，近期的天然氣合約關係已趨向生產階段、處理工場及天然氣運輸各方的聯盟。透過合資的關係，供需雙方對天然氣鏈之風險與利潤都將有更平衡的承擔。

合約協商談判過程，其實就是買賣雙方對作業風險處理的安置，經檢視各自所需承受之作業風險，雙方協商以合約條款規範權利義務，以達作業風險可控，成本最低之雙贏局面。未能以合約規避之作業風險，佐以內部控制與稽核的功能可確保風險管理措施的有效執行，進而達成組織之獲利目標。

國內天然氣市場將面臨新競爭，國外天然氣產業之相關資訊掌握與蒐集有其必要。此次能藉由參加訓練之交流，瞭解鄰近國家天然氣產業之合約種類，將有助天然氣業務之上下游觀念整合及未來天然氣事業之推廣。

. Gas Supply and Purchase Contract Checklist

Preamble

- Date of Agreement
- Names and address of Buyer and Seller
- Recital of positions and intent of parties
- Description of development or project

Article 1 - Definitions

- Important terms and phrases used in the contract over which there might be some potential for misunderstanding such as:
 - Type of gas
 - Dedicated reserves
 - Accounting Day and Year
 - Volume of gas: annual, daily, hourly
 - Capacity, Entitlement
 - Delivery Point

Article 2 – Conditions Precedent

- For Seller – with specific dates for satisfaction
 - Development and equipping wells
 - Construction and commissioning of Gas plant
 - Construction and commissioning of Pipeline
 - Award and execution of Construction Management Agreement
 - Financial closing
 - Governmental consents
- For Buyer – with specific dates for satisfaction
 - Award and execution of Construction Management Agreement
 - Construction and commissioning of plant to use Gas
 - Construction and commissioning of facilities to receive Gas
 - Financial closing
 - Governmental consents
- Default on Conditions Precedent
 - Non-defaulting party may extend date for satisfaction
 - Liquidated damages for each day secured by bond or guarantee
 - Step-in rights that allow the non-defaulting party to complete construction and recover costs
 - Right to terminate for cause, if completion will be delayed for set period (6 months)
- Seller’s option to utilize gas from the properties for recycling or repressuring operations.
All gas required for Seller’s use as fuel in the operation of a processing plant.

Article 3 – Warranties and Indemnities

- Seller warrants –
 - Unencumbered title to Gas delivered
 - Corporate actions
 - Governmental consents
- Buyer warrants –
 - Corporate actions
 - Governmental consents
- Buyer and Seller give cross-indemnification for damages resulting from their individual operations.

Article 4 – Agreement for Sale and Purchase

Article 5 – Term of Agreement

- Effective Date
- Term of Agreement
- Provisions for extension

Article 6 – Delivery Point

- Describe the point where the gas passes from Seller's control into the Buyer's control (wellhead, central point in field, delivery point on Seller's line).
- Delivery at Border
 - Interconnection with downstream Pipeline and transfer of custody and risk of loss
 - Metering
- Cross-Border Delivery
 - Custody and risk of loss to stay with Seller until delivery

Article 7 - Seller's Reservations

- Operate and control properties free from any control of Buyer.
- All liquid hydrocarbons produced from dedicated lands.
- All gas required for delivery to third parties.
- All gas required for development and operation of properties.
- All liquids removed from gas prior to entering Buyer's line.
- Right to process, or have processed, all gas prior to delivery, providing that processing does not reduce quality of gas below minimum specifications.
- Right to unitize any locations with Seller's other properties and/or others in the same field.
- Redetermination.
- Provisions for resolving disputes by independent expert in case of disagreement on reserves.

Article 8 - Quantity

- Minimum gas quantities to be delivered on daily and/or monthly and annual basis throughout the contract's term.
- Statement of "take-or-pay" provisions.
- Make-up periods clearly defined.
- Price paid for Make-up gas.
- Withdrawal of wells that are uneconomic, or produce gas below contract quality specifications.
- Permit the Buyer to purchase a daily contract quantity in excess of its annualized obligation to purchase (i.e. to allow the Buyer the necessary "swing") during peak demand periods.
- Ratable take from all wells under different ownership in common source of supply.

Article 9 - Description of Facilities

- Seller's Facilities -
Description of Gas Supply (usually Exhibit).
Geologic description of the productive horizons if less than all zones are subject to the contract.
Any exclusion, exception or release of lands or well from the contract
Location and capacity of Gas Plant and Pipeline
- Buyer's Facilities –
Description of Delivery Point (usually Exhibit)
- Transporters Facilities –
Legal description of location (usually Exhibit).
Receipt and Delivery Ports

Article 10 – Exchange of Information

- Nomination gas quantities to be delivered on daily and/or monthly and annual basis throughout the contract's term.
- Nomination Procedure (Exhibit)
which quality measurements are calculated.
- Periods for which quality test are to be effective.
- Provisions for special quality tests at Seller's election and cost.

Article 11 – Recoverable Reserves

- Procedure for determination of original in-place reserves and/or well's deliverability.
- Period to expire between redetermination of reserves.
- Provisions for increasing reserves with additional development.
- Provisions for effective date of reserve line pressure in stages with depletion of reserves without price differential.
- If line pressure is too high to take gas, Buyer will reduce pressure or Buyer will release gas from the contract if neither party will undertake compression.
- Maximum pressure to be maintained at delivery point.
Shipper to compress gas so it can enter Transporters line.

Article 12 – Take or Pay

- Minimum price that may be paid for gas under contract over term of contract.
- Statement of “ship-or-pay” provisions.
- Make-up periods clearly defined, if any.

Article 13 – Price

- Schedule of prices per Mcf or GJ for delivery periods (monthly).
- A “Base Price” that is adjusted for the energy value of the gas above standards (1,000 BTU per cubic foot).
- Price adjustments for:
 - Fixed
 - Favoured Purchaser/Seller
 - Escalation with Price Controls (if any)
- Provision for price redetermination.

Article 14 – Billing and Payment

- Provisions for period of billing.
- Specifications for content of invoice and other information to be furnished to Buyer.
- Payment is required even though the amount of the invoice is disputed.
notices) consider to have been received when mailed
- Interest on late payments a LIBOR + ___%

Article 15 – Taxes and Levies

- Reimburse Seller for 100% of existing and new taxes or charges on production.

Article 16 – Quality

- Quality Specifications (Exhibit __)
- Reductions in price and delivery/acceptance obligations which apply if gas is below contract specifications.
- Pressure and temperature standards at cancellation or termination of the contract.

Article 17 – Delivery Pressure

- Maximum pressure to be maintained on Buyer’s line or delivery point.
- Seller or Buyer to compress gas so it can enter Buyer’s line.
- Buyer to either reduce line pressure or compress gas should Seller not elect to compress gas, and price differential.
If possible – provisions for Buyer to reduce before duties or obligations are effective.

Article 18 – Measurement

- Pressure and temperature basis to which all gas measurements are to be corrected.

- Provisions for specific gravity measurement including testing procedures and periodic measurement.
- Provisions for flowing temperature measurement.
- Provision for deviation of gas under pressure from behaviour indicated by Ideal Gas Laws.
- Testing procedure and equipment to be used for determining energy value.
- The type of metering equipment, location, control and operation.
- Provisions for the retention of measurement data and other records.
- Provisions for testing for errors in measurement equipment and procedures if errors are detected.

Article 19 – Force Majeure

- Description of force majeure events and duration before notice is given.
- Obligation on notifying party to use diligence to overcome the event.
- Right to cancel contract if event continues beyond specific period.

Article 20 – Assignment

Article 21 – Dispute Resolution

- Resolution of technical dispute by referral to independent expert.
- Governing law or rules and forum for arbitration or litigation.
- Dispute resolution survives the
- Expansion of Pipeline.

Article 22 – Notices

- Routine communication (monthly invoices, delivery with required postage, or transmitted by telefax.
Provision for prior written notification

Article 23 – Termination

- For Cause
- Unilateral Right to Terminate

Article 24 – Governing Law

- Contract interpretations and performance is governed by the laws of _____.

Exhibits

Exhibit A – Description of Gas Supply

Exhibit B – Description of Delivery Point

Exhibit C – Quality Specifications

- Maximum water and objectionable liquid content.
- Maximum oxygen, carbon dioxide, sulphur and hydrogen sulphide content.

- Standard energy value of 1000 BTU per cubic foot.
- Right to reject non-specification gas.
- Reductions in price and delivery/acceptance obligations which apply if gas is below contract specifications.
- Pressure and temperature standards at which quality measurements are calculated.
- Periods for which quality test are to be effective.
- Provisions for special quality tests at Seller's election and cost.
- Follow the specifications of equipment vendors to maintain warranty

Exhibit D – Measurement Procedure

Exhibit E – Nomination Procedure

Exhibit F – Form of invoice

Exhibit G - Governmental Consents

Shipper's Entitlement and Obligations

- Reservation of Capacity.
- Minimum Bill.
- Balancing Period.
- All gas required for development and operation of properties.

Transporter's Rights and Duties

- Control of Meters.
- Line Pack.

Liability for non-delivery.Tariff

- Schedule of prices per Mcf or GJ for delivery periods (monthly).
- Tariff methodology.
- A "two-part tariff" that is allocated between capacity and demand charges.

IMPORTED GAS RISK MATRIX

RISK	CONSTRUCTION	MARKET IMPACT	FINANCING	MANAGEMENT STRATEGY
<p>Security of Supply: Due to either</p> <p>1 Inadequate reserves,</p> <p>2 Supply obligations are for a duration that is less than economic life of facility using gas, or</p> <p>3 Dependency on imports</p>	<ul style="list-style-type: none"> ◆ Under investment in pipeline infrastructure ◆ Construction of Storage facilities for backup supply 	<ul style="list-style-type: none"> ◆ Demand is supply constrained ◆ Less penetration as gas becomes "swing" fuel ◆ Construction of Storage facilities for backup supply ◆ 20-30 years supply capability ◆ Dual fuel ◆ Back-up imports with domestic gas ◆ Liability for failure to supply 	<ul style="list-style-type: none"> ◆ Cannot be less than 8-10 years supply for loan amortisation ◆ Increased costs to compensate for risk ◆ Limited – recourse rather than non-recourse project funding 	<ul style="list-style-type: none"> ◆ Reserves ◆ Independent certification ◆ Right to call for redetermination under supply contract ◆ Back-up suppliers with cost in tariff ◆ Supply Contract ◆ Curtailment provisions ◆ Preferential right for dedication of future discoveries ◆ Restrictions on third party sales ◆ Dependency ◆ Contingency plan for curtailment ◆ Strategic reserves or funds to buy alternate fuels ◆ Diversification
<p>Market Risk: Due to either</p> <p>1 Field deliverability for acceptable NPV exceeds demand, or</p> <p>2 Lack of credit worthy buyer</p>	<ul style="list-style-type: none"> ◆ Staged development ◆ Higher development costs since wells and processing facilities are constructed in stages ◆ Excess capacity in pipeline network ◆ Project delay 	<ul style="list-style-type: none"> ◆ Demand is market constrained ◆ Thermal equivalent pricing for with alternate fuels ◆ Finance customer conversion or dual fuel capability ◆ Pledge receipts ◆ Payment in foreign currency ◆ Penetration is incremental and gas becomes "swing" fuel 	<ul style="list-style-type: none"> ◆ May not have acceptable coverage ratios for lending ◆ Equity requirements ◆ Financing cannot be arranged. ◆ Take-or-Pay based upon annual contract quantities 	<ul style="list-style-type: none"> ◆ Deliverability ◆ Independent certification ◆ Eliminate price controls on alternate fuels ◆ Long term supply contracts with indexed pricing fuel oil with ceilings and floor prices. ◆ Minimum bill obligations using a 2-part capacity/ commodity tariffs ◆ Capacity and throughput requirements ◆ Load shedding ◆ Credit Enhancement ◆ Letter of Credit ◆ Sovereign guarantee for state enterprise (full faith and credit for performance or limited to take-or-pay for duration of loan)
<p>Financing Capacity: Exposure is limited for both</p> <p>1 Country, and</p> <p>2 Project</p>	<ul style="list-style-type: none"> ◆ Project delay ◆ LNG is cost competitive with pipeline gas at distances of 4,500km (on-shore) 2,000km (submarine) 	<ul style="list-style-type: none"> ◆ Use alternate fuels ◆ Price based upon crude oil reference price 	<ul style="list-style-type: none"> ◆ Cannot meet coverage ratios for debt service, or ◆ Internal rate of return ◆ Cannot support loan by pledge of assets or revenue 	<ul style="list-style-type: none"> ◆ Country: ◆ Economic and institutional reforms ◆ Reform state electrical boards ◆ MIGA or co-financing with counter-guarantee ◆ Project ◆ Increased equity to 50% and above ◆ Multilateral co-fundraising and equity participation ◆ Revise project structure to improve feasibility ◆ Government guarantee ◆ Parent guarantee ◆ Integrated project planning and management ◆ Pre-qualify and select experienced contractors ◆ Coordinate construction schedules for facilities

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				<ul style="list-style-type: none"> ◆ Assignment of contractors liquidated damages to lenders ◆ Completion rights to take over if delay is prejudicial ◆ Project financing
<p>Completion Risk: Construction of facilities are delayed or project is abandoned before completion date</p>	<ul style="list-style-type: none"> ◆ Facilities installed by other operators delay commissioning ◆ contractor defaults ◆ Schedules are delayed ◆ Project cost overruns 	<ul style="list-style-type: none"> ◆ Use alternative fuel ◆ Lost revenue 	<ul style="list-style-type: none"> ◆ Penalties or default under Loan Agreement ◆ Step-in rights by lenders or bonding companies ◆ Supplemental loans required 	
<p>Regulatory Risk: Central and State governments control</p> <p>1 Economic regulation,</p>	<ul style="list-style-type: none"> ◆ Expansion is delayed ◆ Increased compliance cost ◆ Third party access may need to be accommodated 	<ul style="list-style-type: none"> ◆ Price volatility ◆ Reduced demand ◆ Fuel switching and loss of market to alternate fuels 	<ul style="list-style-type: none"> ◆ More difficult to demonstrate financial feasibility ◆ Less access to non recourse financing or foreign investment ◆ Breach of loan covenants for all consents and approvals 	<ul style="list-style-type: none"> ◆ Economic ◆ Clear and consistent regulatory framework which provides for freely negotiated contracts between suppliers and users including acceptable methodology for tariffs ◆ Third-party access only for excess capacity ◆ Performance undertaking or implementation agreement with government ◆ Possible indemnity for loss of profits due ex post facto regulations ◆ Stability clause in sales contract
2 Environmental regulation, or	<ul style="list-style-type: none"> ◆ Increased cost ◆ Siting and route restrictions ◆ Completion delayed 	<ul style="list-style-type: none"> ◆ Pass through compliance costs. 	<ul style="list-style-type: none"> ◆ Must have all consents and permits as loan condition ◆ Potential lender liability 	<ul style="list-style-type: none"> ◆ Environmental ◆ Consent process using independent assessment of impacts ◆ Time limits for objections
3 Tax Code,		<ul style="list-style-type: none"> ◆ Pass through taxes 		<ul style="list-style-type: none"> ◆ Tax Status ◆ Specific provisions in tax code for gas import projects ◆ Tax treaty with exporting nation
<p>Foreign Exchange Risk: Payments are received in local currency when expenses and profits are accountable in international currency</p>	<ul style="list-style-type: none"> ◆ Difficulty in paying contractors in foreign currency ◆ Project delay or cancellation 	<ul style="list-style-type: none"> ◆ Price shocks ◆ Fuel switching and loss of market to alternate fuels ◆ Currency is only partially convertible 	<ul style="list-style-type: none"> ◆ Difficulty in servicing loan ◆ Project default 	<ul style="list-style-type: none"> ◆ Provide for either ◆ payment in international currency, or ◆ price calculated in international currency then payable in local currency ◆ Central Bank permission for conversion and expatriation
<p>Political Risk: Due to actions of either</p> <p>1 Exporting nation,</p>	<ul style="list-style-type: none"> ◆ Delay construction 	<ul style="list-style-type: none"> ◆ Interruption of supply ◆ Increased costs. 	<ul style="list-style-type: none"> ◆ Refusal to lend ◆ Unable to service loan ◆ Potential cross-default 	<ul style="list-style-type: none"> ◆ Exporting Nation ◆ Presidential or ministerial authorization for export under enabling legislation ◆ Implementation or support agreement ◆ Supply contract with national oil company with delivery obligation either at buyer's border or in-country receipt point ◆ Pipeline treaty which includes international arbitration with obligation to supply during dispute resolution
2 Transit nation, or	<ul style="list-style-type: none"> ◆ Reroute pipeline ◆ Use LNG 	<ul style="list-style-type: none"> ◆ Increased transit fees 	<ul style="list-style-type: none"> ◆ Revenue is below coverage ratio 	<ul style="list-style-type: none"> ◆ Transit Nation ◆ Termination of imports if cross border transit interrupted ◆ Tri-lateral or bilateral protocol or treaty on regulation of gas transit ◆ Participation of multilateral development banks in project with partial-risk insurance ◆ Trustee management of transit fees with drawing rights for claims by importing nation

RISK	CONSTRUCTION	MARKET IMPACT	FINANCING	MANAGEMENT STRATEGY
				<ul style="list-style-type: none"> ◆ Right to cross border for inspection and repairs ◆ Pipeline treaty which includes international arbitration with no right to block transit during dispute resolution ◆ Only reasonable fees under GATT
3 Importing nation, or				<ul style="list-style-type: none"> ◆ Importing Nation ◆ Indemnity for loss due to governmental act or omission ◆ Stability clause in supply contract ◆ Pipeline treaty which includes international arbitration with obligation to take delivery and make payments during dispute resolution
4 U S , Iran and Lybia Sanctions Act (U S)	<ul style="list-style-type: none"> ◆ Less competition since U S companies may not participate in Iran pipelines 	<ul style="list-style-type: none"> ◆ Increased prices due to reduced competition 	<ul style="list-style-type: none"> ◆ Financial institutions U S may participate in lending. ◆ No U S EXIM Bank guarantee 	<ul style="list-style-type: none"> ◆ U S Sanctions ◆ State Department can delay sanctions ◆ Pipelines which transit Iran are not sanctionable
<p>Operating Upsets:</p> <p>1 Due to upset in owners facilities or those of 3rd party supplier or end-user,</p>	<ul style="list-style-type: none"> ◆ Post-construction risk 	<ul style="list-style-type: none"> ◆ Loss of supply ◆ Liability for failure to supply 	<ul style="list-style-type: none"> ◆ Loss of sale revenue for loan repayment 	<ul style="list-style-type: none"> ◆ Facilities ◆ Adequate force-majeure clause which includes third-party force majeure ◆ Ability to deliver from line-pack, storage or domestic suppliers ◆ Limitation on claims under supply contract ◆ "Global Insurance" program owners and facilities
2 Weather for LNG, or	<ul style="list-style-type: none"> ◆ Post-construction risk 	<ul style="list-style-type: none"> ◆ Loss of supply 	<ul style="list-style-type: none"> ◆ Loss of sales revenue for loan repayment 	<ul style="list-style-type: none"> ◆ LNG ◆ Expand LNG storage at receiving terminals ◆ Ability to divert LNG carriers to alternative sales ports with market for standard size cargos
3 Sabotage of pipeline	<ul style="list-style-type: none"> ◆ Security during construction ◆ Armored compressor, and metering stations 	<ul style="list-style-type: none"> ◆ Interruption of supply 	<ul style="list-style-type: none"> ◆ Loss of revenue for repayment of loan ◆ Risk perception 	<ul style="list-style-type: none"> ◆ Sabotage ◆ Landowner cooperation ◆ Cooperation with security forces ◆ Stock pile repair material and equipment
<p>Domestic Production: Reaction of domestic producers due to availability of imported gas</p> <p>Price Volatility: Price changes in costs for fuel oil or International Crude Price (ICP)</p> <p>Intervenors challenge: Judicial proceedings under environmental anti-conspiration or competition laws</p>	<ul style="list-style-type: none"> ◆ Interconnection with domestic pipeline network ◆ Compatibility of gas quality specifications ◆ Post Construction Risk ◆ Delay construction ◆ Increase cost ◆ Restrict terminal siting and pipeline routing 	<ul style="list-style-type: none"> ◆ Stimulate gas-to-gas competition ◆ Domestic supplies will seek price parity if import price is higher despite lower net-backs to export producers ◆ Price indexed to alternate fuel causes increased cost to wholesaler and end user ◆ Use of alternate fuels 	<ul style="list-style-type: none"> ◆ Country exposure for petroleum sector may be reduced ◆ Less attractive for foreign investment in exploration ◆ Windfall or wipe out due to price changes ◆ Potential lender liability 	<ul style="list-style-type: none"> ◆ Authorization for gas imports according natural R/P ratio ◆ Phased removal of price controls with renegotiation of gas prices according to thermal equivalency pricing ◆ Comparison of producer set-backs before introduction of fiscal incentives ◆ Long term supply contract with thermal equivalent prices ◆ Price ceilings and floors ◆ Stock pile repair material and equipment ◆ Legislation and regulations for transparent permitting and licensing with public involvement ◆ Environmental impact assessment and mitigation ◆ Prohibit legal action by competitors ◆ Limits on scope of Judicial review. ◆ Statue of Limitations in enabling legislation ◆ Government support in litigation