



International Gas Sale Agreements and Security of Supply

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Agenda / Content

Source of Gas and Technology

Cross Border

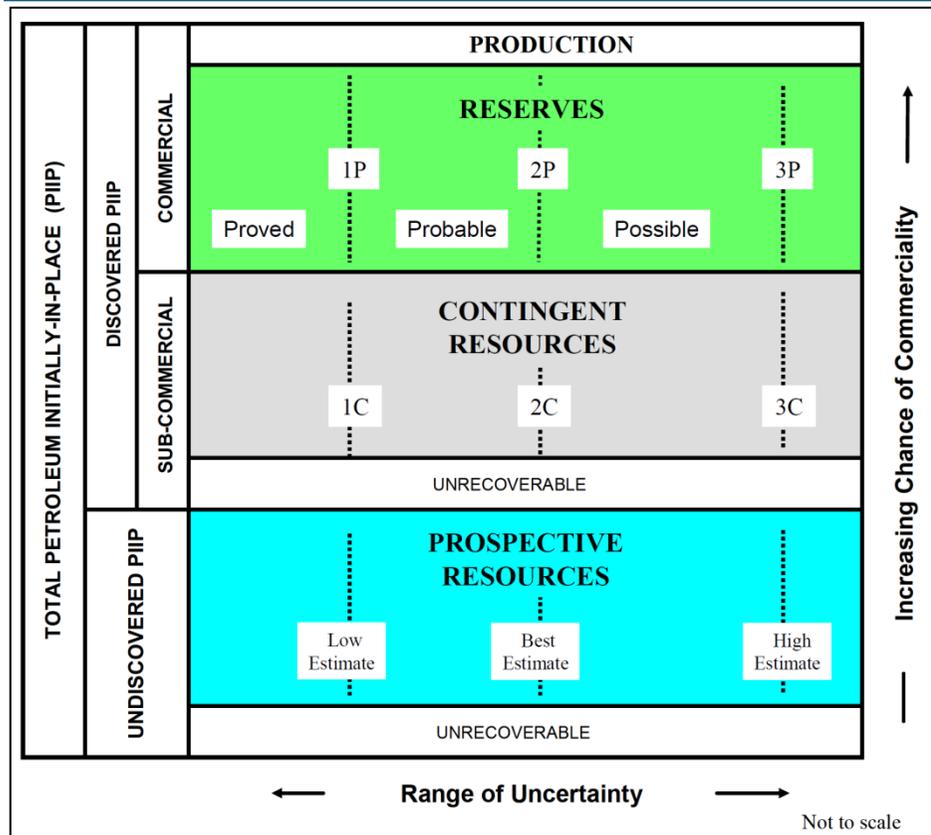
Shortfall Gas and Take-or-Pay Gas

Alternative Fuels

Security of Supply, Value of Lost Load/Supply and Storage

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Guidelines for Application of the Petroleum Resources Management System



- There are several official categories used to classify hydrocarbon resources.
- Many buyers will want most if not all of their contracted gas to be from proven reserves, with perhaps a small part of the overall contract classified as probable reserves.
- Another factor at play is whether the gas is conventional or unconventional such as shale gas, tight gas or coal bed methane. Understanding of the subsurface is always an evolving process and downward revisions do sometimes happen. (Note conservative behaviour of Japanese buyers of CBM LNG from Queensland).
- One way of looking at the massive rate of technological innovation over the last decade is to say that it has expanded the amount of gas and oil in reserves.
- But sometimes technology does not work properly – events at the deep water Macondo field to cite one very painful example.
- So the greater amount of standard equipment and the more conventional the source of gas then in general the lower the risk to supply.

Source: Society of Petroleum Engineers

Anticipating that Cross Border Gas Supply Agreements Might Need Revisited

- **Governing Law**

- Cross border gas supply agreements are usually written using seller's legal system. Often governments or government-back agencies are the sellers. But a corporate suing a foreign government is very hard. In addition there is the US Foreign Sovereign Immunities Act and other similar legislation which formalizes the convention that governments are immune from legal action taken in another country's courts.

- **Arbitration**

- Realising that the cards are mostly likely stacked against them in the courts of the country that is supplying the gas, exploration and production companies or cross border buyers usually write arbitration into gas supply agreements (GSA). This is particularly true for LNG contracts (which are usually cross border) and the main vehicle is the International Chamber of Commerce Court of Arbitration. To date, most cases have taken place in London.

- **Expert Panel or Tribunal**

- Another route is to include in the GSA the terms under which a Expert Panel will be formed and how its decisions will be implemented. If the parties cannot agree on the member(s) of the Expert Panel then the ICC Rules for Expertise can settle the choice instead.

- **Price Re-openers and Hardship Clauses**

- These are written into the GSA and can be invoked when the buyers' market place takes an economic downturn and the prices of commodities such as gas fall substantially. Or on the other hand some years into a long term contract a buyer may find his market flooded by cheaper alternative source of gas and seek to use the hardship clause to get a price cut from the seller.

Shortfall or Take-or-Pay Gas – a Temporary Change from Contracted Quantities

Approaches

- There are different penalties for short fall gas depending on country and depth of gas market.
- In Southeast Asia most contracts are bilateral or sometimes with an aggregator as middle man. So making good a shortfall from the spot market or a hub is not usually an option. Therefore penalties are written into the contracts.
- But in broad terms there is a sliding scale depending on price.
 - High price = greater penalties
 - Low price = lower penalties
- Take-or-pay requirements are written into the Gas Sales Agreement and today these have generally been honored in Southeast Asia.



Alternative Fuels

- From the Gas Supplier

- Usually quite costly, as for the power sector the most common alternative is diesel.
- Compensation could be in physical delivery of substitute diesel.

- By the User

- Or else the buying utility or power station could contact for diesel and send a bill to the gas company.
- A different story for industry which cannot really switch to alternative fuels or feed-stock.

- International Markets

- If you are lucky enough to have an LNG terminal in Southeast Asia
 - LNG cargoes can be contracted for on a spot basis under a master supply agreement.
 - Short term of sales of piped gas are not usually available in Southeast Asia as there is no market place.

- Hot Switching Capability

- Requiring power stations to store alternative fuels is one thing, achieving a hot switch is another matter
- Perhaps a practice hot switch should be made part of planned maintenance.

Security of Supply, Value of Lost Load and Storage

Valuation Methods

- Divide national GDP by national MWh to get value of one lost MWh and from that to a value for gas to power using a heat rate.
- Or ask buyers:
 - what they would pay to avoid an interruption
 - what they would like paid in compensation for an interruption
 - (usually former is usually lower than the latter)
- Answers will also vary by length of interruption, and by type of user.
- Industry is generally willing to pay more to avoid an interruption and will want more in compensation for any interruption.
- If there is an LNG terminal build extra tanks and use them for storage and socialize the cost - no country in Southeast Asia has natural storage.



Assigning a value
to interrupted
supply of gas or
power remains a
work in progress

Summary

Source of Gas and Technology

- Proven reserves of oil and gas have risen the last two decades, according to BP's Annual Review of World Energy, helped by new technology and higher crude oil prices but new technology sometimes comes with extra risks.

Cross Border

- Anticipate that long term agreements might need revised, but carefully word the scope given to expert panels or arbitration courts.

Shortfall Gas and Take-or-Pay Gas

- To date in Southeast Asia there have been very few cases where shortfall gas provisions or take-or-pay clauses have not been honoured, or else any problems have been mutually worked out between parties, sometimes with the help of governments.

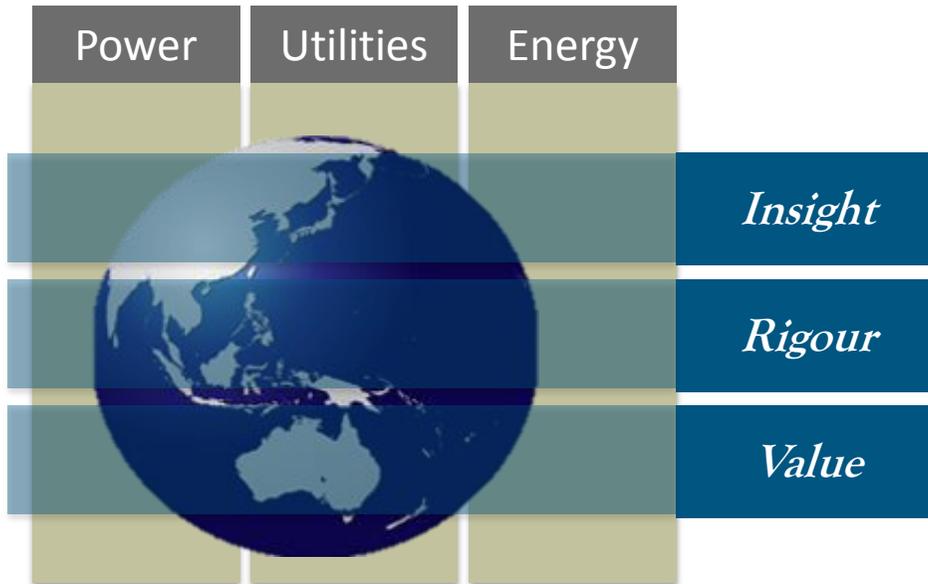
Alternative Fuels

- If the gas supply agreement makes some provision for alternative fuels (for the power sector) then make sure that the power sector can easily switch to those fuels.

Security of Supply, Value of Lost Load/Supply and Storage

- Attaching a value to lost load and therefore what amount of storage to have remains a work in progress – there is a wide range of values depending on country.

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