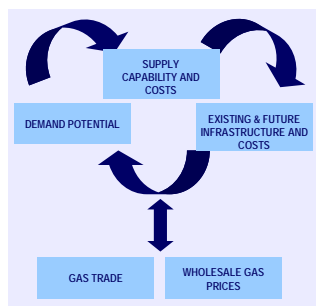


Licensing the World Gas Model



The World Gas Model (WGM) has been developed by Nexant's Global Gas practice to support our consultancy assignments and is now available for licensing.

Our WGM uses a powerful optimiser programme, in conjunction with Microsoft Excel, which allows all inputs and outputs to be analysed by users and linked to other in-house systems. WGM has been developed as a practical tool by people who really understand the international gas market. Answers to some Frequently Asked Questions about the model are attached.

WGM users find the model a vital tool for undertaking strategic gas market analysis and testing their own scenarios. Under the license agreement, subscribers are provided with a copy of the World Gas Model for use in their own offices together with a support package from Nexant.

The process starts with Nexant's key experts visiting the subscriber's offices, to install the WGM, and to provide full training on using the model for relevant personnel. A user manual is provided detailing how the data is set up, how to run the model and how to understand and interpret outputs. Nexant then provides a follow-up service including model maintenance and data updates.

In addition to the WGM itself, a complete database is provided including all data required by the model including:

- production profiles, costs and taxes, swing
- demand forecasts for every country/node in the model with seasonal profiles
- pipeline data including capacities, tariffs and start dates for new projects
- LNG regasification terminals with capacities, regasification costs and start date for new terminals
- LNG liquefaction terminals with capacities, liquefaction costs and start date for new terminals
- pipeline and LNG contracts with import and export nodes, ACQ and take-or-pay levels, start and end dates, pricing formulae
- LNG shipping route data including distances, canal usage and other data required to compute shipping costs
- storage data including working capacity, maximum deliverability and operating costs.

All of the data inputs and outputs are in Excel format which can be expanded and/or over-written with alternative assumptions as desired. The database file is linked to the WGM model which is also in Excel such that incorporating the updated data would just require changing the link in WGM to point to the revised database file.

Regular data updates are provided for the above data sets. Production data and demand forecasts are updated annually. All other data listed above are updated on a quarterly basis.

A recent subscriber to the model told us:

“We reviewed all of the gas models available and the choice was obvious – we chose the Nexant World Gas Model”

For further information on licensing the World Gas Model and the license fees please contact:

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Frequently Asked Questions

Q *How do clients access the World Gas Model?*

A The WGM is currently used by Nexant staff to support clients. The model can be run with assumptions specified by the client, proposed by Nexant Global Gas or typically by a combination of the two depending on clients' specific interests. The model is also available for licensing to clients for use at their own premises. Please contact us to discuss this option

Q *How many countries are included in the model?*

A The model includes every country which produces, consumes or transits gas. Larger countries including USA, Canada and Russia are sub-divided. In total there are currently over 140 nodes, each of which represents a country or part of a country.

Q *Are results summarised by region?*

A Results can be provided at both country and regional levels. The regions used to summarise results are not hard coded into the model allowing clients to specify their own regional definitions.

Q *Which units does the model work in?*

A Inputs are provided in billion cubic meters (bcm) with costs in US\$ and \$/MMBtu. Outputs can be converted within the model to any units specified by the client.

Q *What is the format of outputs?*

A All outputs are in Excel format so can be provided as tables or charts or linked to other Excel systems.

Q *What if we need to include new countries in the model?*

A New nodes can be added to the model easily to represent additional countries or areas.

Q *What happens if we want to add new pipelines or LNG plants?*

A The model has been developed with sufficient space to add new facilities such as pipelines, LNG liquefaction and regasification plants and storage facilities simply by adding appropriate data.

Q *What is the time horizon of the model?*

A The model is currently set up with data to 2030, but it can easily be extended.

Q *How much detail is provided on seasonal variations in supply and demand?*

A The model considers quarterly time periods. Seasonal patterns of demand are estimated based on historical data.

Q *How are pipelines included in the model?*

A The model includes all existing international pipelines as well as proposed new pipelines. The timing of new projects is a parameter in the model which can be used to defer project start-up (possibly beyond the outlook period) depending on the scenario being considered.

Q *How are pipelines modelled?*

A Pipelines are modelled as links between two nodes. Pipeline capacity and unit costs/tariffs are specified in the data set.

Q *How are gas prices modelled; does WGM distinguish between spot and contracted prices?*

A Spot prices are estimated as marginal costs of supply at each node. Prices are generated for long term contracts using pricing formula based on oil and or gas spot prices.