

# EXECUTIVE SUMMARY

## *Gas goes global*

Total gas output in IEA countries is falling, while demand is rising. IEA countries are becoming more dependent on inter regional trade, with this trend most marked in Europe. While the North American region has traditionally been concerned with pipeline gas, and the Pacific market with LNG, neither can now afford to ignore the global picture. North America is preparing to import LNG from both Pacific and Atlantic producers, while Pacific consumers have sharply increased LNG imports from Atlantic markets as some traditional Pacific suppliers have been unable to meet contracted demand. IEA Europe will import increasingly large volumes of both LNG and pipeline gas, so what happens in this region is of paramount importance to all regions of the world. If investment in pipeline gas does not develop as anticipated, (and there is cause for concern in this regard) pressure on both the Atlantic and Pacific LNG markets will increase.

LNG production capacity is growing, from 240 bcm in 2005 to 360 bcm by 2010 (in line with the 2006 Natural Gas Market Review, GMR 2006) and, by 2015 to 470 bcm, potentially as high as 600 bcm, **but capacity increases after 2010-12 depend critically on new projects being sanctioned soon.** Regasification capacity is growing rapidly, although some countries and regions need to improve competitive forces in their domestic markets if they are to take advantage of the diversity provided by LNG.

By 2015, LNG is set to provide almost a quarter of OECD gas demand, but will contribute relatively little to non-OECD energy demand. Despite the traditionally slow pace of developments in LNG markets, the business is changing rapidly. Newly-negotiated and recently-renewed long-term contracts are responding to the effects of globalisation seen in the more price responsive short-term LNG market. The rapid growth in LNG use and its greater flexibility is already beginning to create a global market for gas. This process has accelerated over the last year, compared to expectations of the GMR 2006.

Due to its liquidity and depth, the North American market has provided the “price to beat” for the increasing volumes of price-sensitive LNG cargoes. Nevertheless, LNG importers in the Pacific and European regions remain able to outbid the United States in order to secure incremental supplies due primarily to differences in domestic market structure. The United States price (usually indicated by the Henry Hub) therefore seems to be setting a floor price for price-sensitive LNG. During periods in 2006, a correlation between Henry Hub and prices in the United Kingdom became apparent, whilst some long-term LNG supply contracts are now indexed to the Henry Hub.

## *Investment outlook worsens*

**Investment in the gas sector is a serious cause for concern,** having worsened in comparison to the GMR 2006. Current upstream investment to 2015 is considerably below the amount required, with particular weakness in several regions. Gas investments everywhere are suffering higher costs and

construction delays, in keeping with energy investments generally, although proposed LNG projects seem especially affected. A selection of these LNG projects shows production delays averaging almost a year, with average cost overruns of more than USD 2 billion per project. Furthermore, only one major new LNG liquefaction project has been sanctioned in more than a year and a half, a marked slowdown compared to previous years. Reports pointing towards the formation of a gas producers' association, analogous to OPEC, will do little to improve this situation.

The global demand for raw materials and talent has pushed up costs (dramatically in some cases) and reduced the effectiveness of each investment dollar spent compared to the situation reported in the GMR 2006. As well as affecting existing projects, increasing costs have been blamed for the postponement and cancellation of significant new developments worldwide. At the same time, the companies with the skills to deliver these increasingly complex projects are seeing reduced access to reserves. Encouraging production in IEA countries, in particular a renewed focus on producing from "fallow" (economic but undeveloped) fields, could help take some of the pressure off non-IEA investment in the short to medium term.

There is a distinct deficit of new long distance pipeline investment in the period to 2015, noting that investments in transportation over increasing distances show a distinct preference for LNG. Regulatory uncertainty and NIMBY ("not in my backyard") issues continue to slow investment in downstream pipeline and other infrastructure, especially when

borders must be crossed. Within many jurisdictions, **regulatory uncertainty is slowing investment.**

Storage investment seems to be lagging substantially in IEA Europe, but progressing well in IEA North America. Investment in downstream transportation and distribution networks is also behind, particularly in the IEA European region.

Investment in LNG shipping is running ahead of requirements through to 2015, but this additional capacity will add necessary increased flexibility to the LNG industry. Similarly strong investment is occurring in regasification capacity within each IEA region which will also contribute to flexibility, although in Europe many new terminals are yet to be sanctioned and geographical imbalances persist.

### ***Gas demand drops in 2006, but gas remains expensive***

An unusually mild winter in 2006 had a strong dampening impact on gas demand for residential use worldwide. In North America and North West Europe, prices responded to the decrease in residential demand and consequent record inventory levels by falling well below expectations in the GMR 2006. Prices have been below oil parity, resulting in increased substitution away from oil products in stationary applications. A similar substitution effect has occurred in Japan and Korea for different reasons. In the majority of IEA European countries, gas prices remained relatively static, reflecting their link to oil prices.

In the medium term, forecasts of tight supply underpin **high gas price expectations**. Gas demand growth looks set to remain strong, although a little weaker than in the GMR 2006, reflecting these expectations as well as increased concern over security of supply. Overall, gas prices in all IEA regions are still considerably higher than the level of USD 4/MBtu or below, which were seen as recently as 2002. Prices in 2006 ranged from USD 6.50/MBtu in North America, USD 7/MBtu in Japan, USD 7.40/MBtu in the United Kingdom, and USD 8.30/MBtu at the German border. Gas is cheaper than oil, but expensive when compared with coal.

### *Gas-fired power demand stays strong*

**Gas-fired power remains the default option for new power generation.** In Europe, almost two-thirds of new electricity plant under construction is gas-fired. In North America, the proportion is half. Demand for new gas-fired power generation capacity continues to grow as political commitments in some countries to avoid or phase out nuclear and reduce carbon emissions have left gas as the default option. Uncertainty over climate change policy is slowing investment in new coal-fired plant in Europe and to a lesser extent, North America.

There are large numbers of new coal and nuclear plants planned, but construction needs to start soon if new plant is to be operational before 2015. Renewables cannot fill the gap in this timeframe; to the contrary, increasing shares of intermittent renewables such as wind may increase the need for flexible gas-fired power as back-up. The growing interdependence

of gas and electricity is raising concerns about security, reliability and competition because gas increasingly meets electricity demand peaks, notably in summer, where an increasing number of IEA countries are experiencing peak power demand. In many regions, gas-fired plant sets the price of electricity a significant proportion of the time. Expensive gas therefore means expensive electricity. For these and many other reasons, policy makers must appreciate the growing intertwining of gas and electricity industries, and design markets and regulatory systems accordingly.

### *Gas security is deteriorating*

The GMR 2006 highlighted the growing dependence of IEA countries on gas imports. The situation has continued to deteriorate over 2006, only alleviated by weakening demand from mild weather. There is concern about the rate of development of gas reserves in countries as diverse as Russia, Iran, Indonesia, and Bolivia. Moves towards a “Gas OPEC” will raise concerns further. At the same time, more gas is being transported over increasing distances in a more uncertain world. Hence the overall risk to gas supplies is growing. This heightens the need for short-term and long-term gas security measures. Gas emergency policies are needed to deal with short-term gas supply disruptions, while longer-term policies are required to ensure sufficient investment as well as increased diversity of suppliers, supply routes and energy sources, especially in the electricity sector.

The increasing links between gas and electricity offer both a threat and an opportunity regarding energy security. Efficient gas and power markets tend to reduce gas demand as prices increase, saving gas at times of high demand or low supply. In addition, some gas-fired equipment can continue to operate but switch fuel, reducing gas demand at the expense of oil. In addition, government-sponsored measures to save electricity “in a hurry” can be used to reduce power consumption, and hence gas demand, in the event of a shortage.

**Consuming countries need to upgrade gas emergency policies to cope with possible supply disruptions.** Strategic storage is one method of addressing specific security concerns. However, the high costs and limitations of strategic storage need to be well understood and their development and possible deployment should not undermine commercial storage investment. A suite of measures to address general security issues can be much more effective and efficient than storage alone. Such measures could take into account fuel-switching, interruptible contracts, demand restraint and storage where good sites are available. Growing globalisation in gas markets and expansion of electricity markets means that it is increasingly necessary to check the international interdependency of policies and market responses, particularly in a situation where they might be applied simultaneously. Possible impacts of national measures on wider oil and electricity markets need to be assessed.

In the longer term, open, transparent and fully functioning markets with strong cross-border links, offer important benefits in security

of supply, competitive pricing and rational response in crises. Governments, especially in Europe, need to step up their efforts to ensure such markets develop and are maintained. Long term security is dependent on adequate and timely investment across the board in production, transport, pipelines and distribution. Ensuring that gas is used efficiently is paramount; the Alternative Energy Scenario set out in the *World Energy Outlook 2006* estimates that strong policy action to improve energy efficiency and promote low carbon alternatives can reduce global gas demand by between 4% and 5% in 2015, an amount equal to Russia’s current gas exports to IEA countries.

### *The world “dodged a bullet” in 2006 but gas remains vulnerable and expensive*

A very mild winter in 2006 and in some regions 2007 took significant pressure off gas demand in what was becoming a strong suppliers’ market. This should not lure decision makers into a false sense of security. Supplies remain tight, and new projects under development are subject to rising costs and increasing delays. A return to more normal winter conditions in consuming countries will put strong pressure on gas supplies. Colder-than-normal weather in the winter (or indeed hotter weather in the summer) could quickly see supply difficulties re-emerge in some areas. There are very real concerns that upstream investments and long distance pipelines will not develop quickly enough to meet growing demand, especially if power generation investment continues to favour gas.