EXECUTIVE SUMMARY

Strong demand in the first half of 2008 reverses dramatically later in the year and into 2009

The first half of 2008 saw strong gas demand growth in most IEA regions of up to 10% in some countries. This began to slow in mid year, then to reverse dramatically late in 2008, and continue to fall into 2009, as the global recession hit gas hard. The industrial sector was especially hit, as cold weather kept domestic and commercial heating demand strong. Demand for gas-fired power slumped, as industrial power demand fell in line with the economic downturn, and as gas-fired power is generally the most expensive in the mix of power sources, notwithstanding very marked price falls which accompanied weakening demand.

Gas prices peaked in mid 2008 at levels over USD 13 per MBtu in the United States for example, but have since dropped to around USD 3.50 per MBtu in April 2009. British prices have fallen from similar highs to around USD 4 per MBtu. Oil-based prices in Japan and Continental Europe, with their in built time lags, continued to rise through most of 2008, but with the fall in oil prices can be expected to decline through 2009 to average around USD 7-8 per MBtu in the case of Europe. Plentiful gas supply is also playing a strong role in markets where gas-on-gas or gas-on-coal competition can be seen.

Gas supply grows strongly

Of particular note is the continuing growth in unconventional gas production in the United States. Gas production in 2008 showed a near 8% increase over a year earlier, despite destructive hurricanes in the late summer, and has continued to show around 4% increases in the early months of 2009. Growth at these levels represents a major turnaround from the production declines of about 2% per year observed earlier in the decade, challenging the wisdom that United States production would inevitably decline, increasing the need for large-scale LNG and pipeline imports. Indeed LNG imports in 2008, at less than 10 bcm, were less than half the level of 2007. LNG was thus freed up for other markets, and over the course of 2008, some 20 bcm of "Atlantic" LNG was shipped to Pacific markets, double the levels of 2007, in response to the strong demand in those regions in the first half of 2008. Hence United States unconventional gas production is of global significance. However, low gas prices have reduced the gas rig count by nearly half in April 2009 compared to the year before, and it seems inevitable that growth in output will slow. The future of United States gas output remains one of the major uncertainties in global gas markets.

Globally, LNG capacity continued to grow, although various problems restricted output, so actual production grew only modestly to 240 bcm in 2008. However, a massive increase in new LNG capacity is already underway in 2009, and the next three years will see capacity grow to at least 370 bcm, an astonishing increase, without precedent in the LNG world. Thus, 2009 and 2010 will test the flexibility and resilience of the global LNG market. Norway also continued its export led expansion, with gas output in 2008 growing by 10% to almost 100 bcm. Growth will continue into 2009, and is set to rise to beyond

120 bcm in coming years, making Norway the largest IEA gas exporter.

Investment outlook weakens

Falling gas prices and volumes have taken a heavy toll on all producers' cash flows, adding to the already serious problems in gas investment throughout the value chain identified in earlier *Natural Gas Market Reviews*. Large investments continue to be needed to meet growing demand in the medium to longer term, and to offset falling output in many consumer countries. For example, UK gas output in 2008 was two thirds of 2003 levels, and declines at the end of 2008 and early 2009 were around 10%. While some relief can be expected from the high engineering, procurement and construction costs that were a feature of hydrocarbon developments from 2004 to late 2008, financing problems are likely to bedevil all new construction projects in 2009 and even into 2010, especially for the long lead time, high capital intensity projects found in many parts of the gas sector. Regulatory uncertainties remain as a barrier to investment, and any rise in gas demand will await economic recovery, likely at best to be sluggish and uncertain, further complicating investors' decision making.

In the LNG sector, notwithstanding the massive increases in capacity that will be seen in the next few years from projects under construction, very few new projects have been sanctioned in recent years. Unless 2009 and 2010 see a number of new project approvals, there will be a dearth of new capacity in the period after 2012. Financing problems, plus uncertain demand growth will impact such approvals adversely, although these projects are to meet medium to long-term demand. Globally there is nearly twice as much regasification capacity operating or well under construction, compared to liquefaction capacity. This imbalance is likely to remain an ongoing feature of the LNG trade well into the medium term.

The world's largest producer, Russia, faces considerable challenges, both financial and technical. Gazprom, accounting for around 80-85% of Russian gas output, will see prices for western European exports fall from USD 12 per MBtu in 2008 to USD 7-8 per MBtu in 2009, and has also seen volumes fall sharply in the first quarter of 2009. Gazprom has wisely prioritised its capital expenditure, to focus on upstream in established and new areas (Yamal), on the pipeline infrastructure to support these, as well as the Nord Stream project, linking Russia directly to Germany via the Baltic Sea. Price reform continues in Russia, which should drive greater efficiency in gas use, notably in the power sector.

Power sector demand likely to drop sharply

While gas demand for power was strong in the first half of 2008 in many IEA countries, again the collapse of industrial output in the final quarter of 2008 and into 2009 saw industrial power demand drop by up to 10% in many countries, both in and outside the IEA. While this translates into total electricity demand declines of around 4%, falls in gas-fired power are likely to be around double these levels, given the position of gas in the merit order, as seen

in some countries in the early months of 2009. Hence, gas demand from the power sector through 2009 is likely to be weak, although the outlook in the medium term remains strong. Most power plants under construction and planned in OECD countries are gas-fired. Gas power has shorter lead times, lower capital cost, a smaller footprint and the lowest carbon emissions of any fossil fuel. New gas-fired capacity is also being developed in many non-OECD countries, although generally coal remains the dominant fuel in the power sector there. Current investment and financing uncertainty may actually favour gas further, with its smaller unit size and shorter lead times responding to an uncertain demand recovery path. Greater deployment of renewables over the medium term may also enhance the role of gas to balance intermittent sources such as wind.

Europe's biggest gas security crisis

The beginning of 2009 saw Europe's most serious gas security crisis, with nearly 7 bcm of gas not delivered to Europe and Ukraine over the first three weeks of the year. While some additional Russian gas supplies were available through Yamal and Blue Stream pipelines, as well as some spot LNG in southern Europe, the bulk of the European response was through rapid storage drawdown. Countries lacking adequate storage (chiefly in eastern and southern Europe) suffered supply shortfalls, since the crisis again demonstrated that gas cannot flow easily across borders in Europe. This is because there is a lack of physical interconnection capacity, capable of reversing the flow of gas from west to east, or the market mechanisms that enable gas to be redirected speedily and efficiently are not present in some areas. Only one major cross-border movement of gas was seen throughout the crisis, that of gas flowing out of the United Kingdom to Europe, although the United Kingdom suffered no loss of supply, since it imports no Russian gas. Encouraging progress has been made in enhancing market flexibility in Europe, such as greater hub trading and other improvements in market transparency. But, clearly more needs to be done urgently to make Europe's gas market work better. In the medium to longer term, Europe also needs greater investment in more varied sources and routes for gas supply, enhanced gas storage, and much more diversity in its electricity sector, embracing renewables, nuclear and coal, with improved environmental performance.

Non-OECD gas use grows fast

Many gas producers are consuming more gas in their own domestic markets, notably Iran and other Middle Eastern countries. Iran, as the second biggest gas reserve holder, seems unlikely to be a significant exporter before 2015, at the earliest. Other gas suppliers such as Qatar are imposing moratoria on further gas development. Both China and India are emerging as major gas users, although their energy mixes seem certain to be dominated by coal for the foreseeable future. Both countries will be able to import around 30 bcm of LNG within the next few years on the basis of regasification terminals being built and contracts concluded, and both could exceed 100 bcm of annual gas consumption in the near to medium term, bigger than any OECD European or Pacific gas user.