

Smart investment in natural gas

The impending closure of ageing power stations and the heightened interest in shale gas extraction has highlighted the potential of natural gas to enhance energy security, reduce carbon emissions and lower energy prices.

Gas is currently an integral part of the UK's energy mix, providing around 40 per cent of our electricity generation. It will continue to play an important role in the energy mix over the coming decades, for both heating and electricity generation.

However, the enthusiasm for gas investments is mixed with concerns over environmental impact and uncertainty about gas price and availability in the future.

The report *A UK 'dash' for smart gas* has examined evidence on the opportunities and challenges of natural gas resources – including technological progress, international gas market dynamics, the UK's carbon constraints and environmental impacts.

The report outlines two key aspects that have influenced the natural gas debate in the UK: a renewed interest in gas-generated power; based on the assumption of potentially abundant and cheap natural gas resources; and expectations on domestic shale gas availability which could increase energy security and reduce vulnerability to fluctuating energy prices in international markets.

The analysis suggests that basing substantial gas investment on the assumption of low prices and large unconventional reserves is a risky option. A preferable, lower risk option would be a 'dash for smart gas' – with targeted use of natural gas in areas where it offers the greatest impact in decarbonising the power sector.

Key findings

- There is only a limited time window for using gas-fired power plants at current emission levels in the transition to low-carbon electricity production, if the UK is to meet carbon targets in a least-cost way. Beyond the 2020s, gas can only play a significant role if carbon capture and storage technology is deployed on a commercial scale.
- Low gas prices are not guaranteed, and there are large uncertainties around future price forecasts. The UK gas market is likely to remain largely driven by wholesale prices charged by foreign gas suppliers, and the price impact from domestic shale gas production could therefore be limited.
- There is great uncertainty around the size of UK shale gas resources and reserves that can be commercially extracted. The infrastructure challenges of establishing a shale gas industry means that it could take a couple of decades for the industry to reach maturity in the UK.
- The scale of the shale gas industry could be constrained not only by the size of the resource and the cost of exploiting it, but also by issues such as planning and public concerns about environmental and social impacts.
- As electricity generation is expected to include increasing contributions from renewables and nuclear power, it will be crucial to consider the full range of flexibility options – not only gas-fired power stations, but also measures such as energy storage, interconnection and demand management for energy consumption.

Beyond the 2020s, gas can only play a significant role if carbon capture and storage technology is deployed on a commercial scale.

Policy relevance and implications

- Clear and consistent policy decisions about the UK's electricity generation need to be made now, in order to secure the investment needed in new power plants and infrastructure this decade. Inconsistencies between the Gas Generation Strategy and UK decarbonisation ambition, combined with uncertainty about the outcome of the review of the fourth carbon budget in 2014, could be perceived by the private sector as a significant policy risk and discourage investment.
- The UK's energy strategy should avoid relying too much on gas, as it could counteract the Government's objective to diversify energy supply in order to protect the economy from price rises in international energy markets.
- The Government should ensure that the implementation of the Gas Generation Strategy does not undermine efforts to decarbonise the energy sector by 'locking in' high-carbon gas generation infrastructure.
- In order to satisfy public concerns about environmental and social impacts, shale gas exploitation will require robust policies to minimise visual impacts and maintain strict environmental, health and safety standards in the production process.



BRIEF DESCRIPTION OF THE PROJECT

The report *A UK 'dash' for smart gas*, produced by the ESRC-funded Centre for Climate Change Economics and Policy (CCCEP), the Grantham Institute for Climate Change and the Grantham Research Institute on Climate Change and the Environment, has examined the possible future role for natural gas in UK electricity generation and implications for energy security, cost and the environment. The researchers reviewed evidence across a range of relevant areas, including technological progress, international gas market dynamics, the UK's carbon constraints and environmental impacts.

Web: www.cccep.ac.uk/Publications/Policy/briefingNotes/2013/briefing-note-uk-dash-for-smart-gas.aspx

FOR MORE INFORMATION

Samuela Bassi, Centre for Climate Change Economics and Policy
Email: S.Bassi@lse.ac.uk

The ESRC Centre for Climate Change Economics and Policy (CCCEP) is hosted jointly by the University of Leeds and the London School of Economics and Political Science. It aims to advance public and private action on climate change through rigorous, innovative research.

Web: <http://www.cccep.ac.uk>

The Economic and Social Research Council is the UK's leading agency for research funding and training in economic and social sciences.

Web: www.esrc.ac.uk

ESRC communications team: comms@esrc.ac.uk

The views expressed in this evidence briefing are those of the authors and not necessarily those of the ESRC.

The infrastructure challenges means that it could take a couple of decades for the shale gas industry to reach maturity in the UK.