

## ENERGY SUPPLY: SECURITY OR INDEPENDENCE? Alisa Murphy, B9 Coal, UK

Energy security is *the* question of today's generation, surpassed only perhaps by economic security, itself hugely interlinked. As the global population catapults towards a projected 9.1 billion in 2050, the problem of how to meet escalating energy demands shows no sign of abating.

In the UK, the Government's Energy and Climate Change Committee (ECCC) is currently conducting an inquiry into energy security to determine the relationship between security of supply and energy independence. But should these issues be treated as distinct concerns or looked at as part of the broader challenge of how to cleanly and efficiently access the vast energy reserves beneath our very feet? At B9 Coal, this is our primary objective: developing a low-carbon solution while maximising indigenous supplies.

### Security vs sustainability

Energy concerns lie at the heart of the international community's current endeavours. Recent global events have highlighted the problem of reliance on fuel imports: issues of regime change and the rights of persecuted citizens are inextricable from fears around oil supply and rising prices. The gas dispute in the winter of 2008/2009 between Russia and Ukraine highlighted the precarious balance closer to home. Gazprom, on which so much of Europe depends for supplies, could turn the tap off at any moment. The planned South Stream pipeline, an alternative to Russia's Nabucco pipeline, is one solution to Europe's energy security, but it is not enough. Moreover, it does not solve the equally pertinent issue of sustainability.

The move towards a low-carbon energy sector is much heralded, but there is sadly more talk than action. Although progress has been made on the push towards increased renewable generation, it has not been without its problems. Meeting the EU's target of 15% renewable energy by 2020 is an enormous challenge. This is underlined by the ECCC's own recommendation that electricity generation should be largely decarbonised by 2030. Even if renewables double in output, there will still be a huge reliance (of 85%) on gas,

coal, oil and nuclear power in 2050. Renewables are currently too intermittent and unreliable to adequately solve either security of supply, or independence. A transitional solution that addresses both these challenges is crucial.

### Facilitating the transition to a low carbon economy

B9 Coal's projects combine coal gasification with alkaline fuel cell technology for clean, flexible power generation with carbon capture. These power plants provide the opportunity to adjust output quickly to meet demand without loss of efficiency. The alkaline fuel cells developed by AFC Energy are the most efficient method of converting hydrogen to electricity. Its system is low-cost, low-pressure and developed for large-scale deployment. The company has been making significant developments across a range of industries, including chlorine production and energy from waste. Integrated with the B9 Coal model, the fuel cells offer a pull through solution for carbon capture and storage (CCS) and will provide a fundamental building block in the development of a hydrogen economy.

The B9 Coal model can also be coupled with hydrogen storage and other technologies, such as underground coal gasification (UCG), to ensure a secure, reliable supply of power. Hydrogen storage will be key to the UK energy mix in 2050 and, coupled with B9 Coal's fuel cell power plants, will provide a secure and efficient supply of energy to the UK grid at all times. UCG provides access to coal "stranded" deep underground, eliminating the need to mine it and process it through a surface gasification plant. The process produces a high quality synthetic gas (syngas), containing carbon monoxide, hydrogen and methane. In the UK alone, UCG provides the option of generating hydrogen from as much as 17 billion t of previously inaccessible coal without the damaging effects of traditional mining. Australian energy company Linc Energy, which specialises in synthetic fuel production, has exclusive rights to the B9 Coal model when applied to UCG. The company has been testing



alkaline fuel cells at its UCG demonstration facility in Chinchilla, Queensland, which has been operational for 10 years.

### Talk vs action

The coalition Government has repeatedly affirmed its commitment to CCS in its bid to meet the dual challenges of energy security and decarbonisation of supply. But it has to stand by these pledges and ensure the wide-spread deployment of CCS. The commitment to fund four CCS demonstration plants will pose significant benefits for the nation's economy in terms of expertise, the adoption of British technology and the creation of UK-wide manufacturing jobs. Full scale CCS deployment will ensure both emission reduction and the establishment of low-carbon secure energy supply in the near future.

The world is in turmoil as it seeks to find a suitable path through the seemingly polar priorities of security vs independence. Investing in transitional solutions removes this unreasoned choice: we can have a UK-based clean, constant and reliable supply of electricity. The coalition Government clearly recognises the need to take bold steps to make the green energy revolution a reality whilst keeping the lights on. Now it must act on them.

### Author

Alisa Murphy is CEO of B9 Coal. She has a background in public relations, particularly in the low-carbon sector. Alisa previously co-founded and ran a creative communications company working solely with green businesses. She joined B9 Coal at the beginning of 2010.