

Oil Market Report: February 2018

Having previously produced energy related “Olympic” reports on London 2012 ([August 2012](#)) Sochi / Russia 2014 ([February 2014](#)) and Rio / Brazil 2016 ([August 2016](#)), it seems only right that this month we turn our attentions to South Korea - the hosts of this year’s Winter Olympics. And before we start, we should make the quick editorial point that this report will only focus on South Korea, rather than Teletubbyland to the North or the entire Korean Peninsula.

Most people probably know that South Korea - like near neighbours Japan - is a post-war economic miracle. Ranked 9th in the world in terms of GDP (\$2.7tn), the country is also a global leader in technology, heavy manufacturing and the creation of repetitive but catchy “teeny pop” songs. Unsurprisingly for such a significant economy, South Korea is also an energy intensive state where annual consumption of oil has increased on an annual basis from 1.25m barrels per day (bpd) in 1990 to today’s figure of nearly 3m bpd.

What differentiates South Korea from other energy hungry states is that the country has virtually zero indigenous production and is therefore one of the largest energy importers in the world. It has no oil, no gas and only small deposits of poor quality coal. Nor is it blessed with climatic conditions that lend themselves to hydro-electric power generation. Over 98% of energy consumption is met by imported products and the country has the highest level of crude oil import per person in the world (8.5 litres per person per day). Furthermore, it is the second largest natural gas importer in the world (after Japan) and with no direct access to international pipelines, all product has to be brought in by sea. This makes South Korea’s shipping lanes amongst the busiest in the world and plays a part in keeping the nation’s huge shipbuilding industry nice and busy.

What South Korea may lack in indigenous energy sources, it more than makes up for in refining might. 3 out of 10 of the world’s biggest refineries are located in South Korea and despite only having 5 refineries in total, each of these is industry leading. The biggest of all is the Ulsan Refinery in the South-East of the country, which produces 840,000 barrels per day and is thus the second biggest refinery in the world (after the Jamnagar Refinery in India = 900K bpd). Total South Korean refining production is 2.8m bpd and the average processing capacity per refinery is 590,000 bpd. To put some kind of comparative figures against that, UK total refining production is not much more than 1m barrels per day and its largest refinery (Exxon Fawley) has a daily production of (only) 260,000 barrels.

All of this intense fossil fuel processing and consumption means that South Korea is one of the largest electricity users on earth and with that, comes a predictable Carbon Footprint. Despite having a population that is only $\frac{3}{4}$ of the size of the UK (51m vs 65m), electricity consumption is 60% higher. Furthermore, in a virtual parallel of Germany’s recent experience ([August 2017](#)), the 2011 Fukushima nuclear incident in Japan drove the Korean Government to reduce its reliance on nuclear energy. This has meant that CO2 emissions have actually increased over the last 5 years during a period when most OECD nations (South Korea included) have signed up to various climate change agreements. Total South Korean CO2 emissions are 50% higher than the UK (585m tonnes pa vs 390m), and calculated on a per person basis, South Korea compares unfavourably to most developed nations. 11.58 tonnes of CO2 per person per annum are emitted in South Korea, compared to Germany (with a similar industrial base) with 8.93t and the UK with 5.99t. In fact, South Korea’s figures are not so far off the USA - global CO2 “winners” with 15.53t pp / pa.

With one of the most sophisticated industrial economies in the world, (almost) universal car ownership, freezing winter temperatures (the 2018 Pyeongchang Olympics was the coldest on record) and sweltering summers requiring air conditioning units to work overtime, it is clearly a huge challenge for the South Korean Government to reduce its CO2 footprint. In 2012, a target was set for a 30% reduction in Greenhouse Gas emissions by 2020 and some efforts have been made. Asia’s first emissions trading scheme is based in South Korea and there has been investment in energy efficiency programmes, plus the provision of tax breaks for renewable energy. But progress has been slow and has not been helped by monolithic state monopolies in the energy sector (Korea Gas Corporation, Korean National Oil Company, Korea Electric Power Corporation). Almost inevitably, the 2012 target will be missed. All of which probably explains why poor Elise Christie crashed out of the Olympic Short-Track Speed Skating (again) and why GB’s Curlers frantically swept the ice to no apparent effect. They were all no doubt distracted by the conundrumous question of how a modern economy can maintain prosperity and growth, whilst at the same time reducing their CO2 emissions...