

Carmel Digweed University of Sheffield

How is technology and engineering driving change in China?

China. The word alone evokes images of smog, smoke, and sky high factories. It is certainly not a country known for its environmental awareness and green credentials. In fact, it only marginally trails the 'all-consuming' USA in the energy stakes, and alarmingly, China is the world's third-largest net importer of oil behind the United States and Japan. But don't worry too much, because all that is starting to change. China has the fastest growing economy in the world.

From decades of communist rule, China has emerged and is undergoing what many have described as, 'a second industrial revolution'. But this has fuelled demands for more energy, mainly from coal. It is apparent that China needs a way of using alternative sources of energy, and through technological innovation this is possible. China recently announced its plans to spend 78% more on emission reduction in order to meet its 2010 targets. By closing inefficient coal-fired power units and steel plants, China will spend 9 million Yuan (£6.4 million) on helping the country become more energy efficient. Thanks to technology, China will no longer be the big bad wolf of the environmental world.

We hear a lot nowadays about 'being green', 'energy efficiency', and 'carbon footprints', all phrases that used a decade ago would have sounded like scientific nonsense. But today countries around the world are doing their best to help the environment, and that is not limited purely to the West. Call it a world wide wake up call. And it wouldn't be possible without new technology, and advances in energy saving products. Solar power is a major part of China's plan for environmental success. It is officially the world's biggest consumer of solar energy, as well as the largest producer of solar water heaters. Due to the sunny climate, China has a potential solar energy reserve equivalent to 1,700 billion tons of coal. That's a lot of smoke they're saving.

Even the Olympic games are going green. Held in Beijing this year, China are making a real effort to use solar energy,. According to Li Zhonghai, senior official with the China Association for Standardization and member of the National Committee of the Chinese People's Political Consultative Conference (CPPCC), "80% of streetlights around the Olympic venue using solar power, and 90% of all hot water used at the event will utilise solar energy to heat it".

By 2020 China wants 15% of its power to come from renewable energy sources. The majority of this will come from hydro-power. In 2006, the world's biggest dam was built in China, and it smashed an alarming ten world records. 'The Three Gorges Dam' was met with controversy when it was built, indeed thousands of people had to relocate in order for it to be constructed. But it is the world's biggest man-made producer of electricity from renewable energy, and undoubtedly the key China needs to unlock its hydro-power potential.

Over the next few years, China may also become home to the world's first 'Eco-city'. 'Dongtan' is the brainchild of Shanghai Industrial Investment Corporation and 'Arup', the design firm who were responsible for the design and structure of Heathrow's new Terminal 5. Between them they envisage, "The world's first eco-city, which will be sustainable not just environmentally, but also socially, economically and culturally. It will be located on the third largest island in China, and will be responsible for producing its own energy, through wind, solar energy, bio-fuel and 'recycled city waste' ". A nice idea indeed, and if it works, it will provide a clear environmental model for the world to follow.

But sustainable communities such as these are not realistic models for countries such as China, and it will probably be hundreds of years before anywhere is 100% "Carbon Neutral". But what does any of this have to do with technology and engineering? Arguably one of the main criteria for any new product, any new building, any new piece of technology is that it must be green. It must come from a renewable source. It should protect the environment. Indeed, it is not enough for us to simply use coal or oil to power anything anymore; something China is still adjusting to, having been a massive consumer of coal over the past few decades. The new ways of harvesting renewable energy, and the technological breakthroughs we have made to do so in the past few years, means China's government sitting up and taking notice, and more importantly implementing changes. All we need now is for the USA to have an environmental epiphany, something I suspect won't be happening any time soon.

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