Title: Environmental crisis calls for sustainable change in China's energy production

The cold weather has come swiftly this year; the coal-powered heating systems have been switched on, and China's Northern regions are once more covered by a cheese bell of thick smog.

Once the winter season starts, millions of people in China will be breathing a hazardous cocktail of chemicals at even higher levels than usual. These chemicals are caused by coal-fired power plants, factories and oil combustion by vehicles.

Air pollution has long-term health impacts that build up slowly over time. It may also cause less obvious problems, such as weakening people's immune systems. As such, it is easy to overlook the health impacts of air pollution. Air pollution has been linked to increased incidences of cancer, heart disease, stroke, respiratory illnesses and so on. And it has also been associated with asthma in children, and thus impaired quality of life for lots of kids.

With a booming economy and ever-increasing demand for energy, China has built new coal-fired power plants at an amazing rate. Today, coal provides not only 80% of China's electricity, but also the lion's share of its air pollutants, like soot, sulphur dioxide etc. And while cars, trucks etc. also contribute to air pollution in cities, it will be impossible to make the air quality in China better without getting away from coal.

Meanwhile, coal burning is the biggest contributor of air pollution in Beijing and surrounding area, according to a University of Leeds (UK) study. Previous studies have linked outdoor air pollution to premature deaths and child asthma in this industry-intensive region, which arguably has the worst air quality in China.

A quick flick through China's energy statistics book tells us just how coal-addicted Beijing's neighbours are. In 2011, Shandong and Hebei provinces devoured nearly 700 million tonnes of coal collectively, making them the first and fourth biggest consumers among China's provinces. Each burned through more coal than Germany, Europe's largest economy, and amazingly, together they exceeded India's total coal consumption. Putting it another way, lot's more coal is consumed within 600 kilometres of China's capital than in the entire United States.

The one-million dollar question is whether China really wants to let air pollution to continue at this rate, or whether it can afford to do so. The country's rapid growth in coal consumption has been brought on by extensive industrial expansion, which in turn, has made the pressure on the environment and public health conditions bigger. In order to stop the air conditions from getting worse, we have to start thinking about how to change our energy production model fundamentally, starting with a huge reduction in coal consumption. Encouragingly, over the last couple of years, China has become the world leader in the energy production from renewable sources, like hydroelectricity, wind, solar and so forth.

But still, it looks like that the most basic solution against continuing air pollution is to pull the plug on its root causes: to quit burning coal and to move away from fossil fuels, replacing them with clean, renewable energy; establish clear, strict air quality

standards and introduce effective policy instruments to curb the rapid growth of the number of vehicles on the roads.

A recent report from one famous environmental group includes detailed recommendations for long-term policy changes, such as putting together legally binding and regional coordinated plans to reach national air quality standards; capping of regional coal consumption; hiking up pollution discharging charges and strengthening supervision efforts by local governments; De-NOx retrofitting for existing coal-fired power plants, the shutting down of inefficient coal-fired industrial boilers and so on.

According to opinion leaders, the Chinese government is working really hard to put into place some of these measures to make the quality of air better across the nation. For instance, a few years ago, the China State Council, added PM 2.5 monitoring to the newly revised National Ambient Air Quality Standard and applied it to dozens of pilot cities. Meanwhile, both the central government and local governments launched a series of measures successively to make stricter air pollution control. One primary target, for example, was a stronger standard released at the end of 2012 to reduce emission discharge from vehicles.

And just a short while ago, an Action Plan was put into place that sets the road map for air pollution and control for the next five years in China, with a focus on three key regions – Beijing-Tianjin-Hebei area, Yangtze River Delta and Pearl River Delta. A series of new measures and specific targets will be put into action.

But despite all this action, the elephant in the room still needs to be addressed. Coal burning is the biggest culprit behind PM 2.5 pollution, yet many Chinese big cities are huge consumers of coal, which is understood by experts as one key issue that will need to be dealt with in the long run.

The inconvenient truth is that progress in emission intensity brought about by technological advancement has been more than offset by the pace of aggregate coal consumption growth. In coming years, further gains in pollution reduction will become even harder and more expensive to achieve, as the low-hanging fruits are all taken.

So, in a nutshell, without parallel efforts to handle the growing coal consumption and collective measures from the various regions in the country, it’s very hard to say whether China’s “big bang” measures for getting a grip on pollution will have much effect in the long term.

(compilation of original articles, modified for teaching purposes)