Air Pollution

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Hosting the Olympic Games has forced China to get serious about the smog that chokes its capital city.

Major polluters have been shifted away from Beijing. Coal-burning boilers have been converted to cleaner fuels, and vehicle emission standards have been introduced. A month before the games, construction will be stopped and heavy-polluting industries will significantly reduce their emissions. During the games, there will be limits on the number of cars allowed on the roads.
All this so that athletes – and the world's media – see clear skies.

The Olympic Games provide a unique opportunity for China's leaders to implement politically challenging actions. Sadly, few other cities in the developing world have similar motivation to clear the air. More than two billion people in the world lack clean air to breathe in the urban environment, and, less well known, but as serious, 3 billion people use smoky solid fuels such as wood and coal for cooking and heating without proper venting in the household environment, with serious health effects especially for young children and women who tend to spend more time indoors or near cooking stoves.

Air pollution – in the form of outdoor urban pollution and of 'indoor' pollution caused by old-fashioned cooking methods – kills nearly 2.5 million people each year; ninety percent of the fatalities happen in developing nations. This is much higher than the annual death toll from earthquakes and major disasters, yet attracts a fraction of the publicity or global concern.

Research for Copenhagen Consensus – a project that researches and compares solutions to different global challenges – weighs up approaches to both outdoor and indoor air pollution.
Because outdoor pollution mainly affects the elderly and the world's population is ageing, the health effects will only get worse if nothing is done.

In many developing countries, road vehicles are generally found to be the major source of outdoor, partly because of high levels of diesel use, badly maintained engines and little or no emission control technology.

Sustainable solutions for air quality management have been few and far between. Cities that have made progress at reducing pollution – Bangkok in Thailand, for example – have made a decade-long investment in emissions standards and control measures.

Thailand is now evaluating options to further reduce vehicular pollution – retrofitting older vehicles, inspection and maintenance for commercial and high polluting vehicles, promotion of alternative and clean fuels, and transportation management.

This approach is expensive. Although a shift to low-sulfur fuel along with technology like catalysts and filters will significantly reduce emissions, in some developing nations the costs will outweigh the benefits unless one is prepared to pay $2,000-5,000 per year of life saved . Another approach is inspection and maintenance programs that ensure a higher efficiency of in-use diesel vehicles. Other options are worthy of further investigation, including greater pollution control in power generation, industry and energy efficiency.

Compared to outdoor urban air pollution approaches, the world does have simpler, cheaper solutions to the problem of indoor air pollution.

In principle the answer is surprisingly simple: improved stoves with good venting of smoke and the use of alternative fuels. Improved domestic fuels have already replaced nearly half the solid fuels in rural areas in the Eastern Mediterranean region and Latin America and the Caribbean, but progress is very slow in rural sub-Saharan Africa, South Asia and the rural Western Pacific developing region. Over half of all the deaths from indoor air pollution occur in China and India.

The big challenge for donors and developing country governments is choosing remedies in which the economic benefits outweigh the costs – particularly because LPG is expensive.

Improving stoves by providing better ventilation could reduce adverse health effects of indoor air pollution from solid fuel use by at least 50 percent, but wouldn't wipe out the problem like switching to kerosene and LPG would.
The annual cost of improving cooking systems, including fuel, range in different nations from $3-24 for improved stoves, $10-20 for kerosene and $40-90 for LPG. Health benefits were found to substantially exceed costs for improved stoves in Africa and South Asia, and for kerosene in the Western Pacific developing region. But because LPG is so expensive, its cost exceeds the economic value of the health benefits in all regions in almost every study, unless one is prepared to pay $2,000 per year of life saved.

It is potentially possible to achieve drastically more if interventions are appropriately targeted. Death rates from acute lower respiratory infections are reported to be much greater for underweight children than for children of normal weight. Studies in Cambodia, Ghana and Senegal show that use of fuel wood is far more prevalent in households with underweight children. Replacing traditional stoves with improved stoves or LPG in homes with a high likelihood of raising children with severe malnutrition could have a benefit/cost ratio about six times higher than in households raising well-nourished children.
Another option is replacing solid fuel with charcoal, though this is not usually considered a clean fuel. Some evidence suggests that charcoal use can result in about 75% reduction in health effects.

Curbing indoor and outdoor air pollution share three basic approaches – fuel switching, emissions control and fuel use efficiency – each offering different opportunities and drawbacks. There are also a range of political and economic barriers to overcome.

Although pre-Olympics excitement has put a spotlight on China's efforts to clear the air above Beijing, we need to recognize that for a significant proportion of the world's population including the Chinese, air pollution is a daily fact of life and respiratory diseases. There is no single, quick fix, but improving cooking stoves in the worst affected areas of the world is a strong candidate for policy-makers' consideration. This would help address premature illness and death in the developing countries and promises a sound return on the investment.