# breathe deep: air quality reform in China

data information from air quality monitors, optical sensors, and satellites is transforming pollution policy in China

impact federal and municipal governments are investing over four hundred billion dollars for air pollution reduction efforts between 2013-17

In 2010-11, media and watchdog organizations in Beijing noticed discrepancies between data from independent air quality monitoring systems and official government information. In response to public protest, the federal government launched a $275 billion plan in 2013 to improve air quality throughout the country.[1-3] The Beijing municipal government pledged an additional $160 billion. The city's technical partner on this "Green Horizon" initiative, IBM, will use real-time data from optical sensors, air quality monitors, and satellites to predict where pollution will be generated and how it is likely to spread througout the city.[4]

Particulate matter levels in Beijing
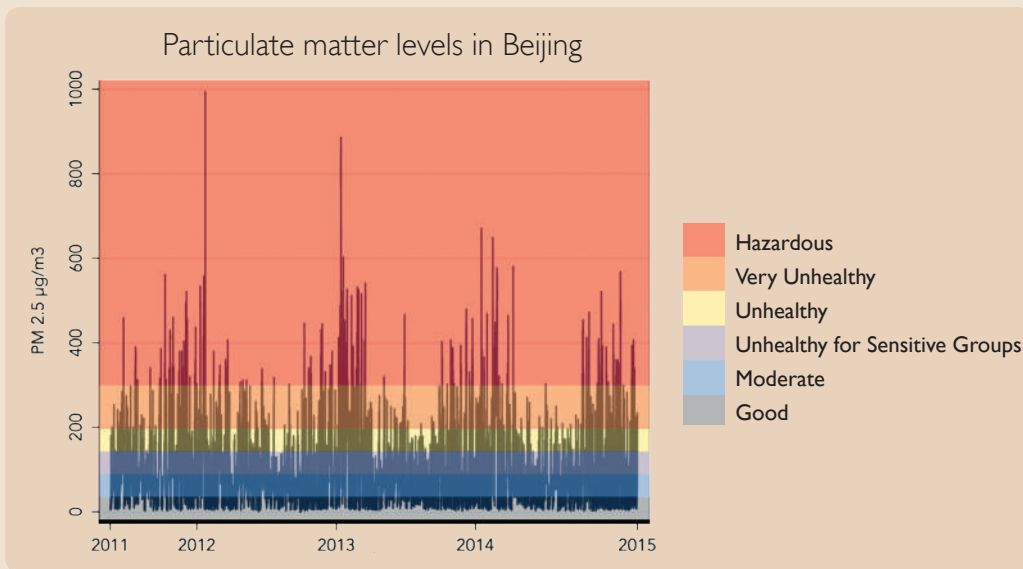
Levels of fine particulate matter (PM2.5) in Beijing's air between May 2011 and February 2015, recorded hourly. Note the number of observations in the unhealthy, very unhealthy, and hazardous ranges. Source: US Department of State

public health impacts of air pollution

Over two million people die every year in China from polluted air, and hundreds of millions more suffer much shortened lives.[5] As cities like Beijing grow, vehicle exhaust, factory emissions, and the burning of firewood and trash create dangerous concentrations of particulate matter in the air (see figure). Certain realities that would have been unthinkable a generation ago – pedestrians and motorists in respirator masks, children with year-round bronchial coughs – are now considered normal, inescapable facts of modern life.

data for citizen pressure

The pressure brought to bear by air quality data has led to meaningful investment and the setting of ambitious targets for pollution reduction. Beijing's objective is to lower fine particulate matter levels – the most dangerous form of air pollution – by 25 percent over a four-year period. The Green Horizon system has already performed impressively in enabling the government to take pre-ventative action against pollution: data not only identified problems and generated political will, but is helping to solve them.[6,7] Stronger emissions regulations and higher fines for polluters are already in place, with a target of reducing carbon emissions to three-fifths of present levels by 2020.[8,9]

the long road ahead

Even in the most optimistic scenario, making China's air safe will take decades.[10] Staying the course with environmental reforms, especially given the competing imperative of economic growth, will be difficult. The momentum for change is unmistakable, however, as is clear by the proliferation of websites, smartphone applications, and media sources that provide pollution forecasts.