Issues with Air Pollution in Asia

Managing growth in sustainable ways remains to be one of the greatest challenges facing humanity in the 21st Century. The consequences of economic growth, coupling with its effects on the environment, in addition to possible changes to global climate, is a primary concern. Although from a political perspective the topic remains controversial. Scientific communities argue that human emissions of CO_2 could contribute to a global greenhouse effect, resulting in an increase in global temperature known as the "global warming" crisis. Developing countries in Asia have recognized climate change as a potential threat and have taken steps to reduce emissions with varying success, but China and India have shown that their emissions are growing rapidly, and their industrialization may contribute to a noticeable increase in CO_2 emissions despite the environmental protection efforts of other developed countries.

Since 1900, atmospheric CO_2 concentration level has risen from the historical baseline determined by ice core measurements[1]. In the same period, global CO_2 emissions from fossil fuel burning has increased by one order of magnitude, and global average temperature has increased nearly 1°C[3].

Unfortunately, the United States was also a global leader in CO_2 emissions and energy usage in the latter half of the 20th Century per statistics produced by Gapminder World web site, as shown in figure 1-1 below.

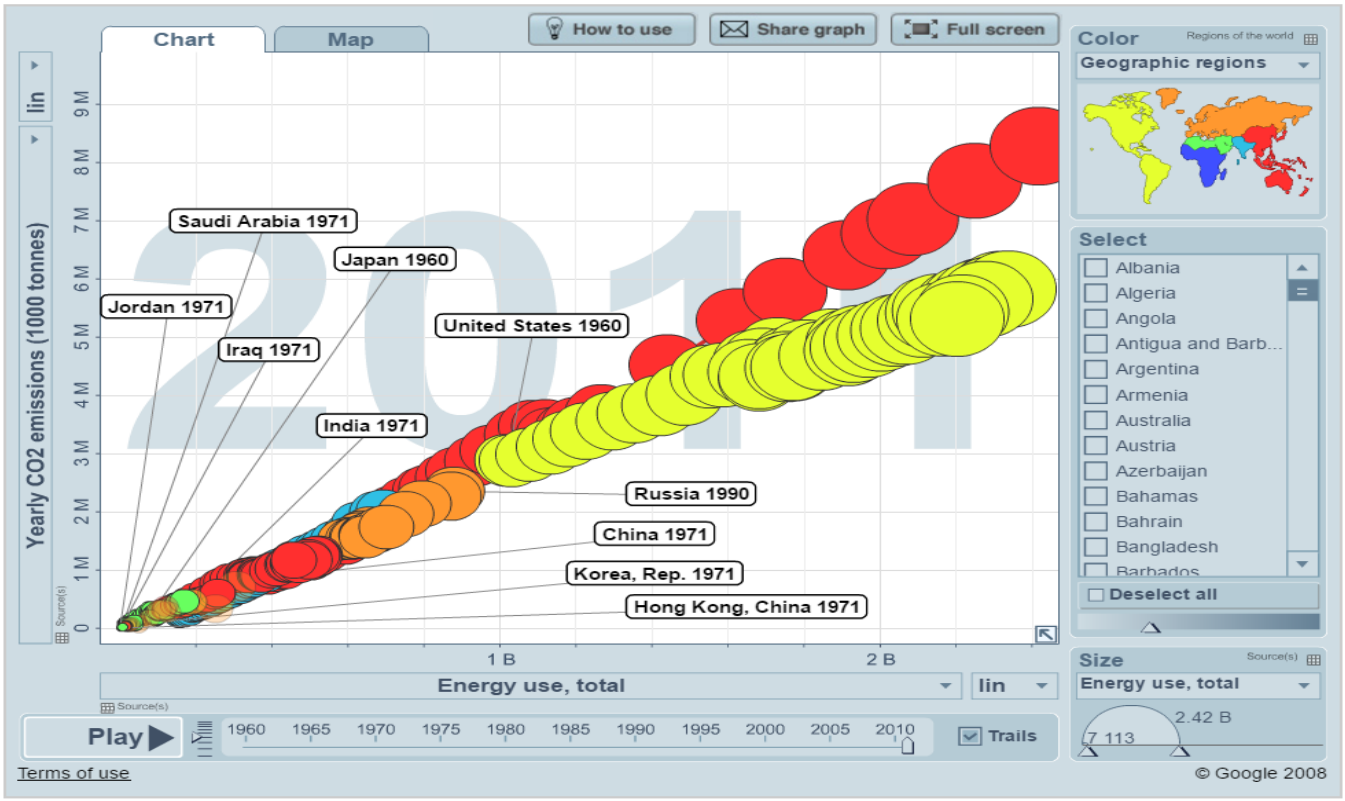

Figure 1-1 Changes in total energy use and CO_2 emissions of highly populated countries on each continent, 1971-2011

Although starting from a high baseline, however, the growth of CO_2 emissions in the United States has remained slow, regressing in the first decade of the 21st Century. On the other hand, China had unprecedented growth in CO_2 emissions from 2001 to 2010. China's CO_2 emissions in 2001 were comparable to the United States in 1966, and China's CO_2 emissions in 2010 had surpassed that level at least by 2-fold. India, though starting from a smaller baseline, its CO_2 emissions also nearly doubled in the same period. India now has the third highest CO_2 emissions, after the United States and China.

Evidently, CO_2 emissions in developing countries have increased at a rate of 4.4% per year, as compared to a 1% increase per year as a global baseline[2]. Coupling with the recent economic growth in India and China, this change may quickly become uncontrollable if it is not brought to attention immediately. Controlling CO_2 emissions is clearly a global interest because of its permanent global impact. To this end, the United States, Russia, and other well-developed countries must continue to take steps to reduce their own CO_2 emissions, but they must also help China and India grow responsibly to keep their CO_2 emissions in control.

[1] Rapp, D, *Assessing Climate Change*. Springer, 2014.

[2] Ravindranath, N; Sathaye, J, *Climate Change and Developing Countries*. Springer, 2002.

[3] Boden, T.A., Marland, G., *Andres, RJ, Global, Regional, and National Fossil-Fuel CO2 Emissions*. Carbon Dioxide Information Analysis Center, 2010.