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## **Global Dimming and China's New Socio-economic Revolution:**

China has vowed to ramp up its socio-economic fabric to 21st century western standards. Their main thrust will be to convert their country from the world's source of cheap goods to a more sustaining economy. One of their main goals to accomplish this is to manufacture all of parts and pieces of the goods they assemble. To date, they have generally just been the assemblers - putting together components designed and manufactured elsewhere. To compliment this fundamental change of productivity, China has vowed to not only enforce existing environmental laws, but to increase environmental standards as well. Both of these major concepts bode poorly for world climate. As China grows in affluence, so does their carbon consumption. They are



already far outpacing predictions of consumption and carbon emissions. Accelerated growth will enhance these emissions, unless of course the new environmentalism decreases the emissions. As this same thing happened in the development of the U.S. economy, so it will likely happen in the development of the Chinese economy in this coming revolution.

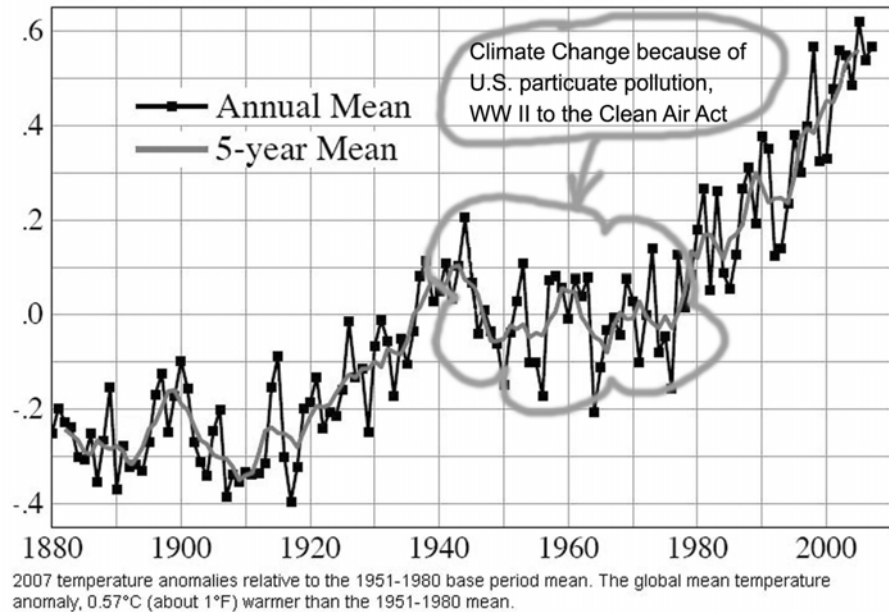
China is in a similar socio-economic and environmental situation as the U.S was in the 1960s. The use of the automobile has become a normal part of life. Superhighways are proliferating, their manufacturing industries are undergoing rapid changes, and their pollution levels are frightening. This is quite similar to the U.S. in the 1960s. Then, in the U.S., surface waters were poisoned, our skies were an ash tray and waste was dumped wanton on the ground and in our seas and waterways. In the early 1970s the environmental revolution hit the U.S. The Clean Water Act, the Clean Air Act and the Pesticide Reform Act were brought into law. On a global climatological scale, what happened next was astounding. In just a few years, our global climate changed - obviously and robustly!

Looking at the global thermometer records from the turn of the 20th century, two things stand out. One is that the average temperature of the globe is steadily rising. The other thing that stands out is a blip in that steadily rising temperature trend between the mid 1940s and the mid 1970s. During these years, Earth's temperature flattened out - that is, it stopped rising. The reason for this cessation of the rising trend was pollution caused by industrialization after World War II. Our industrial machine was in such a hyper state at the end of the war that it was easy to transition to a completely new way of life - where consumerism and the American way dominated. This massive amount of industrialization created equally massive amounts of pollution in our atmosphere in the form of particulate pollution. It is this particulate pollution that was so readily observed as smog in

the 1960s as our country became more and more polluted, and this was one of the main reasons for the environmental revolution.

The astounding part of the environmental story is: The Clean Air Act of 1970 changed our Earth's climate. It allowed the steady warming prior to the end of World War II to continue. What the Clean Air act did was to curb the worst part of air pollution that U.S. industries had been creating. It did this by addressing the easiest and most obvious part of the problem - particulates. Technology to remove particulates is relatively efficient and the law was fully enforced by 1977. Industry, in just a few years cleaned up their emissions. Because this type of pollution is relatively easy to remove, Mother Nature can quickly cleanse our atmosphere. Particulates are just that - particles of stuff, a lot of black soot, byproducts from combustion processes and the

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like - all relatively heavy and large particles. These relatively large particles can be quickly washed out of the atmosphere by rainfall, and even those that get mixed high into the upper atmosphere where there is no rain, settle out because of gravity in just a few years. Volcanic eruptions are a good example of this. Volcanoes eject their ash clouds (particulates) high into the atmosphere above the highest of clouds. This ash, quite similar to particulate pollution, must therefore rely on gravity to be cleansed from the skies. In just a couple of years it falls to lower elevations where rainfall can wash it out of the sky. This is one of the main reasons that volcanic eruptions have no significant long-term affect on our climate – their effects do not last long enough. Mother Nature cleans them up relatively quickly.

The Clean Air Act allowed our climate to continue warming because it removed the particulate pollution from industrial emissions. The pollution was keeping a portion of the sun's energy from reaching the surface of the Earth. This prevented warming. When the pollution was removed, the warming continued. China's particulate pollution is masking significant planetary warming. As China cleans up their environment, this mask will be lifted. The resulting increase in global temperature could seem as if it were trying to make up for lost time.

In 1970, the U.S. population was 203 million. China's population today is 1.3 billion which is over six times what the U.S. population was when we began our environmental revolution. How will this population explosion affect temperature change once the veil is removed?

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