

CHINA'S ENVIRONMENTAL CONCERN. CARBON DIOXIDE (CO₂) EMISSIONS – AN ACUTE PROBLEM

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Abstract:

China is the country that has made a substantial contribution to the global economic growth and, during the current crisis, it has extended its influence and has consolidated its position due to the massive investments and purchases of bonds issued by the countries with the biggest problems. This paper, through the deductive analysis and the causal explanations, catches, on the one hand, China's contribution to the global economic growth, and, on the other hand, the negative environmental consequences generated by its very rapid economic expansion. Basically, the world's second economy currently holds the first position in the ranking of the largest polluters, through the emissions of carbon dioxide (CO₂). This intensely debated aspect can influence the global ecosystem irreversibly; therefore, China must deal with the environmental degradation.

Keywords: carbon dioxide emissions (CO₂); pollution; renewable energy; environment; climate change;

JEL classification: Q5; F00;

1. Introduction

China can be analysed, from a new perspective, as an emerging economy capable of influencing the effects and the duration of the economic crisis and also as a centre of power that plays an increasingly important role on the global geopolitical scene, which has all the prerequisites of a winner. Called the world's production workshop, China is the example of good practices, throughout the global economic crisis, being the eastern pole of globalisation. [Dobrescu, P., 2010: pp 132] The impressive pace of the economic growth and the consistency of its implementation, on average 10% annually, has boosted China's economic power, propelling it on the second place in the hierarchy of the world's major economies. Basically, China has taken by storm the most developed countries, thus surpassing in turn: Italy, France, the UK, Germany and the USA and therefore becoming: the world's first exporter, surpassing Germany, the first car manufacturer and the world's largest market for cars, the world's largest international creditor, the world's leading producer and consumer of energy, and in 2011, the world's largest producer, [Câmpeanu, V., Pencea, S., 2012: pp 18-19] deposing the U.S. after 119 years of leadership.

In just 30 years, through a process of industrialisation and urbanisation, which in Europe lasted more than 200 years, China managed to save 400 million people from the most severe poverty. The economic and social performance has modelled in its turn a new attitude, a different kind of confidence. Thirty years ago, poverty was something normal; currently the situation of the 100 million Chinese who live in severe poverty is no longer regarded either as inevitable or acceptable. It seems to be only a fleeting sequence. China's sphere of prosperity is strong because it is based on two pillars: the human potential and the economic one. In order of their importance, the human one holds supremacy. Traditionally, the Chinese population migrated south and southeast,

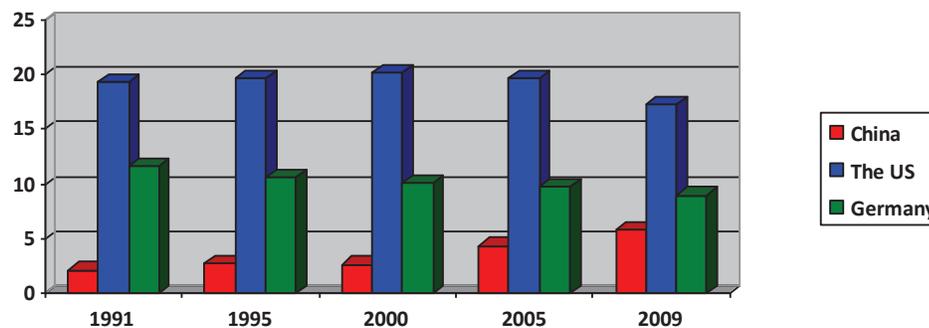
where the special economic Zones were developed, those enclaves that have attracted foreign direct investment (FDI) and have mostly absorbed the cheap labour. At present, China sees its environment threatened by many polluting industries, by the increasing road traffic and by the energy consumption based, over 70%, on coal.

2. The growth of carbon dioxide (CO₂) emissions in China - causes and effects

China's rapid economic development in the last 30 years was accompanied by the increase in energy and in CO₂ emissions. Basically, China has become the largest consumer of energy and CO₂ issuer in the world, surpassing the U.S. earlier than anticipated. China's annual industrial emissions increased by a factor of 2.7 (166%), that is to say almost to 3992 million tonnes (Mt) between 1992 and 2007, but more than 70% (2815 Mt) of this increase occurred between the 2002-2007 period. Thus, the growth rate of the CO₂ emissions in China increased from an average annual rate of 5% between 1992-2002 to a value of 16% for the period of 2002-2007. [Minx, J., et al, 2011: pp 1]

Until 2002, the increase of the greenhouse gas emissions was generated by the spectacular growth of production, as a result of the increase in consumption and in exports, which has generated massive structural changes in China's economy. The CO₂ emissions have increased faster and faster because the sectors with intense emissions played an important role in building the infrastructure, becoming increasingly dominant, [PIK, 2011], a situation hard to avoid because China has an emerging economy with a developing infrastructure. Therefore for China it is important to know how to choose the right type of infrastructure in order to limit the future growth of the greenhouse gases emissions.

Figure 1
Evolution of CO₂ emissions in China, US and Germany (tons/per capita)



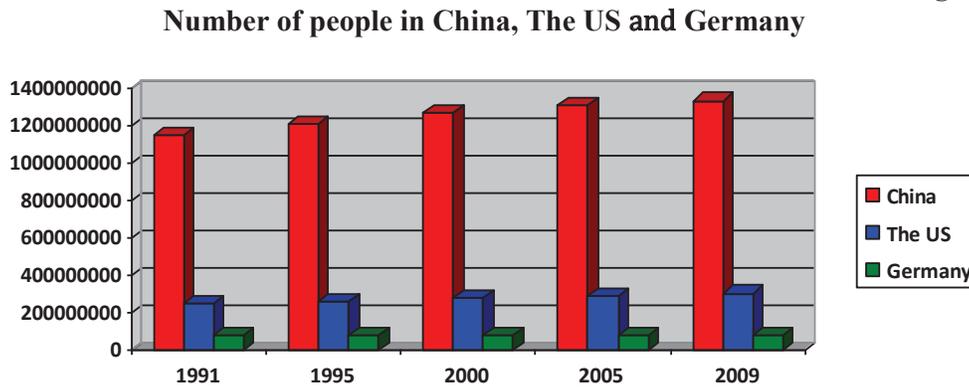
Source: The table was compiled by the author, and the data were taken from the World Bank database <http://databank.worldbank.org/data/views/reports/tableview.aspx> (Accessed on 09.02.2013)

Another important factor with an impact on increasing the CO₂ emissions per capita is urbanisation, a phenomenon with a spectacular evolution. China seems to be moving vertically. Furthermore, the Chinese population's migration from villages to cities involves using gas heating, electricity and transport infrastructure dependence, all involving an increase in CO₂ emissions per capita.

Since 1990, China has been the largest beneficiary of foreign direct investment (FDI) in the developing countries. They have played a significant role in promoting China's rapid economic growth, by covering the capital gap, through the transfer of technology to the local firms and by improving the openness of China's economy. However, the foreign direct investment also had a negative impact on the economy,

such as the effects on the surrounding environment. [Ligang, S., Wing, Th.W., et al, 2008: pp.243]

Figure 2



Source: The table was compiled by the author, and the data were taken from the World Bank database <http://databank.worldbank.org/data/views/reports/tableview.aspx> (Accessed on 09.02.2013)

One of the most popular views on the effect of the economic openness on the natural environment's quality is the pollution paradise hypothesis, [Ligang, S., Wing, Th.W., et al, 2008: pp.243] according to which, especially the developing countries have comparative advantages in the polluting sectors as a result of their relatively relaxed environmental regulations. Basically, by relocating the intensively polluting industries in the richer countries towards the poor countries, or through international trade, or through foreign direct investment, multinational companies can obtain lower production costs in the host country. In addition, in order to attract more foreign investment, the developing countries may deliberately undervalue the environmental damage, as well as decrease their environmental standards. Parallel with this hypothesis there is the opposite theory according to which FDI may help improve the natural environment's quality in the host countries. For example, since multinationals apply a universal environment standard, they tend to use their clean technology also in their local subsidiaries from the host countries. In addition, foreign investment could cause an influx of technology to local firms, removing the inefficient local businesses and improving the energy efficiency and that of using the resources, helping thus the reduction of the local polluting emissions.

Because there are several opposing assumptions, private studies are used to notice which of the theoretically predicted mechanisms have a greater weight in the selected developing countries. In the case of analysing the impact of the foreign companies' entry on the environment's quality and on the polluting emissions in China, it was noticed that the foreign-owned enterprises and those collectively owned have the best environmental performance in terms of intensity in discharges that pollute the water, while the public companies and the private companies in China have the worst performance. [Ligang, S., Wing, Th.W., et al, 2008: pp.245]

An explanation of these findings would be that foreign ownership companies could adopt cleaner technologies in their production as compared to other firms. Although it was found that, generally, foreign investment contributes to reducing the polluting emissions in China, nevertheless their FDI's effects on the environment vary significantly among different regions in China. Thus, in terms of environmental quality, while some provinces benefit from the entry of foreign firms, others lose. It was found that there are significant regional disparities in terms of the FDI impact on local levels of pollution. More specifically, the threshold values for most pollutants are much higher

in some of the most developed coastal regions than in those relatively less developed regions within China. This implies that for the more developed regions, the higher inflow of foreign investments will help to further reduce the pollution levels, while further increases in foreign investment in inland provinces will continue to worsen the state of the environment. To overcome these obstacles, the poorer provinces will need financial and technological support to enable them to align with the government environmental regulations.

3. The reduction of greenhouse gas emissions in China – a maximum necessity

To reduce the greenhouse gas emissions and to combat the global climate changes, ultimately it is necessary to move to a development model based on low-carbon dioxide emissions. This is also one of the targets of China's 12th Five-Year Plan (2011-2015). The continuous development and the expansion of the low-carbon dioxide emission industries can become powerful growth factors, resulting in fundamental changes of the development model.

The new global model of economic development could be based on the following elements: [Golley J., Ligang S., 2011: pp. 145]

- energy sectors with low carbon emissions: new and renewable energies (wind, solar, hydro, biomass, nuclear, ocean energy); fossil fuels with low carbon dioxide emissions, such as liquefied natural gas (LNG);
- upstream industries and services of the energy sectors with low carbon emissions, such as equipment and services for generating energy with low CO₂ emissions;
- downstream industries and services of the energy sectors with low CO₂ emissions, such as renewable energy-based industries (such as electric vehicles and the related industrial chain);
- de-carbonisation of the traditional industries that are great emitters of carbon dioxide and agricultural modernisation by using new technologies and business models;
- infrastructure and urban transport systems with low CO₂ emissions;
- consumption and lifestyle patterns that support low emissions that will further expand the markets of low emissions type products.

According to Wen Jiabao's declaration, China has engaged itself in reducing the volume of its CO₂ emissions per unit of GDP by 17% by 2015, and the energy consumption by 16%. Basically, it will have to pay greater attention to environmental protection, and in order to achieve this objective, the consumption of non-fossil energy sources will have to reach 11,4% of that of the primary energy, as compared to 8,3% in 2010.

4. The Climate Change Performance Index – a mirror of reality

Germanwatch the European Climate Action Network (CAN Europe) within the UN Climate Change Conference in Durban (South Africa) launched in December 2012 the Climate Change Performance Index 2012 (CCPI 2012). It measured and ordered in a top-58 the most polluting countries, from the viewpoint of the CO₂ emissions, by analysing the level of emissions and the national policies. There were over 200 experts from all 58 states involved in the analysis. As in the previous index, no country has made sufficient progress in preventing the climate changes in order to fill the first 3 places in the rankings. The next 3 places (from 3-6) were filled by three European countries (Sweden, the UK and Germany). At the opposite end of the ranking, with the worst scores, there are Saudi Arabia, Iran and Kazakhstan. [cotidianul.ro]

According to the report, there is suspicion on China's climate performance because of the contradictions between theory and practice. While China remains the largest emitter of CO₂ worldwide, with a dramatic growth trend, the emphasis on the national policy of cutting the emissions intensifies by imposing national targets on decreasing the energy consumption and increasing the share of energy from renewable sources.

China managed to install almost half of the renewable energy capacities worldwide, recording substantial performance, along with the U.S. and Germany in this regard. No doubt that China's position in the CCPI will improve as the reduction of CO₂ emissions will be significant. But China's ambitions aim at the development plans for the emerging industries of strategic importance, covering the next-generation of information technology, the industries on energy saving and environmental protection, the new energy sources, biology, top equipment for production, the new materials and the vehicles that use the new energy sources. As a result, China has recently become the world's largest investor in renewable energy, followed by the United States and Germany. These efforts will have most likely a significant positive impact on the future global development model, an economic model based on low CO₂ emissions.

5. Conclusions – China's challenges

In a long term perspective, China's economic growth should allow further strengthening of the social security system, to manage the rapid urbanisation, together with the transformations associated to the labour market and to reducing inequalities, but especially to cope with the negative environmental consequences caused by the rapid economic expansion. The 12th Five-Year Plan (2011-2015) comes at a time when the need for rebalancing towards a growth model based on domestic demand and oriented towards the service sectors is stronger than before, due to the less favourable global outlook. Being on the second place in the world in terms of number of the poor, after India, poverty reduction remains a fundamental challenge for China. The rapid economic ascent has also brought many challenges, targeting both demography and economy, such as: aging of population, internal labour migration, rapid urbanisation, growth of inequalities or environmental protection. Therefore, significant adjustments of the strategies are necessary to achieve sustainable economic growth, and for that, China has to promote green growth, to alter the pattern of economic development and to improve the structure of energy sources exploitation.

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