

# Climate Change and the Economic Recession: Should economists be concerned about climate change?

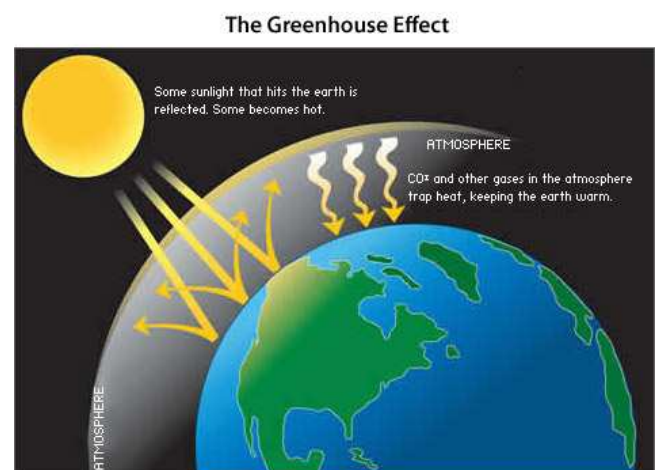
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The recent economic recession was an event that was caused by ignorance in the financial sector in the westernised world and climate change is an issue that has been accelerated in the past few years. The link between the two is going to be explored in this essay, analysing if climate change prevention has varied in accordance to levels of GDP worldwide, as well as political and social views that may affect climate change.

Although many may not have a clear understanding of what the term ‘climate change’ actually means, it cannot be argued that it has been one of the most pressing issues facing the planet in recent years, as the consequences are unfolding before our very eyes. Already, the world has experienced some very extreme weather conditions such as floods, droughts and tropical storms and the temperatures and level of the planet’s waters have risen significantly. However, whether these geographical effects are affected by the recent economic recession requires further analysis, firstly of what climate change is and the geography behind it and then secondly relate changes within the environment to the financial crisis of the new millennium. In terms of the recent economic recession, climate change has been pushed lower on the economic agenda, especially in the UK as Gordon Brown is trying to salvage another term in office. As a result, the question that should be asked is: “should economists be concerned about climate change and to what extent?”

Climate change is the change in the earth’s temperature within the last 100 years. Records show that the temperature of the earth has increased by 0.74oC between 1906 and 2005. There are two specific types of global warming: natural and synthetic. The following diagram shows the natural cause of the increase in the temperature of the atmosphere surrounding the planet:

The diagram shows how solar radiation enters the Earth’s atmosphere as short wave radiation. The Earth’s surface absorbs around 51% of the solar and the excess attempts to escape the atmosphere as



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long wave radiation. However, this energy becomes trapped within the Earth's atmosphere by the carbon dioxide contained in it. This natural process has been occurring for thousands of years with carbon dioxide levels changing in the atmosphere; this process creating both the Ice Age and the Earth's current climate. However, the enhanced greenhouse effect has occurred in the last 100 years as a result of causes implicated by the acceleration of the by-products of the world's manufacturing and production. The burning of fossil fuels increases the level of carbon dioxide in the atmosphere significantly; figures show that carbon dioxide concentration levels from 1958 – 2004 have increased from 315.6 parts per million to 378.8 million respectively; scientists using ice –core samples have estimated that there has been this much carbon dioxide in the atmosphere for around 450,000 years.<sup>1</sup>

One of the main causes of climate change is the recent acceleration of automobile and aviation emissions in the second half of the 20th Century and the start of the 21st century. Car ownership across the globe is over 600 million which contributes to around 18% of the world's energy related greenhouse gas emissions consisting mainly of carbon dioxide.<sup>2</sup> Whilst the majority of these cars are located in westernised countries (nearly 250 million in the U.S.), the petroleum they run on is not produced in these countries causing relations between these countries to be strained (one conspiracy theory was that the USA invaded Iraq because of the oil they produced). As oil is expected to be around for the next 50 years, the number of cars on the world's roads will only increase. This in turn will cause an increase in congestion, which will increase emissions further as a result of slower driving. Aviation on the other hand, is a much smaller contributor to climate change, but with more flights it is likely that aviation will play a more significant role in the future. Aircrafts do produce carbon dioxide, around 8% of engine exhaust is carbon dioxide, but the real cause that effects global warming is triggered by the formation of high altitude cirrus clouds (persistent contrails) that reflect infrared radiation back down to the Earth's surface.

In recent years, the effects of climate change are being witnessed at an increasing rate, and in exploring these effects, an economic link, if any, can be discerned. Rises in sea level, caused by the melting ice caps, seems to be the primary effect and is affecting most countries with coastal borders or that is below sea level such as Bangladesh. According to the 2009 Global Climate Risk Index, Bangladesh is the most vulnerable country to the effects of climate change. In a report from the US news magazine, the rising sea levels in the Bay of Bengal are infiltrating fresh water rivers and underground water supplies in the area, affecting water availability for millions of Bangladeshi's. "An immediate threat comes from soil salinity that jeopardizes food output in Bangladesh, a country where 40% of its 150 million people live below the poverty line." The excess salt that covers many farms in this area reduces the productivity of the countries rice crop where agriculture accounts for 22% of the GDP of the country.<sup>3</sup> Other long-term effects that countries such as Bangladesh have to endure as a result of climate change are extreme flooding, hurricanes and food shortages. Therefore, the global economic recession

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<sup>1</sup> Climate change in context: volume 1 – Brenda Wilmoth Lerner and K.Lee Lerner 2008

<sup>2</sup> <http://www.worldometers.info/cars/>

<sup>3</sup> <http://www.usnews.com/articles/news/energy/2009/03/26/how-global-warming-threatens-millions-in-bangladesh.html>

would have brought about worse news for developing countries such as Bangladesh whose location in terms of climate change is the most vulnerable. Already being that climate change is exacerbating the conditions needed for their main exporting good, the lack of demand due to the economic recession would mean even less income and growth for Bangladesh. An example of climate change in a more economic developed area is North America. Recent weather happenings on this continent cannot be seen as a direct effect of global warming, however the increase in frequency and severity of the weather happenings can be said to be symptoms of climate change.<sup>4</sup> For example, Hurricane Katrina is said to be a direct effect of climate change as it was one of the worst and most costly natural disaster to hit the region in recent history with over 1800 people losing their lives.

The recent global financial crisis brought to fore questions such as, “why spend time on long term climate change issues instead of focusing on short term priorities such as unemployment, budget deficits and GDP growth?” There are plenty of reasons that could answer this question such as the millions of people worldwide whose lives are at threat to rising sea levels, for example the people of the Alliance of Small Island States (AOSIS). However, in reality the governments of the world are more concerned with these short term priorities, showing ignorance towards climate change issues, which are also in reality, long term issues that need to be addressed in the immediate future to stop the catastrophic Armageddon anticipated by many climatologists.

A recession is defined as two consecutive quarters of negative growth, and the majority of the world’s main economy’s experienced this towards the end of 2008. There is evidence to assume that there was a positive relationship between the falls in GDP with decreases in carbon dioxide emissions. However, the recessionary rest for climate change will almost certainly be balanced out by the acceleration of growth of all of the world’s main economies as they come out of the recession, at the start of 2010 for most, if growth continues as expected.<sup>5</sup>

The stylist Philip Pelusi introduced two designers’ shows to help his clients save money when choosing clothes to wear in the current economic climate. This is found to be the overall attitude of many consumers not only in the clothing sector but also consumption as a whole during the recession. For example, in the same article it is quoted that, “For many during a deepening recession, conspicuous is out and frugality is the new black”, backing the view that consumers want to save during the financial crisis. The cause of this is that income falls during a recession, which in turn results in a reduction in demand from consumers for goods and services that look to save as confidence is low and unemployment is high. Inevitably, as consumption falls, firms will have a surplus’ in goods and produce less, using less capital intensive machines decreasing carbon emissions, especially in the manufacturing sector. 2009 research into climate change shows that the recession has caused a 3% dip in carbon

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<sup>4</sup> (Climate change in context: volume 2 – Brenda Wilmoth Lerner and K.Lee Lerner 2008 page – 674)

<sup>5</sup> <http://www.cnn.com/2009/LIVING/03/04/cheap.new.chic/index.html>

dioxide emissions. This is due to a combination of lower industrial work in businesses, a reduction in car consumption and an increase in the use of public transport worldwide.<sup>6</sup>

High unemployment was another characteristic of the recent recession. This factor materialised as firms look to cut down on costs to keep profits close to the same level/minimise the decrease in profits as revenue falls. All sectors were affected by the recession with the majority of companies freezing employment levels or cutting them down and with firms looking to reduce their costs further, greener investment projects are unlikely to be undertaken as many it's an extra cost. As a result, the claimant count for the UK Government also rose dramatically with the best part of around 2.5 million out of work during the recession and 1.64 million people claiming for unemployment benefit (the highest level since April 1997)<sup>7</sup> Unemployment usually carries on increasing even when recessionary periods subside (commonly known as hysteresis) so the outlook for firms taking on new climate change initiatives are not likely at this moment in time. With a massive budget deficit, the financial crisis hit the UK government at a bad time as its' borrowing increased tremendously during this period. Predicted costs of adapting to climate change, in terms of dealing with the impacts of global warming, are estimated to be up to \$100 billion annually by 2030<sup>8</sup>; "the world's premier energy analysts calculated that to avoid dangerous climate change, countries around the world will have to spend \$400 billion a year building more than 350 new nuclear plants and 350,000 wind turbines in the next 20 years"<sup>9</sup>; hence it seems impossible for the planet to keep on top climate change especially during a financial crisis as the world endured during the latter part of the 2000's. However, the recent Copenhagen Summit gave some hope to cutting carbon emissions. In December of 2009, the 2009 United Nations Climate Change Conference was held to mitigate a framework for an agreement from 2012 onwards. An agreement was brought together by 5 countries (USA, China, India, Brazil and South Africa), but an official agreement was not approved as all 193 countries involved did not accept it unanimously. Therefore, an actual legally binding document stating that any country had to cut their emissions by a stated amount wasn't created, which was a major setback for climate change activists and supporters. As it stands there isn't a global protocol that has been formed for after 2012, which is meant to surpass the Kyoto protocol. In future, any discussions between countries on climate change need to conclude with realistic but concrete decisions regarding, the future of sustainable energy. Also awareness surrounding the event where the top leaders discuss climate change should be advertised in the media similar to the events that occurred in Kyoto and Copenhagen in recent years. "Action on climate change that is up to the scale of the challenge requires countries to participate voluntarily in a sustained, coordinated, international effort"<sup>10</sup>

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[http://www.lowcarboneconomy.com/community\\_content/\\_low\\_carbon\\_news/7376/recession\\_may\\_cut\\_carbon\\_emissions](http://www.lowcarboneconomy.com/community_content/_low_carbon_news/7376/recession_may_cut_carbon_emissions)

<sup>7</sup> <http://www.statistics.gov.uk/cci/nugget.asp?id=12>

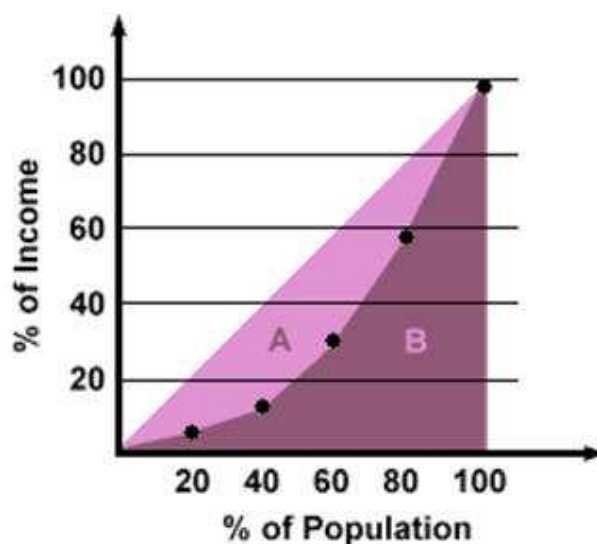
<sup>8</sup> <http://www.independent.co.uk/environment/climate-change/annual-cost-of-climate-change-will-be-163190bn-1778391.html>

<sup>9</sup> <http://www.guardian.co.uk/environment/2009/oct/06/carbon-cuts-recession-iea>

<sup>10</sup> The Economics of Climate Change – Stern Review 2007 – page 37

Other initiatives closer to home, such as increases in recycling and advertisements to increase awareness of an individual's carbon footprint, will help fight the battle of climate change.

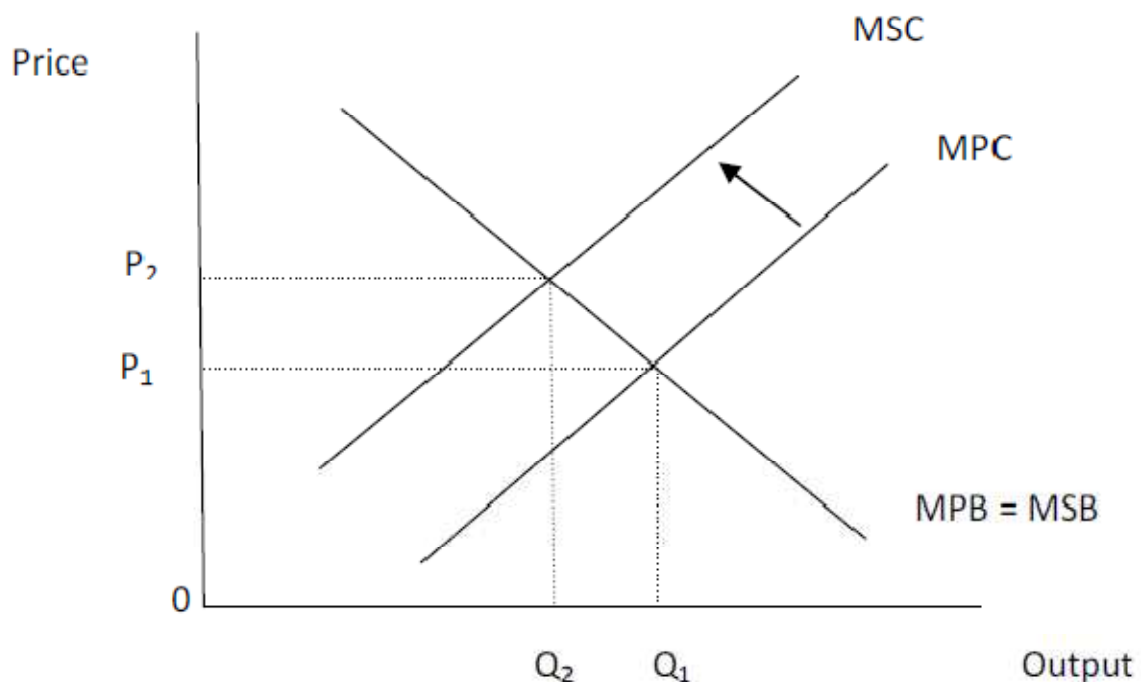
As the world escaped a long period of recession, climate change gained support from firms who could take advantage of the low interest rates implemented by governments worldwide to encourage investment, in this case climate change initiatives. The dip in carbon emissions recorded during the recession, is one of only four annual dips in the last 50 years, which gives countries worldwide a crucial opportunity to switch to more sustainable energy resources. Less carbon intensive energy resources, such as wind and nuclear power could provide the world with a realistic low carbon energy global economy reducing the impact on climate change. There is complex evidence to show that climate change issues were and were not forgotten during the recession. The International Energy Agency (IEA) supports the view that there is an opportunity for the world economy to switch over to greener technologies and limit carbon concentrations to 450 parts per million. However, there is also evidence that investment in renewable energy has fallen by 20% in late 2008 and 2009, and that it would have fallen to 30% if not for green governmental stimulus packages worldwide. Inevitably with the postponement of these energy projects, prices of substitutes to renewable energy such as oil will rocket sky high as a result.<sup>11</sup> Further indications that global warming issues will be disregarded are the major efforts by the main economies of the world to increase GDP, for example countries such as China with extremely high levels of growth. The following curve shows how the world's income is consumed and circulated in westernised countries with a relatively smaller population size than the rest of the developing world:



The Lorenz curve plots the cumulative share of the income – in this case global income – against cumulative population share. The 45 degree line represents perfect income inequality. As we move away from this line towards the x-axis inequality becomes more apparent and this is the case current in the

<sup>11</sup> <http://greenenergyreporter.com/2009/11/iea-investment-in-renewables-fell-20-percent-during-the-recession/>

current world economy. The Gini coefficient is the area between the Lorenz curve and the 45 degree line divided by the whole area underneath the 45 degree line. This diagram is an illustration of how many the worlds' income is unequally divided in favour of the richer countries. The causes of climate change are, in the majority, caused by the few capital intensive countries, while on the other hand the effects are felt, in the majority, by less developed countries, in the "poorer south hemisphere". Now that the financial crisis has ended, the developed countries of the world are more than likely to go back to their old ways and produce incomprehensible volumes of carbon dioxide emissions, sending the planet past the threshold of no return. The following diagram shows a possible solution to limiting output (especially manufacturing worldwide) that have a direct externality of carbon emissions:



The diagram above shows how at a price of  $P_1$  and an output of  $Q_1$ , firms that emit carbon dioxide in their production process don't pay for the negative externality that is created with every extra unit of output. The cost is currently being paid for by society – a current example is in Scandinavia - these countries pay the negative externality created by firm in the UK who produce harmful gases in their production process and as a result of the cloud formation that notoriously travels northwards across the North Sea, it produces acid rain that kills livestock and fisheries in these foreign countries. As we move from that position to a price of  $P_2$  and an output of  $Q_2$ , the negative externality is internalised and is now paid for by the firm through a higher price of output – for example a green tax. This in turn reduces its output as each extra unit of output costs more to produce. Another possible solution to reduce carbon emissions is to create a globalised system of tradeable permits whereby each country has a certain allowance in regard to created emissions. This would limit output worldwide as countries could

buy permits off each other but not exceed their maximum allowance. However, this would need to be strictly regulated by one international governing body associated with climate change which currently doesn't exist.

In conclusion, climate change has materialised in many forms in the planet's recent history and has accelerated rapidly in the last 20 years or so. The effects of global warming are being felt predominantly by the poorer countries of the world which are populated by the most citizens. While the westernised world has contributed to the majority of the acceleration of carbon emissions in recent years, most green activists would strongly argue that these countries need to take full responsibility of climate change and act swiftly and efficiently to avoid a worldwide irreversible catastrophe. Therefore I feel that economists should be very concerned about climate change as the extent of the problem is huge. However, this is much easier said than done as it is estimated that the countries of the world need to contribute to up to \$400 billion annually averting and adapting to adverse climate change. Possible ways of eradicating the market failure of carbon dioxide emissions is to internalise the negative externality through forms of taxation that go towards helping those affected and aiding efforts of limiting global warming. If the worlds' main economies continue as "business as usual", after the recent financial crisis then the human race has forgone a massive opportunity to reduce the effects and it will have detriment to the well being of low-lying vulnerable countries, such as Bangladesh and small island countries across the globe. "The ethics of adaption imply strong support from the rich countries to the most vulnerable"<sup>12</sup> The poorest countries have limited resources and domestic support as their GDP is relatively low, and their priorities lie elsewhere. If very limit action is taken, future generations will have to fit the bill of climate change at compounded rate such that the present value of the global warming is unattainable by the human race.

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<sup>12</sup> The Economics of Climate Change – Stern Review 2007 – page 37

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