

Carbon emission abatement essay



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Discuss (1) the various options available for carbon abatement, their merits and weaknesses, and (2) the role government and business have to play if the methods are to achieve their objectives. Major Assignment Tutor: Mrs Mitrabinda Singh Major Assignment Global warming is a complicated issue faced by leaders of today. Warnings are becoming increasingly amplified, in the wake of a realisation that a disastrous future ahead because of the perpetual accumulation anthropogenic greenhouse gases " emanating from fossil-fuel combustion and burning forests.

PM Tony Blair told BBC news that scientific evidence of global warming was " overwhelming" and its consequences " disastrous". Global warming is the observed increase in the average temperature (of the Earth's atmosphere and oceans) in recent decades (Brenneman 2009). The Earth's average near-surface atmospheric temperature increased by 0.6 ± 0.2 °Celsius (1.1 ± 0.4 °Fahrenheit) in the 20th century (The Universe-Galaxy-stars 2012). Global warming and climate change have already unleashed untold suffering to thousands of people across the face of the earth.

Think of the millions of environmental refugees who have been forced to vacate the land of their forefathers because of flooding. Thousands of children in Africa have been born into lives of poverty, disease and famine, resulting from shifting climatic conditions (Andorra 2011, quoted in Africa – up in Smoke, 2012, 12).

In Niger for example, drought and famine claimed the lives of nearly 70 people (BBC News 2012b) whilst later in the year, unexpected flooding

displaced 1 50000 families, stirred up a cholera outbreak and claimed more lives.

In Australia and the US, wild raging fires have destroyed the habitat of thousands of species, reducing beautiful vast “carpets” of green thriving flora and fauna; into barren lifeless stretches of sparsely vegetated, stunted and horrid landscapes with little biodiversity. moderate to exceptional, whilst intensified convection over the Caribbean also brought heavy rains to Colombia, where flooding displaced an estimated 1.5 million people.

Thousands of pages can be authored to document the incalculable grave impacts global warming has caused to our beloved mother earth. It is even more astonishing when you realise that all this anguish has been borne by people who are now alive today. You cannot help but wonder what it shall be like in the more distant future. A continued surge in CO₂ levels for another century will see gases reach a level unheard of since millions of years ago.

The consequences are anticipated to take many centuries to be fully manifested, as the Earth transforms into a new state.

In the distant future, eras with high CO₂ are anticipated where sea levels will be even higher and temperature will soar to catastrophic levels: a planet grossly unlike the one to which the human species is adapted (Conservation Foundation 1963). So now you may be wondering “, what is the link between Global Warming and Carbon Emissions? After all, the essence of this account is a mere review of the various means by which Carbon Emissions may be reduced. Scientific research has established a link between Global Warming and Carbon Dioxide pollution.

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Carbon dioxide particles are capable of retaining heat energy received from the sun (Rogers 1989). The atmosphere naturally contains optimum levels of carbon dioxide, necessary to make the earth habitable (green-house effect).

Human activities such as burning of forests and fossil fuels, however, further append CO₂ levels in the atmosphere to catastrophic levels which cause global warming and climate change (Yunro 2011). The author was inclined to explain the relationship between Carbon emission and Global Warming, so as to express the weight of the Carbon Reduction issue under review.

Mitigating carbon emission seeks to curb Global Warming and all its adverse impacts highlighted previously. Global warming is the “ bigger picture” beyond carbon emission. Carbon reduction methods in the discussion essentially target the sectors summarised in the opposite pie-chart. Government can use regulation to reduce carbon emission levels.

This is essentially a “ command-and-control” approach, where standard minimum requirements are established and enforced by law. Such laws may target annual level of carbon emission, mandatory adoption of given forms of clean technology and production techniques.

Compliance by emitters is mandatory, the failure of which is punishable by fines, public shaming, penalties, sanctions and blacklisting. (ESAA Emission Trading 2010).

Regulation is an effective control mechanism as it covers all aspects of the global mission by sector. Regulation almost guarantees a reduction, as companies seek to avoid static, that it fails to allow firms to determine a cost

saving approach, based on the elimination of non-value adding costs and the most efficient course of action relevant to the industry (ESAA Emissions trading 2010).

Low volume, small industries such as dry cleaners and book printers, for example; may feel aggrieved when their carbon assessment is made on the same basis as that of mega profit making high volume industries such as oil and gas extraction or car manufacturers. The smaller industries are sure to comply with the legal requirement concerning carbon emissions in the fear of being penalized substantially. The bigger industries however, may find the penalties very negligible in comparison to the high revenues they generate.

This sad tale ensures that “small companies remain small,” whilst the bigger industries continue to grow.

As mentioned by Parry (2004, 35), regulation when used to dictate capital injection towards a given technology or production technique; is criticized for being inefficient than substitute alternatives available. Presently, the fines for breaking the EU carbon law is pegged at 100 euros (\$130) per metric ton (1 . 1023 tons) of carbon, for airline companies and 7 euros per metric tonnes for general manufacturing industries (ESAA Emissions trading 2010).

As stated by Pelletier (2010, 13), laws against the carrying out of deforestation are neither form of regulation that target carbon emission reduction. Deforestation is the unwarranted cutting down of trees for logging, mining, oil and gas extraction; cattle ranching or agricultural purposes.

You may have wondered, if at all any linkage exists between trees and carbon. How do laws against deforestation achieve carbon reduction? You will be glad to know that trees act as a carbon sink, absorbing carbon dioxide in the atmosphere.

The presence of trees creates a carbon sink which eliminates to greater extent, the excess levels of carbon. When this mechanism however is eliminated, then how will atmospheric carbon subside? The absence of trees would cause an unprecedented exponential growth in Carbon levels.

However it is saddening to note that most of the damage has been done already. Did you know that between 1930 and today, Philippines has lost 90% of its rainforests, whilst Madagascar has lost 95% of its rainforests, El Salvador 70-85% of its rainforest due to heavy bombing during the civil war 1984-1985.

Sumatra has only 15% of its rainforests left. It appears that substantial damage has been done already, yet still, governments cannot afford to waver in the fight to curb deforestation.

It is encouraging to note that some governments have even taken a proactive approach to not only protect their few remaining forests, but to replenish the depleted ones also. Issues of economic development hinder the effective implementation of deforestation laws. Imagine the impact of halting logging activities in Africa, which are providing employment for millions of people and “ putting food on the table” in thousands of homes.

What about the grave effect on their already beset economies; What would it mean for initiatives such as building schools, educating and empowering women on family planning and many other crucial issues? Resultantly, it is no surprise that only 6% of Central Africa's forests are protected by law (Laurance et al 2006, 457). service, to ensure efficiency and marginal carbon emission from the combustion of fuel.

Other regulations, such as the U. S Lacey Act 1968, bar the trade of wooden products across international boundaries.

The role of government is to provide adequate funding for the effective implementation of these laws and of course to enact the legislation to curb carbon emission (Greenpeace 2011). Another way of reducing carbon emission as stated by Feiveson (10, 4) is the awarding of development of renewable technologies using wind or the solar energy.

the truth of the matter is that, it is relatively costlier in the early years to develop clean technologies. Setup costs are high and most companies are discouraged.

However, rewarding the development and use of such technologies would provide Incentive for companies to partake. Such reward can be in the form of government subsidy to lower acquisition costs of setup material, the provision of expert engineers to assist in the setup activity, offering loans to clean technology development projects as well as a mere sign of recognition and appreciation. The government will obviously need to cater for these requirements in its national budget.

The government is also tasked with rendering support for research into innovative green technologies. The subsidy approach is highly viable as it provides incentive for businesses to develop cleaner technologies, whilst the company's liquidity and cash flow remain relatively unaltered. This entails that companies will continue to enjoy healthy profits whilst, developing cleaner technologies concurrently, or in the case of government loans; spreading the cost of the financing activity which will be eventually offset by lower operating costs in the long run. This approach also ensures a healthy mutually beneficial relationship between the government and business.

One drawback however, is that once companies attain such loans, they may not be used entirely to serve the purpose of clean technology development. In Zimbabwe, for example, cases have been recorded whereby; some farmers misused loans rendered to them by the Ministry of Agriculture through Agro-Bank, for the purpose of developing wind vanes (Mutenga 2012).

Furthermore, resources are not always sufficient enough to provide for this cause. Carbon emission may also be reduced through a federally-imposed carbon tax (Povenberg 1997).

The main idea is that government can use the surplus tax revenue to finance subsidies in the development of selected low-carbon technologies. The chances of any government imposing a new tax however, is somewhere between zero and nil.

If carbon is taxed, this will significantly decrease annual profits, repel investors and cause economic recession. The successful imposition of carbon

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tax would entail that governments possess a whole new pool of subsidy revenue to distribute to industry. Will the tax revenue be used to provide subsidies for clean technology development?

If at all subsidies are indeed issued, would you trust that they will award them to the right companies, for the right reason? It is a really a be the most effective strategy? Nakata (2003: 11) revealed that in Japan, a carbon tax rate of \$2.0/mm Btu case produced an emission rate of 324 mm TC in the year 2040, attaining a 23% reduction in the emission rate. Without carbon tax imposition however, CO₂ emission in 2040 would be 420 mm TC (2003).

Without tax return in this case, CO₂ emission rises to 332 mm TC, producing an 8 mm TC production compared with the tax return case. Clearly carbon tax, though controversial, can bring the results.

Pricing schemes such like the cap-and-trade emissions trading scheme (ETS) can reduce CO₂ (Weisman 14, 349). The role of government in this case is to “set the ground rules.” Its role is restricted, and major decisions are made in the private sector.

The government establishes an overall emissions cap and assigns specific emissions allocations to the different sources of CO₂. Industries and companies are free to decide as to what to do or how to meet their allocations. The government needs to engage experts of industry, to come up with a reasonable maximum amount of carbon emission for various respective industries.

Furthermore, the government is tasked with providing an accurate and reliable means of carbon emission measurement. Furthermore, there is also need to engage with other relevant bodies such as the EIJ, AU or ASEAN.

In the case of the European Union member countries for example, governments ought to work together in the implementation of cap-and-trade schemes. The two vital components of cap-and-trade schemes is the cap itself, and its flexibility that allows companies to exchange emissions warrants. The cap is perimeter of carbon emissions imposed by the ETS.

The cap is attained by the creation of emissions permits, supplemented by a business requirement for emitters to yield the amount of permits equivalent to their carbon emissions, traditionally on an annual basis. Under an ETS any firm emitting carbon under the permissible perimeter may retain permits equivalent to the amount of its carbon emission, whilst the excess permits may be sold.

Presently, carbon permits can be traded at 7 euros a metric ton. Permit price fluctuates according to market volatility, whilst the cap (maximum permissible amount of carbon emission) is fixed.

The buying and selling of carbon permits is the second vital aspect of cap-and-trade schemes. One major advantage is that companies can implement carbon abatement at a lower cost than compared to the permit price for excess emissions.

This ensures that companies will purchase permits, only when the cost of reducing its emissions surpasses that the purchasing price of permits.

Emissions reductions will therefore be attained at the lowest cost to the economy and society at large.

Other advantages include the following; predictable annual carbon emissions which allow for economic and carbon forecasting, relatively lesser political barriers than a tax, government can generate revenue which can be reinvested through rebates or utilised to provide public goods such as roads and street lighting and companies generate revenue as carbon emissions decline. Cap-and-trade successfully reduced the sulfur oxide emissions that cause acid rain, quickly and cheaply (Roberts 2012) Critics argue that, whilst total carbon emissions are capped the monetary worth thereof remains unspecified as it is determined by several market variables.

This means that some economic conditions result in a marginal price for permits, which does not provide sufficient incentive for companies to limit their carbon emissions and sell the excess permits.

Another scenario may also occur, where, the market conditions result in a very high price which exceeds that of reducing carbon emissions. The scope and manner of price setting may also result in too many permits may be issued which gives rise to other market imperfections. Industrial nations must reduce their dependence on fossil fuels such as gasoline, oil, and coal as they produce carbon dioxide, a heat-trapping gas that causes global-warming.

Industrial countries are liable for most of the worldwide carbon emissions.

These countries however, are capable of switching to cutting-edge energy saving technologies that produce marginal carbon emissions. Clean, renewable sources, such as solar, wind, and hydro-electricity, can generate sufficient energy without increasing carbon emission (Blakemore 1998). Such technologies need to be deployed much more widely, whilst government policies must encourage their use. Investment should also be directed towards developing and commercialising clean technologies. The Australian Government for example, invested more than \$5 billion in clean energy technologies development since 2000.

Such technologies are vital efforts to reduce carbon emissions. (Department of Climate Change and Energy Efficiency) As stated by Dawson (1987, 16), transferring Clean Technology to Developing Countries is also necessary for carbon reduction. Leading businesses, international organizations, and the MEDC's ought to devise a means to transfer energy saving technologies to LEDC's.

This enables LEDC's to develop their economies without using environmentally unfriendly fossil fuel technologies which the MEDC's are now striving to phase out. As pollution knows no boundaries, it is vital for all world governments to reduce carbon emission.

However, this creates a dependency syndrome, where poor countries over-rely on richer countries. African leaders for example, have been criticized for living lavishly, yet failing to bring about economic growth in their countries, which leaves their citizens to survive on donations from MEDC's and NGO's. The government must also initiate behaviour change.

This can be done through awareness campaigns, media advertising as well as communicated in schools and work places. Did you know that cars, trucks, and buses consume over half of the oil consumed in the United States (Wellkamp 2010)? Imagine the impact of substituting traditional vehicles with energy efficient gasoline-powered cars, electric and fuel-cell cars and buses.

These measures will lessen CO₂ emissions by using less gasoline. In addition, campaigns may also encourage consumers to make less trips (encourage walking for small errands), use of public transportation, bicycles, and carpools.

If we use less energy, less carbon dioxide is produced. Over the past two decades, American industry and consumers started using more-efficient motors, vehicles, appliances, windows, and manufacturing processes.

Vast amounts energy and money promote energy efficient products. graph showing natural gas reduction of oil reliance- Centre for American Progress 2012) governments must also slow down population growth, through awareness, family planning, women emancipation and free distribution of contraceptives.

Whilst all the aforementioned technological and economic changes can reduce per capita carbon emissions, persistent large population increases will retard emission reduction efforts. The more people there are, the more energy is required.

Reducing population growth rate will alleviate carbon reduction efforts.

Reducing carbon emission is not an event that can be completed over night; but a process which needs several years to bring fourth results. A step by step transition ppears to be the best approach to reduingC02. World leaders must negotiate a climate change treaty with legally binding limits on carbon emissions.