

Research Report

MUNISH '12



Please think about the environment and do not print this research report unless absolutely necessary.

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| Forum | Special Conference 1 |
| Issue: | Government policies for reducing greenhouse gas emissions |
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Introduction

In light of the rising concerns of the environment, reducing greenhouse gas emissions and saving energy has become a paramount issue for governments all around the world. Through varying policies, and government initiatives, some progress has been made in the field of alleviating environmental burdens. On the other hand, this progress is often outweighed by the increasingly industrialized global economy. While MEDC nations that were included in such agreements as the Kyoto Protocol have gone some lengths in reducing their Greenhouse Gas (GHG) emissions, many developing nations such as the 'BRIC' countries (Brazil, Russia, India and China), as well as the Southeast Asian 'Tiger' nations are becoming ozone-depleting-powerhouses in their own right. However, few global initiatives include them.

Nonetheless, most nations are feeling national as well as international pressure on some level to reduce their emissions. Many NGOs and UNOs are highly invested in environmental conservation, and the message of conservation has spread widely. Fear of Global Warming as induced many companies to invest in "greener technology". While citizens and companies have been induced to change their ways, there is no comprehensive for governments, so people have taken it upon themselves to apply the pressure. As a result, many governments, most notably China, USA, and governments in the Scandinavian region have invested mass amounts of money into a greener tomorrow. These investments have included cultivating greener energy sources such as wind farms, setting up policies that force companies to "go green", or policies that increase awareness on environmental preservation.

Despite all this increased frenzy over the environment, the United Nations has, in the opinion of many, is too far delayed the writing of a resolution that set standards on what is to be done about the environment. The Growing population will have to have its needs met, but preferably not at the expense of the environment. Striking a balance is a job for governments worldwide, and defiantly a point of discussion.

Definition of Key Terms

BRICS Countries

The BRICS Nations are Brazil, Russia, India, China, and South Africa. These are nations that are newly industrializing nations. They have growing populations, growing economies and are some of the biggest producers of noxious greenhouse gasses.

Tiger Nations

Similar to the BRIC nations, and are the strongest economies after Singapore including Malaysia, Indonesia, Philippines, Thailand, they growing in every respect (to a lesser degree than the BRIC nations). They are in the earlier stages of development where change is easier to change their approach to the ecology.

Newly Industrializing Countries (NICs)

Nations that are like the BRIC and Tiger countries- they are growing economically and recently were LEDCS but are moving up very quickly. They are often not included in any pas environmental resolutions because they were, at the time of the resolution's creation, LEDCs.

LEDC

Less economically developed countries, formally referred to as the "Third World"; LEDCS are generally poor, countries with lower standards of living, and less income per person.

MEDC

More economically Developed countries are countries that are have high GDPs and GDP per capita. They are wealthy nations with well off populations, and high standards of living.

Global Warming

GW is the theory that the world is getting warmer due to pollution. It prostrates the idea that earth is heading towards massive weather changes; perhaps more adequately dubbed as Global Swings, it would lead to erratic, dangerous, and unprecedented weather patterns- causing a drought in one area and floods in the neighbouring country.

Green GDP

Green GDP is a new economic measurement for a countries wealth that takes into account the damage to the environment. GDP is the value of everything made within the borders of the country, and green GDP takes the GDP and subtracts the environmental cost (*GDP – environmental depreciation*). This means, For example, they measure the price of the chairs made, as well the price to the environment that cutting down the trees made.

Greenhouse Gases

GHG are gasses that help keep our atmosphere hot. The major Greenhouse Gas is Water vapour, but the harmful, man-made ones are mainly Carbon Dioxide (CO₂), Methane CH₄, and Nitrous Oxide (N₂O), Fluorinated Gasses are also a cause, but to a lesser extent. These are gasses that are normally found in the environment, but are able to cause major problems like acid rain, when they are amassed. They are also often created in factory,

manufacturing processes, or in the process of making energy. They are generally harmful to the environment.

Policy

A policy is a rule, or a strategy or a modus operandi of any sort for tackling an issue or a set of related issues. It is a stance that is backed up by an action, or more often a series of actions. It acts a blueprint for how governments should deal with said issue.

Green/Greener

The term “Green” describes the idea of something being eco-friendly. Advertisers often use the phrase green in marketing. Making something “greener” refers to making it more eco-friendly.

Sustainable Energy

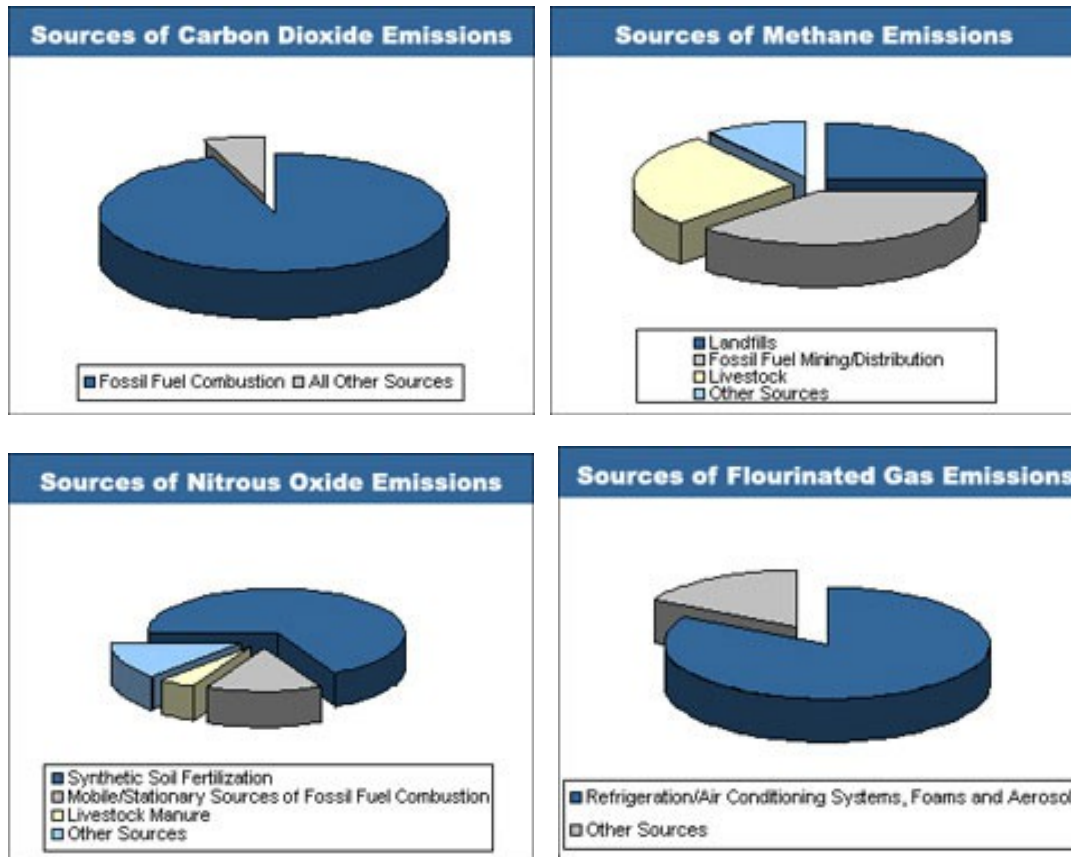
Sustainable energy is an energy source that is generally renewable and often eco-friendly. Examples include solar energy, wind energy, tidal energy etc. The main energy source in today’s society is Coal, Gas, and increasingly- Nuclear energy; these are non-renewable as they take eons to replenish. Switching sustainable energy is one of future’s challenges and it is increasingly difficult because few sustainable energy sources are at all reliable, or reliable without a downside.

General Overview

Greenhouse Gasses

Greenhouse gasses are not, in general, harmful. They allow heat to be trapped inside our atmosphere, keeping our environment in a cool 14C on average. These gasses are in our atmosphere to trap and emit solar energy; with every ray of sunshine, more than half of the infrared heat is reflected back into space. But the Greenhouse gas layer of our atmosphere traps a regulated amount. However, industrialization has lead to an increase in human production of GHG, especially CO₂. On Planet Earth, the Major Greenhouse Gas is water vapour, which traps about 72% of the heat and makes up about 95% of the greenhouse gas atmosphere. The next largest is Carbon Dioxide which traps about 26%; this is followed by methane which traps around 9%. In theory, methane is about 72 times more absorbent than Carbon Dioxide, but there is much less of it in our atmosphere, so it is lessened.

Not only humans, but also plants and animals play a role in increasing GHG emissions. For example livestock excretions, and plants produce oxygen as a waste product, and it is also a GHG. There are many sources of GHG emissions. They are split into ‘natural causes’ like rotting vegetation, and emissions caused by human activity.



The different gasses are emitted in various different ways, from various different technologies. Fossil Fuel is a major cause, as is livestock (production, transportation etc.).

The problem with the increase in Greenhouse Gas Production is that the increase and overload in Greenhouse gasses (which is caused by increased human activity) means more heat is being trapped in the atmosphere. Some people fear that this will lead to Global Warming as ice caps melt, flooding and sinking of islands, animal endangerment, and weather patterns become erratic. More imminent problems include acid rain, which destroys structures and is made as Sulphur Oxide and nitrogen oxide dissolve in the water in the atmosphere and rains down. Furthermore, the increased levels of smog are causing city air to be increasingly toxic and dangerous. Moreover, reliance on Fossil Fuels is extremely precarious as they are non-renewable.

Government policies

Most industrialized and industrializing nations have mass amounts of GHG emissions. Reducing these emissions has become an increasingly important mission.

| Top-10 cumulative energy-related CO ₂ emitters between 1850-200 <small>[Wikipedia, 2012]</small> | | |
|--|------------------|--|
| Country | % Of world total | Metric tons CO ₂ per person |
| United States | 28.5 | 1,132.7 |
| China | 9.36 | 85.4 |
| Russian Federation | 7.95 | 677.2 |
| Germany | 6.78 | 998.9 |
| United Kingdom | 5.73 | 1,127.8 |
| Japan | 3.88 | 367 |
| France | 2.73 | 514.9 |
| India | 2.52 | 26.7 |
| Canada | 2.17 | 789.2 |
| Ukraine | 2.13 | 556.4 |

An effective policy will keep in mind the economic constraints of change, and encourage change in many needing sectors without putting the entire economic burden and any single social class or group. This however happens quite often with the upper or middle class being highly pressured or for example, one sector like the Fossil fuel business or the Livestock business when in fact all sectors need to downgrade in their Fossil Fuel usage. There are two main types of Policies, Market, and Non-market Policies

Market Policies

Market policies are government policies that target greenhouse gas emissions by going at the pockets of the citizens by, for example, having a GHG Tax on households. They have been proven to reduce emissions by ten folds (in comparison to non Market systems) while still maintaining low costs. The benefit of Market Policies is that through these, governments can much more easily quantify and thus internalize the effects of the strategy. To do this, they must first quantify the damage, which can be good and bad. On the one hand quantifying the damage to the environment caused by a household or company incentivizes governments and policymakers to invest in studying this, and considering their green GDP. On the other hand, allowing people to “buy-off” this environmental damage may cause problems as people may choose their luxuries over the environment.

Two highly practiced market policies are the Tax system and the Cap-and-Trade system. The Carbon Tax system “punishes” people for their damage to the environment causing them to pay higher taxes. This can be done by, for example taxing households for their carbon emissions, or taxing companies for the damage caused by the production of their products. The tax method is widely seen as much more effective, with benefits exceeding that of the Cap-and-trade system by upwards of 30%. The tax method also allows companies and households to adjust for prices and policies themselves in the long term. Taxes are generally unpopular, but as Nobel Prize winner Laurent Joseph Stieglitz said- “ it makes much more sense to tax things that are bad, like pollution, than things that are good, like saving and work.”

The Cap-and-Trade system works by making pollution a type of market commodity. The perceived benefit would be that it is a much more Laissez-Faire approach, much more in-line with capitalistic systems. The idea is that the government sets a “cap” on how much pollution is allowed (on any given level- e.g. Company level, sector level, etc.), and then the government sells credits to businesses. These credits are like permits to pollute. The credits allow companies to pollute as long as their total pollution levels are within the set cap. Naturally, some companies find eco-friendliness easier than others, and therefore some companies are able to sell some of their permits to other companies. In theory this system would be the fairest, most effective and natural policy. The government would be able to rake in large amounts of money from selling permits, and this money could be used to better services, for example, building roads or investing in eco-technology. The downside to this system is that there is a great risk that the consumer would be punished with this system. To make up for the purchase of permits or the paying of fines (when companies go over the cap for example), companies may raise prices. This is especially a fear with inelastic, highly polluting industries like the Energy industry. People will buy energy at any price, but they may find themselves paying more and more. On the other hand this strain on the consumer may be circumvented if the state were to reinvest the permit money into the economy heavily, so as to lessen the economic strain on the firms and thus the households as well. An effective cap-and-trade system needs an organized and effective government system and accountable companies which makes it difficult in any corrupt societies without international administration.

Another equally popular Market policy has to do with incentivizing the market to invest in the reduction of GHG emission. Eco-friendliness is becoming increasingly popular as a marketing tool and using this craze for a greener tomorrow, to ensure a truly greener future and that governments can cheaply and effectively progress. This procedure is nearly a non-market policy, but the government itself spends little in promoting eco-friendliness in all fields.

Non-Market Policies

Non Market Policies (NMP) is policies that are generally government enforced that seek to reduce greenhouse gas emission through direct, structural change. This includes programs, which involve things like building wind farms, switching to nuclear energy, using natural gas as opposed to coal, or building eco-friendly homes.



These policies are often very expensive, short-lived, and/or ineffective. However, they do take steps to ensuring a more eco-friendly future. NMP policies are highly practiced and promoted by governments even despite their higher expense. They also create jobs, gather attention of the cause, and they do help reduce GHG to a degree. Non-Market policies are often harder to implement, but not only are the effects of the policies easy to compare internationally, but it is also easier to ensure these policies internationally as they are less invasive to sovereignty and it is easy to check whether or not they were taken on-board.

Development Cost

The cost of development for most countries is the environment. The choice between environment and development is one most countries, particularly developing countries need to make. Most countries develop though increasing their manufacturing and service industries. The manufacturing industry is a major cause of pollution, and it seems necessary for the development of nations. While it is irrational to suppose that countries would forfeit their development for the environment, it is possible to find a balance. Many MEDCS are focused of finding this imbalance, but it is of course, easier for them to invest in this due to the fact that their economies are already developed. For many developing nations, the investment in eco-technologies is unthinkable (as people are not enthused by the ides) and unaffordable. Global policies often excuse LEDCs and sometimes NICs not only because they cannot afford the luxury of green technology, but also because it can be considered unfair that while current MEDCs are able to exploit the environment and their resources to reach their current wealth, NIC are restricted by new international laws. This is, however, still necessary.

Major Parties Involved and their Views

United Nations Environment Program

The UNEP is highly interested and has invested in decreasing the GHG emissions globally. It is part of their mission and they have been invested in it for many years. They have also been involved in the UNFCCC and other conventions.

International Energy Agency

The IEA is deeply concerned with the heavy dependence of our society on fossil fuels. They are firm in the belief that energy is a necessity for modern life, and thus they are highly invested in looking for alternative energies and promoting energy conservation.

International Atomic Energy Agency

The IAEA's main duty is to ensure safe use of nuclear energy. Atomic energy does not emit GHG, though it still emits toxic waste. The IAEA is invested in helping states make the change to safe nuclear energy.

Organization for Economic Co-operation and Development

As the OECD is highly invested in a well flowing economy, they are very interested in the energy problem and suggest market policies as a solution.

United States

The US House of Representatives has passed the Waxman-Markey in 2009 that favours a cap-and-trade system to generate GHG reduction at various, insisting on 3% reduction by 2012; 20% by 2020; 42% by 2030; and 83% by 2050. The American public is highly invested in conservation, and the government is more interested in Market policies to alleviate the countries environmental strain that is often attributed to citizens' overuse and lack of conservation.

China

China has taken great leaps in the field of eco-friendliness in light of immense international pressure. 20% of china's energy supply comes from wind energy, but according to many, this is not enough. The Chinese eco-system and people are suffocating under the smog of the large manufacturing industry that fuels the countries growth.

EU

The European Union had set in an Emissions Trading Scheme that is a hybrid cap-and-trade system for dealing with reducing GHG emissions throughout Europe. Europe has long pioneered the field of eco-friendly policies, with many Scandinavian countries leading the world with the most eco-resourcefulness.

Timeline of Events

| Date | Description of Event |
|-------------------|--|
| | Term Global Warming is introduced |
| June 3-14 1992 | UNFCCC |
| 11 December, 1997 | Kyoto Protocol |
| 16 February 2005 | Kyoto Protocol Enforced |
| 2012 | Deadline for Annex I countries to reduce emissions by 4.2% of 1990 emissions |
| 2011 | Canada, Japan and Russia discontinue from Kyoto Protocol |
| 12 December 2012 | Canada officially withdraws from Kyoto Protocol |



UN Involvement, Relevant Resolutions, Treaties, and Events

The Kyoto Protocol (signed in Japan) and the **United Nations Framework Convention on Climate Change (UNFCCC)** (signed in Rio). The UNFCCC demanded nothing but suggested future meetings (protocols) in which future cut-off marks could be outlined. Kyoto protocol split countries into sections, Annex 1 countries had to do the most GHG reduction, as a group they had to come down an average of about 5%. Many countries have not ratified the treaty, the United States of America has withdrawn, which brought the average reduction down to about 4%. Other resolutions have been set, but none as binding as the Kyoto Protocol.

Evolution of Previous Attempts to Solve the Issue

In the beginning, many were sceptical about the reality of Global warming or Global swings, but more recently, has been increasingly agreed that global warming is a serious and looming threat. Many have taken two sided to the argument of how to stop global warming. There are though who believe that the human race must go at the roots of the cause and stop GHG emissions through market and non market policies, while others believed that “Adaptation” was the way to go meaning that instead of stopping the rising sea levels by stopping Global swings, humans should simply build more dikes to accommodate the rising sea levels. As more and more scientists convert from sceptics to believers, more and more scientists believe that GHG reduction is the only real solution. Many countries have gone from adaptation techniques to non-market policy techniques. Market policy techniques are new frontier at stopping global warming and they seem to be the most successful yet.

Possible solutions

An ideal solution would include both long-term and short-term solutions and consider both market and non-market policies. Introducing a carbon tax or setting up cap-and-trade policies would be infinitely more effective than simply instating more mandates and target dates, though reinforcing deadlines may be effective. Solutions have to be globally attainable and easily re-crafted to fit different areas of the world. The most effective plan is cost effective. Research must be done in various areas to ensure that whatever is built or spent on would be the most effective system. Research must also be done at relevant intervals to ensure that the projects are still maintained and effective. Countries must be given incentives to follow through with the methods outlined in the resolution. The resolution must also outline punishments for countries if they fail to proceed as promised. The resolution would suggest various steps to follow one comprehensive policy (e.g. carbon tax, cap-and-trade, infrastructure improvement, energy transfer etc.). Various resolutions can be made, many of which are not mutually exclusive.



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Appendix

http://kec.kansas.gov/reports/GHG_Review_FINAL.pdf

