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Global Warming: An Overview on Manoeuvre Made to Reduce Carbon Footprints

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***Abstract**: Climate change has become the major challenge worldwide. The main cause of which is global warming. Global warming is the consequence of increase in carbon footprints. Inspite of innovation of various technologies and policies in the direction of reduction of carbon footprints problem is stagnant. Mostly in developing countries problem is more vulnerable where use of renewable resources has been in progress. Here in this paper discussions have been done about the various mitigation measures to reduce carbon footprints.*

Keywords : Climate, global warming, CO_2emission

Introduction

The Twentieth Century temperatures are clearly warmer than any other century over the past 500, and perhaps even the past thousand years. (1) It is proved that climate changes happen after an increase in CO_2emission, which confirms that the increase in CO_2emission does cause global warming. (2)

Energy is essential in day to day life. The use of fuel in cars, in the production of goods, as well as in household activities such as burning of fuel in cooking, Heating and cooling of houses. Electricity consumption is of crucial importance for adapting to climate change in terms of adjusting to heating and cooling needs, but also important in terms of mitigation as electricity accounts for more greenhouse gas emissions than any other sector in Europe.(3) All activities generate CO_2 in substantial amount, which is the main green house gas. Apart from CO_2 other gases such as methane CH_4, O_3, N_2O, CFCs are other gases which are equally responsible in increase of carbon footprints.

Carbon-footprints is the sum of all the emissions of carbon-dioxide, which were generated with the various anthropogenic activities. The frequency of measurement is annual. Human activities include, methane (CH_4), emitted by agriculture, energy exploration, decay of organic waste, production and transport of coal, natural gas and oil etc.

Carbon footprints can be evaluated by summing up the global warming potential (GWP) of the various green house gases. As we can say 1 kg of methane is equal to 25 kg of CO_2, 1 kg of nitrous oxide is equal to 298 kg of carbon dioxide. Similarly after accounting the green house potential of different GHGs carbon footprints are derived. (4)

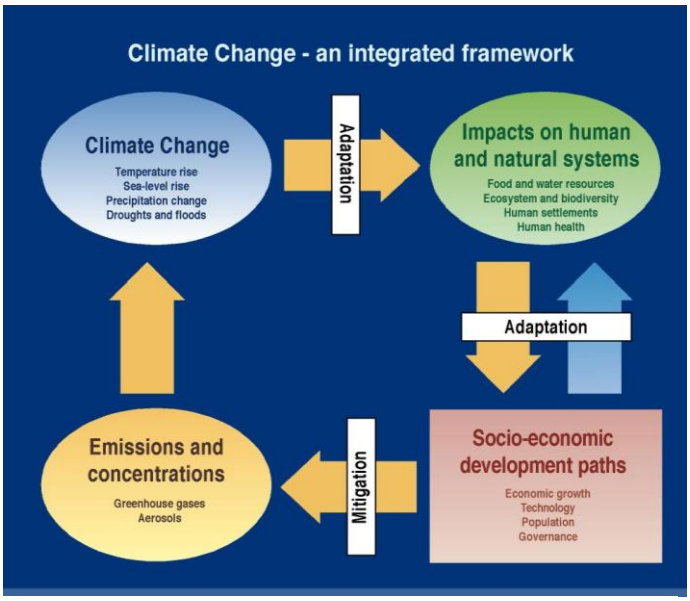
United Kingdom, has taken the lead at a national level in setting mitigation targets. The UK Climate Change Bill calls for an 80% GHG emissions reduction by 2050 relative to 1990 (5). India is the fourth largest emitter of CO_2, following china. Due to its large economy and its large population its carbon emission is high, despite of its low per capita carbon level (6).

Footprints are generally made up of two components. Primary Footprints (direct emissions either from burning of fossil fuels or industrial emissions), Secondary footprints (Indirect emission in whole life cycle)

Personal carbon trading is the generic term in which carbon credits are allocated to each individuals which can be utilized by person after utilization of the specified credits extra charge would be taken by him for further use of credits. One carbon credit is equal to one tonne of carbon dioxide.

Effects of global warming:

Global warming means a lot in terms of climate changes scarcity of water, increase in annual mean temperature, increase in sea level, and drought and flood. Emissions of green house gases need to cut to reduce the effects of global warming. As we can see according to IPCC, the panel provide wide information in this area and integrated framework suggested by this panel is as shown in this picture. Wildlife, Aquatic life and human beings are also greatly affected by this epidemic. Here integrated framework on global climate change as per the IPCC is shown in **Fig.1.**



"Fig.1 An integrated framework on climate change**"**

Causes of global warming:

Emissions and increase in concentration of GHGs and aerosols due to various anthropogenic activities are the main cause of global warming. Exploding population, irreplaceable energy sources and lack of technologies for the use of renewable energy sources have posed a great impact on the increase in concentration of GHGs and aerosols. Most of the Developed and developing countries need to ensure that projects should be environmental friendly before execution. Here **Fig.2** shows the direct emissions of greenhouse gases by various economic sectors.

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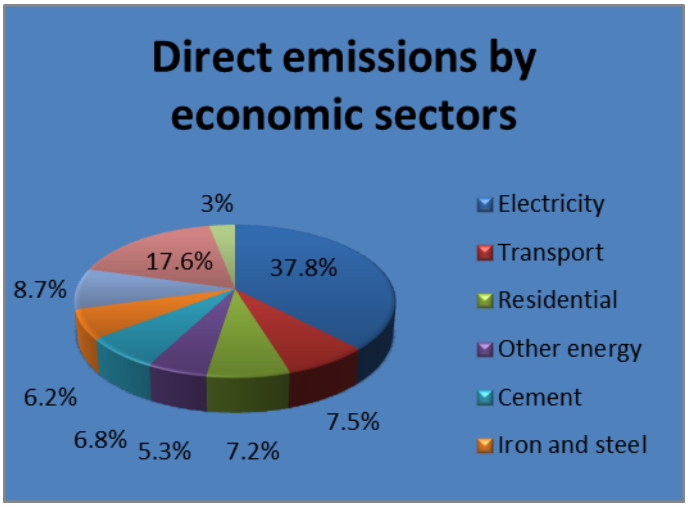

"Fig.2. Emissions by various economic sectors**"**

Manoeuvre made for reduction of carbon footprints:

Decarbonisation which is the low carbon economy refers the situation where the carbon emission is low in construction and any phase of the development of the socio economic system. These terms are also characterized by the low pollution, low emissions and low energy consumption.
To maintain ecological balance and to encourage low carbon product development we need to emphasize on energy saving and efficiency technologies, renewable energy development and green house gas emissions reduction.

To mitigate the climate change due to emissions of GHG and CO_2, These gases after being captured has been transported and then storage of these gases in geologic and oceanic resources is done, which will otherwise be emitted in atmosphere. This phenomenon is called Carbon Sequestration.

Biomass with CCS is potentially one of the few options for negative emissions. CCS is the process of capturing waste CO_2 from large point sources, such as fossil fuel power plants, transporting it to a storage site, and depositing it where it will not enter the atmosphere, normally an underground geological formation. Capturing of carbon is done using a number of methods such as pre combustion, post combustion, oxy-fuel combustion, chemical looping combustion etc. Transport of the captured CO_2 to the storage sites is done using pipelines, which is the cheapest form of transport.

Biogenic CO_2 is part of the renewable carbon cycle. CO_2 is extracted from the atmosphere into trees and crops as they grow, and is released when they are combusted or decomposed.
Therefore, biogenic CO_2 does not contribute to the increase of greenhouse gases in the atmosphere. When CO_2 that has been captured from the atmosphere by biomass is stored geologically, a flow of carbon from the atmosphere into the underground is created, i.e. a permanent CO_2 sink. It is known as negative CO_2 emissions.

This emitted CO_2 can also be used effectively in some to mitigate global climate change. Carbon dioxide has numerous industrial applications and can also be used as chemical for various purposes. The important areas are urea fertilizer production, food packaging and processing, beverage carbonation, pharmaceuticals, fire suppression, winemaking, paper and pulp processing, water treatment, steel manufacturing, etc. Prospective areas of CO_2 usage include polymer processing, concrete curing, algal bio-fixation, renewable methanol generation, etc

We need **New Energy Sources** to replace fossil fuels. Actions to be taken in certain specific sectors along with a large scale power generation using renewable energy sources such as solar and wind and thus contribute in reducing carbon footprint. Nearly 70 percent of electricity in the India is being generated by burning fossil fuel, mainly coal. The coal dominant scenario projects nearly a fourfold increase in the requirement of coal by 2030 as compared to coal consumption in the year 2010. Eventually this will increase the emission of greenhouse gases into the atmosphere exponentially.

Personal carbon trading is the generic term for a number of proposed emissions trading schemes under which emissions credits would be allocated to adult individuals on a (broadly) equal per capita basis, within national carbon budgets. Individuals then surrender these credits when buying fuel or electricity.
To help reduce carbon emissions, the Government would set limits on the amount of carbon that could be used.

Conclusion

Global warming consequently climate change has a great significance as it is mainly introducing by the human being. The burning of fossil fuels, for energy generation and aerosols have proved prime source of this climate change scenario. Clean energy production technologies, energy usage technologies such as personal carbon trading and carbon- dioxide capturing techniques such as carbon sequestration need to be implemented to mitigate carbon emissions.

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