

Environment [KOL] Class-4

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2. A Dutch company developed a type of meat called MOSA meat by taking a thin line of cells from these animals and by using tissue culture to develop this form of meat which in taste and nutrient would be same as ordinary meat.

Carbon Credit & Carbon Trading

The Kyoto Protocol was signed in 1997. which asked the developed nation to reduce their emission by 5.2% taking 1990 as the base year. There were two major drawbacks of Kyoto Protocol

1. US initially signed it but also withdrew from it and US was the biggest emitter at that time.
2. Although developing nation like China and India signed it. but they were not asked to reduce their emission as they were considered as late industrialisers.

Emissions can be reduced by establishment of carbon reduction project which is based on non-conventional form of energy.

Carbon Credit is a certificate given to a nation or an agency for reducing carbon emissions and 1 credit is equivalent to 1 metric tonne CO_2 reduced.

Carbon credits are also called as CERs, which stands for certified emission reduction.

There are three mechanisms of Carbon Credit and Carbon trading which includes

1. Joint implementation

Under this mechanism carbon reduction project would be transformed from one developed to another developed nation. The first nation would be responsible for establishment and second for maintaining it.

2. Clean Development Mechanism

Under this mechanism a carbon reduction project will be transferred from developed to developing nation. In this case the carbon trade would go to the developed nation and developing nation would get money from developed nation.

Since the developing nation is not under binding obligation to reduce its carbon emission the carbon credit earned by developed nation would be considered as additional in nature.

3. International Emission Trading (IET)

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The Surplus Carbon Credits which developing nation generally have can be sold in the international market to earn money. Trading to place act two main exchange -

1. CHICAGO Climate Exchange
2. EUROPEAN Climate Exchange
situated at LONDON.

1. Annex I	Developed Nations, Binding obligation present. No. - (41)
2. Annex II	Developed Nations, part of Annex I, No. - (25), fund Carbon Reduction Project in Developing Nation.
3. Non Annex I	Developing Nations, on whom binding obligation of UNFCCC not present.

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The Prices of Carbon credit are declining in the international market as the west is suffering from economic crisis and the companies of these country are not producing enough to be in requirement of carbon credit. On the other hand countries like India and China benefited a lot from CDM mechanism as more than 1100 project were established in India and 3000 in China under this mechanism.

The big industrial houses in India have invested a lot in the CDM mechanism and are waiting for the price of carbon credit enhanced so that it can be sold at profit of developed world but since this is not happening their investment is lying in vain. It is just not judicious to question CDM mechanism on this basis as CDM mechanism gives us three fold benefit.

1. Better environment, 2. money, 3. technology.

India is suffering from energy crisis. The requirement of which can be made by non-conventional form of energy which would be responsible for development and these carbon reduction projects are based on non conventional energy.

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Blue Carbon → Mangrove vegetation present in the coastal areas absorbs CO_2 from atmosphere perform photosynthesis and generate blue carbon which get stored near the base of this vegetation and cannot be oxidised as ~~and~~ the saline soil lacks oxygen. as such mangrove vegetation reduces the adverse impact of global warming because it is absorbing CO_2 from atmosphere but not allowing CO_2 to escape in atmosphere but if destruction of mangrove takes place this form of carbon would be exposed and it would be oxidised by the oxygen present in atmosphere enhancing the adverse impact of global warming. Blue carbon is also produced by phytoplanktons in oceans. They absorb CO_2 perform photosynthesis and produce this form of carbon but when phytoplanktons perish blue carbon present in them gets deposited near the oceanic floor, where there is deficiency of oxygen (minimal) and as such it can not be oxidised. As such phytoplanktons also reduce the adverse impact of global warming. A significant role is played by Sperm whales the waste product of these whale are rich in iron

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which is utilised by phytoplankton to grow in large number and as killing of sperm whales would enhance the adverse impact of global warming.

ANDREx Project

(Antarctica Deep Water Rate of Exchange)

This project was conducted near Antarctica in the southern at the region called Weddell Gyre which is located toward east of Antarctica. Scientist study the uptake of CO_2 from atmosphere by phytoplanktons in large numbers and also the fixing of this carbon to the oceanic floor by a mechanism called "Biological Carbon pump".

The southern ocean have phytoplankton in large number due to Dust storm blowing from the Patagonia desert which is rich in iron.

Black Carbon (Soot).

Black Carbon is produced by many source which include burning of vegetable oil, incomplete combustion of Petroleum product like tar.

When black carbon is present in atmosphere it absorbs the 23% of Solar Radiation falling on it which is much higher when compare to organic carbon which absorbs 3% only and as such black carbon enhances the adverse impact of global warming. The developed nation want black carbon to be treated as green house gas and efforts should be made for its removal on the other hand developing nations state that since an isolated technique for removing black carbon from atmosphere is not present by using the same technique organic carbon would also be removed and as such impact of global warming would enhance.

BROWN CARBON

over the Indian subcontinent to the stretch about 3-5 km in the atmosphere. Atmospheric Brown cloud are present which consist of Brown Carbon emits Agricultural waste / Biomass in Rural parts of this regions.

Brown Carbon is responsible for absorbing blue rays of the spectrum as a result of which browning hue would be produced which falls on historical monuments like Taj Mahal because of which it appears to be pale.

#. Carbon Sequestration :

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It is a comprehensive mechanism under which not only carbon sinks for absorption of CO_2 are established but also includes all those mechanism through which the adverse impact of global warming would be reduced. Natural carbon sinks include oceans, forest cover, wetlands, etc. Artificial carbon sink can be established by re-vegetation of abandoned mines and the adverse impact of global warming reduced by using space mirrors - which can enhance Albedo phenomena and this can also be enhanced by painting rooftop and roads with bright colors.

One device which can be used for this purpose is the Super Tree in which contaminated air is mixed with water under thermodynamic pressure. The contaminant in air gets converted into mud and some dirty water which can be easily passed into the drain. But this device is also responsible for absorbing CO_2 from contaminated air and making it germ free.

Carbon Capture Mechanism

On one hand enhanced level of CO_2 in atmosphere is responsible for global warming but on the other hand industries like Beverages CO_2 shortage can be witnessed. Some countries like Switzerland have developed a mechanism to directly capture CO_2 from atmosphere but this is a costly affair as the percentage of CO_2 in atmosphere is very less (0.04%) and as such large volumes of air need to be compressed and passed over the sorbent material for this purpose. It would be wise to capture CO_2 from industries like power plants, steel plants, distilleries, cement industry and use them for Beverages industry.

The sorbent material which is used for CO_2 absorption includes zeolites or mesoporous silica and the mechanism used is called **AMINE SCRUBBING PROCESS**. Amine are derivatives of ammonia where hydrogen atoms have been replaced by alkyl

Note point

* Green water is that fraction of rainfall which is trapped in the soil and utilised for cultivation of crops. (10)

IUCN (Red list)

Vulnerable species are those which are likely to get endangered. Endangered species can get extinct in whole or part of its range.

Critically endangered are those which are likely to get extinct in the wild. Species which are present in extinct in the wild list implies that no member of this species is present in the wild but can be present in captivity.

On the other hand extinct species means that the members are not present in wild and neither is captivity.