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## Clean Development Mechanism (CDM) and Carbon Trading

### CHAIRMAN'S VOICE

#### Global Warming- The Issue

The Earth has an atmosphere of the proper depth and chemical composition. About 30% of incoming energy from the sun is reflected back to space while the rest reaches the earth. Greenhouse gases (for example, carbon dioxide (CO<sub>2</sub>), methane (CH<sub>4</sub>), nitrous oxide (N<sub>2</sub>O), water vapour), re-emit some of this heat to the earth's surface. As the GHGs are transparent to incoming solar radiation, but opaque to outgoing longwave radiation, an increase in the levels of GHGs could lead to greater warming, which, in turn, could have an impact on the world's climate, leading to the phenomenon known as climate change.

#### Kyoto Protocol

Presently, a variety of approaches are being implemented to reduce carbon emissions. Among these are the commitments of governments to reduce emissions through the 1992 United Nations Framework Convention on Climate Change (UNFCCC) and its 1997 Kyoto Protocol.



The UNFCCC came into effect on 21<sup>st</sup> March, 1994, according to which industrialized countries shall have the main responsibility to mitigate climate change. Such countries are listed as Annex- I countries. An agreement was struck at the now famous Kyoto protocol on 11 December 1997 in Kyoto, Japan. Born in the 1997 World Earth Summit held at Kyoto, Japan, this Protocol is making miracles in society today. Under the Kyoto Protocol, emission caps were set for each Annex-I countries, amounting in total to an average reduction of 5.2% below the aggregate emission level in 1990. Each country has a predetermined target of emission reduction as compared to 1990 level.

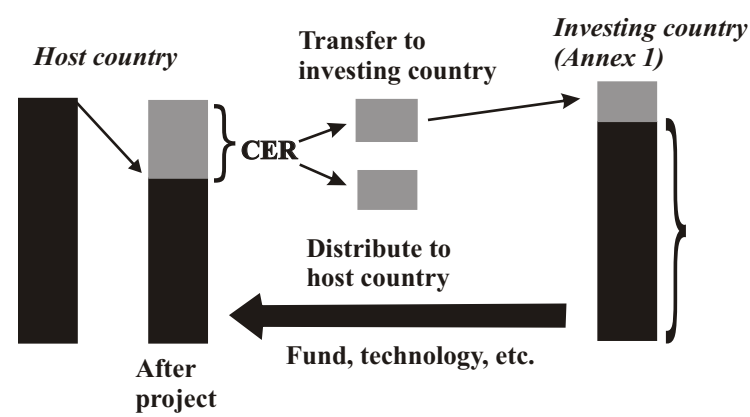
No emission cap is imposed on Non – Annex I countries. However, to encourage the participation of Non-Annex I in emission reduction process, a mechanism known as Clean Development Mechanism (CDM) has been provided.

The outcome was the Kyoto Protocol, in which the developed nations agreed to limit their greenhouse gas emissions, relative to the levels emitted in 1990 or pay a price to those that do. At this point comes the Carbon Trading.

### **Carbon Credits**

The primary purpose of the Protocol was to make developed countries pay for their ways with emissions while at the same time monetarily rewarding countries with good behaviour in this regard. Since developing countries can start with clean technologies, they will be rewarded by those stuck with 'dirty' ones.

This system poises to become a big machine for partially transferring wealth from wealthy, industrialised countries to poor, undeveloped countries. A CER or carbon Credit is defined as the unit related to reduction of 1 tonne of CO<sub>2</sub> emission from the baseline of the project activity.



Let us say that India decided to invest in a new power station, and has decided on a particular technology at the cost of X crore. An entity from an industrialised country (which could even be a company) offers to provide India with slightly better technology, which costs more (say Y crore), but will result in lower emissions. The industrialised country will only pay the incremental cost of the project – viz. Y minus X. In return, the 'investing' country will get certified emission reductions (CERs), or credits, which it can use to meet its Kyoto commitments.

The World Bank has built itself a role in this market as a referee, broker and macro-manager of international fund flows. The scheme has been entitled Clean Development Mechanism, or more commonly, Carbon Trading.

**CDM PROJECT TYPES**

Type of projects, which are being applied for CDM and which can be of valuable potential, are:

**Energy efficiency projects**

- ♦ Increasing building efficiency (Concept of Green Building)
- ♦ Increasing commercial/industrial energy efficiency (Renovation & Modernization of old power plants)
- ♦ Fuel switching from more carbon intensive fuels to less carbon intensive fuels.
- ♦ Also includes re-powering, upgrading instrumentation & controls

**Transport**

- ♦ Improvements in vehicle fuel efficiency by the introduction of new technologies
- ♦ Changes in vehicles and/or fuel type, for example, switch to electric cars or fuel cell vehicles (CNG/Bio fuels)
- ♦ Switch of transport mode, e.g. changing to less carbon intensive means of transport like trains
- ♦ Reducing the frequency of the transport activity

**Methane recovery**

- ♦ Animal waste methane recovery & utilization
- ♦ Installing an anaerobic digester & utilizing methane to produce energy
- ♦ Coal mine methane recovery
- ♦ Collection & utilization of fugitive methane from coal mining;
- ♦ Capture of biogas
- ♦ Landfill methane recovery and utilization
- ♦ Capture & utilization of fugitive gas from gas pipelines;
- ♦ Methane collection and utilization from sewage/industrial waste treatment facilities



### Industrial process changes

Any industrial process change resulting in the reduction of any category greenhouse gas emissions

### Cogeneration

Use of waste heat from electric generation, such as exhaust from gas turbines, for industrial purposes or heating (e.g. Distillery-Molasses)

### Agricultural sector

- ◆ Energy efficiency improvements or switching to less carbon intensive energy sources for water pumps (irrigation)
- ◆ Methane reductions in rice cultivation
- ◆ Reducing animal waste or using produced animal waste for energy generation
- ◆ Any other changes in an agricultural practices resulting in reduction of any category of greenhouse gas emissions

### Indian Scenario- Favouring Points

- a) India - high potential of carbon credits
- b) India can capture 10% of Global CDM market
- c) Wide spectrum of projects with different sizes
- d) Vast technical human resource

Through India's ongoing Infrastructure projects and projects on non-conventional energy sources, a new phase of development is still to be observed, moderate start of which has already begun.

**M. Anil,**  
Chairman



## Kerala to set up Thermal Power Plant jointly with Orissa

The Kerala cabinet has approved the proposal to set up a 2000MW thermal power plant in Orissa as a joint initiative, utilising coal from Baitharani fields in Orissa. The project details were discussed at a meeting of senior officials from the two states and the state cabinet approved the proposal. The proposal would be taken up for the approval of the Orissa government.

The Central Government had earlier allotted Kerala, Orissa and Gujarat to prospect coal equivalent to 3,000 MW each for the three states from the Baitharani fields. Kerala, Gujarat, and Orissa were allotted equal share of the block estimated to have 608 million ton of coal reserves. Coal prospecting is currently going on in the block under a joint-venture company floated by the three States for undertaking mining operations.

Initially, Kerala had thought about setting up a thermal plant at Cheemeni in Kasaragod district by bringing its share of coal. But that plan had to be dropped due to local resistance. Later, the state also considered the idea of building a plant in Baitarani jointly with the National Thermal Power Corporation Ltd. (NTPC), but that also did not work out.



It was against this backdrop, that the idea of a joint initiative by Kerala and Orissa was mooted. To start with, the two states would form a Special Purpose Vehicle (SPV) company for implementing the project. The project is estimated to involve a cost of Rs 8000 crore when completed in three phases of 650 MW each.

The power generated by the plant would be equally shared by the two states, which was expected to make up power crunch faced by our state and meet the growing future needs.

*Editor*

## Broad Band Access Technology

KSEB Engineers' Association ,Kannur Unit has arranged a Technical class on “ Broad Band Access Technology” on 12th October 2011 at Engineers' House,Kannur.Sri. Abdul Basith, J.T.O ,BSNL was invited to present this technical session.

The class begun at 4.45 pm after introductory speech. First he has given a brief introduction about the Internet and different types of internet access technologies used in BSNL and detailed the backbone of these technologies.

Our internet service is based on TCP/IP(Transmission Control Protocol/Internet Protocol).It is the basic communication language or protocol of the internet. Before the origin of Internet ,there is only PSTN (Public Switched Telephone Network) service. It is only a collection of interconnected voice-oriented telephone networks and now PSTN furnishes much of the internet infrastructure.



## **Internet Access Technologies of BSNL**

### **1) Dial-up technology**

It is simply the application of PSTN to carry data. A PC, modem and telephone service are needed for accessing this service. We have to pay local call charges corresponding to our surfing duration. We can access our Dial-up account from any place using the access no “172233”(prepaid) and “172222”(postpaid).

BSNL is having 5 core routers at Chennai, Bangalore, Mumbai, Kolkatta & Noida called A1 routers. A router is a device which join multiple wired or wireless networks together. These routers have connectivity with other co-routers(A2,A3 & A4) and all these routers are mesh connected. In Kerala we are having A3 router at Ernakulam.

While establishing an internet connection, the customer modem will communicate with RAS modem of RAS(Remote Access Server) of BSNL.(RAS is there in all district head quarters).RADIUS(Remote Authentication Dial in User Service)provides centralized authentication,authorization & accounting(AAA) management for connecting & using the network service.

### **Disadvantages of Dial-up technology**

The Dial-up connection is slow with a speed of only 56 kbps.We can access only a single service at a time.ie.telephone or internet. To overcome these disadvantages of Dial-up technology, broad band access technology has been developed.





## 2) Broad Band Access Technology

It is the “high speed” access to the internet and it usually has a high rate of data transmission and capable of providing multiple service simultaneously. The International Telecommunication Union (ITU) has defined broad band as a data connection that is able to support interactive services and has transmission capacity (bandwidth)  $\geq 2$  mbps. In India TRAI (Telecom Regulatory Authority of India) redefines it as a data connection with capability of minimum download speed of 256 kbps. There are 3 technologies in broadband.

2.A DSL Technology- Digital Subscriber Line (DSL) is a family of technologies that provides digital transmission over the wires of a local telephone network.

2.B Cable modem Technology- In cable modem technology coaxial cables are used. It is having a downstream speed of 30 mbps & upstream speed of 1 mbps.

2.C BPL Technology – Broad band over Power Line, allows data to be transmitted over utility power lines. It is having a downstream speed of 3 mbps & upstream speed of 1 mbps.

BSNL is using ADSL technology (asymmetric digital subscriber line) which is having a downstream (download) speed of 24 mbps and upstream (upload) speed of 3 mbps. ADSL can work up to a distance of 6 km. In ADSL 2+ technology (second generation of ADSL) the bandwidth is divided into



- 0-4khz - for voice
- 4-15khz - not used
- 15-138 khz - upstream
- 138-2.2 Mhz - downstream

Disadvantages of DSL Technology

It is assymmetric and data rate depends on quality of copper and distance from telephone exchange. Hence necessity of other technologies arises.

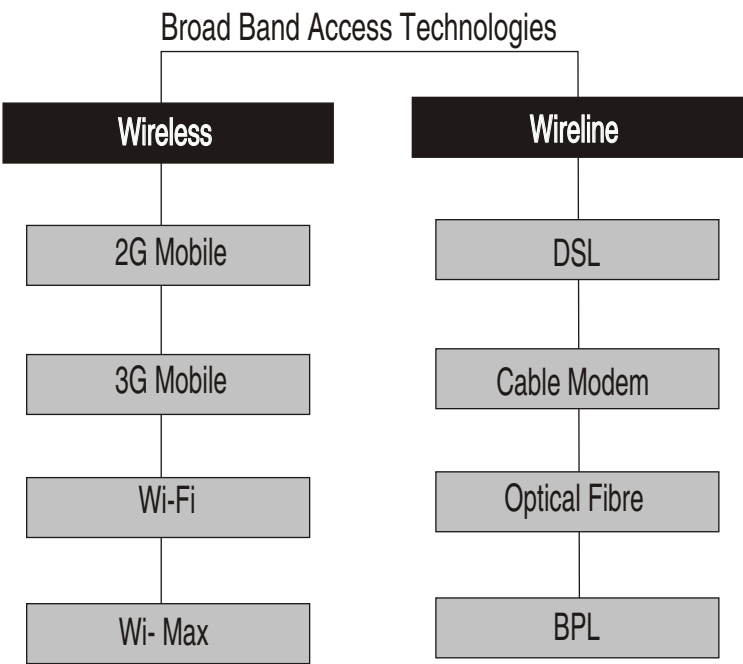
FTTH(Fibre to home ) Service allow consumers with high end demands such as HDTV,3DTV,IPTV etc.,the integrated service of internet ,phone line and IPTV under one connection. High quality content will be available through this connection at speed up to 100mbps which is not possible through conventional copper cable.

GPON (Gigabit Passive Optical Network) uses symmetric technology having a speed of 1.25 gbps and facilitate a converged access network supporting multiple services including VOIP and video-on- demand.GPON will launch in Kannur soon.

Wireless broad band access technology

- |    |                |        |           |         |
|----|----------------|--------|-----------|---------|
| 1) | 2 G -GSM       |        | data rate | 114kbps |
| 2) | 2 G- CDMA      |        | data rate | 144kbps |
| 3) | 2.5-EDGE       |        | data rate | 384kbps |
| 4) | 2.5 –CDMA      |        | data rate | 3mbps   |
| 5) | 3G-WCDMA       |        | data rate | 7mbps   |
| 6) | 4th Generation | Wi Max | data rate | 24 mbps |

In brief, Broad Band Access Technologies can be classified as shown below:



The Technical session concluded at 6.00 p.m.

**UNIT MEETING**

**Next Unit Meeting is on 09-11-2011 at Engineers' House. A technical class on " Insulation measurement and Tan Delta" is arranged.  
All members are requested to participate.**

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**BOOK - POST**



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