Forestry and Plantations

Opportunities under Kyoto Protocol

The Kyoto Protocol fixes legally binding targets to restrict the emission of greenhouse gases (GHGs) by the rich (Annex I) countries. The Clean Development Mechanism (CDM) is a market mechanism to help these countries meet their Kyoto targets cost-effectively. The implications of the CDM for the Indian forestry and commercial plantation sectors are discussed here.

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With the UN secretary general receiving on November 18, 2004 the Russian Federation's instrument of ratification, the critical mass required for the Kyoto Protocol to enter into force was achieved[1] even with the US, the largest CO_2 emitter in the world, staying out of the Kyoto mechanism.[2] The protocol entered into force on February 16, 2005.

During the third Conference of Parties to the United Nations Framework Convention on Climate Change (UNFCCC)[3] held during 1997 in Kyoto, Japan, a protocol to the UNFCCC was approved [UNFCCC 1997]. Unlike the UNFCCC, the Kyoto Protocol fixed legally binding targets to reduce the emission of greenhouse gases (GHGs) by the countries listed in Annex I of UNFCCC (Annex I countries) between 2008 and 2012, the first commitment period of the protocol. This has been a landmark achievement in international climate change negotiations, although the expected reduction in the GHGs by the industrialised countries is small. Under the protocol, the industrialised (Annex I) countries are legally obliged to reduce their collective CO_2 emissions to at least 5.2 per cent below their 1990 emission levels by 2012. Recognising the need for the developing (non-Annex I) countries to industrialise for their development, the protocol does not bind these countries to any GHG emission reduction targets during the first commitment period.

Obviously, meeting the Kyoto compliance of GHG emission reduction can be costly for the Annex I countries – both financially and politically. GHG emission reduction requires either improved energy-use efficiency, especially with fossil fuels, or reducing the amount of fossil fuels consumed. For the developed countries, attempts to reduce GHG emissions within their own national boundaries will be very expensive and may also have a negative impact, which will be politically costly, on the high standard of living of their citizens.

The protocol established three major flexible market instruments to help the Annex I countries meet their GHG emission reduction targets cost effectively [UNFCCC 1997] from non-domestic sources: emission trading (ET), joint implementation (JI) and the Clean Development Mechanism (CDM). Of these, CDM allows Annex I countries to invest in climate-friendly projects in non-Annex I countries. Through such projects, the investing countries will earn certified emission reduction (CER) credits that can be used by them to offset their Kyoto targets (Article 12.3(a)). Thus, CDM brings potential benefits to the developing countries.

CDM and the Non-Annex I Marketplace

The CDM aims at bringing funding from the rich (Annex I) countries into the poorer (non-Annex I) countries for environment-friendly projects in tune with the sustainable developmental requirements of the latter. The CERs so obtained by the Annex I countries will be a far cheaper option than taking up domestic mitigation activities by themselves. One CER is taken as one tonne of CO_2 prevented from being released into the atmosphere (emission reduction) or removed from the atmosphere (sequestration) as a result of the CDM project over and above (additionality) the emission reduction/sequestration that would have occurred in the absence of the project (business-as-usual scenario)[4].

CDM is a mechanism that addresses global climate change at the marketplace of the non-Annex I countries. Obviously, the CDMs make good economic as well as environmental sense. For the developed countries it will be more economical for them to invest in a developing country and obtain CERs rather than limit their own GHG emissions within their national boundaries. The developing countries are exempted from GHG emission reduction during the first commitment period of the protocol and therefore it does not hinder their further industrialisation. Thus, the CDM addresses global environmental concerns by providing an economic opportunity for the developing countries to attract funds for climate-friendly projects and the developed countries an opportunity to meet their Kyoto compliance cost effectively.

CDM has attracted several criticisms as well, notably that it gives the rich countries a cheap option to buy GHG emission rights from the poorer countries and continue with or even increase their current domestic GHG emissions [Agarwal and Narain 1999]. But it may be noted that Articles 17, 6.1(d) and 12.3(b) of the Kyoto Protocol fix restrictions on the extent of use of the three market instruments in meeting GHG emission reduction targets.

The Kyoto Protocol has been fair to the non-Annex I countries by not fixing GHGs emission reduction targets. The potential financial benefits the CDM projects can bring them could be significant. For non-Annex I countries such as India, China, and Brazil that have a huge population and are fast developing economies – and therefore, by default, would emit huge amounts of GHGs in the future – attracting CDM funds into the commercial plantation and forestry sectors in these countries would help in strengthening their rural economies.

CDM and the Plantation and Forestry Sectors

Deforestation, the second major cause of GHG accumulation in the atmosphere after fossil fuel combustion, has been responsible for 20-25 per cent of global anthropogenic GHG emissions during the 1990s [Pandey 2002]. Recognising the importance of carbon sequestration in combating global climate change, sink[5] activities such as afforestation and reforestation projects were included in the Kyoto Protocol as a means of meeting GHG emission reduction targets. The advantages of including sink projects under the CDM and the practical difficulties in carbon accounting in international carbon sequestration projects are discussed by Anderson and Richards (2001) and Schlamadinger et al (2001).

The Bonn agreement[6] favourably considered including sink enhancement activities for Annex I countries to meet their emission reduction targets under Articles 3.3 and 3.4 of the protocol. The Marrakech accords[7] set the framework for approving modalities and methodologies for CDM projects, which included only GHG emission reduction projects, not carbon sequestration/sink projects. CoP-9 to the UNFCCC held in Milan during December 2003 agreed to include afforestation/reforestation projects under CDM. The CDM Executive Board is currently finalising the rules and modalities (Article 5.2) for including carbon sinks from afforestation/reforestation activities under the CDM.

Studies conducted at the Rubber Research Institute of India and elsewhere in rubber growing countries show that the carbon sequestration capacity of natural rubber plantations is very high [Jacob 2003; Jacob and Mathew 2004].

Between June 2003 and January 2004 the price of CER in the EU Emission Trading Scheme (ETS), a parallel carbon market for the EU which is expected to be linked to the Kyoto mechanism, increased from about 7 Euro/tonne of CO_2 to about 13 Euro/tonne of CO_2. But in the CDM market the price was notably low, around US $ 5/t CO_2. Even at this modest price, rubber plantations have a potential worth of US$ 120-170/ha/yr in the CDM market [Jacob and Mathew 2004]. It has been estimated that from the total area of 5,00,000 ha of natural rubber cultivated in India, there will be enough CERs to meet just under 10 per cent of the combined demand for CERs by Japan and the EU to meet their Kyoto targets. Just like any other commodity trade, virtual trading of CERs also is open to market forces. If more and more buyers of CERs come to the market, naturally the price of CERs will go up. With the Kyoto Protocol entering into force after Russia's ratification, it is expected that the price of CERs will substantially increase as the first commitment period of the protocol (2008-2012) approaches when the demand for CERs would also go up.

The CDM market potential of CERs from forestry/commercial plantations can be realised only if the designated national authorities (DNAs) in the non-Annex I countries include such specific forestry/plantation projects under the CDM. For India, the DNA is headed by the ministry of environment and forests. CDM is as much about economics and environment (and, unfortunately politics too) as it is about livelihood and sustainable socio-economic development in the non-Annex I countries. The immediate and direct beneficiaries of many commercial plantations and forestry

rojects in the country are mostly poor easants who are scattered in the remote eas of India. Therefore, any carbon atement project in the forestry/commerial plantations sectors under the CDM ill be compatible with the socio-economic d ecological criteria set out under the DM for sustainable development in the n-Annex I countries in the tropics and b-tropics (Article 12.2).

rocessing and Product anufacturing Sectors

Any activity that results in a reduction the emission of GHGs into the atmosere is eligible for CDM funding, subject certain conditions. Many activities reted to primary processing of plantation oduce and product manufacturing can alify for funding under the CDM. Proction of biogas from processing effluts from commercial plantations (e g, ural rubber processing effluents), protion of bio-diesel from seeds of species ch as Jatropha and natural rubber, use biomass-based gasifiers and solar theral systems for generating energy are igible for CDM funding. Among renewle energy sources, biomass is gaining in portance because of advances made in asification technology [Dasappa et al 04]. Growing energy plantations in graded ecosystems for the purpose of oducing biomass for gasifier-based ower generation in rural areas, as successfully demonstrated in rural Karnataka r a decade [Ravindranath et al 2004] is excellent opportunity to tap CDM funds. non-Annex I countries like India with st areas of wastelands and large sections the rural population not having access assured power supply, the wastelands ould be converted into energy plantations the production of biomass for gasifiers vegetable oil from plants such as Jatopha that can yield bio-diesel. Both the oduction of biomass and generation of ergy using biomass gasification are herently climate-friendly technologies at can attract CDM funding.

Use of any such renewable energy source the rural agriculture sector displaces ssil fuels, which amounts to indirect equestration of CO_2 and therefore qualies for CDM funding.

Any technological innovation in primary rocessing and product manufacturing in e commercial plantation and forestry ectors that improves energy efficiency s also eligible for CDM funding. The small amounts of CERs from the various plantation and forestry related processing and industrial units in the country can be pooled and traded in the international CDM market. Use of plantation wood in place of forest timber may also qualify for CDM funding. Opportunities may be present in commercial plantations such as rubber, cocoa, coffee, tea, and cardamom, and forestry plantations such as eucalyptus, sal, and teak for obtaining CERs through the efficient use of fossil energy and use of renewable energy for the primary processing or value addition of these commodities.

Conclusions

The object of this article is to introduce those working in commercial plantation and forestry projects of India to the possibility of attracting CDM funds for afforestation/reforestation projects under the Kyoto Protocol. There are many uncertainties and hurdles still existing in this regard. Adoption of appropriate methodologies by the CDM Executive Board for determining the CERs from afforestation/reforestation projects and approval by the Indian DNA (headed by the ministry of environment and forests, government of India) to include commercial plantations under the afforestation/reforestation projects for CDM are only two of them. It is important that all the concerned stakeholders work in coordination to garner the benefits of carbon trading under the CDM of the Kyoto Protocol into the forestry and commercial plantation sectors in the country. The methodology currently being developed by the CDM Executive Board for afforestation/reforestation projects need to be taken note of. EPW

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Notes

1 For the Kyoto Protocol to enter into force, it had to be ratified by 55 parties to the UNFCCC, including enough Annex I countries whose combined emission of CO_2 exceeded 55 per cent of the total emission of CO_2 by the entire Annex I block as of 1990. With Russia ratifying the protocol, these figures reached 127 countries and about 61 per cent.

2 The US pulled out of the Kyoto Protocol during March 2001, declaring it "fatally flawed".

3 In May 1992 international climate change negotiators agreed to the UNFCCC which was signed at the Earth Summit held at Rio de Janeiro in June 1992. The convention entered into force with its ratification by the 50th country in March 1994. The industrialised countries and economies in transition to open market (EIT) listed in Annex I to the UNFCCC ('Annex I countries') agreed, albeit non-legally, to reduce their respective GHG emissions to their 1990 levels by 2000, but this never happened.

4 *The non-CO_2 GHGs are converted into CO_2* equivalents (CO_2e) based on the global warming potential for 100 years as approved by the CDM Executive Board.

5 Sinks are various forms of stocks of carbon in aquatic or terrestrial ecosystems such as undersea coral reefs, terrestrial and aquatic living organisms, and soils. These stocks of carbon, unlike atmospheric CO_2 do not have any adverse effect on climate.

6 CoP-6 held at The Hague during November 2000 had to be suspended due to serious disagreements over the Kyoto Protocol. It was reconvened at Bonn during July 2001 when a broad political agreement on various Kyoto provisions was achieved.

7 CoP-7 held at Marrakech in Morocco adopted the document required to make the CDM operational and set the framework for approval of methodologies for CDM projects, but no specific mention was made of sink projects.

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