

Clean Development Mechanism for Pulp And Paper industry & JKPL Experience

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ABSTRACT

Paper Industry generates Green House Gases (GHGs) in many stage of its operation; there is scope for implementation of CDM Project preferably in Forestry sector. JKPL's A/R CDM Project under LULUCF (Land Use and Land Use Change and Forestry) category aims at GHG mitigation and sell emission reductions earned through carbon sequestration in the established agro-forestry plantations. JKPL, Rayagada and VCCSL (Social Enterprise), Kakinada have jointly developed such a project which will enable small and marginal farmers in Orissa and Andhra Pradesh to earn carbon revenues through linkage with the global carbon credit market by afforesting their degraded lands. The project covers about 1600 beneficiaries in three districts Koraput, Kalahandi, and Rayagada, in Orissa and Vishakhapatnam, Vizainagram and Srikakulum districts in Andhra Pradesh. The project is one of its kind in India & gives an insight into various processes associated in such projects such as PDD formulation, Baseline assessment, land eligibility, project area boundary demarcation, proving of additionality, continuous monitoring etc. to meet the stringent UNFCCC guidelines which are quite difficult under Indian conditions. This will be an eye opener for the Indian Paper industries for implementation of CDM A/R project which can be a win-win situation for the farmer community as well as the Industry.

Introduction

The Indian Paper Industry is among the top 15 global players today, with an output of more than 6 millions tones annually with an estimated turnover of Rs.150, 000 millions. (Approx. USD 3400 million). Paper Industry in India is riding on a strong demand and on an expanding mood to meet the projected demand of 13 million tones by 2020. "Growth of Paper Industry in India", indicated that per capita paper consumption increased to 9.18 kg on 2009-10 as compared to 8.3 kg during 2008-09. Still, the figure is low (9.2 kg) compared to 42 kg in China and 350 kg in developed countries. India has emerged as the fastest growing market when it comes to consumption, posting 10.6% growth in per capita consumption of paper in 2009-10. Every phase of paper's lifecycle contributes to global warming, from harvesting trees to production of pulp and paper to eventual disposal.

- The biggest greenhouse gas releases in pulp and paper manufacturing come from the energy needed to power the pulp and paper mill.
- The climate change effects of paper

carry all the way through to disposal. If paper is land filled rather than recycled, it decomposes and produces methane, a greenhouse gas with 23 times the heat-trapping power of carbon dioxide.

- The pulp and paper industry is the fourth largest emitter of greenhouse gases among manufacturing industries, and contributes 9 percent of total manufacturing carbon dioxide emissions
- More than one-third of municipal solid waste is paper, and municipal landfills account for 34 percent of human related methane emissions to the atmosphere, making landfills the single largest source of such emissions.

In the context of a rapidly evolving Clean Development Mechanism (CDM) market and increasing debate about the design of a future global climate regime, it is essential to understand which types of projects are undertaken along industrial value chains, and also the influence of company characteristics (e.g. size, raw material base, product type, ownership and location) on firms' CDM participation and choice of project type. The Indian Pulp & Paper Industry which is predominantly wood based can benefit from different mitigation

opportunities.

- The use of paper mill wastes for steam generation using a fluidized bed combustor will provide an alternative source of energy and significant cost savings in its operation
- Efficient Chemical recovery units with lime & mud reburning kilns, proper contribution of high pressure, recovery boilers, suitable double extraction turbine systems, efficient pulping & washing systems are the areas which can come under CDM in Paper Industry.
- Apart from energy intensity CDM Projects wood based Paper industry can go for A/R CDM project in LULUCF category.

2. Experience of JKPL (Unit: JKPM) in implementation of CDM Project:

2.1 Project Concept:

JK Paper Ltd. (Unit: JKPM) which is an integrated Pulp & Paper manufacturing unit started a one of its kind CDM project in LULUCF (Land Use and Land Use Change and Forestry) category to sell emission reductions earned through carbon sequestration in the newly established agro-forestry plantations. JKPL, Rayagada and VCCSL (Veda Climate Change Solutions) a Social Enterprise,

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Kakinada have developed the project jointly. The project will enable small and marginal farmers in Orissa and Andhra Pradesh to earn additional revenues through linkage with the global carbon credit market by afforesting their severely degraded lands. The project covers an area of 1607.7 hectares and about 1600 beneficiaries in Koraput, Kalahandi, and Rayagada, in Orissa and Vishakhapatnam, Vizianagaram and Srikakulam districts in Andhra Pradesh. The farmer will get price of the Carbon Credit sold to the World Bank Bio-Carbon Fund, at the same time it has immense impact to reduce GHGs to a large extent. Out of CERs generated, the first 2,76,000 CERs to be sold to World Bank and the rest CERs to be sold to any other party.

3. Approach for the assessment of certified reduced carbon emissions:

Being one of its kind in this sector gives a good learning experience on the various aspects of CDM A/R Projects.

- Baseline Eligibility Assessment.
- Project Boundary Demarcation.
- Farmers Involvement & Documentation.
- Agricultural Management by Farmers.
- Monitoring Plan.

3.1 Baseline Eligibility Assessment:

Baseline information was collected using primary and secondary data sources. The primary data covered in formation on pre-existing vegetation, land use, local ecology and socio-economic conditions in the project area. Secondary data covered information on regional land use agricultural services, local economy, and resource status of local communities.

3.1.1 Primary data:

3.1.1.1 Pre-existing vegetation:

Field studies were conducted using sample survey methods. The surveys covered assessments of woody and non-woody vegetation in the six districts of Orissa and Andhra Pradesh. Based on preliminary surveys, two clusters of districts Koraput, Kalahandi and Rayagada in Orissa; and Srikakulam, Vizianagaram and Vishakhapatnam in Andhra Pradesh were categorized into baseline strata.

3.1.1.2 Woody vegetation

The existence or non-existence of baseline woody vegetation was first assessed through participatory rural appraisal (PRA). The baseline surveys

indicated that woody vegetation on land parcels either lacking or insignificant as lands had been under subsistence agriculture for a long time. The surveys also indicated that there were no significant differences in the pre-existing vegetation of land parcels in the two clusters of Orissa and Andhra Pradesh.

3.1.1.3 Non-woody vegetation

Considering that lands had been under agricultural use, no shrub vegetation was observed during field surveys. The surveys indicated only small quantities of grass and herbaceous vegetation. As per UNFCCC guidelines, GHG emissions from the removal of herbaceous vegetation were insignificant and could be neglected for the A/R CDM project activities. Therefore, the carbon stock changes in non-woody vegetation were considered insignificant.

Secondary data:

The secondary data was obtained from the local land revenue administration and other district level offices.

3.2 Project Boundary

Demarcation:

The project boundary includes all discrete parcels of lands owned by different farmers in the blocks/ mandals (an administrative block) in the six districts (Project area). Each of these parcels of land was identified using Geographical positioning System (GPS). The GPS coordinates reflect the delineation of land parcels on the ground. Additionally, each parcel of land was also identified using official documents and maps of the Land Administration/Revenue Department.

3.3 Farmers' involvement:

The farmers were responsible for planting of saplings, nurturing the trees and harvesting them and they had entered into a tripartite agreement with VCCSL & JKPL (Unit: JKPM) for



Farmers attending training programme on Plantation raising at Agro Economic Research Centre (AERC), Jaykaypur



Farmers on Exposure visit to Casuarina Plantation in AP

developing the CDM project. The farmers (around 80%) were from small and marginal farmers not possessing more than two hectares of land.

Training and guidelines were given to the field staff of JKPL & VCCSL team regarding organizing farmers for taking up plantation. The communication was mainly in the local language Oriya in case of Orissa area and Telugu in case of Andhra Pradesh. A good number of training programmes and exposure visits were held at village, Block and district level.

3.3.1 Documentation of the farmers:

Documentation is most important for such a Project and consisted of identity proof of the farmers along with copies of the land "Patta". Documentation for such a large number of farmers was extremely cumbersome and consumes a lot of time since, one has to convince them of the need and satisfy their apprehensions. The issue of joint *Pattas* and ancestral land created further problems in establishing ownership.

3.4 Issues of agricultural management

JKPM (Company) provided quality planting material to the farmers (1590 nos) spread across 6 districts, 3 in Orissa and 3 in Andhra Pradesh. The activity of agricultural management like planting, maintenance of planting & harvesting of plantation generates employment opportunities to the local people.

3.5 Monitoring Plan:

3.5.1 Monitoring of the baseline net GHG removals

The baseline carbon stock changes need not be monitored because the accepted baseline approach assumes continuation of existing changes in carbon pools within the project boundary from the time of project validation.

3.5.2 Monitoring of the proposed A/R CDM project activity



Planting of Eucalyptus clones in farmer's field at Rayagada, Orissa

3.5.2.1 Monitoring of the forest establishment

Information on the following were collected and archived in the project database:

- Site preparation, planting month, location, area and species planted.
- Area planted by year in each stratum was confirmed through field survey.
- Species composition and characteristics of planted species as well as pre-existing vegetation were recorded after survey.

3.5.2.2 Monitoring of the forest management

- Species-wise silvicultural management such as harvesting, coppicing, replanting and other operations that influence the GHG removals by sinks are being monitored and the information recorded in the project database.
- Occurrence of natural fires or other natural or human induced disturbances and the area and the biomass affected recorded and reported.

3.5.3 Stratification & Sampling of Project area

3.5.3.1 Stratification

Post stratification was conducted to address the possible changes of project boundary and planting scheme in comparison to the outline of the project design. The combination of three categories (*Eucalyptus* clonal, *Eucalyptus* seedroute, and *Casuarina* plantations) and two regions (Orissa & Andhra Pradesh) resulted in identification of five project strata.

3.5.3.2 Sampling in Project Area:

In the project, the number of sample plots was estimated using a level of precision of 10% and a confidence interval of 95%. The number of sample plots estimated using the 10% precision was seventy seven. An additional 30% plots have been taken to ensure against loss of any sample plots due to

harvesting during the monitoring period. Therefore, one hundred sample plots have been taken in the monitoring plan.

3.5.4 Monitoring GHG emissions by sources as the results of the A/R CDM project :

There were no GHG emissions associated with the implementation of the project as there was no biomass burning involved in the site preparation and site preparation and planting activities were carried out using manual methods. Therefore, project emissions have been considered as zero. The monitoring will cover natural fires. In cases of fire, the area and volume affected has to be assessed and emissions associated with the biomass burning from fire to be calculated and accounted as part of actual net GHG removals by sinks.

3.5.5 Monitoring the leakage due to Displacement of grazing & Fuel wood leakage:

The project is not affected by leakage due to grazing as there is no displacement of the grazing animal population in the Project area from the baseline population based on the Livestock Census conducted by Govt. of India in the six project districts. As the project produces more fuel-wood from lops & tops of plantation in comparison to the baseline, therefore, there was also no risk of fuel-wood leakage. As there no leakage from the project is anticipated, no monitoring of leakage has been implemented.

4. Main Problems of JKPL (Unit-JKPM) in Implementation of the Project:

4.1 Proving land eligibility:

Proving of land eligibility i.e that the particular land was not covered under forest as on December 1989, was proving difficult due to lack of relevant data in the public domain. PRA (Participatory Rural Appraisal) was conducted in village level in the six districts to prove land eligibility.

4.2 Demarcation of plot boundaries:

Demarcation of the plots was proving to be difficult due to their scattered nature - 1708 parcels of land spread across 6 districts in Orissa and Andhra Pradesh. The method had to be fast as well as reliable, this was overcome through use of technology using Global Positioning System (GPS). Staff had to be specifically trained to take readings using GPS meters. Apart from that the methodology required all the plots to be mapped using Geographical

Information system (GIS) which was done by engaging consultants.

4.3 Proving of Additionality:

This was the biggest hurdle, as wood based Paper industry is already promoting plantations through farmers and this case could be considered as a "As usual scenario". The additionality in case of JKPM was proved by inclusion of mainly small and marginal farmers with the argument that without the carbon revenue it would not be viable for the farmers to go for plantation and the lands would continue to remain fallow or only support subsistence agriculture.

4.4 Continuous Monitoring:

A project of this scale requires continuous monitoring to get the required information of growth parameters - height & girth of trees of the sample plots, continuous monitoring of all plots relating to harvesting, coppicing, replanting, etc. For this a trained and dedicated team has been engaged to get all information to comply with the stringent requirements of UNFCCC standards.

5. Conclusion:

JKPL has been pursuing this project since 2004 with some 1600 farmers in some of the most backward districts in Orissa and Andhra Pradesh. The effort of JK Paper Limited is noteworthy because linking of small & marginal farmers to the global carbon markets through this project had never been attempted. Apart from the direct benefits to the farmers the project will also bring several environmental benefits such as preventing soil erosion and protecting vital water resources through sustainable land management practices which otherwise would not have taken place. The project can serve as a model for other industry going for CDM A/R project in LULUCF category to reduce GHGs through forestry thus involving local farming community working for mutual benefit and while ensuring environmental benefits.

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