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Methodological issues under the Kyoto Protocol

Implications of possible changes to the limit for small-scale afforestation and reforestation clean development mechanism project activities

Views on the implications of possible changes to the limit established for small-scale afforestation and reforestation clean development mechanism project activities under decision 6/CMP.1

Submissions from Parties and intergovernmental organizations

Addendum

1. In addition to the three submissions contained in document FCCC/SBSTA/2007/MISC.19, two further submissions have been received.
2. In accordance with the procedure for miscellaneous documents, these submissions are attached and reproduced* in the language in which they were received and without formal editing.

* This submission has been electronically imported in order to make them available on electronic systems, including the World Wide Web. The secretariat has made every effort to ensure the correct reproduction of the texts as submitted.

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PAPER NO. 1: BOLIVIA

SUBMISSION BY BOLIVIA

Implications of possible changes to the limit for small-scale AR Clean Development Mechanism project activities

MANDATE

The 26th session of SBSTA agreed to invite Parties to submit their views to the secretariat on the possible change to the limit of 8 kilotons CO₂ per year for small scale AR-CDM projects, with a maximum of 40 kilotons CO₂ per verification period, considering national experiences, and including the following issues:

- a) Social effects;
- b) Economic effects and;
- c) Environmental effects, including estimation of leakage.

The CDM SC-AR was designed to be an incentive for poor people to engage in AR activities with a perspective to improve their livelihoods and at the same time to provide a service to the atmosphere by sequestering carbon.

Bolivia thinks that if the objective for which this mechanism was created is not being fulfilled there is the need to change the rules while maintaining the environmental integrity of the KP.

CDM-AR projects in Bolivia

There are no Bolivian AR-CDM projects registered but there is a group of 7 initiatives in different stages of design in the DNAs CDM project portfolio.

The only Small Scale AR CDM in DNAs pipeline is an initiative for a portfolio of 15 Small Scale Activities in the Bolivian tropics with small landowners.¹

Most of the figures and examples given in this submission are based on these projects.

An analysis was made to determine the barriers for these types of projects in order to understand what kind of incentive the CDM SC-AR is with the present rules in the context of Bolivia.

National requirements

For the implementation of a small scale CDM AR project, it is important to consider, that all projects should comply with the environmental, social and economic sustainability criteria set up by the DNA.

¹ CARBON SEQUESTRATION THROUGH REFORESTATION IN THE BOLIVIAN TROPICS BY SMALLHOLDERS

Eligibility

Eligible areas are those areas without forest before the 31st of December 1989. A forest is defined as a surface of minimal 0,5 ha, crown cover over 30% and trees height should be able to grow over 4 meters.

Barriers for non CO2 reforestation projects by low income communities in Bolivia

The main barriers detected for this type of projects are:

- *Financial access is a barrier, due to the fact that land or plantations can not be used as collateral for a Bank loan.*
- *There are no economic incentives for AR activities from the side of the government*
- *There is a preference for short term investments and reforestation projects require long term investments, and have long repayment periods*
- *There is very low tradition in Bolivia to invest in plantations, therefore no local knowledge has been developed in this area.*

There is a high risk of shortage of cash flow during different stages of the project since, not only there is a lack of funds for the investment phase but basically it is very difficult to maintain a continued cash flow capacity. Low income communities will prefer short term income generation activities due to their very low capacity of saving for future expenses.

Examples show that even in those cases where the establishment phase was financed by ODA projects, the management of plantations failed in later years due to financing constraints and capacity deficits, as a consequence, plantations got lost.

Therefore the availability of funding during the whole period of a reforestation project is a crucial condition for the implementation of this kind of activities.

The incentive that the SC AR-CDM could bring might cover the financing need during the entire project period, but especially during the first most delicate stage of a plantation guaranteeing the appropriate implementation and management of the plantations.

Therefore a financing scheme needs to be developed for the entire project period, especially during the first most delicate stage of a plantation. It is generally hard to find this financing, since forestry projects will generate normally revenues only after a long time and most costs, guaranteeing the appropriate implementation and management of the plantations, will be made during the first period of the project. Therefore it is extremely important to find possibilities to generate revenues in the first period of a plantation, when there are no other revenues. Since biomass increment is high in the first period revenues from CDM-AR might be a very interesting option to generate these revenues and provide the necessary incentives to guarantee a sustainable reforestation project.

This document will try to determine if the actual size of SC AR-CDM is providing this incentive and if the change in the limit could improve the situation in the context of Bolivia.

Low Income communities' characteristics

A study done by Berger, 2006², showed that small farmers hardly will enter into (re)forestation projects because other land use types respond better to the direct socio-economic needs than tree planting activities. A livelihood needs analysis showed a list of important requirements which should be met at least partly by alternative land uses:

For farmer families the following characteristics and requirements for land use are considered important:

1. Income within a relatively short period
2. Possibility to have direct access to capital in case of emergencies.
3. Investments should generate an increase value of their land.
4. Markets for products should be visible; farmers are more willing to invest if clear markets exist for their products.
5. Access to markets should be relatively easy, preferable access should be possible on an individual basis, without intervention of many intermediary stakeholders (middleman, community or producers organizations, etc.).
6. Handling of products should be relatively easy.
7. Constant and secure markets are preferred over insecurity in markets.
8. Labor demand, and peaks in labor demand should be well related to labor supply,
9. Relatively simple land use methods are preferred above more complex land use methods.
10. Low input investment is preferred above a high input investment due to the lack of capital
11. Net benefits determined by a comprehensive cost-benefit analysis

Without a clear incentive it is not very likely that low income communities and small land holders will implement plantations by themselves and do the continued management over the years, due to the following:

- Agroforestry activities cannot compete in terms of points 5,6,7,8,9,10 compared with traditional land use systems.
- Silvopastoral systems cannot compete in terms of points 8,9,10 compared with traditional land use systems.
- Commercial forestry plantations cannot compete in terms of points 1,2,5,8,9,10 compared with traditional land use systems.

An incentive for reforestation activities should be focused on tackling some of these barriers.

Revenues from LCERs or TCERS can be used to tackle these barriers. But the question is: are the revenues from the sale of CERs enough to remove some of these barriers? or in other words: will Small Scale CDM AR result in more reforestation activities?

² Berger D.,Stilma A.A. 2006. *Estudio de Prefactibilidad, Captura de carbono y apoyo a la conservación a través del manejo sostenible de recursos forestales en la zona de amortiguamiento del PNANMI Madidi y de la RBTCO Pilón Lajas*. CETEFOR/PRISA/DED. Cochabamba.

Feasibility of small scale AR CDM projects under the actual regulations

CER-production

An example is given of pure plantations in the Bolivian lowlands is given, areas which are among the areas with the highest potential for reforestation in the country. It was estimated that the optimum size of a project in this case should be 420 has in case that a stream of tCERs is sold.

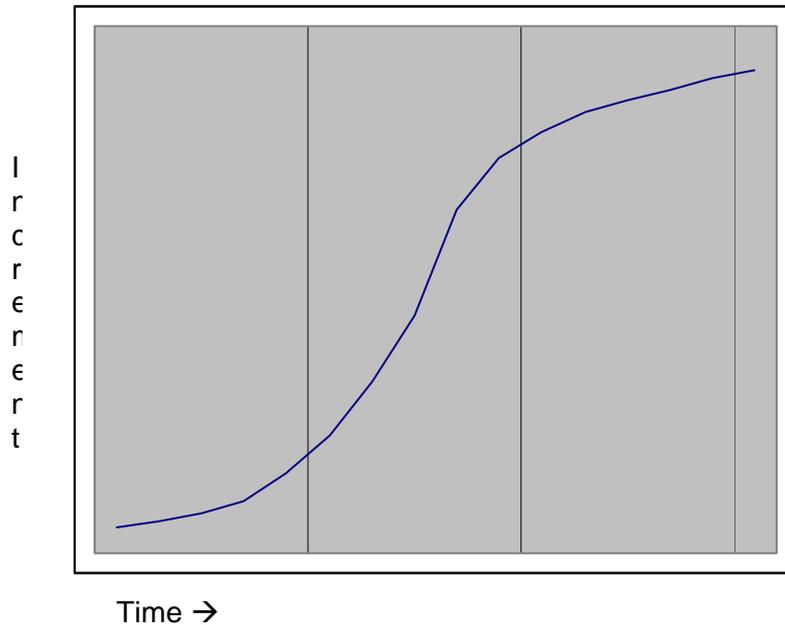
Table 1.- tCERs produced in an optimum project size

| Year | Produced t CERs | SSC limit CERs |
|------|-----------------|----------------|
| 2012 | 28.867 | 40.000 |
| 2017 | 79.138 | 80.000 |
| 2022 | 102.154 | 120.000 |
| 2027 | 111.602 | 160.000 |
| 2032 | 0 | 200.000 |

Source: Own

As shown in the above table, in the first verification period an amount of tCERs far below the threshold is sold, due to a higher production of forest plantations in the second verification period and avoiding passing the limit in later periods. Since most tree plantations have a growth curve as shown below, thus not in all verification periods the same amount of tCERs can be sold, the amount of tCERs sold per period is generally less than 40.000 tCO₂e

Typical growth for trees in plantations during three verification periods



Source: own

Financial analysis

Transaction costs:

Total CDM transaction costs for a project in Bolivia are estimated to be 108.333 USD in the development phase and afterwards 44.643 USD every five years.

Estimated revenues from the sale of CERs are based on the sale of a stream of tCERs as shown in table 1.

Actual market prices for a stream of tCERs are in between 3,50 USD and 4,75 USD³. A discount rate of 12% was taken, which is a normally used discount rate for forestry projects in Bolivia and includes a projected inflation of 5%. It is important to take into consideration that the social discount rate could have been considered in the case of poor communities and this should be higher than 12% because they are producing at subsistence margin.

Table 2. Costs Benefit Analysis

| Cost/benefit analysis considering a price of \$us 3,50/tCO ₂ for a stream of tCERs | | | | |
|---|---------|---------|---------|---------|
| Discount rate 12% | 2012 | 2017 | 2022 | 2027 |
| Present Value of Carbon Costs | 126.847 | 148.111 | 157.160 | 161.443 |
| Present Value of Carbon Revenues | 69.490 | 138.123 | 155.957 | 160.111 |
| NPV | -57.357 | -9.987 | -1.204 | -1.333 |
| NPV/ha | -136,56 | -23,78 | -2,87 | -3,17 |

Source. Own

As shown in table 2, the NPV is negative during the whole project-period for a threshold of 8.000tCO₂/year

Break even point for small scale CDM AR projects

It was calculated that a break even point for small scale CDM AR projects can be reached if the threshold will be raised to an average of 24000tn CO₂e/year. However this situation will not generate any incentive yet for the implementation of the project.

Raising the limit to 48.000 ton CO₂e/year

It is proposed to raise the limit to an average of 48.000tn CO₂e per year. Transaction costs will increase in less proportion to the income, compared with projects with a threshold of 8.000tn CO₂e. Preparation costs are estimated at 115.476 \$us and afterwards carbon costs are 56.548 \$us every 5 years.

Results of a cost benefit analysis considering a price of \$us 3,50 and a discount rate of 12% are shown in the table below.

³The World Bank is paying between 3,50 and 4,75 USD for a stream of tCER's

Table 3.- Cost Benefit analysis

Cost Benefit analysis considering a threshold of 48000 tCO₂e, discount rate of 12% and a price per tCO₂e of \$us 3,50

| Discount rate 12% | 2012 | 2017 | 2022 | 2027 |
|--|---------|---------|---------|---------|
| Present Value of Carbon Costs | 172.571 | 230.441 | 249.940 | 257.376 |
| Present value of Carbon revenues (CERs) | 307.219 | 610.705 | 689.548 | 708.884 |
| NPV | 134.648 | 380.264 | 439.607 | 451.508 |
| NPV /ha | 80,15 | 226,35 | 261,67 | 268,75 |

Source: Own

As shown in table 3, during the whole project cycle the NPV is positive, however for the first commitment period it is still low with \$us 80,15 and is hardly an incentive for small holders and communities to invest in reforestation projects. However for project developers it might be an interesting incentive, considering that it covers almost 10% of the total costs of reforestation⁴ during the first five years.

It is not expected, that transaction costs will lower very much in the future, since specialized consultants and accredited DOE 's have to be contracted for this process.

Social effects

A SC-CDM-AR project generates skilled and unskilled labor. In the example of the project developed for the Bolivian lowlands, labor demand for land units, where trees will be planted is at present, very low. These lowlands have a marginal economic value.

Tree plantation generates the following amount of unskilled labor.

Table 4.- Labor Demand with 8000tCO₂/year

Labor demand/men days/ha for a project generating 8000tCO₂/year

| Year | days/ha/year |
|---------------|--------------|
| 1 | 63 |
| 2 | 26 |
| 3 | 20 |
| 4 | 20 |
| 5 and further | 17 |

Source: own

Table 5.- Labor Demand with 48000tCO₂/year

Labor demand for a project generating 48.000tCO₂e/year (2520ha)

| Year | Men days/ha/year |
|---------------|------------------|
| 1 | 662 |
| 2 | 273 |
| 3 | 210 |
| 4 | 210 |
| 5 and further | 179 |

Source: own

⁴ Present Value of total direct establishment cost for a tree plantation were estimated on 445 \$us per ha and a similar amount for the maintenance costs during the first 5 years, given a total cost of 890 \$us/ha for the first five years, applying a discount rate of 12%

On the other hand projects will develop capacity building activities in the forestry sector at a community level with the purpose of strengthening of the farmers organizations this will increase the sustainability of the project, but will also be useful in other community activities.

Economic

More feasible projects will lead to a higher labor demand in the area, for skilled and unskilled employment which will benefit the local economy. On the other hand for forest plantation, the Internal Rate of Return was calculated in between 8% to 12%, including the opportunity cost for labor of the small holders. Although this is a benefit for the long run this is significantly more than the actual land uses, in which studies show income is marginal and not even always covers the labor input of the landowner. Although returns on forest plantations are expected on the long run, which is a barrier for most small holders, the sale of CERs can provide some money on the short run which can lower this barrier.

Environmental effects

All small scale CDM AR projects have to comply with the sustainability criteria established, as well as the environmental impact assessment required by law in Bolivia. This will reduce the negative environmental impacts of the projects, whatever its scale. On the other hand most projects will be established on marginal lands, which are in a process of degradation. It was found that reforestation projects on these lands are changing poor degrading vegetation into vegetation with higher biomass and generally a higher biodiversity. Increasing the feasibility of the projects will lead to more reforestation activities and therefore will increase the mentioned environmental benefits.

Leakage

However modalities handling leakage in SS AR CDM projects are simplified, it should be monitored anyway since leakage might not pass certain threshold values. Leakage is counted on a per hectare base, leakage per hectare will not change. The relative amount of leakage within the projects will be the same. Maintaining the monitoring system on leakage gives enough certainty leakage will be kept within the established margins.

Conclusions

With the actual threshold of 8.000t CO₂e/year, small scale CDM AR projects are not providing an incentive.

Considering a price of 3,50 per CO₂e the break even point for a small scales AR CDM project is reached using a threshold of 24.000t CO₂e/year. This amount is needed, just to cover the transaction costs of a small scale CDM AR project for the first commitment period.

Feasibility will increase if the threshold of 8.000tn can be raised to 48.000tCo₂e/year, but even in that case it should be clear the sale of CERs will only finance a small part of total costs of a plantation but in this case revenues out of the sale of CERs can be used as an incentive for AR projects to be developed by poor communities in Bolivia.

Colombian Submission on “Implications of a possible change to the limit established under decision 5/CMP.1 for small scale A/R project activities, including the following issues: social, economic and environmental effects”

Background

In SBSTA25, there was a request by Colombia, supported by several parties, for the COP/MOP to call for views on the implications of changing the limit of 8 ktons/year for small scale A/R CDM project activities.

In response to that call for views, the Secretariat received and published eight submissions by thirty-nine Parties (including Latin American, Asian and African nations and the EU) and the World Bank.

Thirteen of those countries and the World Bank supported the increase in the small scale limit of tones for A/R CDM projects. The EU and Japan requested further analysis.

During SBSTA 26, discussion continued, with significant attention by Parties. At that session, Secretary De Boer indicated that:

“Parties will for the first time during this session consider submissions on the issue of possibly changing the limits for small scale AR project activities, which may have important implications for the number and regional distribution of these project activities. Noting that currently no small scale and only one large scale AR project activity has been registered under the CDM to date, it may also be important to further explore the existence of other barriers faced by such project activities, and possibly propose ways to address them for the land use sector.”

Nine parties stated their support for increasing the limit during this session, including nations from Africa, Latin America and Asia. Two countries (one Latin-American and one Asian) objected this proposal due to lack of evidence.

In conclusion, SBSTA agreed to “undertake a further analytical assessment, based on inter alia; national experiences, of the implications of a possible change to the limit established under decisions 5/CMP.1 for small scale A/R project activities, including the following issues: a) social effects; b) economic effects; and c) environmental effects, including estimation of leakage.

Views from Colombia

In our experience, small scale A/R projects where the only hope for low-income communities to participate and benefit from A/R CDM project activities and support sustainable development objectives.

In reality, with the 8 kton limit, and the current tCER or ICER price range, these projects are not economically viable. We have had two experiences come to our attention, in which indigenous and peasant communities tried to develop small scale A/R projects, but after reviewing the costs of designing and implementing the project and comparing them to the potential revenue from the sale of the 8 kton/year of carbon capture, they have to desist from their initial project proposal. They have had to re-design their projects to include more than double the land and search for partners outside their communities to implement the new project. In one case, this even compromised the integrity and viability of the project and delayed its structuring significantly.

The smaller full-scale projects in our national A/R CDM portfolio, have expressed to our DNA, that there would be the following implications to the change in the small scale A/R CDM projects:

a) social effects

The poorest communities generally do not have the capacity to develop CDM projects; they would normally have costs such as hiring consultants or project developers in addition to the transaction costs. If they had the opportunity of implementing a small scale project, with its economic benefits, their life quality would probably improve and they could include more families in the project in order to extend project benefits such as; diversification of production, improvement of soil quality, improvement of food security, protection of water sources and employment.

Projects of this nature link communities bringing about integration, organization, education, technology transfer and capacity building. Improving the viability of the mentioned projects would bring these benefits to more communities in the country.

b) economic effects

Without a doubt, if projects can be larger, and/or capture more carbon for sale, and at the same time retain their economic benefits, the net income for the communities would be greater. This income could go to satisfy their basic needs such as

infrastructure, health, drinking water, sanitary systems, food security and education.

c) environmental effects, including estimation of leakage

Colombia is of the view that: with an increase in carbon capture per project, and the viability of previously unviable projects, there will evidently be an increase in sinks and therefore an increased contribution to the main objective of the UNFCCC.

The viability of more A/R CDM small scale projects will locally; improve degraded soils, have a positive impact on local biodiversity, and help release pressure on natural forests, in addition to allowing small communities to benefit from these projects.

In terms of leakage, larger small scale projects may or may not have an impact on leakage potential. Projects should review their potential for leakage. In this regard, a separate module to account for leakage could be designed by the AR working group when detected.

Conclusions

Colombia believes that as stated in our previous submission, small scale A/R projects should have a limit of no less than 32 kton CO₂e per year. We are sure that this adjustment would contribute to make A/R CDM projects a real possibility for low-income communities and aid in improving the equitable distribution of CDM projects.

The benefits of such decision are clear, as stated above, while the possible barriers can be addressed from a methodological standpoint.
