

Definition of Forests under the Kyoto Protocol: Choosing Appropriate Values for Crown Cover, Area and Tree Height for India

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By the Decision 11/CP.7 of the Marrakesh Accord the following definitions of forests, afforestation and reforestation were adopted (UNFCCC, 2002), which were later extended to land use, land-use change and forestry activities carried out under the Clean Development Mechanism (CDM) of the Kyoto Protocol by Decision 19/CP.9 adopted at Milan (UNFCCC, 2004).

(a) “Forest” is a minimum area of land of 0.05-1.0 hectares with tree crown cover (or equivalent stocking level) of more than 10-30 per cent with trees with the potential to reach a minimum height of 2-5 meters at maturity *in situ*. A forest may consist either of closed forest formations where trees of various storeys and undergrowth cover a high proportion of the ground or open forest. Young natural stands and all plantations which have yet to reach a crown density of 10-30 per cent or tree height of 2-5 meters are included under forest, as are areas normally forming part of the forest area which are temporarily un-stocked as a result of human intervention such as harvesting or natural causes but which are expected to revert to forest.

(b) “Afforestation” is the direct human-induced conversion of land that has not been forested for a period of at least 50 years to forested land through planting, seeding and/or the human-induced promotion of natural seed sources.

(c) “Reforestation” is the direct human-induced conversion of non-forested land to forested land through planting, seeding and/or the human-induced promotion of natural seed sources, on land that was forested but that has been converted to non-forested land. For the first commitment period, reforestation activities will be limited to reforestation occurring on those lands that did not contain forest on 31 December 1989.

The Decision 19/CP.9 of the Conference of Parties held at Milan also requires that a non-Annex 1 country may host an afforestation or reforestation activity under the CDM only after it has selected and reported a single minimum tree crown cover value between 10 and 30 per cent, a single minimum land area value between 0.05 and 1 hectare and a single minimum tree height value between 2 and 5 meters. The selected values shall be fixed for all CDM afforestation and reforestation (A&R) project activities registered prior to the end of the first commitment period (UNFCCC, 2004). India has so far not selected these values and can become eligible to host CDM projects only after she does so. This note examines the issue for the purpose of making appropriate choices for these values.

For Annex 1 countries making a similar choice under Decision 11/CP.7, the choice of values within the prescribed ranges given in this definition of forest should normally be the values already adopted and reported historically to the FAO in the past (UNFCCC, 2002) But this proviso does not apply to the non-Annex 1 Parties that may make their choices based on the priorities that a nation sets for itself in focusing the flow of funds under CDM to specific activities. In the case of India, being a non-Annex 1 country, only A&R are eligible activities under CDM that can earn carbon credits for meeting Kyoto targets of the Annex 1 country party that invest in such activities. “Afforestation” is conversion of land, which has not been a “forest” for at least 50 years, to a “forest” as defined above. And “reforestation” is raising “forest” on lands not being a “forest” since 31.12.1989. Thus, this definition of forests is crucial both in selection of sites for CDM (the land chosen should not have been a “forest” for the requisite length of time) as well as in creating the end product (which should be a “forests” as defined above) for the carbon sequestered in the process to qualify as carbon credits.

Examining first the crucial cover density, if we adopt the lower mark of 10% crown cover as the chosen density then no open forests as on 31.12.89 in the country, with their crown densities ranging from

10% to 40%, could be taken up for reforestation because all these lands would be seen as forest as on 31.12.89 and thus ineligible. This would cutoff all Joint Forest Management (JFM) areas, raised in degraded forests with existing densities of 10% and above, from inflow of funds from CDM. But, at the same time, this value would enable agro-forests raised with a mere 10% tree density to be also considered as creation of forest through afforestation and thus earn carbon credits for the farmers who want to earn extra income from growing a few trees with the agriculture crops as their main stay. This would enhance the attractiveness of agro forestry for the CDM investors.

On the other hand if we take the higher range of 30% cover as the defining value than all open forests in the country that had less than 30% cover on 31.12.89 would be eligible for reforestation and JFM activities in these degraded forests leading to reforestation would be eligible for CDM inflows. But such a higher range may not help agro-forestry as the farmers would have to create a tree crown density of more than 30% on their agriculture lands for the end result to be accepted as a forest and thereby earn carbon credits. This may not work with many agricultural crops that are less shade tolerant and intercropping may not be an option available to the farmers unless they are willing to sacrifice heavily on their agricultural productivity. Only farmers who decide to convert their farmlands to tree cover alone would be able to benefit from CDM.

It is thus clear that the lower extreme value for crown cover works to the disadvantage of the JFM while enhancing the attractiveness of the agro forestry and the reverse is true in the case of the higher extreme. Since it would be desirable to neglect neither of these two major potential tree growers in India we would have to choose values that could support both even if to a lesser extent. The middle course thus suggests itself as a viable alternative. If we adopt a middle value, say minimum 20% tree crown cover, then the JFM projects over the worst degraded lands having cover ranging between 10% to 20% would be eligible for attracting CDM investments. And since, in reality, most of the degraded forest lands offered for JFM fall in this category anyway it would mean that most of the lands suitable for JFM would fall under the eligibility criteria and would be able to attract CDM investments. At the same time, farmers may not find it difficult to raise tree crown cover of 20% over their farmlands in order to qualify for CDM projects since most agricultural crops in India, when intercropped with trees, can tolerate this amount of shade without a serious drop in productivity.

Now, turning our attention to the minimum area requirement ranging from 0.05 ha to 1.0 ha, the lower values offer apparent advantage to both afforestation on farmlands and reforestation of degraded forests; in the former case by enabling the farmers to earn carbon credits by raising even small clusters of trees and, in the latter case, by enabling taking up of very small sized gap plantings in the large number of small sized gaps that one encounters in the degraded forests of India. But, considering that the transaction costs (incurred in project preparation, validation, monitoring, measurements, risk coverage, verification and contract etc) constitute a major part of the cost of production of carbon credits, and the fact that these costs per unit of carbon credits earned would be much higher for smaller sized areas, it would be clear that any advantage that the smaller sizes offer would not be able to cover the severe handicap of the associated higher transaction costs. Hence, in this case it would be best to adopt the highest value of 1 ha that would also make monitoring relatively low cost since satellite imageries offer resolutions of this size.

As regards the tree height, where the choice has to lie between 2 meters to 5 meters, many would tend to argue that in India, with large extents of deserts and arid lands that support stunted tree growth, the lowest permissible value of 2 meters would be best. But the disadvantage in choosing this value would be that even two meter high lantana bushes and other similar woody large sized weeds, that cover most of the forest and non-forest lands in India, would qualify as trees making the lands that support these weeds as 'forest' and thus making these areas ineligible for afforestation and reforestation under CDM. The minimum height chosen should thus be such that the major woody weeds in the country do not qualify as trees. From this point of view, the height of 3 meters appears most appropriate as few such weeds reach this height. At the same time, many tree species attain the height of 3 meters even in the deserts of India and, thus, this choice would not exclude large parts of India from the likely CDM inflows.

In conclusion, and for the reasons mentioned above, it is recommended that India may select the minimum crown cover value of 20%, minimum size of 1 ha and minimum tree height value of 3 meters as

the core defining values of forest under the Kyoto Protocol and report to the CDM Executive Board at the earliest to enable the country to host A&R projects under the CDM.