Key messages from the WOTROMEX research project in Jalisco

The WOTROMEX project is supported by the Netherlands Science for Global Development programme and has been carried out by CIGA-UNAM together with the University of Twente, Netherlands. Its aim is to consider the opportunities for REDD+ in Tropical Dry Forests (TDF), with a focus on community management. The case study area is the Ayuquila Basin in western Jalisco, which is an REDD+ Early Action Area under the Mexican national REDD+ strategy. Some of the main findings are presented below.

1. In Mexico as a whole, tropical dry forests are being deforested faster than other types of forest

Between 2007 and 2011, average loss of area of TDF in Mexico was about 0.33% per year, compared to 0.2% per year for all forest types.

The primary cause of the loss of TDF forest in the study area in Jalisco was conversion to improved grass lands (seeded pastures) and scrublands (unseeded grazing areas). A much smaller proportion was converted to agriculture (shifting or permanent). Recuperation was mainly from scrubland. The largest pool of carbon in the TDF in the study area is in the soil (including both soil organic carbon and mineral carbon). In both absolute and relative terms there is more soil carbon per ha in areas under shifting cultivation and under fallow following shifting cultivation, than in old growth forests. Soil carbon forms between 64% of the total carbon in old growth forests and 88% in the fallow areas. However, the soil carbon in areas which have been opened for permanent agriculture are less than half those under shifting cultivation.

2. Well-enforced command and control mechanisms and greater inter-sectoral coherence, not direct payments, may be the best solutions in the long run to reducing deforestation

Although it is possible to establish that some geographical areas are more at threat from deforestation than others, it is very difficult to identify exactly who is going to deforest in a given period of time. This means that payments for ‘not deforesting’ would have to be given to far more forest owners than would, in reality, have deforested. Given also the relatively high opportunity costs of deforestation, this would result in low cost efficiency. Moreover, any such payments would likely result in leakage, as demand for pasture or agricultural land would simply shift to other locations.

Although PES may be part of the solution under REDD+, it does not address the causes of deforestation. Given the relatively high opportunity costs of deforestation, well-enforced
command and control mechanisms may be a long run solution to reducing it. Dealing with the lack of coherence between agricultural policies (which often promote clearance) and environmental policies (which aim to reduce deforestation) at the local level and at the national and regional level would be a major step forward, but sectoral autonomy is a political reality and reaching agreement between institutions may be a challenge.

3. Gross degradation in the tropical dry forests of Mexico results in more emissions than deforestation

Tropical dry forests (TDF) are much more densely populated than humid forests in Mexico (as in the rest of the world) and local communities use them intensively, causing extensive degradation. As a result, the average above ground carbon stock levels of TDF in Mexico are currently around 14.5 t C/ha (compared to an intact level of 40 to 60 t C/ha). There could be opportunities under REDD+ for reducing degradation emissions and increasing carbon sequestration in TDF, but these would need to involve local communities and be based on a good understanding of the underlying processes.

One third of the sampling plots of TDF in the national forest inventory showed losses of carbon stock between 2004–7 and 2009–13, resulting in gross emissions from degradation of 22Gg CO₂ per year. This is considerably more than the emissions due to deforestation (around 3Gg CO₂ per year). On the other hand, two thirds of the sampling plots in TDF showed increases in carbon stock over the period, resulting in gross removals due to forest enhancement of around 40 GgCO₂ per year. The enhancements outweighed the emissions, with average standing stock in TDF increasing at a rate of 0.3 tC/ha/year between the periods 2004–7 and 2009–13, indicating that on average stocks are recovering, probably as a result of abandonment of agriculture and out-migration from rural areas. This indicates that gains and losses may be related through cyclical processes such as shifting cultivation or shifting pasture use. Interventions undertaken under REDD+ need to be based on a good understanding of these processes.

4. At present Mexico does not have a baseline (REL) for degradation or for forest enhancements so the state cannot claim performance-related rewards for these elements of REDD+

Mexico has proposed a national Reference Emission Level (REL) to the UNFCCC and has developed an Initiative for Reduced Emissions, with finance from FCPF. However the REL includes only emissions from deforestation and forest fires. This is mainly because there is insufficient historical data on changing carbon stocks within forests to estimate trends in degradation and forest enhancement. On a parallel track, there is an opening for activities that promote carbon removals through forest enhancement. These can be developed by forest owners as individual projects, and could be financed through sale of credits in national and international voluntary carbon markets, based on local monitoring of increasing stocks as a result of local management interventions.
Reduced degradation however remains out of the picture in terms of finance, even though it is possibly the greatest contributor to forest emissions. The difficulty is primarily related to lack of historical data, which is a problem worldwide, and the challenge is how to develop robust degradation baselines either at the local or the national level.

5. Reducing the shifting cultivation cycle from 10 years to six has not increased overall emissions

The shifting cultivation cycle in the study area has been reducing from 10 years to five or six years over the last 10 to 15 years. Contrary to popular opinion, this has not led to increased emissions because the driving force behind the change is not population increase (i.e. not pressure on the land) but a combination of public policy (subsidies which inadvertently encourage farmers to circulate their land more quickly) and the fact that clearing fallows requires much more labour if they are left from more than five years.

*With a downward relative trend in maize prices over the last decade, and given that labour is the constraining factor in traditional agriculture, farmers nowadays prefer short cycles (cutting mature fallow is very labour intensive). Since in this area there has not been an increase in numbers of farmers engaged in shifting cultivation, this shortening of fallows appears to have been accompanied by an increase in areas abandoned by agriculture, and these areas are increasing their carbon stocks. Biomass emissions per ton of maize produced in a shifting cultivation system are around 1.27 t C compared to 0.59 t C in permanent agriculture, but this does not take into account the much higher carbon inputs in permanent agriculture in the form of energy and agrochemicals.*

6. Cattle rearing is the primary cause of both degradation and deforestation in many areas of tropical dry forests

The rising price of beef compared to maize is an important driver of degradation and deforestation, and the availability of government subsidies stimulates increases in herd size. Deforestation is occurring as people convert their shifting cultivation plots to permanent pasture or create new privately owned pastures in what was once communally managed dry forest. In part this relates to outmigration, particularly of men, from the region.

*Cattle rearing requires less labour than shifting cultivation, and parcels of land are often rented out to cattle owners while the owners are away. In part this shift relates to changes in the law since 1992 which have allowed the privatization of resources that were earlier held and managed communally, although the proportion of land actually privatized is very small; but there are also extra-legal sales of land. Degradation is also occurring where people allow their cattle to grazing freely in forests that are still held communally. Extraction of timber is not thought to be a major cause of losses of stock as the number of large diameter trees with good timber properties is very limited in these degraded forests. The extraction of poles for fencing correlates with cattle density and may possibly be a contributory factor. The impact*
of firewood extraction varies: in many places it is supplied from the clearance of the milpa and thus does not result in further degradation.

7. Most deforestation and degradation is caused by richer members of the communities

Poor people are much less involved in deforestation and degradation than richer people, since they do not have much in the way of land or cattle resources. Moreover, our studies have shown that farmers with larger areas under shifting cultivation (i.e. richer farmers) generally also own cattle, and they earn (net) nearly five times as much per hectare from shifting cultivation activities and associated grazing, than smaller, poorer farmers. In addition, those with larger cattle herds benefit much more from communal forests than those with few or no cattle. Basing payments on opportunity costs would imply paying larger subsidies to the rich than to the poor, which clearly an unacceptable policy in Mexico and elsewhere.

Hence, although it is important that poorer and more vulnerable people are not harmed by REDD+, it is very difficult to explicitly target REDD+ to the poor in the way that some agencies and rural support groups are demanding. For this reason we support the current Mexican policy which aims to base REDD+ intervention on government investments in activities identified in sustainable territorial management plans at the community level. These plans should deal with the cross sectoral contradictions and aim to bring about greater coherence. Investments would reflect needs and opportunities to improve land management, not carbon performance as such. We also note that in Jalisco only around 30% of the forest is under community management. There is an urgent need to assess rates of deforestation and degradation in private properties.

8. There is a need for community monitoring to assess the impacts of REDD+ interventions in both carbon and social terms

It is very difficult to quantify degradation and forest enhancement using remote sensing. For this, ground level studies are needed and our studies have shown that with training, communities are well able to monitor biomass levels in their forests. Recording systems based on smartphones are possible and UVAs (drones) could be used in the future, managed by communities themselves. The more important question is, do they want to monitor, and what incentives could be offered to encourage this.

Further reading
Please see InfoBriefs on reddciga.blogspot.mx and reports and articles on http://redd.ciga.unam.mx/