

CDM and LULUCF: what's in it for women?

A note for the Gender and Climate Change Network

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At CoP9, many of the LULUCF issues of the Protocol were finally settled and a decision was made to allow certain forms of sinks – afforestation and reforestation projects – to be carried out under the CDM. The conditions set have been widely criticized by environmentalists, because they allow for forestry that is not environmentally friendly, in particular they leave the door wide open for destructive large-scale monoculture plantations, even for GM plants. Moreover, socio-economic and environmental impact assessments only have to be done if ‘significant negative impacts’ are expected, and there is little opportunity for stakeholder involvement.

While such criticisms are undoubtedly pressing, the question of what these LULUCF decisions mean in **gender** terms has hardly been addressed by anyone. This short note attempts to highlight the gender implications of current CDM policy, focusing particularly on the LULUCF sector. Although a primary purpose of CDM may be to reduce atmospheric carbon, for developing countries it is seen as a mechanism for sustainable development. In practice, to the extent that non-annex 1 countries welcome participation in the CDM, this is because it offers a much needed avenue for the acquisition of up to date technology, particularly energy technology, which has a number of (hopefully sustainable) environmental, economic and social benefits other than simply carbon reduction. The gender question that needs to be addressed here is, are the technologies that are likely to be promoted under CDM, and particularly under LULUCF projects under CDM, going to provide environmental, economic and social benefits that meet the particular needs of women?

In order to deal with this question, it is first necessary to work through a number of underlying issues, as follows:

- What kinds of energy technology do most women actually need and want?
- What have been the difficulties in the past in delivering these technologies?
- To what extent can CDM and its current LULUCF opportunities be used as a vehicle to overcome these difficulties and resolve women's energy problems?
- Why is CDM/LULUCF so limited in this respect and what are the prospects that it could be altered to be more accommodating, in the future?

Women's priorities regarding energy technologies

Electricity. For most women, particularly the majority of women who are poor and live in developing countries, CDM is a totally unknown concept, as is the need to reduce atmospheric carbon. However, there is no doubt that many women have an interest in energy technology. It is difficult to rank order women's list of energy priorities but many studies of development 'wishes' show that women, as well as men, have a strong desire for electric lighting to replace kerosene or candles as lighting, and to power appliances. This would in the first instance be within the home, where electricity would allow not only leisure activities (eg TV, reading in the evening) for all, but might make general housekeeping tasks easier (light in the cooking area, possibility for small food processing appliances, sewing machines, rice steamers etc). It could potentially open the way for many small enterprises for women in the area of food production and marketing and in other productive fields. In the public arena, electricity might have even more value to women. It has been suggested that street lighting makes moving about at night possible, and might open opportunities for women to participate in a variety of social and political activities including evening training programmes and community meetings (although this may reflect planners' wishful thinking more than women's own views). However, where electricity is available there are often central services for grain processing (rice husking, maize milling etc) which women clearly do value very highly (as demonstrated by the fact that women are willing to walk or take a bus to such facilities carrying their grain, rather than process it by hand at home). Electricity can also be a key factor in the provision of improved water supplies, which has regularly been shown to be very high on most women's list of priorities. It is therefore reasonable to suggest that provision of electricity is likely to be one of the main energy priorities of women. This needs to be seen in the context of the actual situation as regards access to electricity today. According to estimates based on earlier World Bank figures (World Bank, 1996) less than half the households in the developing world have access to electricity. This of course affects men, women and children.

How many households are electrified in developing countries?

According to a World Bank study, 52% of the urban population and 18% of the rural population of developing countries were connected to electricity in 1970 and this rose to 76% and 33% respectively by 1990. This mirrors figures from the HDR (passim) which say that the per capita consumption of kWh/annum increased over this period from 180 to 366. Although per capita consumption increased to 810 kWh by 2000, this has mainly been the result of large scale increases in urban uses (including factories and office A/C); expansion of the grid since 1990 has been limited. It is very difficult to give accurate figures, but given that urban population in developing countries has increased from 20-25% in 1970 to 40% in 2000, a rough estimate of total population in developing countries that has electricity today, is around 50%; but much lower in some countries and in rural areas of many others.

Sources: World Bank: Rural Energy Development: Improving Energy Supplies for 2 Billion People. Washington DC. World Bank; UN Human Development Report: various years

Cooking technologies. Far more than half of all households in developing countries use biomass fuels (wood, charcoal, dung or agro-wastes), for at least part of their domestic cooking since even electrified households do not usually use electricity for cooking, because of the cost. The biomass fuel sector, in fact constitutes 50-90% of the TOTAL energy used in the sub-Saharan countries. In rural areas of Africa close to 100% of women use biomass for cooking as do the poorer sections of the population in urban areas. In rural Asia and Latin America the figure is also very high. It is well documented that biomass fuels when used with traditional combustion technology have a highly deleterious effect on the users' health (inhalation of smoke, accidents with fires), and it is notably women who bear the brunt of this. Moreover in rural areas these fuels are usually gathered (at no cash cost, but with many hours labour), again often by women and children, which compounds the drudgery associated with these fuel systems (strained backs and necks from carrying firewood loads of up to 40kg). In urban areas biomass fuels are purchased from dealers who collect it in the forest areas surrounding the cities. The traditional domestic technologies used in connection with biomass fuels both in rural and in urban areas, are inefficient and inconvenient. It is widely assumed that women would prefer an alternative to biomass as the main cooking fuel, or at least to the traditional technologies, although women have actually rarely been asked their opinion on in a structured way. Their opinions on this have not been recorded in a systematic manner.

Why has there been so little spread of electricity and improved cooking technologies?

For the case of electricity there are clear economic factors which explain the current state of affairs. Not only the unit cost of electricity, but the cost of connection to the grid (or the capital costs of a stand-alone alternative such as a diesel generator or solar home system), place electricity out of reach of many. Moreover, during the 1990s there was a change in macro-economic policy under Structural Adjustment programmes, such that subsidies for the construction of public infrastructure were greatly cut back. The grid was simply not expanded into rural areas at the rate at which it had proceeded during the 1980s. At the same time tariff subsidies were reduced. There are alternatives to grid electricity (solar PV, micro-hydro) but these are not necessarily any cheaper, and where they have been successful they have been funded on a project basis rather than structurally, so they remain limited in their spread.

For the case of biomass cooking technology the situation is more complicated. Switching from biomass fuels to modern fuels apparently presents a major problem. As noted already, electricity, where it is available, is hardly used for cooking even by better off families because the cost per kWh is high. Gas is a much more economic cooking fuel (although there are high up-front costs for the equipment), and where it has been made available (for example in Senegal, and India) it has quickly been taken up in urban areas. However, it is simply not available in many rural areas, partly because of transport costs,

but also because in many countries there has been strong government regulation of this energy sector so that private distributors have been discouraged. A shortage of dealers, gas cylinders and filling stations is the result. As regards alternative technologies, biogas has made some headway in Nepal and India, but only among better off rural families who have the requisite number of cattle to feed the digester as well as the up-front cash for the construction (in Nepal there were generous subsidies and a well designed credit programme), and solar cookers have had a dismal record of lack of acceptance, with the possible exception of very simple, cheap models used in refugee camps. The case of kerosene as a cooking fuel is instructive here. Although it is difficult to generalize across all developing countries, kerosene is widely available even in remote rural areas and could be named the major lighting source of the developing world; it is still subsidized in many places. Cheap and relatively efficient kerosene stoves are available and are used in many urban areas as an alternative to charcoal braziers, and by better-off households in many rural areas, particularly for 'quick cooking' eg of tea in the morning. In most households however the main cooking activities using larger quantities of energy (grains, beans, meat) are done on biomass fuels. The conclusion can be drawn that although the convenience of kerosene as a cooking fuel is known to women, it is evidently considered relatively too expensive for such tasks, and that until really cheap supplies of gas are made available in rural areas, biomass fuel is likely to be the main fuel of choice for cooking. The option of moving up the first step on the so-called energy ladder is present, but is not utilized.

So if improvements are to be made, it would be sensible to make these within the biomass energy sector itself, both on the demand side (improved combustion devices) and on the supply side (better supply of fuel). However our experience in these two areas is rather discouraging. Stove programmes – popular under the Basic Needs Approach of the 1980s – were by no means all successful (particularly in rural areas and for firewood – charcoal stoves in the cities fared much better), and attempts to get villagers to plant woodlots for a better, sustainable supply of firewood went out like a damp squib; the costs, and opportunity costs, proved to be too high.

It can be argued that the reason for the lack of success of initiatives in the biomass sector relates to the fact that the fuels are obtained 'free', or at least at a highly subsidised rate, by most users. Subsidised not in the formal sense but in the environmental sense; they are taken from nature without paying the replacement cost (this is particularly true for biomass fuels culled from forests and sold in cities, with the result that large swathes of deforestation can be seen expanding around almost all cities in developing countries). If such fuels were to be taxed, and the revenue ploughed back into maintenance of the ecosystems that produce the fuel, not only would the environmental destruction be reduced, but the increased price of the fuel would generate more interest in fuel efficient combustion devices. This has already happened to some extent for the case of charcoal in Africa, the price of which rose rapidly in the 1980's as a result of increasing distances and transport costs. This was met with relatively rapid developments in improved charcoal stoves and their widespread marketing. If the price of firewood were to increase by three times, many more people would be interested in buying a more efficient stove, and more people would be interesting in designing, making and selling one. More

efficient stoves not only reduce the amount of biomass fuel needed to cook the meal, they are also proportionately (and sometimes more than proportionately) less polluting and less tiring to use (and to supply fuel for). However, in many rural areas, firewood can still be harvested sustainably, and even where this is not the case, the opportunity cost of (women's) labour in fetching it is evidently too low to kick start a demand for fuel saving stoves. No amount of well intentioned intervention by stove-promoting programmes can overcome this; the trigger would have to be an increase in the actual, money price of the fuel itself¹.

The biomass fuel sector suffers from the problem that the supply side is almost totally unregulated (and is difficult to regulate), and it could be argued that this is the primary energy problem in the developing world today. Supply is unrecorded; it is diffuse and is managed by a very large number of unregistered individuals. In some cities a small tax is placed on lorry loads of firewood or charcoal, and/or a charge is made for permits to cut the wood, but this is difficult to enforce and in any case very low; yet the commercial value of this essentially informal trade is enormous. For the case of Benin for example it is believed that the turnover in the urban woodfuels trade is equivalent to that of the electricity sector.

From an environmental economics point of view there is a strong case for raising the price of biomass fuels, at least in urban areas, to cover the 'real' (ie replacement) cost and to stimulate the market for improved, energy saving combustion devices. The social and political implications are however all negative. 'Artificially' raising the price of a basic need such as cooking fuel will bring about hardship in poor urban families who are already struggling from hand to mouth to survive, which is unacceptable both socially and politically. There are also institutional difficulties in implementing such measures. There is insufficient control over forest areas, particularly those that are nominally state property, and in rural areas customary rights to gather firewood at no cost have a high level of legitimacy. These are serious dilemmas which have hindered the development of a socially supportive and environmentally sound biomass fuel policy integrating control of the supply side with improvements in the demand side through improved technologies.

One recent development however deserves mention, and this concerns attempts, particularly in cities in West Africa (Niger, Burkina Faso, Mali, Senegal) under a variety of programmes such as the RPTES, to control the culling of firewood for the urban market. These work by allocating parcels of forest in the 'fuel catchment area' to rural communities, for management under a plan which ensures that the wood is harvested sustainably. Such programmes are heavily subsidised by donors at present; the costs are considerable but are not reflected in the price of the woodfuels, which still have to compete with woodfuels cut by commercial dealers from unmanaged forest areas in the rest of the catchment area. Producing woodfuels in this way is however very much cheaper than by using plantations or woodlots, which as mentioned was a strategy

¹ The difference in willingness to pay for stoves between India, where much of women's labour is perceived as having little cash value, and China, where women's employment outside the home means that time spent gather fuel is a cash opportunity cost, is instructive. D.Nathan (1997) Economic Factors in the Adoption of Improved Stoves. *Energia* 4.

experimented with in the 1980s in these countries. The areas under management are small patches in the overall supply area and until the whole supply area is brought under such control, it is clear that such subsidies will have to continue, and when the whole area is covered, the prices could be allowed to rise slowly to a 'rational' level, at the same time stimulating the market for energy saving stoves. A major benefit of the programme is that a large part of the financial benefit from the trade remains with the villagers who now manage the forest and sell the wood to the dealers and charcoal makers, apart from the obvious forest conservation gains. Moreover, this is an activity in which women are heavily involved, often in their own work groups or teams; the scheme provides a much welcomed additional income source (much of the work is in the dry season when agricultural work is less demanding). And although this kind of approach deals at the moment only with the city woodfuels supply, the spill over to rural fuel supply and technology may yet appear.

It can be argued that the primary problem as regards energy policy in the world today - taking into account the number of people concerned - is the lack of a sensible policy for controlling the supply of firewood and other biomass fuels in developing countries. It is, by chance - or perhaps not by chance- an energy problem that confronts women far more than men. There is no developing country which has yet systematically introduced a rational policy to deal with both the supply and the demand sides of this problem, although there is experience from a number of projects in several W African countries which are beginning to promote such a policy in a patchy way around the main cities.

Could the CDM in principle help to overcome these barriers?

The CDM mechanism is designed to reduce atmospheric carbon dioxide by reducing emission through renewable energy or conservation measures to reduce consumption, or by increasing sequestration rates, at sites in developing countries, mainly through finance from industrialized countries which have reduction quotas to meet. Such efforts have to be additional to any activities which would have been undertaken by the country in the normal course of events.

Thus if for example a developing country has planned to expand the grid to certain rural areas and supply it with thermally produced electricity, a project which substitutes solar or micro-hydro electricity could in principle qualify for CDM status. However, it is only the additional costs that will be funded, ie the difference between the cost of providing conventional grid electricity and the cost of using the renewable alternatives. If there are no concrete plans (with local finance) for grid expansion, a solar or micro-hydro alternative cannot expect to be approved as a CDM, and certainly not the entire costs. It will be evident from this that CDM does not offer a lifeline for the finance of rural electrification for the benefit of the unconnected half of the world population and for the women in particular.

As regards the biomass fuels and cooking technology: these fall under the category of LULUCF. The sinks side of the agreements (ie efforts to increase sequestration) has

been heavily disputed, since uptake of carbon by biomass affords only a temporary, and somewhat insecure, solution to the atmospheric carbon problem, although it is acknowledged that about one quarter of all the increase in free carbon dioxide derives from land use changes (essentially deforestation). For a number of reasons, but partly because of the underlying question about whether sequestration should be allowed at all as a carbon reduction strategy, the Conference of Parties decided that only two forms of sink would be allowed at least in the first commitment period (2008-12): afforestation and reforestation. Basically this means that the only projects which will qualify as CDMs are those where trees are grown in areas where there have been no trees before (at least since 1990); it excludes any sort of forest management which involves existing forest (for example, the kinds of efforts now being made in W.Africa as explained above). In other words, *avoided deforestation* cannot be claimed under CDM at present.

Forests under CDM are thus considered only as sinks, not as part of an energy system in which some savings of carbon might be made. In any case, while short rotation tree plantations could in theory supply fuel for urban areas (and still claim temporary carbon credits for the period in which the carbon was held in live form), previous experience has made it clear that this is likely to be an expensive way of producing for domestic cooking needs, even if the gain from the sales of the carbon credits offsets this somewhat. In any case it is unlikely to be able to compete with 'free' fuel gathered from the remaining unmanaged forest. Apart from this, the generally negative impacts of plantations need to be taken into account. They are generally large scale, mono-managed (for economic efficiency), tend towards monocultures, and alienate other uses. Some plantations may be planted on 'wasteland' (although there is ample argument that no land is totally waste; it all has a use somewhere in the rural economy), but in practice, to ensure reasonable carbon uptake rates, ie tree growth rates, better quality land will be taken. To protect the carbon absorption function, all threats (fire, illegal cutting, grazing) will be minimized by keeping unauthorized people out (even gathering of dead wood is prohibited). Such plantations have been rightly characterized as 'carbon cemeteries'. There are not even very many gains to be had in employment: after the planting phases, there will be need only for some guards (who are unlikely to be women).

CDM has closed the door on the one type of LULUCF solution that might begin to address the central energy problem for the majority of the population of the developing countries – systems that encourage local level management of forests to avoid further deforestation, to increase sequestration in existing forests, and to produce sustainable firewood supplies on a much increased scale. Of course, such initiatives need more than just finance from outside, such as could be offered via some CDM-like mechanism. They require first of all changes of local legislation to enable forest which is considered part of the national estate, to be devolved for local management. They also require changes in the way that supplies of woodfuels from such managed areas are controlled, monitored and taxed. But were CDM finance to be available, this would be a push in the right direction.

Turning to the demand side of the cooking fuel problem, it has been suggested by some that improved stoves, which by burning more efficiently will save on dwindling stocks of

biomass fuels, would be a good candidate for CDM finance. Alas, however this is not the case under the current regulation. Woodfuel is seen to be in principle renewable, therefore burning it is just part of a cycle. What is burned will be replaced by more trees, and the effect on atmospheric carbon will be neutral. The question of whether it is in fact being used in a *sustainable* manner, is not addressed. Improved stoves, are, in a word, not up for CDM finance. By this argument, replacement of wood burning stoves by for example gas or kerosene cannot qualify for CDM finance either, since they actually increase the amount of carbon in the atmosphere by switching users from 'carbon-neutral' wood to fossil fuels.

In all, one could say that the current policy as regards the LULUCF opportunities under CDM offer no opportunities at all for the improvement of cooking technology and fuel supplies. Poor rural women are not going to gain any benefits at all from CDM in these respects.

Why has CDM and its LULUCF policy been so limited in this aspect of energy?

In order to understand why certain policies were developed it is necessary to understand the positions of the various stakeholders who are involved in the policy making. These are of course quite complex, but a crude sketch can always be made to give the general picture.

The *official policy makers* are the national representatives at the meetings of the UNFCCC. As far as CDMs are concerned, they are aiming at carbon reduction (industrialized countries) and sustainable development (developing countries). Exactly what sustainable development means is unclear, in fact it is open to almost any interpretation, but improving the quality of life of poor women might certainly be among the objectives. To what extent this kind of objective is pushed, will depend on the mandate of the national representatives, since it is only one of very many interests to be pursued and represents only one of the many pressure groups to be responded to.

Investors in CDMs are in the short run national governments of the industrialized countries and in the long run, companies and industrial concerns. They are primarily concerned with obtaining the cheapest carbon available. This can be best obtained through large scale projects, in which the overheads are relatively low, such as improved power plants and energy conservation measures in large factories. Large scale implies that a considerable investment is in the hands of one organization, in one location, thus it is relatively easy to monitor and control. Large scale plantations are a good option, because they are also relatively easy to manage, and the capital costs may be even lower. Small scale, scattered projects, such as renewable energy for decentralized power, will not be such an attractive option because of the increased management uncertainties and higher overheads. Scattered community based forest management schemes even less.

Environmental lobbyists have in the past fought against the inclusion of any kind of sinks in the Kyoto Protocol, on the grounds that reduction of atmospheric carbon should

be tackled at source, ie cutting back on emissions from fossil fuels. However now that afforestation and reforestation are included, efforts have shifted to ensuring that these are environmental beneficial (not monocultures etc); there is currently an effort to develop sets of social and environmental criteria.

Professionals in the energy sector in developing countries may certainly welcome fuel switch (fe.g. from coal to gas) in power plants (there are many side benefits to such improved technology, including reliability, and reduced pollution), but often also speak of the need to build up the new and renewable energy sector, particularly for areas which are beyond the grid, and may well hope and push for CDM for funds to stimulate this. The technologies which they focus on in this regard are mostly electricity generating; solar PV, mini-hydro, and dendro thermal power plants. Few energy professionals are engaged with the biomass fuel problem or are concerned with the need to rationalize supply and demand sides of this sector.²

The government **forestry sector** in many developing countries is looking for budgetary support from CDMs to fight the tide of deforestation, which is thought to be caused primarily by the demand for crop and grazing land, but also, especially around cities, by the demand for woodfuels. Funds are needed both for reforesting areas that have been stripped, and for the management of forests that are degrading and being encroached upon. In a few countries it has been recognized that communities can do this more effectively than Forest Departments, but it is believed that funds are needed to provide incentives, particularly to finance the Forest Departments involvement (technical support and monitoring). Whether heavy involvement of professional staff is necessary, may be disputed³. By and large however, the attitudes of forest departments are still such that the use of forests for firewood and charcoal is frowned upon. Most Forest Departments have very little to do with energy planning activities which go on in other ministries and have little understanding of the economics of the woodfuel trade.

Women in developing countries are hardly represented as a lobby or interest group in their own right. So far, the only 'gender sensitive' elements of the whole Kyoto process has been a motion to include more women on the various committees that advise the negotiations.

It is evident from the above, admittedly crude analysis, that the immediate energy needs of a large part of the female population of the world are not in line with, or not reflected by, the interests of many of the powerful stakeholders who are engaged in formulating CDM policy.

² It is interesting that although biomass fuels make up from 50-90% of the entire energy consumption in the sub-Saharan countries, the proportion of pages devoted to them in national energy plans, and in staffing, is on the order of 1%.

³ Kerkhoff for example has argued strongly based on a study of a number of cases in the Sahel, that communities are perfectly capable of managing forests without much outside assistance. P. Kerkhoff (2000) Local Forest Management in the Sahel. London: SOS Sahel.

Conclusion

It may well be argued that solving women's energy needs is not the point of the CDM. Its primary object is, basically, reducing carbon dioxide levels in the atmosphere as cheaply as possible, while contributing to 'sustainable development' in developing countries. However, women's energy needs may be considered one aspect of sustainable development, and given that energy is central to the carbon dioxide question, and that biomass fuels for cooking are central to the energy problem in developing countries, the lack of focus on this is unacceptable. To argue that biomass fuels are carbon neutral is spurious. CDM needs to be reformulated to allow this major energy question to be addressed. There are many possibilities within a CDM-type of arrangement, particularly relating to management of forests and avoidance of deforestation, by which rationalization of the biomass fuels market could be tackled. This would result in increased sequestration and decreased consumption of wood and charcoal, and in carbon savings at competitive costs.

As regards women's (and other unconnected people's) needs for electricity, the problem is economic. Since finance is competitive, based on the investment cost per ton of carbon saved, current conditions suggest that there is little hope from CDM in this regard. The electricity demand per customer is low, and the cost of infrastructure is high and in general projects promoting renewable, carbon free technology cannot in any case be considered 'additional'. Women will have to look elsewhere for support for electricity supply, which in a civilized world would be considered as much as basic right as clean water, education and a roof over our heads.