

Bioenergy production on marginal and degraded land: the potential social impacts

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Summary

Biofuels have been put forward as an opportunity for small scale rural farmers to stimulate rural local economic development and this potential certainly exists, particularly given the extreme poverty found in these parts of the world. Africa and South America are particularly seen as continents with vast tracts of “underutilised land”. But there are concerns about the social impacts that could result from biofuels projects; these include, amongst others, food security issues, labour and human rights and land rights. The media has printed many stories, mostly from South East Asia, where indigenous people have complained about losing their land use rights as a result of large scale biofuel programmes, driven by governments. In many parts of the developing world attention is being given to marginal or degraded land as it is thought that this land may offer greater benefits and less social impacts². However, the use of land that is not currently under commercial production in the developing world, for the purposes of producing biofuels, could result in social impacts amongst poor rural people unless safeguards are put in place; projects will need to be developed with the particular and specific purpose of uplifting the affected poor community. This paper seeks to summarise the issues that are related to marginal, degraded and underutilised land and suggests possible methodologies to identify these issues and ensure negative impacts are mitigated.

Background

In the developing world, land rights are complex and in many cases based on informal agreements. For instance in many developing countries, land is often owned collectively. In some instances government retains ownership of the land and has granted permission for the community to use the land; in other cases the land may be owned by a community leader who can make the decisions about how the land can be used by the community. There is great variability in land use and land use rights globally and they cannot be covered adequately in this paper. The issues are very different in the western world, where ownership is clearly defined by law, as much of the land rights in the developing world are controlled using a far more fluid and

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^f The issue of the definitions for marginal or degraded land is controversial; definitions have been slow to emerge and for the purposes of this paper we will use the definitions suggested by the following paper prepared for the joint international workshop on high nature value criteria and potential for sustainable use of degraded land to be held in Paris on June 30th and July 1st 2008 for which this paper has also been prepared. The paper is called “ Degraded land and sustainable bio-energy feedstock production, prepared by K. Wiegmann, K.J Hennenberg and U. R Fritsche of the Oeko-Institute, Germany

(frequently) non legalistic system of customary laws and rights. Unfortunately these rights can be abused very easily and indigenous communities can be stripped of their rights with very little legal recourse.

Until now, land owned communally/informally/collectively was not highly prized. While much might be arable, a great deal of it has been degraded over the years through over grazing or overuse; or it may never have been good land in the first place. However, with the advent of the biofuels craze, all land is being scrutinized for its ability to produce a bio-energy crop, even degraded and marginal land. This is quite possible as there are bio-energy crops that do not require arable land. For instance there is *Jatropha curcas*, a small hardy shrub that grows in most countries in the south and in Africa annual crops like sweet sorghum grow well on marginal land and yet provide a good feed stock for the making bio-ethanol.

A recent paper³ provides a summary of some of the most comprehensive studies that have been done on land availability world-wide. The figures from various sources show great variability, but what is clear is that reserves of agricultural land are limited to certain countries in Africa and South America. Marginal or degraded land is far more wide spread but it tends to be more difficult to utilize for some of the reasons mentioned above, such as complex land rights and dispersed allocations, but infrastructure development in and around the places where such land is found is poor and availability of water is an important issue even where ground water is plentiful.

For this purposes of this discussion, it is important to recognize that there is a difference between land that is arable and "underutilized" and arable and land that is "underutilized" whilst also being marginal or degraded. According to the IIED/FAO paper mentioned above, half of the cultivatable reserves can be found in just 6 countries: Angola, DRC, Sudan, Argentina, Bolivia and Columbia. But most countries in Africa and South America have land that is "underutilized" and marginal/degraded land.

Discourse about the use of "underutilized" or marginal land needs to take cognizance of the complex traditional and customary practices of indigenous people in the developing world. Land constitutes the basis of economic livelihood of indigenous people and small scale rural farmers and landowners; dispossession of land and territories is thus a major problem for indigenous people. In many parts of the world the modes of production of indigenous people, like pastoralism, hunting and gathering, rotational slash and burn and using un- or non-productive land does not fit in with the modern notions and aspirations of present day land use practices and modern industrial agriculture. This creates tensions, which are likely to escalate with increasing pressures on land. In 2003⁴ a research group attempted to allocate a cash figure for the value of "marginal and "underutilized" savannah land in South Africa on neighboring communities. It amounts to about US\$500 per annum per household at current exchange rates, which is a great deal of money to a poor household. The poorer households use the land for

³ L Cotula, N Dyer, S Vermeulen. *Fueling Exclusion; the biofuels boom and poor people access to land*. IIED and FAO 2008

⁴ W Twine, D Moshe, T Netshiluvhi. *Consumption and direct land use values of savanna bio-resources used by rural households in Mametja, a semi arid area of Limpopo province south Africa*.2003

biomass, building materials, wild fruits and nuts, collecting insects and in some cases, where the land can support even marginal growth, for the limited production of subsistence crops like maize. The point that “underutilized” land provides a significant resource base to support livelihoods was also made in the IIED/FAO paper with more examples given. In the case of small scale landowners in the developing world, they are very resource poor and often the small piece of land that they own or have permission to use is the only resource that they have. Without this land these highly vulnerable people will be further exposed to the vagaries of poverty, currently exacerbated by rising food and fuel prices. At least when such poor people can utilize the land to collect biomass or gather some food and materials for household use they are partially sheltered from such global impacts.

However, protection of livelihoods should not extend to preventing development in the rural poor communities of the south. Where a community chooses to continue its traditional practices and subsistence livelihoods, this should be protected. But studies are showing that many rural poor communities would like to extend their activities beyond subsistence livelihoods. Research conducted in south Africa in association with the author called “*gender and biofuel production: current conditions of South African women small scale farmers and their thoughts on growing crops for biofuels*” indicated a clear and strong intent by small farmers to get involved in the production of biofuels and many have already been approached to do so. They argue that they are poor and cannot support their families on meager state incomes and subsistence food growing and would like the opportunity to develop their land through biofuels to make additional income. Many were prepared to abandon food growing altogether if the income could provide basic needs. While this may be of concern in the event of bio-energy crop failure or market failure, the sentiments expressed are important to note: rural poor communities are, in many instances, excited about the potential opportunity they may have in this area. As many of these farmers have land that is marginal and already suffering a degree of degradation which is being further exacerbated by poverty, the use of the land to grow bio-energy crops that can be supported on marginal land, while at the same time rehabilitating the land to an extent, can be seen as a positive enhancement of livelihood support. The real issue is how the projects are designed and implemented. If projects are done in a way that takes full cognizance of the wishes and concerns of the community, designed to give optimum benefits to the poor, carefully dresses gender issues and maximizes the local economic development loops, such projects can generally be of significant benefit to the rural poor.

Mitigating impacts

Because the issues involved in land use and land use rights are so complex and variable, it is difficult to design a set of guidelines that would cover all eventualities. What would be the best way to ensure that impacts are mitigated is to design a comprehensive community consultation process that can be adapted and used in each case where a bio-energy programme is planned on indigenously owned land. In this way, the process can be used to, amongst others, collect data, illicit responses from various sector of the community and develop a set of project specific guidelines and agreements. The World Bank/IFC and other institutions have adopted the

equator principles⁵ in terms of how they will allocate and distribute finance and this process is well described. In 2005 the UN issued a paper that arose from a workshop that deals specifically with land use and resource rights of indigenous communities⁶. During this UN workshop, the principle of Free, Prior and Informed Consent were set as the basis for the consultation process and can be summarized as follows: (i) information about and consultation on any proposed initiative and its likely impacts; (ii) meaningful participation of indigenous peoples; and, (iii) representative institutions.

A successful process will involve review of existing laws and information especially about the nature of the land use at the time of project identification. It is also important to do base line social and economic assessments alongside any environmental assessments that are required as this will allow measurement of the success or progress of the project towards its stated goals. Consultation is a parallel process and the community should be asked to assist in the design of the process; often they have ideas about the best ways to communicate with the local people or how to advertise the process. Agreements need to be established up front on how negotiations will take place and how consensus can be reached. A project action plan or implementation plan needs to be developed in consultation with the community and grievance procedures need to be established for both the consultation process and for project implementation. Independent reviewing is essential both within the consultation process and during project implementation and reporting practices are essential and also need to be agreed upon during the consultation phase.

Critical to the success of a process is to illicit the views of a community and determine if they wish to engage with a biofuel programme; for this they need to be able to access the necessary information to be able to make an informed decision. Experience also shows that involving the affected community in designing the process is also important so that they can say how, where and in what way the consultation will take place. It is critical that the consultation is held in good faith, and that if the existing users of the land decide that the project is not in their best interests that they have the right to leave the process. Traditional governance structures need to be built up and utilized in the consultation processes. Through such a process it is possible to ensure that women's groups and other frequently marginalised groups will be included and in this way the project builds the social capital of the community within which it is working. Capacity building is essential also, as often indigenous communities may not have the full understanding of the issues without a level of training.

Through a comprehensive consultation process, a skilled team can guide the process with all stakeholders to ensure that a mutually beneficial agreement is reached. While for many organizations and individuals, such processes seem onerous, most organizations that have taken the trouble to engage in such processes all claim to have reaped the benefits throughout the entire life cycle of the programme. Taking all the stakeholders along with you can be empowering on both sides, while each learns from the other. In many cases the community

⁵ Equator principles can be found at www.equator-principles.com

⁶ UN Dept Economic and social affairs; *International workshop on methodologies regarding free prior and informed consent and indigenous peoples; the experience of IFAD*. Workshop report New York 17-19 Jan 2005.

itself will provide solutions and indigenous knowledge that is invaluable to the success of the programme.

Indicators

Any consultation process must have a purpose, and while achieving consensus on the way forward in a project is important, the process should also set goals for the project. Setting the base line social and economic assessment allows the development of indicators that could be used to assess progress. It is preferable to set simple indicators that give an idea of how the overall social status of the community is improving, such as number of children, especially girls in secondary school, number of secure homes, weekly or monthly incomes, status of health and childhood mortality, status of sanitation systems and water provision. These are generally good indicators of the economic status of a community.

Food security impacts can be measured against the amount of protein the family is eating, or if the family has changed its diet significantly over the course of the project, or even availability of food in the home.

Projects of this nature should preferably strive to provide energy for the local people, so indicators on types of energy available and its use (either in weight or KW eq) would provide information on this aspect.

Appendix 1 – Mali Folke Centre case study

Mali is located in West Africa and is a very poor country with 65% of its land mass area being desert or semi desert. 99% of all the people living in Mali have no access to energy services.

Mali is most famous in the development world for being the country where a technology called the Mali multifunctional platform was pioneered. The platform is a simple diesel driven engine to which you can attach a number of apparatuses that are driven by the engine. For instance, grinding mills, welding machines, compressors, electricity generators, water pumps and even transport vehicles. The project was rolled out in Mali by the United Nations Development Programme (UNDP) and an NGO called MFC Nyetaa.



Source : MFC Nyetaa: A Multifunctional platform

But Mali also has another claim to fame that is less well documented and known. MFC Nyetaa started growing *jatropha curcas*, a small shrub that produces oil seeds, a number of years ago. It was originally begun as a women's project, the oil been seen to initially be used for soap and the seed cake for fertilizer, but it was quickly realized that *jatropha* oil could be used to drive the diesel engines of the Mali platforms. Nowadays, small Lister engines are used for the Mali platforms driven by the pure plant oil (PPO) from *jatropha*.

The programme has developed rapidly in recent years as various development agencies have come to realize that this project could provide some solutions to the massive energy and economic problems faced by villages and rural communities in the country. The MFC Nyetaa forged a partnership with FACT, a Dutch based NGO that provides technical support through its members that are biofuels experts. Two funders, the SHWG of the Netherlands and Amadeur, the Malian Agency for the Development of Household Energy and Rural Electrification have provided significant funds (293,000 and 300, 000 euros respectfully) to roll out a electrification programme based on *jatropha* PPO.

The programme is based on a village concept. 30 villages have been selected to ultimately be a part of the programme which will start with one community, called Garola. Each village has a 1000 ha *jatropha* plantations, all on marginal land that cannot be used for growing food, which are run and operated by local women. The women manually harvest the *jatropha* seeds which are then pressed by a *jatropha* oil driven diesel operated press, the oil is refined through a purifying machine and it is used directly for driving the Lister engine. The oil is sedimented and the residue is used to make soap which has remarkable dermatological properties.

The main purpose is to produce electricity in the villages. Each village gets 300KVA generating capacity to supply 400 connections. The electricity is generated by a viable local energy company, that purchases the oil from the local women producers and then sells on the electricity. In the case of Garola this ESCO is called ACCESS. Garola expects to provide electricity to its entire 10,000 people strong community. As very little of the entire process enters or leaves the village from outside, this has a massive impact on the local village economy. The most critical thing is that the cash cost of producing the oil (including repayments to banks, purchase of seeds, payment of water and land) cannot exceed the cost of fossil diesel, otherwise the economies don't work. However, as the majority of the cost is internal, labour and hand water pumping, this is a small risk to the project. Cash merely gets distributed within the community creating a multiplier effect. The Local Economic Development aspects get a further boost through the sales of soap and natural fertilizer from the waste products The first village to complete this project is Garola, a cross roads with a vibrant economy, 100 small enterprises and business. It is an agricultural community largely, but there is currently no electricity supply. This programme has changed that through the provision of the local grid and a small supply of electricity to each home.



The new diesel electricity generator is launched in Garola

Source: MFC Nyetaa

3- 4Kg of *jatropha* seeds produces 1 litre of oil and 2-3Kg of seed cake. The seed cake is high in nitrogen and phosphorous, higher than cow dung and so acts as an excellent organic fertiliser that can be used on other foods crops and sold.

From a gender perspective the MFC Nyetaa says “ (the *jatropha* micro industry) allows women to start their own micro enterprises, alleviate poverty and generate income” . Additionally, having access to energy supplies that can carry out the heavy burden of their work such as grinding corn and ricin means that women have more time to engage in other productive activities.