Summary of CSD-17 Learning Centre Course **May 8, 2009**

Evaluating the Role of Biofuels in Sustainable Rural Development

Sponsors: International Union for the Conservation of Nature (IUCN), in collaboration with ENERGIA - the International Network on Gender and Sustainable Energy, the Roundtable on Sustainable Biofuels, and the National Wildlife Foundation

Coordinators:
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Objective: To review the potential of biofuels to contribute to rural development, present and discuss RBI draft criteria for 'sustainable' biofuels and IUCN tools from *Implementing Sustainable Bioenergy Production*, and review and discuss a couple of case studies of biofuel projects in developing countries, in order to share practical suggestions on designing and implementing biofuel activities.

Rationale: There is a great deal of discussion about the pros and cons of biofuels production, and the Chair of CSD- 17 has specifically proposed that CSD-17 develop a voluntary set of criteria for the sustainable production of biofuels. However, much work has already been done on developing criteria and guidance on sustainability in relation to biofuels, particularly by the international Roundtable on Sustainable Biofuels, and also on applying sustainability analysis to current biofuel policies and projects. It would be useful to present some of this information to CSD-17 participants in a format that allows time for substantive discussions with experts who have been exploring this topic.

"**Evaluating the Role of Biofuels in Sustainable Development**"

1. Introduction to the course and the instructors (Gail Karlsson, ENERGIA)

2. Overview on the role of biofuels in promoting energy access and development in rural areas of developing countries, and options for implementing sustainability standards for biofuels (Professor Ottinger, IUCN – see attached outline)

3. Review and discussion of draft standards for sustainable biofuels compiled by the international Roundtable on Sustainable Biofuels, http://cgse.epfl.ch/page79931.html (Barbara Bramble from RSB).

4. Description and discussion of a case study from Ecuador by Stephen Gitonga from UNDP Environment & Energy Group (attached)

5. Description and discussion of case study on Ghana by Sabina Mensah from GRATIS Foundation – from the ENERGIA/IUCN biofuels book

6. Summary and wrap-up of key points from the presentations and discussion.

Introduction Outline by Professor Richard Ottinger

I. Potential

Biofuels have a great potential to assist developing countries and poor rural areas of all countries to:

- Enhance economic development
- Reduce dependence on costly and undependable imported oil
- Increase energy security
- Reduce the burdens on women and children from gathering firewood for energy
- Reduce health hazards of pollution from cooking with firewood
- Reduce greenhouse gas emissions

Bioenergy can be produced with crops already grown and suited for growth in most developing countries, using local feedstocks, local labor and creating local employment, and not requiring importation of complex processing equipment.

II. Risks

- Food displacement and cost increases
- Forest and peat bog displacement
- Soil exhaustion through monoculture planting
- Invasive species introduction, squeezing out other valuable crops
- Biodiversity reduction
- Water supply interference
- Greenhouse gas emission increases with feedstocks offering poor energy balance and requiring extensive use of fertilizers and pesticides
- Exploitation of developing country natural resources and labor

The Roundtables for Sustainable Biofuels and Biodeisel have created sound principles and criteria for addressing these risks. Now means must be devised for certification of the sustainability of bioenergy and broad acceptance of certification standards.

III. Implementation Challenges

- Standards must be sufficiently stringent to resolve the gravest risks, yet not so stringent as to be rejected as unfeasible by developing countries; some flexibility must be allowed for transition to full application for the poorest of countries.
- Financing means must be devised
- Education and training must be provided for all participants
- Environmental assessment must be provided with full disclosure to all affected parties of the costs, risks and benefits
- Measures must be adopted to protect against exploitation and corruption
- A legal system is necessary for implementation and resolution of disputes

Standards have been successfully implemented for a wide variety activities, from the elimination of CFCs in the Montreal Protocol to international rejection of “blood diamonds,” to“LEEDS” standards for building efficiendcy, to the conduct of international sporting events.

Stephen Gitonga – UNDP Environment & Energy Group

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Project Title: The establishment of sustainable productive chains for biofuel for rural development in Ecuador.

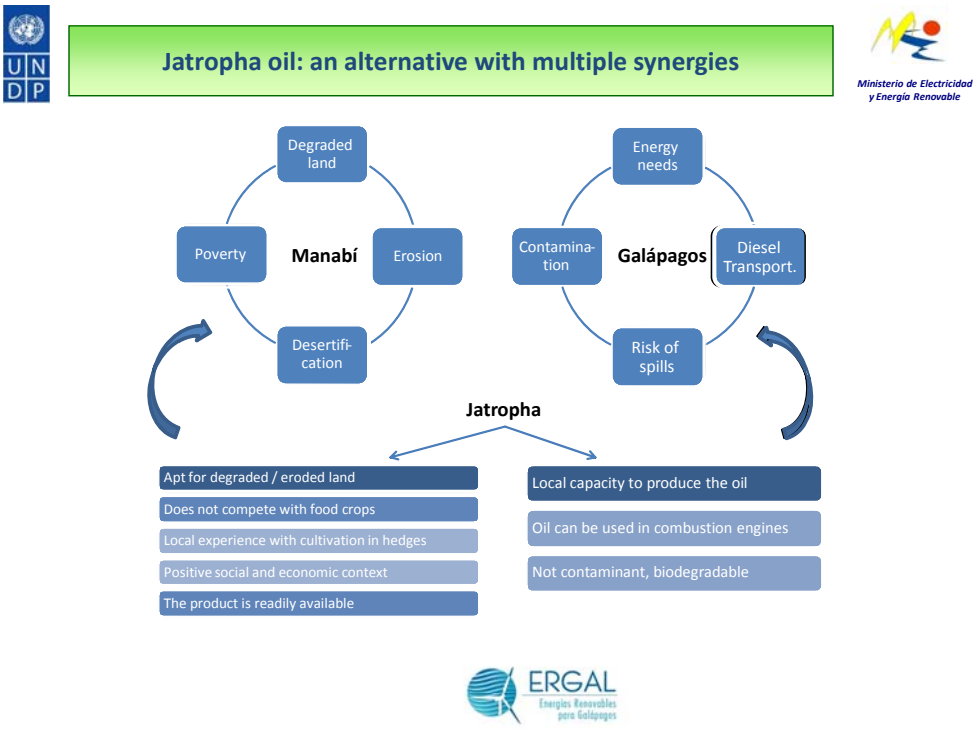
1) Summary

A UNDP, Ecuadorian Government and GEF Small Grants programme partnership is in implementing a pro-poor small scale biofuel production chain meant to supply fuel to the Galapagos Island power utility.

Local communities in drought-prone areas to the south and southwest of Ecuador will benefit from the cultivation of Jatropha curcas and the processing of Jatropha oil to provide fuel for the Galapagos market, provided the new economic activity is implemented in a sustainable way, without disrupting livelihoods or threatening the food security of the communities or imposing technologies that end up being unsustainable in the long run.

The intervention seek to establish a sustainable productive chain: Local small farmers would produce the vegetable oil and the electric facility of Galapagos would buy it. Transportation costs would be included in the final price. Given the fact that diesel for electricity generation is highly subsidized in the Galapagos, the final cost would not exceed actual real costs. With help from the Galapagos Renewable Energy project, the intervention would establish direct links between the associated producers and the final buyer, thus avoiding intermediaries that could establish unfair prices and exploit the farmers. Once systematized, the experience would inform the participating stakeholders in the development of pro-poor biofuels promotion policies

The project benefited from experiences between Ecuador and Mali and other selected countries in Africa, in order to develop local capacities for the sustainable cultivation, processing and use of Jatropha oil for energy generation, and as a source of green fertilizer. Beneficiaries of these lessons and activities will mainly be: Local small farmers who are SGP beneficiary communities in dry regions that face desertification, officers from local governments and from the ministries of Agriculture, Environment, and Energy, and UNDP officers.



2) Results and lessons learned

The project was proposed as a mechanism for complementing and improving the work advanced by UNDP, SGP and the Ecuadorian government in the search for sustainable ways to replace fossil fuels in the Galapagos Islands, following the “Galapagos Zero Fossil Fuels” strategy which was issued by the Ecuadorian Government in year 2007.

Galapagos is a very fragile archipelago which hosts unique fauna and flora presently threatened by human activities. The continuous movement of fossil fuels between the Ecuadorian mainland and the Islands, partly for energy generation, poses a permanent threat against marine and shoreline biodiversity.

The Ecuadorian government strives continuously to mitigate this and other threats such as the introduction of invasive species and unchecked population and tourism growth.

The project aimed at sharing experiences in policy making and project implementation for the sustainable production and use of vegetable oil for energy generation and poverty alleviation, between Mali and Ecuador. It also sought to develop guidelines for the design, implementation and monitoring of projects for the cultivation of *Jatropha curcas*, the processing and commercialization of *Jatropha* oil, and the establishment of a sustainable productive chain with *Jatropha* oil for the generation of electricity in the Galapagos Islands. The chain would link poor communities in drought-prone areas to the south and southwest of Ecuador, producing Jatropha oil from the trees growing as hedges in their small plots, with the Galapagos Electrical Facility operating generators in the Galapagos Islands.

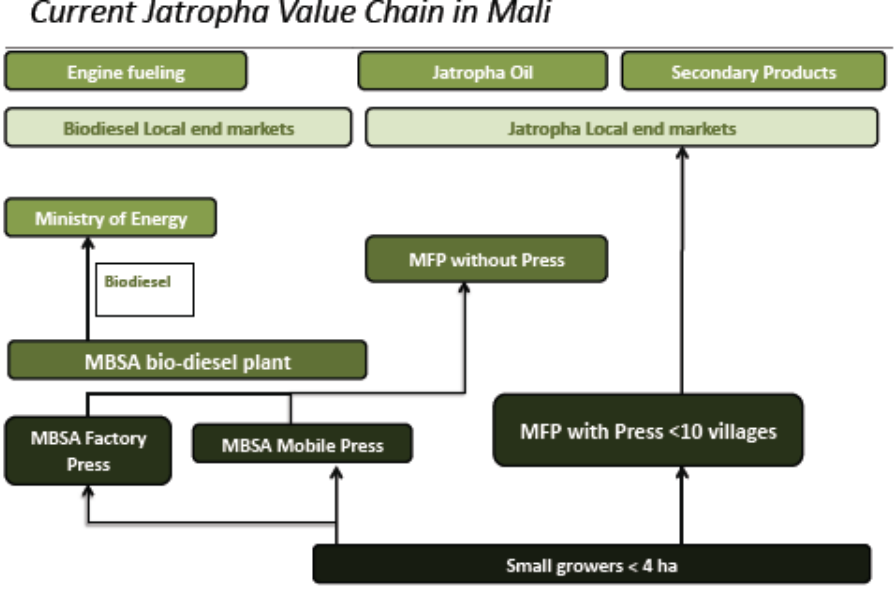
This new economic activity would have to be complementary to their livelihoods and implemented in a sustainable way, without threatening the food security of the communities or imposing technologies that end up being unsustainable in the long run. Once systematized, the experience would inform the participating stakeholders in the development of pro-poor biofuels promotion policies.

A previous study had concluded that it was technically and economically feasible to replace diesel for electricity generation in the Floreana Island With pure *Jatropha curcas* oil. However, there existed the need to identify the most sustainable production and commercialization chain, one that would not threaten the wellbeing and food security of farmers producing the oil. Poor farmers have been approached by entrepreneurs promising big profits to those who devote their scarce, poor land to the cultivation of Jatropha as a single crop – even suggesting that their use what little water they have for the Jatropha plants. Luckily, farmers are weary of these promises (having had disastrous experiences with other so-called “miracle crops”) but they need to understand and learn to play in the growing biofuels market.

As practical experiences on helping poor producers change to this new crop and transform the product into oil are scarce in South America, the project sought to take advantage of the extensive knowledge developed in Mali and other African countries, bringing an African expert from Mali to Ecuador and facilitating a dialogue at various levels: policy makers in the Energy and Environmental Ministries, local authorities at the Galapagos Islands and provinces in continental Ecuador, communities in drought-prone areas, private entrepreneurs, the Galapagos re-electrification project, UNDP country office and the Small Grants Programme in Ecuador.

3) Activities financed by the project

The Malian expert, Dr. Ibrahim Togola, visited Ecuador in April 2008. Together with a local consultant with expertise in agro-forestry and rural development, UNDP, and SGP, he visited a representative sample of SGP – executed Projects in the provinces of Manabi and Los Rios.
The visited communities and cooperatives grow maize, coffee and other seasonal crops and are familiar with Jatropha, using it as fences around their fields. In all the communities, the consultant made a presentation on Jatropha and its various uses in Mali. As in Mali, local farmers are pretty aware of Jatropha and its utilization as a fence, the use of the plant for different medical purposes and its oil for soap making. However, the utilization of Jatropha cake as fertilizer and the different varieties of Jatropha that exist throughout the world, which were presented by the consultant, were new to the farmers and they where very keen to learn more about these points. Many questions were asked on these issues especially since SGP projects promote ecological agriculture. The Jatropha cake and its properties as organic fertilizer and pesticide were very interesting for the farmers.



The consultant also visited an agricultural research institute in the region and commented on a test field planted with Jatropha. Some local entrepreneurs working on the domestication of Jatropha under the local conditions were also visited. The consultant advised the stakeholders about the importance of securing that the production of oil from the seeds be in the hands of the producers themselves. Local farmers would thus sell the oil at higher prices and have the added value of *Jatropha* sub products such as cake. If the seed were exported outside the communities, all these added values would be lost.

Also a workshop with policy makers was held. The meeting revolved around the policy measures to put in place for biofuel promotion. The consultant suggested the elaboration of a biofuel strategy and the establishment of a coordination made up of the different institutional stakeholders to discuss the various aspects of sustainable biofuel production in the country and to create synergy and complementarities between different projects and programs.

The consultant had also a second workshop with the cooperatives of farmers interested on Jatropha cultivation and working with SGP, the research institute, and the private sector. The discussion turned around the farming technique of Jatropha and the utilization of its sub products as pesticide and especially the utilization of Jatropha cake as organic fertilizer. The organization of existing farmers associations for Jatropha cultivation was also discussed. Another important issue that was discussed during that meeting is the collection of the seeds and the cost of seeds.

4) Results

4.1 Capacity building and knowledge sharing: all Ecuadorian stakeholders participating in the project, and even the German experts from DED, lacked practical experience in the local production and processing of Jatropha oil; even local farmers very familiarized with Jatropha did not have knowledge of its uses as fertilizer and pesticide. So the sharing of knowledge about the African experience had an immediate benefit in that it improved the management of Jatropha at all levels.

The knowledge of the consultant helped in the review of important practical aspects like the production of Jatropha organic fertilizer from the pressed cake, important quality aspects of the oil, the production of organic pesticides from the oil, the importance of supporting the work of research institutions in order to select the best Jatropha type in terms of yield for Ecuador, and the importance of defending the farmers' interest in order to help them avoid short lived promises.

4.2 Knowing about successful experiences of community production of biofuels: In Ecuador, biofuel production is still small. Projects by private entrepreneurs tend to promote large, single-crop production and give the role of raw material producers to local farmers. So knowing about an alternative business model educated national authorities and the farmers themselves and opened more options for policy making and practical applications.

4.3 Creating spaces for dialogue and debate among stakeholders: the presence of the consultant raised interest among a wide variety of stakeholders and lead to interesting and active debates about biofuels, reforestation and energy policy in Ecuador.

Community arrangements for the decentralized production of biofuels promote synergies between poverty alleviation and environmental sustainability, thus contributing to the achievement of MDGs N. 1 and 7 (see attached diagram).

5) Further developments

The findings of this intervention were included by Deutsche Entwicklungsdienst (DED), a German development assistance NGO, in a proposal to the German Ministry of Environment. By the end of 2008 the Ministry approved a grant of 950,000 euros for establishing links between producers and buyers of the oil as proposed by this project. Money from the grant will be used to provide technical support and financing for the oil presses to the farmers, and adapting the generators of the islands for the use of pure vegetal oil. The presses will be installed in communities that execute SGP projects, thus taking advantage of the monitoring capacity already set in place by SGP.

During year 2008, the Ministry of Electricity and Renewable Energy contributed 87,500 USD to finance the acquisition of new generators for Floreana. During year 2009, the Ministry will devote 540,000 USD to buy and install oil extraction machines, most of which will go to SGP communities. The Ministry of Agriculture will spend 260,000 USD to promote the cultivation of Jatropha. The Ministry of Electricity has taken the lead in the follow up of this intervention.