

Terminal Report

EC/FAO Cooperative Programme

**“Bio Fuel Energy Feasibility Study for
Food Security and Income Generation of Rural Poor in
Cambodia”**

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Cambodia

Project Findings and Recommendations

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TERMINAL REPORT

1.0 INTRODUCTION

Energy has a crucial role in development of Cambodia. Demand of fossil fuel and thereby the import increased year by year. Cambodia faces highest energy price in the world and is often subjected to insecure supply. Such uncertain energy availability becomes a detriment affecting economic growth and poverty alleviation programme.

Bio fuels offer a locally produced option or solution to provide a substitute for imported petroleum and diesel. Bio fuels also offer other benefits such as improved energy security, rural development, livelihoods generation and food security. Some of the studies conducted in countries like India, Brazil, China and some of the African countries indicate that growth of bio fuels can build confidence in local communities for area development and preservation of environment. Bio fuels production also opens opportunity for crop diversification and supplementing agricultural incomes.

Cambodia is reliant on agriculture for over 30 percent of its GDP growth and 84 percent for employment and livelihoods. Agriculture is being used in the broader term to include animal husbandry and fisheries. Therefore, innovative and pragmatic approach for growth of bio fuels, that does not interfere with (rather supplements) the food production system can make a significant contribution to sustainable socio-economic development.

This study has been prepared to project that small farmer based local production and community based processing and marketing offers good model for bio diesel production leading to livelihoods and food security. A number of issues have been identified that need deeper understanding to ensure bio fuels become a viable solution.

The Report relies on primary data from the field, from four provinces, and secondary information and data from official sources, commune level functionaries, experts, entrepreneurs and farmers. This data has been collected mainly from the following sources so that authenticity is ensured:

- i. Review of policy documents and studies conducted in the past;
- ii. Meetings with officials, experts and representatives of relevant agencies.

2.0 OBJECTIVE

The objective was to conduct the feasibility study on the potential of production of bio fuels through the community based projects that can contribute to food security and income generation at household and community levels, in a financially, socially and environmentally viable manner.

3.0 SIGNIFICANCE OF PRIMARY DATA COLLECTION

The study has conducted the primary data collection for the first time in Cambodia. Primary data collection is a costly and time consuming process. Therefore, most of the studies, conducted earlier in Cambodia, referred to indirect secondary data available from other sources. The survey identified ground realities in the context in which interventions can be planned.

4.0 OUTCOME

The outcome of the Study was based on various outputs. The following planned outputs were fully attained:

- A 'Background Paper' for the feasibility study based on the information collected through review of the policies and relevant documents, and exchange of information through meetings with relevant agencies such as the Ministry of Industry, Mines and Energy, Electricity Authority of Cambodia, the Ministry of Agriculture, Forestry and Fisheries, and the energy related private sector.

The Background Paper served as the basic document for discussions at the Stakeholder Consultation on October 23, 2007.

- 'Stakeholder Consultation', held on October 23, 2007 to disseminate the study findings and to invite inputs. Agencies (government, non-government and international) that have relevant technical expertise; and stakeholders at the province and national level were invited to share the findings. Forty invitees took part and gave their inputs.
- 'Draft Final Report' of the feasibility study was prepared on the basis survey findings and inputs during the stakeholder discussion described above. The draft report delineated the process of community-based bio-fuel enterprise project that is financially, socially and environmentally sustainable. The Report now includes the project outline separately.
- 'National Workshop', was organised on 18 December 2007, to share the Draft Final Report with various stakeholders including government agencies, non-government agencies, international organizations, and private sector, to promote formulation and implementation of community-based bio-fuel enterprises.
- The 'Final Report' was prepared after considering all the suggestions received at the National Workshop. Thus, the report reflects the endorsement by the stakeholders, as envisaged in the project concept.

5.0 FINDINGS AND RECOMMENDATIONS

5.1 Findings

Findings are being presented on the basis of the field survey, discussions with the national and provincial government officers, NGOs, entrepreneurs and international and donor agencies.

5.1.1 Energy Scene in Rural Areas

Energy plays an important role in economic and social development of rural people in Cambodia. Lack of commercial energy supply at an affordable cost has slowed the pace of economic growth in rural areas. This has also increased dependence on wood fuels and crop residues. About 90% of rural energy needs are met through wood fuels. Rapidly rising fossil energy costs for farm inputs, local transport and agricultural machinery pose a major challenge to small farmers' households.

5.1.2 Potential for Growth of Rural Enterprises – High Literacy Rate; and High Level Rural People in Productive Age Group

Cambodia is growing at 10 % of GDP growth and the contribution of agriculture to this growth rate is sliding down from over 40% at the beginning of the century to just over 30%. Rising cost of energy in rural areas and non availability of soft term investments have been the bane of the rural society. Rural people can regain their rightful place by development of sustainable energy supplies that are based on locally available resources that will ensure availability, accessibility and affordability.

Easy and affordable access to an efficient and sustainable energy source will open opportunities for small scale rural enterprises which currently account for less than 10 percent of total rural energy demand. The potential of enlarging rural enterprises both for agro processing and for other industrial and agricultural purposes is high. The surveyed provinces show a high rate of literacy level at 60% which shows that the rural people have the functional literacy to access latest information and integrate that with their natural wisdom. These kind of rural enterprises have a high potential also for the reason that about 40% of the rural population is below 16 years and another about 40% is in the age group of 17 to 36 years. This whole range is the productive range spreading to far off future that needs sustained livelihoods. Also rural people with artisanal skills and technical skills are in high numbers thereby ensuring local availability of skills necessary for the success of the rural enterprises. If they have the option of gainful employment in the rural areas the rural to urban migration can be reduced.

Clusters of such rural enterprises can be created by forming them into association for better bargaining power for credit/loan, marketing and inputs supply.

In addition to the enterprises set up utilizing jatropha oil, oil expeller units themselves will become enterprise at the rural level.

Also, seeds marketing, nursery growing and other input supplies will create rural enterprises. It has been reported that traditionally jatropha fencing is grown and no quantification has been done for the total seeds so produced. However, because of small quantities of jatropha seeds so produced, the farmer never thinks of potential revenue from such seeds. Possibility exists of seeds collection from each household and then making it available to oil expeller unit. This house to house collection of seeds will create enterprise potential at the rural level. Similar experience in milk collection exists in India.

Easy access to sustainable and low cost rural services can vitalize agricultural productivity and help create multiple rural non-farm livelihood opportunities based on small and medium scale rural enterprise development.

5.1.3 Existence of Small Group Enterprises

FAO has already set up three small groups of village level members involved in scarf making; basket making and mat making in the Pursat Province. These groups are making profit because of the group or association formation. The group conducts one shift a day because of non availability of electricity. However, they look forward to working 12 to 14 hours a day if electricity can be made available through jatropha oil use in generators.

The success of these groups may motivate also other groups.

5.1.4 Potential for Diversification of Cropping from Cereal Crops to Include Bio Fuel Crops to Ensure More Even Distribution of Income Generation Potential with Reduced Risks

Lack of services, affordable inputs supplies and low productivities of farmlands are forcing small farmers to sell their lands. As they have followed traditional farming practices they lack the capacity to enhance productivity through newer practices and inputs. They can also not withstand any vulnerability or risk. Any diversification, as in the case of jatropha cultivation, can enhance their capacity. Such a diversification can also ensure more evenly distributed income practices. Introduction of such interventions will also reduce the risk and vulnerability.

Small farmers with lands below 2 ha can form into associations and thereby take advantage of economy of scale. Such associations will take care of inputs supply, training, technology transfer and marketing of product. A large number of farmers in this category are observed to have left their lands uncultivated for varied reasons. They can grow jatropha directly as they are not taking away the productive lands and thereby they do not create any competition with cereal crops.

It is necessary to realize that such small farmers have no capacity to invest and therefore some financial assistance will be necessary, as discussed under funding requirements, later in this Chapter.

There is also a possibility that 12.5% farmers who have lands over 2.5 ha may diversify by putting 25% of their lands under jatropha cultivation, and improving their cereal productivity by 25%. There will be no loss of cereal production and the farmer will also have the diversified cropping resulting in better income distribution.

By cultivating on non cultivated lands will help rehabilitate such lands.

5.1.5 Crop Risk Cover through Crop Insurance

Diversification of cropping pattern, by including jatropha cropping, will reduce crop risk and may motivate insurance companies to undertake general crop insurance, giving better cover to small farmers.

5.1.6 Positive Impact on Health, Education and Income Generation

Direct relationship has been established between the above mentioned three factors and energy supply. All the three elements are very important for achieving the Millennium Development Goals. Realising this the World Summit on Sustainable Development, 2002 emphasised on improving access to reliable and affordable energy services for sustainable development.

Availability of jatropha oil will motivate the rural communities to move from cooking on wood fuels to jatropha oil. This will provide much cleaner cooking environment to women and will certainly give them better health quality.

Also availability of jatropha oil, and its use for generation of electricity from the same will result in more useful hours in villages allowing deeper education penetration in rural areas.

Various studies have established that rural women equipped with efficient energy services can be gainfully involved in agro processing and rural industries.

5.1.7 Impact on Food Security

Field level survey has projected availability of uncultivated lands with small farmers. Cultivation of jatropha on such lands will not take away the lands under cereal crops and does not cause any direct threat to food crops.

Rural enterprises so established will create income generation opportunities for the rural communities. That will have multiplier effect and overall rural development. The snowballing effect will improve the food security of the rural people.

Food security is focused at the household level. Similarly in earlier efforts of rural energy security it was emphasised that rural energy should also be planned for the household level. Therefore, the current concept of rural energy planning and development takes the rural household as the basic unit of rural energy demand and consumption

within a territorial area. Clusters of household in a geographical area will then be a wider focus of rural development and provision of energy services with basic health, education, agriculture, income/employment generation and rural infrastructure/institutions.

5.1.8 Funding

Small farmers have the basic difficulty of financing in the initial period. They have no capacity to do so. And the present practice of loan and credit is untenable for any such rural growth.

There is an urgent need for the government to evolve a national policy for bio fuels growth through small farmers, aimed at farmlands up to 2 ha. Two options will be available:

- Provide subsidy at the rate be determined by the government
- Provide soft term loan for the farmers – at less than 6% per annum with a moratorium of three years
- In either case give crop insurance cover.

Farmers' Associations will be the appropriate set up to share the responsibilities and management of such cropping on a collective basis.

5.2 Recommendations

Bio fuel energy development has direct and appropriate relevance to the rural areas of Cambodia. FAO Model for development of Bio Fuels projects the entire bio fuel production chain to be owned collectively by the small and marginal farmers and feedstock producers.

In keeping with the policies of the Royal Government of Cambodia, labour intensive bio fuel production programme can providing rural livelihood and enable the small farmer to retain the land right.

Bio fuel production also offers opportunities for small scale rural producers groups to be involved in local production, distribution and promoting rural enterprises using energy directly from Jatropha oil or by its conversion into electricity.

Availability of liquid fuel will give flexibility of use in liquid form for engine operation, conversion to electricity or in the form of heat energy. Such a resource will be highly relevant especially in the 30 km special agro-processing zone beinf established by the government.

5.2.1 Government may consider Laying Down Policy for Bio Fuels Promotion

The Royal Government of Cambodia may consider laying down a policy for Bio Fuels promotion as component of overall rural development and agriculture development with a focus on women and disabled group participation.

The Policy may specifically focus on:

1. Short Term; Medium Term and Long Term Bio Fuel production Targets Linked to Rural Income Generation
2. Promotion of Farmer Centric Small Size Producers
3. Promotion of Farmers Associations
4. Economic Support Instruments – Subsidy for Small Size Farms
5. Institutional Finance Soft term loan from Commercial Banks and Rural Development Bank
6. Protection of Land Rights and Ownership
7. Promotion Capacity Building Institutions and Support Systems
8. Promotion of Technology Transfer through Intergovernmental and other Mechanisms
9. Promotion of IT based Information System

5.2.2 Government may Consider Launching a National Demonstration Programme

The government may consider launching national demonstration programme in phases, and taking care of financing of the rural enterprises and farmers to support higher bio fuels production. These activities have to be launched simultaneously.

The government may also consider launching international agency and donor funded two-phase programme:

Demonstration Programme - Phase – I

The first phase of the programme should be taken up immediately to take advantage of the tempo created by the Feasibility Study.

First Phase of the programme may be of 1 year duration where the focus should be on: small scale plantation in the field to be used for demonstration, developing seeds, nursery, capacity building, and strengthening capabilities of research and extension institutions creation and education to potential beneficiaries.

This activity will need small funding and more technical inputs and will lead to substantial demonstration value. The government may decide to motivate some international or donor agency to provide funding for up to one year.

Demonstration Programme - Phase – II

Action for implementing the second phase have also to be launched simultaneously, so that funding could be secured GEF/International Agency/Donor by the time the first phase finishes.

Second Phase will be a large scale demonstration picking from the outcome of the first phase. The objective would be to: (a) conduct large scale demonstration with a view to establish and disseminate agronomic practices for cost effective farm level production; (b) establish and optimise jatropha oil production practices and cost; (c) establish marketing practices for jatropha oil; (d) promote bio fuels based rural enterprise to improve livelihood options and thereby the food security of the rural poor; (e) promote appropriate financing for jatropha farmers and jatropha oil producers; (f) overcome barriers, in general, to jatropha production and marketing.

The outcome of the project will be in line with the Millennium Development Goals of environment improvement, poverty alleviation and improved food security. This project fits into the guidelines of GEF. The PIF may be developed and discussed with GEF for funding which may take about a year, that is, by the time the first phase is completed, and the outcome can be fully integrated.

Such a project for medium term grant for three years, and funding of US \$ 3 million can receive the priority of GEF.

Project Identification Form (PIF) has to be prepared for a Medium Sized Project to be funded under the GEF Trust Fund with FAO as the Executing Agency.

5.2.3 Government may consider Creating Fund for Soft Term Rural Credit

Jatropha production, oil extraction and marketing is expected to develop in the self supporting market mode. Financing will be an important element. In the past, it has been experienced in Cambodia that micro finance for small scale operations needs to be promoted on soft term loans. Rural Development Bank has accessed international funds at a very low rate and provided the same to SMEs at 7% per annum.

Rural Development Bank may take initiative to access funds from World Bank or any other Agency to make it a revolving fund to provide soft term loan to jatropha growers and entrepreneurs.

5.3 Significance of Findings and Recommendations in the Present Context

The Bali declaration of Meeting of Member Countries of UNFCCC has emphasised on developing countries also launching initiative to lower global GHG emissions, though not specifically mandated to do so. This is the first Study released by a developing country reflecting commitment to reduction in GHG emissions, within fifteen days of Bali Declaration. Such an effort will encourage GEF, International Funding Agencies and other Donors to provide fund support to implement the initiative of the Royal Government of Cambodia.

5.4 Follow-up Actions Already Initiated

MAFF was presented the Report on December 28, 2007. However, as the Report was discussed and got approval from MAFF at different stages, they were aware of the findings. MAFF was ready for the action on follow-up. Thus preliminary discussion has already been taken up and it is expected that the follow-up action will start very soon.

This is an outstanding achievement.



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