

A SUSTAINABILITY FRAMEWORK FOR ASSESSING BIO-ENERGY PROJECTS: A NOTE ON THE INITIAL LEARNING FROM THE RE-IMPACT PROJECT IN INDIA

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Biofuels Program in India

The Indian Biofuels Program began over 60 years ago but has gained significant momentum only in the past decade and especially in the past 5 years. While until early 2000 the major focus was on ethanol as a blending additive to gasoline, in 2003 the National Biodiesel Mission was established by the Planning Commission that identified *Jatropha curcas* as the most suitable tree-borne oilseed (TBO) for the production of biodiesel and expected the program to substitute fossil diesel up to 20% by 2011-12 as well as help rehabilitate degraded lands by improving their water retention capacity.

The Government of India's focus is to utilize waste and degraded forest lands for undertaking bio-energy plantations and to promote rural development. Plantation activities are presently undertaken under different central government schemes such as the National Rural Employment Guarantee Scheme (NREGS). A few pro-active states have set-up Biofuels Boards and have announced policies to promote biofuels in their respective states and a minimum support price (MSP) for oil seeds has been declared to provide a fair price to the farmers. The responsibility of storage, distribution and marketing of biofuels presently rest with Oil Marketing Companies (OMC).

In brief, the work carried out up to now in bio-diesel development consists of developing high oil-yielding varieties of *Jatropha* and other TBOs, plantation of *Jatropha* by government-sponsored agencies (such as National Oilseeds and Vegetable Oils Development (NOVOD) Board, Department of Biotechnology (DBT) research institutes, and private companies), setting up of pilot plants on transesterification, and running tests with locomotives and road vehicles using 5% bio-diesel blend.

The Ministry of New and Renewable Energy (MNRE), Government of India is in the process of preparing a National Biofuels Policy. The major drivers for the Indian National Biofuels Policy are expected to be:

- Generating rural employment opportunities
- Saving foreign exchange
- Promoting energy security in the country
- Promoting environmental security
- Meeting climate change commitments
- Promoting renewable energy sources

Issues & Concerns

While the National Biofuels Policy is still to be finalised and ratified, civil society organisations have raised a number of issues and concerns regarding the implementation of the program. Some of the issues raised are^[1]:

- There are no ‘real’ wastelands in the country and that most land with any productive capacity is in use, especially by the very poor who are dependent on these lands.
- Further, there are concerns regarding the negative impacts that monocultures of biofuel plantations could have on biodiversity and correspondingly on the livelihoods of the poor
- In order to achieve economical rates of production of TBO seeds high external inputs (fertilisers, irrigation) would be necessary which could lead to the diversion of good agricultural lands for biofuel production
- Unreliability of existing plant material and the long lag period in *Jatropha* seed production
- Lack of adequate market support leading to *Jatropha* and other TBO cultivators incurring major losses
- Concern that biofuel plantations will be used as a mechanism for preventing community members from expanding their tenure into marginal areas

The steps taken by the Government of India and the issues and concerns raised by civil society organisations are both valid. The drivers for the Indian biofuels program are concerns of national interest while the cautionary responses by civil societies highlight local level interests. Without an acceptable degree of harmony between the impacts at both these levels – national and local – there looms the chances of partial success and/or a number of undesired consequences. Further, since the biofuels program cuts across sectors *viz.* energy, natural resources, rural development, at various scales it is all the more important to ensure that one does not develop at the cost of the other. What is therefore needed, as in any other developmental intervention, is a biofuels program that incorporates economic, social and environmental concerns that interface within a sustainability framework in its planning and implementation. The Rural Energy Production from bio-energy Projects (RE-Impact) project, being implemented across four countries – India, China, South Africa and Uganda – aims to address precisely this issue.

RE-Impact Project

RE-Impact is being implemented by a consortium of seven partners from Asia, Africa and Europe with the aim to:

- Provide, test and implement a Sustainable Rural Development Framework for assessing bio-energy projects in Africa and Asia.
- Develop in-country capacity for applying and testing project methodologies in the case study countries.
- Ensure that in-country policies relating to bio-energy projects and the environment are consistent with other sectoral policies (climate, development, forestry and water), and are based on scientific understanding of bio-energy plantation impacts.

This note presents the initial work undertaken towards developing a Sustainable Rural Development Framework for assessing bio-energy projects. This is an ongoing task and the framework described below could be revised further as the project progresses. It draws heavily on the sustainability

¹ Compiled by Ghosh Gopi N. and Kumar Pankaj, Resource Persons and Anuradha T. N. and Gopalan Ramya, Research Associate, “Query: Biofuel Plantation through Community Groups - Experiences”, Solution Exchange, 27 August 2007

framework for the evaluation of bio-energy interventions developed by one of the project partners, The Council for Science and Industrial Research (CSIR), South Africa, and which was further contextualised for the Indian case – an exercise undertaken by Winrock International India, CSIR, the Centre for Land Use and Water Resource Research (CLUWRR), UK.

Sustainability Assessment

Achieving sustainability is a core challenge for most development programs. Sustainability can be achieved only if at the planning and implementation stage there is as clear understanding as possible of the expected and potential impacts of the intervention – both positive and negative. For this several tools have been developed and used. Sustainability Assessment (SA) is one such tool that is being developed and tested.

Sustainability Assessment is a third generation tool that has its roots in Environmental Impact Assessment (EIA) and Strategic Environmental Assessment (SEA). SA differs primarily from the first two generations of tools, in that it focuses on the sustainability of the intervention under investigation, rather than having only an environmental focus. Further, in the case of the EIA approach, economic, social and environmental issues are addressed in isolation of each other and the relationships between them are not considered; therefore, cumulative effects are often not accounted for. The SEA approach has attempted to address the limitations of EIA, in part at least, by considering environmental concerns from a strategic perspective and thus incorporating them in the planning process. Though the SEA process has contributed towards incorporating environmental concerns in development planning, it does not necessarily contribute towards planning for sustainability, as it is driven by the strategies formulated for individual projects at its core rather than sustainability. However, further developments of SEA, namely, Objective-led SEA and Objective-led Integrated Assessment have been developed. The latter seeks to integrate economic, social and environmental concerns in the assessment process and both are based on a common shared vision of the stakeholders in the planning process. These last two approaches are important steps towards Sustainability Assessment and planning for sustainability.

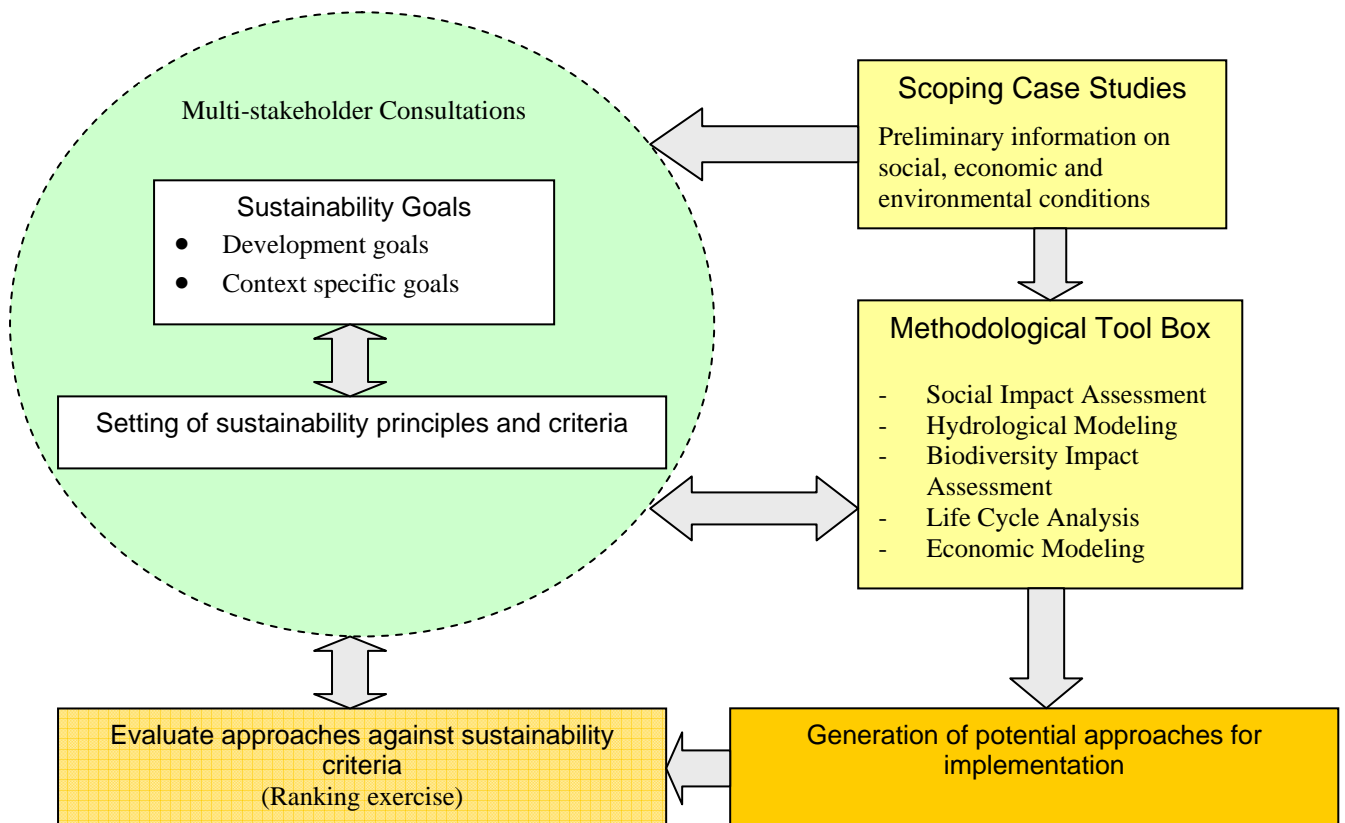
Sustainability is the desired outcome of the Sustainability Assessment approach and not to just mitigate or minimize potential adverse environmental impacts. The approach is inherently integrative, participatory, positive and future-oriented. The first and important step in this direction is for all stakeholders to jointly define a *sustainability goals* (or vision), the desired outcomes of the intervention upon which the planning for the intervention should be focused. Next, in order to assess whether the proposed intervention is sustainable or not, *sustainability principles and criteria* would need to be defined to determine whether the sustainability goals have been met. These criteria would be *context specific*, taking into account local economic, social and environmental conditions, as well as the relationships between these components for the given set of stakeholders. Understanding the interrelationships between economic, social and environmental components is critical (integration) and should influence the setting of the sustainability goals and criteria. Therefore, the SA process has to be iterative and cyclic in nature so that the learning generated at each of the steps can be fed back into the process allowing for goals and criteria to be revised as necessary. The Sustainability Assessment approach is clearly a challenging task, both practically and intellectually, but in order to incorporate sustainability as the key driving element in the development planning process, it is a crucial step that needs to be taken.

Sustainable Rural Development Framework for Assessing Bio-energy Projects

In the Indian scenario, EIA is most widely used and that too limited for large development programs such as, river valley projects, highways, thermal power plants and mining. It is not administered in the case of other land use change interventions such as, large scale plantation activities e.g., Jatropha plantations, even though they have economic, environmental and social impacts. Further, a common critique of EIAs undertaken in the country is that they are largely focused on technical aspects (and therefore most often beyond the comprehension of the lay person) with minimal regard to social components, and are undertaken in a non-participatory manner. In addition to the limitations discussed above, EIAs are snapshots that capture only part of the picture and not the whole (effects over time) which have a bearing on the sustainability of the proposed intervention.

In the context of developing countries such as India, bio-energy development must be viewed within the context of existing poverty and prevalent resource management systems i.e. the economic, social and environmental conditions and their interrelationship. In the Indian case of the RE-Impact projects attempts are being made to develop and test a sustainable rural development framework for assessing bio-energy projects. This framework is presented below in Figure 1.

Figure 1. Sustainable Rural Development Framework for Assessing Bio-energy Projects



As is shown in the framework, a key process to the sustainability assessment is the multi-stakeholder consultations within which the sustainability goals, principles and criteria will be developed. These consultations will initially be supported by scoping case studies that will assimilate preliminary information on the social, economic and environmental conditions in the area of intervention as well as relevant secondary information and data. The impact assessment studies listed under the methodological tool box are a set of detailed studies covering social, economic and environmental aspects of bio-energy projects. The findings from these studies would also feed into the multi-stakeholder consultations where it would facilitate the following two objectives:

- Would provide a scientific basis for planning and decision making by the stakeholders
- Will provide the opportunity to integrate the learning from each of these studies in a manner that is most suitable to that particular context and for that set of stakeholders

It should be noted that the consultations could also assist in identifying the detailed studies that need to be undertaken as part of the methodological tool box. Based on these inputs the multi-stakeholder consultations will help define the sustainability goals, principles and criteria. On the other hand the scoping case studies and the set of detailed studies will assist in generating potential approaches for implementation. These approaches will then be evaluated against the defined sustainability criteria and the most appropriate will be selected, again through a consultative process. This entire process is iterative and dynamic, requiring active participation from all stakeholders. This is also the key challenge of the sustainability assessment process.

It is through this consultative process, supported by scientific studies, which the RE-Impact team expects to test this framework.

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