

Summary Report

South Asian Stakeholder Meeting

In partnership with the **Indian Institute of Technology**, New-Delhi, India

June 12th and 13th, 2008

1. INTRODUCTION

The Roundtable on Sustainable Biofuels, hosted by the Energy Center at the Swiss Federal Institute of Technology (EPFL) brings together companies, civil society groups, governments and intergovernmental organizations to define principles of sustainable biofuels production. Founding Steering Board members include, among others, individuals from the World Wild Fund for Nature (WWF), Toyota, BP, the UN Environment Programme, Shell, the Dutch and Swiss governments, Petrobras, the World Economic Forum, Keio University in Tokyo, Bunge and TERI India.

In the aim of reaching out to a large number of stakeholders, a series of multi-stakeholder consultation meetings is being organized. This meeting in India for the South Asian region, hosted by the Indian Institute of Technology Delhi, is part of this series. Representatives from India, Pakistan, Nepal and Sri Lanka presented a wealth of experience and highlighted risks and opportunities related to biofuel development in South Asia. Overall, there is a call for more research and investigation to better understand all the stakes and consequences of a massive development of biofuels in this region. This holds particularly true for jatropha on which much is said, but few is really known, compared to well-known crops such as corn or sugarcane.

2. PLENARY PRESENTATIONS

[Note: all the presentations are available at <http://cgse.epfl.ch/page71636.html>]

2.a Risks and Opportunity for Biofuels in South Asia:

On the first day, the plenary session included presentation from Martina Otto (UNEP – Social and environmental risks and opportunities related to biofuel development), Rakesh Khanna (Development Alternative – socio-economic benefits for South Asian countries), Phanis Mohan Kancharla (Anagha Datta Trade – Perspectives for the development sugarcane ethanol in India) and Pr. L.M. Das (IITD – Scientific projects related to the use of biomass as a source of energy at IITD).

In the following discussion, several participants called for a more cautious assessment of marginal or degraded land. Large areas have been claimed to be marginal or degraded lands, whereas, without being agriculturally exploited, these might already be used otherwise. It was pointed out that too much attention is being put on jatropha, which is still a controversial option, whereas other crops such as sweet sorghum or pongomia should be considered as well. Some participants voiced that if sugarcane potential had been exploited more efficiently, India could now be at par with Brazil. They regretted the lack of adequate support and incentives for bioethanol. All in all, participants agreed that situations will vary much from a region to another (especially in countries with several contrasts such as India) and that each feedstock could show promising potential in a given context.

2.b Standards for sustainable biofuels production:

Sébastien Haye (EPFL) presented the work of the Roundtable on Sustainable Biofuels, in which several hundreds of participants take part to elaborate the criteria to be complied with in order to ensure a sustainable production. The experience of the 'Better Cotton Initiative' (BCI) was presented by Hammad Naqi Khan (WWF India), in order to share the lessons learnt along this other standard-setting process.

During the discussions participants called for a clear positioning regarding the type of policies (development oriented vs finance oriented) and incentives (cash, subsidies, CDM) to be promoted in order to ensure sustainable production. The BCI cotton does not yet represent a huge share of the market but the initiative is endorsed by major multinationals from the textile industry. This involvement of major actors constitutes an important driver, in combination with regional governments. One important aspect of the BCI standard is to ensure a consistent level of quality for cotton, which is not yet part of the RSB standard.

3. **BREAK-OUT SESSION 1: Environment**

3.a Generalities:

Solid laws exist in South-Asia to protect environmental resources but enforcement was flagged as a problem, especially in federal countries with a decentralized judiciary system. A new law on biodiversity is currently being prepared in India.

Also, policy contradictions were highlighted: between environmental policies, orientations for national development and , national economic development prevails.

3.b Conservation and Biodiversity:

In India, conservation policies are not specific to biofuels, but many areas are already efficiently protected (national parks, national sanctuaries). The joint forest management is a success, as it efficiently protects forest while involving indigenous people.

In Nepal, 20% of the country's surface is protected and Sri Lanka has also protected many areas containing high biodiversity, but so far, none of the countries that were represented have performed the national interpretation of HCV forests or areas.

In all of them, some important lands are not yet protected (e.g. wetlands) and participants recognized that whichever concept should be implemented (e.g. HCV areas), the decision to promote the interpretation, identification and mapping of important areas remains political. Participants recognized that the interpretation of HCVs within the local context was primordial and that a landscape approach (especially for Buffer Zones) is needed.

The issue of invasive species seems to be a major environmental concern in the region; many of such species have already been identified and registered but the necessary action to cope with this problem is under work. Although the RSB standard discourages the use of exotic species, this measure can only be effective if integrated in a broader landscape management, which goes beyond the sole producer's responsibility. More generally, participants agreed that local crops should be promoted to the maximum, as per their social and environmental benefit and the high degree of knowledge from autochthones.

3.c Soils:

Participants recognized that erosion was a problem in all their countries. In the good practices, Perennial crops should be promoted, as they better prevent soil erosion than annual plants. Similarly, keeping vegetal residues would help preventing upper layer erosion.

3.d Water:

Among the forthcoming challenges, water is perceived as one of the most important, even more than land availability. Some participants suggested that the impact of biofuel production upon water resources should even be assessed at the regional scale (water basin).

A consensus was reached on the necessity to carefully choose crops, with regards to local water availability and climatic conditions. The crops' requirement in term of water is an easily obtainable data. Nevertheless, attention should be given to the farmer's skills in order to minimize the risk of failure after switching to a totally new crop. These elements are to be included in the RSB standard.

3.e Technologies:

A majority of participants champion the use of traditional practices as alternatives for sustainable agriculture; biofuel production should take inspiration from agroforestry, in terms of design and management. For example, a plantation's design may highly influence the degree of soil erosion.

Intercropping is seen as a good option (e.g. planting hedges of jatropha), especially in underutilized lands (e.g. coconut plantations in Sri Lanka).

Generally speaking, the participants consider that agriculture must be revisited; for example, governments should never support or incentivize crops that are not adapted to the context (e.g. currently, rice and sugarcane are also subsidized in dry region, whereas these two crops are over-consuming water). Ecological balance and food security should initiate a new green revolution.

4. BREAK-OUT SESSION 2: Social Aspects

4.a Land and Water Rights:

In South Asia, these rights are usually well protected but participants consider that the government has the power to decide about anything, including going against these rights for the sake of national development. All participants agreed that the definition of waste lands is really needed and must include traditional uses as well. The RSB criteria could help reviewing the national definition, e.g. India, that exists for waste land. India has announced that 30 millions hectares of waste lands remain available. For climatic reasons, all of them could not be used for biofuel production in any case. The fear exists also, that these so-called waste lands are already used for other purposes than agriculture (traditional use, wood collection...).

One participant explained that usufruct can be a good option to allow poor farmers to cultivate some land owed by government. If, in last resort, villagers lose some lands, the compensation must be fair.

In many situations, small farmers or villagers suffer from excessive water withdrawals upstream from where they live. Pesticides are also mentioned as frequently affecting water resources' quality.

Water committees exist in Nepal and India and are in charge of the fair sharing of water harvested from rainfall, not for ground water though. In the regions where the water table is critically low, any withdrawal is forbidden ("dark zone").

As no proper legislation usually exists on water rights, standards like the RSB criteria could certainly fill the gap and ensure a fair distribution.

4.b Rural Development:

Many participants do not have a clear picture of the current situation and targets for improvement; hence in every location, a baseline survey is needed to measure social performance, as involves current principle #2. In order to favor local development and energy security, decentralized systems should be developed by corporate sector. Meanwhile, some participants indicate that plantations are not forcefully bad and remain an important economic and a community model in South Asia.

Several times, the responsibility of governments was pinpointed to put the right incentives through policies and financial schemes.

As a success story, the business model of tea producers in Sri Lanka (65% of total production in the hand of small farmers) should be used for inspiration. This is evidence that large scale is not incompatible with small farmers. Small scale models exist in India as well, and with a good technological input, yields can be high.

The remark was made that cheaper production costs in neighbor countries like China might make imported biofuels more attractive than local products, with a risk of lower fuel quality.

Some training among farmers is needed, though, as well as adequate financial schemes to prevent crop failure and incent investment. On this, companies, government and NGOs have a complementary role. As the financial responsibilities should ideally be share among all actors, microfinance schemes are thought of as a complementary option to ensure better security and broader access. In Madhya Pradesh, it seems that some carbon credits are even generated by jatropa plantations and used as funds for farmers.

In some part of the country, some infrastructures are needed and companies should commit to develop them. Local employment is not straightforward though, as in Malaysia where migrant workers are preferred because they claim for lower salaries. Local employment must be promoted.

The possibility of crop failure must be well considered if some initial investments are required from farmers. Ideally, loans should be taken when the financial responsibility is shared among several stakeholders (farmer, processor, retailer, distributor, etc...).

One crucial question about waste lands: how far are these from farmers' villages? Would the villagers have to migrate over a long distance? Would their villages benefit from rural development and infrastructure then?

4.c Food Security:

The participants acknowledged that biofuels were not the main reason that explains the current food crisis, in comparison with population increase and livelihood improvement. A criterion to measure the risk upon food security can be the amount of land that is switched from food to energy production.

By improving the crops (new hybrids), blending requirements in India could be largely fulfilled through technology improvement (e.g. sweet sorghum).

Generally in India, producing biofuels out of food product does not occur.

Many call for the priority to be put on food but an important element is that fuel shortage will also make production costs and food prices higher; hence, the right balance between food and fuel needs is to be found.

Generally speaking, participants would be in favor or producing biofuels on waste lands only and developing R&D to produce more efficient hybrids, especially for jatropa, sweet sorghum or pongomia pinnata.

Energy needs for cooking must also be ensure while developing biofuels.

4.d Labor rights:

The question of child labors is much more complex than it seems. Some street children might know a better perspective with an employment in a farm. Seasonal work from children to help their family is also crucial in some regions. The RSB must absolutely distinguish between employment and exploitation.

4.e Gender:

This critical aspect could be approached through the example of Women Self Help Groups, which already exist in South Asia as a model. However, it is still rare that women own some land, so conflicts might arise whenever some benefit is made out of the land.

In conclusion, some very promising models are already under experimentation, not always with the most commonly described crops. For example, ICRISAT works on small models based on sweet sorghum, where the individual income can be radically increased by switching to better hybrids. ICRISAT provides technical support, training and inputs.

It is agreed that companies have the responsibility to develop local infrastructures and give the priority to local employment instead of incentivizing migrant workers to come for lower salaries.

5. BREAK-OUT SESSION 3: Implementation

5.a Legal context:

Rather than the absence of laws, the implementation of laws is sometimes problematic. The 2nd Principle of the RSB indicates that producers must comply with any existing laws, but if some laws are not actually enforced, what can be realistically be expected from the producers? Furthermore, compliance with existing laws is not always relevant, as several may have been established centuries ago without revision. The RSB standards are considered to possibly encourage law revision whenever needed. In federal countries, interstate water and land rights should be carefully monitored as a potential source of conflicts.

5.b Role of governments and other actors:

The role of government was pinpointed as crucial since producers alone cannot be held responsible for all the aspects related to sustainability. The involvement of other important actors such as banks and investors was highlighted in the case where farmers may have to wait for several years before yields become satisfying, as in the case of Jatropha (farmers that have faced crop failures without support from financial institutions to cope with the situation, are now reluctant to take risks). NGOs and scientists are needed to spread information about crops, environmental and social impacts of unsustainable agriculture and the stakes of switching toward sustainable practices. Environmental and Social Impact Assessments prior to new biofuel projects could be integrated in companies' CSR, where relevant.

Finally, some clarity is needed within governments, since policies on fuel (e.g. development of market flex fuel vehicles) involve several ministries and create confusion about each one's role.

5.c Financial security (business model):

In Punjab, farmers tried to switch crop in order to grow jatropha but after several years without obtaining a decent yield, they finally turned back to their former crops and are now reluctant to grow biofuel crops. The reason is that they were uninformed about the fact that jatropha takes 3 to 5 years to reach its optimal yield and during this period, farmers must receive financial assistance from banks or microfinance institutions. This would help 1) ensuring an income for the farmer and family over the period of growth and 2) equitably share the financial responsibility among several stakeholders so that a single does not have to ultimately bear all the consequences in case of failure. The NABARD, in India, should play an increasing role in proposing financially sustainable schemes for the development of sustainable biofuels. Furthermore, the RSB should ensure that the costs of complying with the standards do not make projects economically unviable. By linking biofuels projects to CDM (See chapter 6.) or other mechanisms, some incomes could be generated for the communities

5.d Need for consultation, participation, information and training:

One of the main requirements for implementation is to raise awareness and provide proper training about new crops and techniques. The consultation and information of community must occur at the implementation stage as well, especially since some of the criteria are highly technical and far from the day-to-day reality of small farmers. Important aspects such as jatropha's poisonous nature or delayed Return On Investment should be fully understood by the communities. Furthermore, the participation of indigenous people is very much helpful in the environmental assessment or mapping processes, as well as for traditional sustainable practices for agriculture.

5.e Need for decentralized systems:

In order to bridge the gap in communication between farmers and government, a significant part of the implementation, the communication, the sensitization and trainings should be delegated to regional administration, in particular in federal countries such as India. The indicators for follow-up should be developed at the local level, with the participation of local actors and the verification of projects should ideally be delegated to regional groups involving community participation. Certifying agencies must, however, remain fully independent.

5.f Small scale vs large scale:

According to several participants, the economic viability of small-scale projects will be difficult without a proper business plan that includes the valorization of byproducts such as those extracted during jatropha processing into biodiesel (see [Mercedes-Benz pilot project on jatropha in India](#)). However, "smallholders" is not incompatible with "large scale", as shown in Sri Lanka where 65% of the tea production is in the hands of smallholders. Even the corporate sector recognizes the need to promote local production and local consumption (pure vegetal oil can be used to produce electricity) before huge national schemes for exportation. Companies such as 'Amul' (leader in food products in India) have even integrated cooperative systems and small scales within their production. No general statement to make but all the scales must be assessed in each context in order to find the most sustainable option, with the priority to be given to community's livelihood before companies' profit.

Cooperatives are an interesting system, but their high level of politicization may orient them toward wrong options.

6. Jatropha: What do we really know?

As the jatropha fever has been spreading rapidly over the last months and years, especially in India, it seemed worthwhile to organize a special discussion to discuss the state of knowledge on this crop and try to sort out myths from reality. At the beginning, jatropha (most of the time, we are talking of *Jatropha curcas* but several other species exist, with interesting potential) was presented as a miraculous plant, which would need no or few water, pesticide or fertilizer, may help soils recovering and grows everywhere, including desert. Furthermore, as a non-edible crop, the pressure on food security would be limited. Suhas Kadlaskar (Mercedes India) presented results from experimental research on jatropha biodiesel, Jyothi Parikh (IRADe) showed facts and figures related to jatropha in India, whereas S. Sriram (Tata Chemicals) highlighted unknown aspects of jatropha production. Participant agreed that more Research & Development was needed on jatropha before governmental support schemes be put in place and massive investments be made in this domain. Jatropha is only one option among others. Below are the main outputs from presentations and discussions:

Jatropha's ideal conditions are rainfalls above 600 mm/yr, a pH below 9 and some specific temperatures with the consequence that, out of the 60 millions hectares of so-called waste land, only half of it would be suitable to grow jatropha.

The current Indian price of jatropha (no subsidies) is of about Rs 10/kg (seeds) and Rs 42/L (oil). Without subsidies, one can consider that jatropha will only be viable if byproducts are also valorized (e.g. 2/3 of the seed makes a cake that is rich in N, P and K), especially because the yield remains low during the first 3 years. In many areas, farmers are more familiar with Karanj than jatropha, although the first does not give as good results as the second. Some training and time are hence needed for them to accept to switch. Although no biofuel projects have been officially accepted as CDM, some jatropha projects in Madhya Pradesh have generated carbon credits, possibly through a special program from the World Bank. Credits are to be shared among the stakeholders. Prices are 5\$/T whereas in Europe, it is about 15-20EUR/T, so prices are likely to go up.

Yields for jatropha may range between 0.4 to 4 MT/ha (depending on the inputs used for cultivation), the interaction with pests –hence, the possible need for pesticides- and other crops remain uncertain, business models must be well designed to ensure viability and many technical aspects of cultivation and harvesting have not been well studied yet.

An important point was made several times: as a perennial crop that lasts for more than 30 years, the development of contract farming must be considered over the long term. The long term cultivation on degraded lands is not really well known, as the experimentation on jatropha is mostly conducted on fertile land under controlled conditions. It was recognized that there is a need for better coordination amongst different trials and projects, and the development of projects on degraded lands.

Summary of positive and negative points related to jatropha:

Positive Points:

- Higher potential of CO2 savings without forcefully encroaching on biological conservation areas or arable lands.
- Since it is not edible, producing jatropha on marginal lands would not lead to competition with food or feed usages.
- Several byproducts obtained during processing, which can be sold to increase economic viability, e.g. seed cakes, glycerin.
- Seed cakes can be used as fertilizer.
- Lifespan of about 30 years.
- Jatropha can be planted as hedges around food crops or intercropped.
- As a perennial crop, it reduces soil erosion.

Negative Points:

- Unknown long term effects regarding nutrient response, water pattern and genetic flows, if biotechnologies are used.
- Unknown correspondence between the different breeds and the different climates. It cannot grow under any climate (e.g. does not grow in Rajasthan).
- Unknown effect of 'jatrophin' (the toxic substance contained in jatropha) on associated crops. More research is needed about the path and degradation of chemicals emitted in the air and the soil.
- Even limited, irrigation is needed in several cases
- Competition with intercrops request further investigation.
- Steams from oil extraction are toxic and byproducts may also need to be detoxified.
- Increased acidification of soil.
- Wherever invasive, jatropha could attract new pests in fields and on neighbor crops.
- Difficult to make jatropha economically viable only as hedges when more profit can be made by setting a plantation.
- Even though this plant can grow with minimal inputs,, farmers might be tempted to increase yields by using more water and amendments.
- Some technical issues need to be explored such as the male/female ratio or the contrasts of fruits maturity on a single tree (difficulty for harvest).
- All the current pilot projects are established on fertile lands under controlled conditions.
- Jatropha fever prevents R&D or investments in other potentially interesting crops!

For more details, please view the following presentations:

- [Jyoti Parikh \(IRADe\)](#) – *technical and financial aspects of jatropha cultivation.*
- [S. Sriram \(Tata Chemicals\)](#) - *issues related to Jatropha.*
- [Subas Kadlaskar \(Mercedes\)](#) – *Daimler's pilot projects on jatropha in India.*