

# Book Review

## **Biodiesel in India – Value Chain Organisation and Policy Options for Rural Development.**

Altenburg Tilman, Dietz Hildegard, Hahl Matthias, Nikolidakis Nikos, Rosendahl Christina and Seelige Kathrin. 2009. German Development Institute (DIE), Bonn. Pp. 139.

The German Development Institute as a part of postgraduate training programme prepared the report on '*Biodiesel in India – Value Chain Organization and Policy Options for Rural Development.*'

The six authors are the researchers who carried out this research project in five Indian States, viz. Andhra Pradesh, Chattisgarh, Karnataka, Tamil Nadu and Uttarakhand who have pioneered in promoting biodiesel production.

The present book provides mainly an overview of the positive effects of the biodiesel production in India. It identifies various ways of organizing biodiesel value chains ranging from cultivation on large plantations to contract farming, small holder production for rural electrification and social forestry projects. It also highlights that each of these wide range of ways have different effects on income generation, participation and empowerment, food security, natural resources management and climate change.

The book starts with a brief summary broadly consists of six comprehensive chapters followed by extensive bibliography and Annex. The first introductory chapter highlights that production of biodiesel from tree-borne oilseeds (TBOs) is seen as an option for substituting fossils fuels, reducing CO<sub>2</sub> emissions, afforesting wastelands and generating rural employment.

However, biodiesel production in India which is an early stages has been widely criticized of being replaced the fertile agricultural land in order to divert the cultivation of fuel crops at the expense of food



production. Further, it has been seen that in some countries biodiesel production increased the green house gas emissions because forests are cleared for their cultivation and high energy inputs are used to produce some of the fuel crops. Above all, yet it is unknown about the economic viability of biodiesel from TBOs and its prospective socio-economic and environmental impacts.

Overview of the biodiesel in the global context has been presented in chapter two. It was stated that from 1971 to 2005, the world's final consumption of oil rose from 2000 million tonnes/year to almost 3500 million tonnes/year (IEA 2007). Correspondingly the price for crude oil in the world market went up from 20 US\$ barrel in the 1990s to over 145 US\$ barrel in July 2008. In view of the increase global energy consumption, countries all over the world have launched biofuel programmes to develop alternatives to conventional fuels. The distinction between bioethanol and biodiesel has been presented very clearly in the chapter.

The profile of Indian biodiesel sector has been comprehensively presented in the third chapter. It has been stated that the Indian biodiesel sector is different from biofuel activities in many countries of the world because it is based on the use of non-edible oils derived from oil bearing trees that can grow on less fertile land. Further, the chapter highlights the ongoing public debate on biofuel whether the cure is worse than the disease. As its criticism mainly regards two aspects, a) the impact of biofuel production on food security, and b) overall positive net carbon balance of fuels. As regards to food security, it questions about the impact of biofuel production on the rise of food prices. Further, it is also disputed whether a rise in food prices increases or decreases food security. The chapter gives clear cut three reasons for impact of biofuel production on the rise of food prices. First, the raw material used for biofuel production like maize, sugarcane, palmoil and rapeseed do not enter the food market which effected food supply; secondly, farmers could worldwide shift their lands to fuel crop production which also diminishes the supply of food crops. Lastly, rising prices food trigger financial speculation on agricultural commodities on the world's stock exchanges, in turn leading to price rises. However, there are differences of opinions regarding the estimates of impact of biofuels on food prices. The chapter also reveals that rising food prices need not be judged negatively from the perspective of the world population living below the poverty line. Therefore, it states that the way the poor are affected depends heavily on whether they are net food buyers or net food sellers.

To assess the impact of biofuels on climate change, life cycle emissions are needed to be taken into account. It has also been stated that the international expert community more or less agrees that biofuels are better for the world climate than fossil fuels.

As stated earlier the status of biodiesel in India is different from other countries of the world because it is based on the use of non-edible oils derived from oil-bearing trees that can grow on less fertile land. India being the seventh largest ethanol producer, with an annual production of 200 million litres of ethanol, biodiesel production in India started only a few years ago. The chapter is divided into three sections on the basis of three steps of the biodiesel value chain, i.e., cultivation, processing and consumption. A very useful self explained figure (pp. 19) depicting the biodiesel value chain in India is also given for the benefit of the readers as well.

It is very clearly mentioned in the chapter that biodiesel production in India involves very high risks for the environment and food security mainly due to the type of feedstock used and the less nutrient land that it is planted on. As compared to Malaysia, Indonesia and Brazil, there is very little threat in India that natural forests would be destroyed for biofuel plantations. The chapter has suggested that biodiesel production can be integrated into forestry programmes and therefore can contribute to afforestation. It also holds that production of biodiesel has the large potentials for the development of India's agricultural sector and rural areas, as it is very effective in generating additional income and employment of the rural population. In addition to that, oil bearing trees may help to restore degraded land and to increase forest cover. Above all, through this, India's dependency on oil imports would gradually diminish and reduce CO<sub>2</sub> emissions substantially.

An overview of the Indian biodiesel policies at the Central and State level has been analyzed in the next chapter. In analyzing so, the chapter discusses the rationale for policy makers to intervene in the biodiesel market. The chapter highlights that despite the potential, a biodiesel market in India has not developed fully due to a series of market failures. Being a new development in the field of TBO-based biodiesel production most of the potential cultivators lack information about cultivation methods, required inputs, expected yields, available support measures and the development of the market. Apart from this, there is a lack of access to credit markets and to land. As a result of these factors, there is clear cut justification for State and Central Government intervention.

The chapter indicates that in September 2008, a “National Policy on Biofuels” was finally approved, and it was decided to set up a National Biofuel Coordination Committee chaired by Prime Minister and Biofuel Steering Committee chaired by the Cabinet Secretary. The Ministry of New and Renewable Energy has been given the responsibility for the National Policy and over all coordination.

Further, the chapter also examines the different approaches taken by the selected States depending upon their state conditions such as availability and ownership of uncultivated land, societal structure and the actors involved like Government departments, local communities, private farmers and corporations, etc. as well as on the specific targets its aim to achieve.

The fifth chapter discusses the multiple ways of organizing the biodiesel value chain in India. At present, the biodiesel sector is still in a nascent state and no dominant mode of organization has yet been established for the value chain. The chapter identifies 13 cases of organizing biodiesel value chains organization in five Indian States. Each case shows a specific form of value chain organization, with substantial differences regarding the main investors, the purpose of biodiesel production and the way plantation activities, processing and marketing are organized. Further, these case studies have been grouped into three main categories, for instance, government-centred cultivation, farmer-centred cultivation and corporate centred cultivation. Under the government-centred cultivation, some cases, viz. *Jatropha* cultivation on forest in Uttarakhand, revenue and communal land in Chattisgarh and cultivation of *Pongamia* on forest land in Andhra Pradesh, have been analyzed.

The chapter states that government-centred cultivation have the potential to improve rural livelihoods by contributing to employment as well as to income generation. Specifically it shows that landless labourers can benefit from cultivating and collecting TBOs on government or communal land, either through government-sponsored wage employment programmes for planting and maintenance or by collecting seeds or through both. In fact, the study also reveals that lack of economic sustainability in the government-centred cultivation hinders the positive implications that biodiesel production can have on rural development. It also focuses on main objective of the corporate investors engaging in the biodiesel sector is to maximize productivity and returns on investment.

The final chapter summarizes the main findings and policy recommendations. It stresses that before looking at the actual and potential

impact of biodiesel on rural development, there is need to assess the chances that a market for biodiesel would emerge in India. The book emphasizes that the future of biodiesel in India hinges on its economic viability. As very few private farmers and corporate investors have engaged in fuel crops and a market for biodiesel has not yet emerged, because biodiesel is not competitive with conventional diesel at current market prices. A number of policy recommendations have been put forth for policy process and programme implementation in India. In conclusion, the book advocates that a biofuel programme should pursue many objectives that are shared by other programmes, such as the National Rural Employment Guarantee Scheme (NREGS) and other schemes for water harvesting, drought-prone areas or afforestation.

On the whole the book gives an indepth account of biodiesel production in India, highlighting different aspects of its benefits and risks with many examples from different Indian States. The book is loaded with comprehensive analysis of the wide range of agricultural techniques and their impact on income generation and rural empowerment. The book also contains a comprehensive bibliography on the subject. It is a great source of information for the students, scientists and researchers, civil societies and the stakeholders about the implications and prospects of biodiesel production in India.

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