

# **Biofuel policy process in India**

## **Context, Actors and Discourses**

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### **Abstract**

Public policies are influenced by discourses depending on how powerful these are, not only in terms of what the discourses are conveying but also the context and issues these are talking about. This seems to be the case for biofuel policy in India. Criticism of biofuel programs, in general, has been mainly on the account of supposed impact of biofuels on food security as well as on biodiversity. However, the Indian context does not entail use of food crops for biofuel production and is dependent on second-generation biofuels grown on wastelands. This complex and intriguing policy scenario in which differing contextual realities are perceived and arguments put forward by various stakeholders, point to the interplay of various perceptions, interests and discourses. In spite of the biofuel issue being a significant one in terms of its economic, environmental and geo-political impact, the biofuel policy process in Indian context has not been studied. This paper aims to fill this gap to some extent by providing an understanding of the context, actors and discourses in the biofuel debate in India. Adopting an actor oriented approach and utilizing concepts in policy process analysis, this paper seeks to understand various such factors that may be influencing the emergence of biofuel policy in India.

### **Introduction**

Current world economy runs on fossil fuels. This is especially true for the transport sector that accounts for around 20% of the total world delivered energy consumption and is dependent on petroleum fuels for 98% of its energy requirement (EIA<sup>a</sup>, 2007). With the emergence of China and India as new growth centers in the world, scrambling for fossil fuels has become intense<sup>1</sup> (IEA, 2007). An emphasis on energy security has also led to the quest for alternative sources of energy that can replace petroleum dependence. Biofuels are one such alternative that has been emphasized by various countries and international institutions as fuels for the future.

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<sup>1</sup> China and India are expected to experience the fastest expansion in transportation sector energy use in the world. (EIA<sup>a</sup>, 2007)

Biofuels are any fuel that is derived from biological sources. Wood, charcoal, dung and plant based oils (used as fuel) are some examples of conventional biofuels. However, recent emphasis has been on plant-based oils that can be used to supplement petroleum fuels. Such biofuels can be categorized into two types, bioethanol and biodiesel, depending on whether it is a supplement of petrol or diesel respectively. Further, based on the feedstock from which biofuels are extracted, biofuels are categorized as first generation (if the feedstock is edible in nature), second generation (if the feedstock is non-edible) and third generation (if the source of oil is whole plant material or microorganism like algae).

Biofuels in the conventional sense have always been an important source of energy. Even in the present times almost half of the world's population, especially in the rural areas depend on biofuels to provide cooking energy<sup>2</sup> (Johansson et al, 1993). However, the new biofuels (bioethanol and biodiesel) have lately gained importance due to various economic, geo-political and environmental reasons.

## **Background**

At the global level EU and US are the major geographical drivers of biofuels. Whereas US is more keen on bioethanol, EU strategy is focused primarily on biodiesel. EU has further proposed to source most of its biofuel requirement from developing countries (CEC, 2007).

An emphasis on biofuels as an alternative energy source has been an issue of concern lately. These concerns are related to the impact of biofuel not only on the food security (Ziegler, 2008) but also on the environment and socio-economy (CEC, 2006).

However, as of now the biofuel policy process around the world does not seem to be affected by these concerns. For example EU is continuing with its biofuel policy but with stricter criteria for sustainable biofuel production (CEC, 2008). India, on the other hand, sees its biofuel program to be sustainable because of the program's dependence on non-edible feedstock, which is supposed to be derived from wasteland and thus does not entail diversion of farm land or food crops (Chauhan, 2008).

In India, Planning Commission's 'Vision 2020' report called for plantation of non-edible oil yielding plants on large areas of waste and degraded lands in the country (Gupta, 2002). Taking a cue from the report, the Indian government decided to blend 5% ethanol in petrol in

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<sup>2</sup> In India almost 70% of the population lives in rural areas and consume 30% of the total primary energy, which largely is derived from fuelwood, chips and dung cakes (Gokhale 2006).

selected states and announced a biodiesel purchase policy in 2005<sup>3</sup> (MoPNG 2004, 2005). Various state government drafted policies and had setup institutions for promoting biofuels in their respective states. The states have also formed rules for allocation of wastelands to various entities for the plantation of biodiesel crops. Encouraged by government's actions and sensing opportunities in the upcoming sector, various companies have proposed large investments to set up biodiesel production facilities.

In a country where land is a precious and contested resource, biofuel is considered a win-win situation as biofuel plantations on the wasteland would not only lead to energy security but also provide livelihoods to the rural communities. However, a few academic as well as empirical studies and experience of several Non Government Organizations (NGO) about the so-called wastelands and the dependence of communities on these resources provide a different set of context and discourse (Shiva and Sankar, 2008; Negi et al, 2006). Moreover, media and some international organizations have recently been critical of the impacts of biofuel.

Though the term 'biofuel' pertains to ethanol as well biodiesel, it is mainly biodiesel production in India that is surrounded by concerns and controversies. While, it would be desirable to look at the whole biofuel issue including ethanol, in this study, the term biofuel refers to biodiesel unless specified otherwise.

The paper presents a theoretical framework first to be used in the discussion section. Later sections discuss the analysis of context and role and discourses of various actors in the biofuel process (State, Private Sector and Civil Society).

## **Theories of the policy process**

The whole process of policy making is more discursive than linear and involves a multitude of variables that define and in turn get influenced by the policy process (Sabatier, 1999; Kingdon, 2003; Radaelli, 1995). In simple terms, a policy process is defined as consisting of various stages. Essentially these can be divided into agenda setting, issue formulation, discussion and policy formulation, implementation and evaluation (see Brewer and deLeon, 1983). Various authors (see Lindblom, 1993, Sabatier, 1999) criticize such a 'stages approach' for its simplistic description and implied assumption that policy making is a systematic and rational process. Instead, policy process has been described as a "primeval

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<sup>3</sup> Indian government declared a Biofuel Purchase Policy in 2005 whereas a comprehensive biofuel policy that sets the direction in which the sector is to move and incentives and structures to facilitate that is still pending.

soup” ‘with action occurring fitfully as problems become matched with policy ideas considered to be in the political interests of a working majority of the partisans with influence over a policy domain’ (cited from Kingdon, 1984 in Lindblom, 1993, 10).

Policy process involves various actors, networks, their interactions and their knowledge, communication of knowledge and politics; and thus needs to be seen through ‘multiple lenses’ for a holistic understanding of it (Sabatier 1999). Various theoretical frameworks have evolved that focus on different variables in the policy process. For example ‘institutional rational choice frameworks’ looks at ‘how institutional rules alter the behaviour of intendedly rational individuals motivated by material self-interest’. ‘Multiple-streams framework’ focuses on ‘policy process as three streams [problems, policy and politics] of actors and processes...which operate independently of each other, except when a “window of opportunity” permits policy entrepreneurs to couple the various streams’ (Sabatier 1999, 8-9). Sabatier analyzes a wide range of theoretical frameworks for analysis of the policy process and suggests that understanding the policy process requires attention to the policy debates and the role such debates play in the overall process. According to him debate not only involves scientific knowledge but also deeply held values, interests, money, and coercion. He further suggests that knowledge is not only used for generating and advancing an idea in the policy making process but also, sometimes, evidences are misrepresented to undermine the opponent’s position or advance one’s own ideas.

### **Argumentative approach to policy analysis**

The argumentative approach focuses on argumentation in policy analysis. Arguments are needed not only to clarify positions with respect to an issue but also to bring other people to a particular position (Majone, 1989). Majone further argues that in the process of argumentation, rationalizations are given by various actors who seek to justify the policy by appealing to the ‘public interest and the intellectual merits of the case’ (ibid, 2). For Majone ‘[a]rgumentation is the key process through which citizens and policymakers arrive at moral judgments and policy choices’ (ibid, 2).

Hajer sees the challenge to argumentative analysis as finding ‘ways of combining the analysis of the discursive production of reality with the analysis of the (extradiscursive) social practices from which social constructs emerge and in which the actors that make these statements engage’ (Hajer, 1993, 45). Thus it is not only important to look at the arguments that various actors provide but also the context in which these arguments are embedded.

## **Concepts of policy process as a discourse**

‘Discourse’ as a term has many meanings and is used in various ways by different theorists (Mills, 1997). Discourse can be defined as ‘ensemble of ideas, concepts, and categorizations that are produced, reproduced, and transformed in a particular set of practices and through which meaning is given to a physical and social realities.’ (Hajer, 1995, 44).

Hajer’s concept of discourse coalition is important in the sense of identifying similar set of discourses that stakeholders, having interest in a particular issue, engage in. Such coalitions present a particular view of the constructed reality. Conflict or struggle among such coalitions to dominate the discursive space is seen as the main aspect of the policy process. In fact discourse coalitions emerge because various actors would struggle to create ‘discursive hegemony’ (Hajer, 1995, 65). Hajer points to two main conditions that a discourse coalition needs to fulfill to dominate the policy process, viz. the successful use of rhetoric to dominate the discursive space and secondly, ideas of the dominant discourse to come in institutional practice (Hajer, 1993, 48). These are termed as discourse structuration and discourse institutionalization respectively. Discourse structuration happens ‘when a discourse starts to dominate the way a society conceptualizes the world’ (ibid, 46). Hajer further suggests that social constructs also do not ‘free float’ but can be tied to some institutions and actors. When a discourse becomes successful it takes the form of an institution and this process can be termed as discourse institutionalization (ibid).

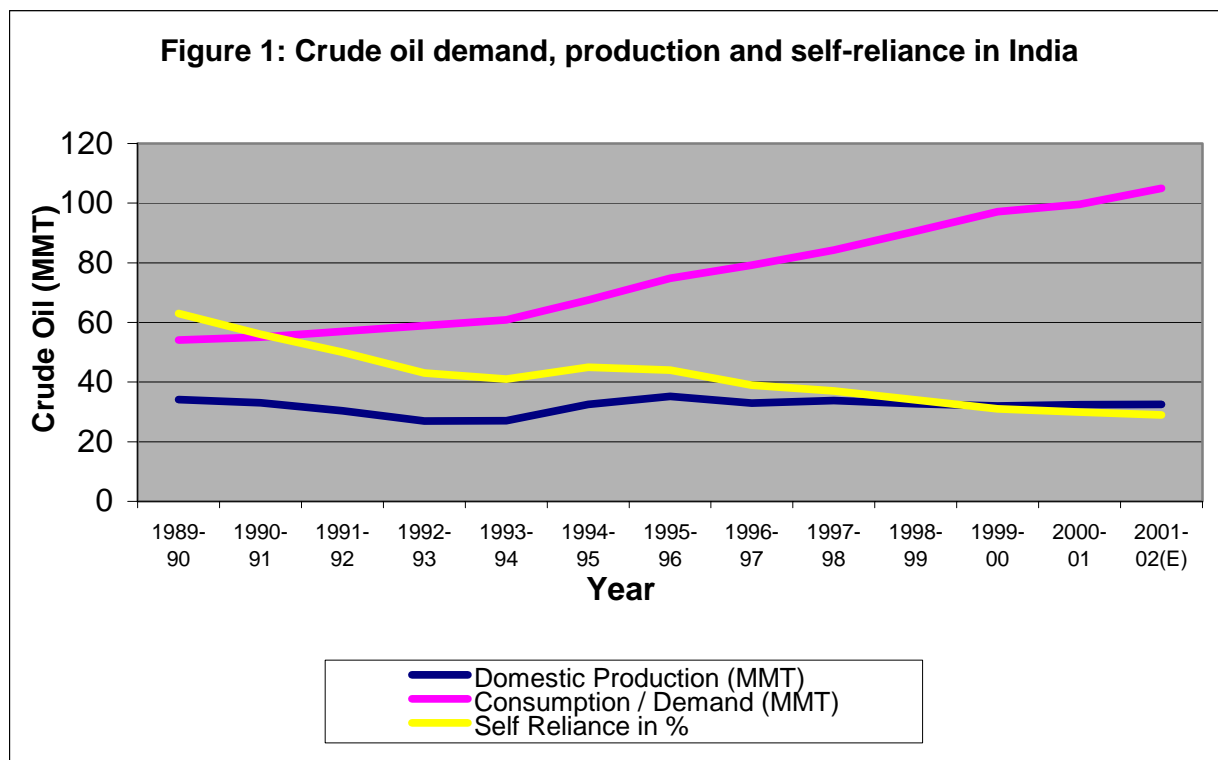
## **Using policy theory for studying biofuel policy process**

Identifying factors that influence emergence of a shift in policy is a difficult task. Further, as Schmidt and Radaelli (undated) argue, ‘in looking for causal influence, discourse can never be *the* factor that explains policy change, or *the* cause. Leaving aside the question of whether any one factor can be *the* cause—we believe none can be’. Therefore, besides taking an actor oriented approach to analyze interests, positions and arguments in the following sections, the concepts of policy process as discourse are used in the discussion section. However, a systematic use of constructivist approach to policy analysis would involve the method of discourse analysis, which is not employed in this paper due to lack of primary data. But these concepts are used in discussion to look at the results of the analysis from a theoretical perspective.

## **Biofuel Policy Context in India**

## Energy economic Context

Demand for petroleum fuel constitutes 40 percent of total energy requirement in India, and India is projected to be the third largest net importer of oil in the world (EIA<sup>b</sup>, 2007; IEA, 2007). There is an increasing gap in production and consumption of crude oil in India (see figure 1) costing the country Rs. 1972.77 billion as import bill in 2005-06<sup>4</sup>.



Source: indiastat<sup>5</sup>

Transport sector is the second largest consumer of petroleum oil in India and is slated to grow at the fastest rate as compared to other economic sectors (IEA, 2007). Moreover, petroleum oil provides 95% of transportation fuel<sup>6</sup>. With the exception of biofuels there are no alternative fuels for use by the transport sector at present.

To reduce the environmental impact due to growth in the transport sector, Auto policy of Government of India (GoI) stipulates emission norms for vehicles. The new vehicles, under the policy, are expected to comply with Bharat III stage norms by 2010. Blending of biofuel is expected to reduce the emission in the transport sector. Further, India is also signatory to

<sup>4</sup> Source: <http://petroleum.nic.in/petstat.pdf> accessed on 20/05/08

<sup>5</sup> Source: [www.indiastat.com](http://www.indiastat.com) accessed on 13/05/08

<sup>6</sup> In 1996-97 Transport sector's share in final energy consumption in India was 22.3% (Source: [www.indiastat.com](http://www.indiastat.com) accessed on 15/05/08)

Kyoto protocol but not bound by emission reduction target. However, it can benefit from the Clean Development Mechanism under the protocol<sup>7</sup>.

The rural energy scenario is also pertinent for biofuel policy context in India. Around 72 percent of the population in India still lives in rural areas. 77 percent household in rural areas and 23 percent in urban areas still depend on firewood and dung for fuel (Shrivastava and Mathur, 2007). Biomass sources like wood, chips and dung cakes, contribute around 30 percent of the total primary energy consumed in the country (Gokhale, 2006). Village common lands, wastelands and forestland constitute major source of this biomass.

### **Ecological degradation and wasteland**

#### *Box 1: Wasteland*

Wastelands is a medieval English term used in a legal sense to refer to land that was unoccupied, undeveloped or uncultivated. As a result, the land could not be the source of any tax or other revenue to its owner. The term was similarly applied to property that had been allowed to deteriorate, or had even been purposely damaged, so that its value (whether in terms of selling price or rentability) decreased. Unfortunately the term wastelands continued to be used effectively in British India and subsequently in Independent India to denote lands, which were 'unoccupied' or 'undeveloped' and could be conveniently diverted to various development or plantation schemes. Many of these lands were actually grazing lands used by the village poor, the landless or migratory pastoral herding communities but seldom have these 'grazing' needs been carefully considered in 'wasteland development' programmes.

Source: Ramdas and Ghatge (2006)

Land resource in India is under tremendous human and livestock pressure as it supports around 16 percent of the world's human and 20 percent of livestock population on a mere 2.5 percent of the world's geographical area (GoI 2001). A large part of this land area is also designated as wasteland, which is around 55 mha<sup>8</sup>. Nevertheless, wastelands

are not barren areas devoid of vegetation but are degraded common lands that are used by a large number of rural communities for their livelihoods (see box 1).

Besides wastelands, India has 19.39 percent of its land area under the forest land category. Around 41 percent of forest cover of the country has already been degraded (MoEF, 2006).

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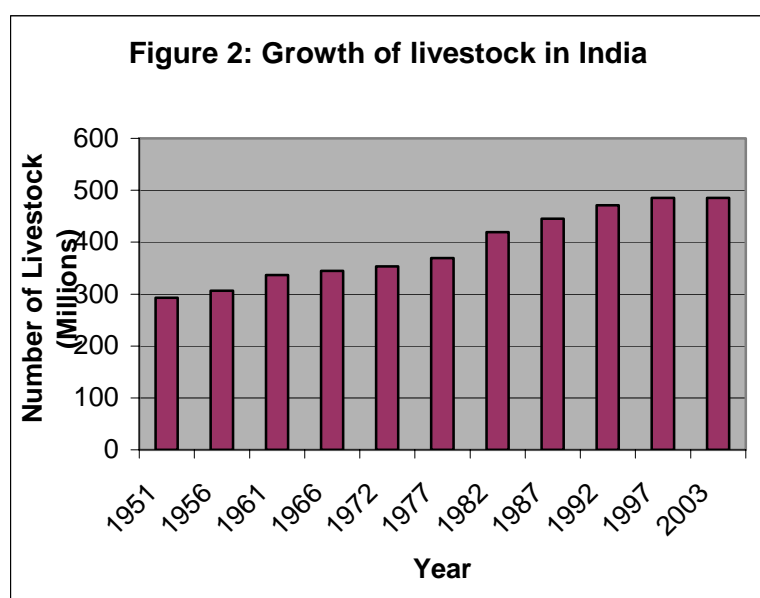
<sup>7</sup> The Clean Development Mechanism (CDM), allows a country with an emission-reduction or emission-limitation commitment under the Kyoto Protocol to implement an emission-reduction project in developing countries. Such projects can earn saleable certified emission reduction (CER) credits, each equivalent to one tonne of CO<sub>2</sub>, which can be counted towards meeting Kyoto targets. The developed country can benefit in terms of meeting their emission reduction targets, whereas developing country like India can benefit from the technology and project funds that are channelized. (Source: [http://unfccc.int/kyoto\\_protocol/mechanisms/clean\\_development\\_mechanism/items/2718.php](http://unfccc.int/kyoto_protocol/mechanisms/clean_development_mechanism/items/2718.php) accessed on 23/05/08)

<sup>8</sup> Different sources give different areas of wasteland. For example NWDB give the figure of 129.57 mha with non-forest wasteland being 93.69 mha. DoLR estimates based on NRSA data suggest that the wasteland area is around 55.27 mha in 2003. Such a huge difference in the estimation of wasteland is attributed to different method of data collection. Whereas NWDB's method was based reclassification of the standard land use data, DoLR estimates were based on remote sensing techniques (Chopra, 2001)

More than 95 percent of India’s forest is under state ownership. However, communities have been using forest resources for various purposes like grazing, collection of wood and non-wood forest products, timber, medicinal plants etc. It is these wastelands and degraded forestlands that are proposed to be used for the cultivation of biofuel feedstock (MoEF, 2006).

### Rural livelihood Context

Large majority of the rural population in India is dependent on agriculture and animal husbandry for their livelihoods. Agriculture sector (including Animal Husbandry) provides



livelihood to nearly 60 percent of the population (GoI<sup>a</sup> 2007). Figure 2 shows the growth in livestock in India over the last 50 years. The total contribution of livestock sector to the Gross Domestic Product (GDP) was 4.70 percent in 2004-05 (GoI<sup>b</sup> 2007).

Further, it is mostly the poor that are dependent on the livestock in India.

Source: National Dairy Development Board<sup>9</sup>

This is evident from the planning commission’s statement

‘[t]he ownership of the livestock is more evenly distributed with landless labourers and marginal farmers owning bulk of livestock. The progress in the sector results in balanced development of the rural economy particularly in reducing the poverty amongst the weaker sections’ (GoI<sup>b</sup> 2007).

**Table 2: Grazing Resources in India (2000-2001)**

Resources	Area	Percentage of total

<sup>9</sup> [http://www.nddb.org/statistics/population\\_india\\_species.html](http://www.nddb.org/statistics/population_india_species.html) accessed on 28/05/08

	(Million Ha.)	geographical area
Forests	69.41	22.70
Permanent pastures, grazing lands	10.90	3.60
Cultivable wasteland	13.66	4.50
Fallow land	24.99	8.10
Fallow land other than current fallows	10.19	3.30
Barren uncultivable wastelands	19.26	6.30
Total common property resources other than forests	54.01	17.70
Livestock units / Ha. of Common Property Resource	6.07	

Source: GoI<sup>b</sup> 2007

A significant part of the feedstock for the livestock comes from forest and non-forest lands including wastelands (GoI<sup>b</sup> 2007). Table 2 provides a list of grazing resources and respective land area in India. Although most of these lands are under the state ownership, at the ground level these are managed as public or common lands. Stressing on the development of Common Property Resources (CPR) and wastelands for livestock development the expert committee on animal husbandry in its report to planning commission noted that

‘The Common Property Resources (CPR)...constitute the most important input for livestock production and subsistence for the poor. These are under depletion and degeneration affecting the livelihood security of the poor (GoI<sup>b</sup> 2007, 124)

Thus we see that the context for emergence of biofuel policy in India projects a very complex picture. On the one hand India’s growing economy is leading to rising oil import bill. On the other hand, majority of India’s rural population subsist on the fuels that are derived from biomass, which in turn comes mainly from forest and non-forest common lands. International and national policy scenarios provide an opportunity for initiating programs for alternative energy and regeneration of degraded lands. There is also the problem of addressing the issue of land degradation related to a large livestock population, especially as large number of people are dependent for their livelihoods on the same degraded lands or the so called ‘wastelands’.

## State in the biofuel discourse

### Planning Commission

An analysis of the Planning Commission<sup>10</sup> reports from 2002 onwards on the issue of biofuels is provided in Table 3. The period in which the biofuel agenda surfaces in the policy circles is the 10<sup>th</sup> plan period of 2002-07. However, 10<sup>th</sup> Five Year Plan (FYP) document does not carry any reference to biodiesel but mentions the decision to introduce mandatory blending of ethanol with petrol in phased manner in the country (GoI, 2002). It was the Vision 2020 report of the Planning Commission released in December 2002 that can be considered as the harbinger of biofuel program and policy in India. The report links the development of biofuel with agriculture and suggests that

‘[a]doption of an agriculture-based energy policy...could generate millions of additional on-farm jobs and lucrative alternative markets for farm produce, while reducing the country’s dependence on imported fuels’ (Gupta 2002, 5).

In the report, the wastelands were not only seen in terms of providing feedstock for production of biodiesel but also various other products for the benefit of rural community.

‘Afforestation of India’s vast expanse of wastelands and depleted forest areas for production of wood pulp, timber, fuel, fodder, biomass power, edible and fuel soil [sic], fuel, herbs and medicinal plants for exports can create millions of jobs, while reversing environmental degradation and supporting industrial development.’ (Gupta 2002, 39)

Further, the report envisioned use of wastelands for biofuel production in two ways. Firstly, for the generation of feedstock to be used for a national network of small, decentralized biomass power plants and secondly, for cultivation of *Jatropha* to be used as a feedstock for production of biodiesel. In fact it places more stress on the decentralised power and diversion of more wasteland for producing power than biodiesel through cultivation of *Jatropha*.

### ***Table 3: Planning Commission documents and reports***

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<sup>10</sup> Planning Commission is the central level body formed in 1950 for formulating plans for the most effective and balanced utilisation of resources and determining priorities. The commission works out sectoral targets and provides promotional stimulus to the economy to grow in the desired direction in the form of five year plans<sup>10</sup> which are informed by various studies conducted or supported by the commission. (Source: <http://planningcommission.nic.in/aboutus/history/func.htm> accessed on 05/05/08)

<b>Documents</b>	<b>Date</b>	<b>Proposed biofuel development</b>
10 <sup>th</sup> Five Year Plan	2002	No mention of development of biofuel except ethanol blending
Report of the Committee on India: Vision 2020	December 2002	Mentions biofuel development but more stress on use of wasteland for decentralized biomass production for rural electrification
Report on the development of biofuel	April 2003	Main document providing direction for development of biofuel mainly for substitution of petroleum fuels in transport sector (although it mentions use of biofuel for energy provision in rural areas)
Mid term appraisal of 10 <sup>th</sup> FYP	2005	The approach paper to mid term appraisal cites land rights as the main issue in development of wasteland for biofuel but mid term appraisal does not mention that. It also does not recommend anything with regards to biofuel.
Report of the expert committee on Integrated Energy Policy	August 2006	Calls for an integrated mission on bio-energy having objectives of biodiesel from non-edible oil, ethanol from cellulose and energy plantations
Report on new and renewable energy for the 11 <sup>th</sup> plan	December 2006	The target period for 10 percent substitution of biofuel increases to 2032.
Approach paper to 11 <sup>th</sup> FYP	December 2006	Calls for an integrated view of energy policy involving different sectors. Recognizes that development of wastelands may be causing a conflict with pastoral livelihoods.

Source: Self

While the idea of biofuel as a substitute of petroleum fuels and use of wastelands for its production started on a low-key note, it gained prominence in the report on development of biofuels (see Table 4 for assessment of wasteland requirement in the report on biofuel development).

**Table 4: Diesel & Biodiesel Demand, Area Required under Jatropha For Different Blending Rates**

Year	Diesel Demand Million tonnes (Mt)	Bio-Diesel @ 5% Mt	Area for 5% blending Million hectare (Mha)	Bio-Diesel @ 10% Mt	Area for 10% Mha	Bio-Diesel @ 20% Mt	Area for 20% Mha
2001-02	39.81	1.99	N.A.	3.98	N.A.	7.96	N.A.
2006-07	52.33	2.62	2.19	5.23	4.38	10.47	8.76
2011-12	66.90	3.35	2.79	6.69	5.58	13.38	11.19

Source: Tewari (2003)

However not much progress was made at the ground level till the mid term of the 10<sup>th</sup> FYP. In fact, the approach paper to the mid-term review mentions land rights as the main issue in development of wasteland. However, Ministry of Petroleum and Natural Gas (MoPNG) announced biodiesel purchase policy in October 2005. But later documents of the planning commission are also not very enthusiastic about the development of biofuel in the sense that these documents neither provide further plans nor mention the progress made. On the contrary, approach paper to 11<sup>th</sup> FYP in fact problematizes the biofuel issue

‘Bio-diesel (Jatropha) planting is being promoted through state agencies without seeing all the consequences such as blocking the migration routes of animals and encroaching upon herd-passing pathways. It is vital to ensure that the commons are protected’ (GoI, 2006)

### **Central Government**

Though the issue of development of biofuel started in 2003, it was only in July 2006 that various ministries and departments were given specific responsibilities through a government notification for developing biofuel program (PIB 2007). At present various ministries of the central government are involved in the biofuel program. Prominent among these are Ministry of New and Renewable Energy (MoNRE), Ministry of Agriculture (MoA), MoPNG, Ministry of Rural Development (MoRD) and Ministry of Science and Technology (MoST).

These ministries have different roles, interests and stakes in biofuel development. Similar to the case of Planning Commission, all these central Ministries also started with both the

options in biofuel end use i.e. biofuel as transportation fuel and biofuel as decentralized energy source. However, the 'Mission document on decentralized energy' suggests that though many states have demarcated land for cultivating biofuel crops, the issue of biomass as a source of energy has lacked attention (Gokhale, 2006).

An analysis of press releases of various ministries on the issue of biofuels reveals that the position of all the ministries is similar on biofuel development i.e. they all promote biofuels. During initial years there was no differentiation between using agriculture land for production of biofuel or using wastelands. Further, the Minister of Agriculture emphasized the need for making bio-fuel cultivation economically viable for farmers as an alternative crop (PIB, 2006). Even the planning commission's recent approach paper to 11<sup>th</sup> FYP mentions development of biofuel as a strategy for increasing agricultural output (GoI, 2006).

Except for a couple of questions in the Lok Sabha (lower house of the Indian Parliament) on the negative impacts of biofuels, proceedings of Lok Sabha and press releases from different ministries and Prime Minister's Office (PMO) largely convey a pro biofuel agenda of the government. However, a shift in the statements is observed from March 2008 onwards, starting from the Prime Minister's (PM) criticism of the US policy of using food crop for production of biofuel. Later, MoA also expressed its concern on rising food prices due to biofuel development. However, the government remains enthusiastic about development of biofuel as is evident from this recent statement from Minister of Science and Technology

'we have the ability to completely rewrite the geopolitics of oil if we ensure that the efficiency of transportation in the country - specifically diesel transportation is improved and bio-diesel substitution takes place on a war footing' (PIB 2008).

Nevertheless, the enthusiasm of the central government is still not visible on the ground as the policy on biodiesel has not been announced as yet. Also, neither the proposed national mission on biodiesel nor a biodiesel board been set up. From government statements the main reason for this delay seems to be the recent food price rise and its link with biofuels. Moreover Left parties, which till recently were a critical coalition member of the government, had expressed concern over the development of biofuels and have warned the government against using oil seeds for biofuel production<sup>11</sup>.

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<sup>11</sup> Source: <http://www.hindu.com/2008/04/10/stories/2008041059851200.htm> accessed on 13/05/2008

## **State Governments**

19 states are at present involved in the biofuel program in India<sup>12</sup> (Lok Sabha 2007). Several states like Chattisgarh, Andhra Pradesh and Rajasthan have taken lead in pushing biofuel programs in their states in terms of creating institutions for promoting the program, allocating land for generating feedstock and linking the plantation program with various schemes. The states have also come out with various models for biofuel program, which mostly fall in the category of Public Private partnership. However, there is no information on how successful these programs and plantations have been and how much biofuel is available from these efforts at present.

### **Objectives behind the state programs**

The reason for the states to go ahead with the program without a clear national policy is given in the statement of Chattisgarh Biofuel Development Authority (CBDA) executive director

‘We have launched our Jatropha plantation programme taking a cue from the Planning Commission’s document, National Mission on Biodiesel. We are aware that the GoM [Group of Ministers] on bio-fuels is deliberating the issue. The broad policy of the central government has already been enunciated in the Planning Commission document.’ (Sharma 2008).

Almost all the state governments are involved in the biofuel program with the following objectives (except for Gujarat state):

1. Utilizing wasteland
2. Generating Rural Employment
3. Working towards energy security in the country

Whereas all other states follow the rhetoric of Central Government in using wasteland for energy security and rural prosperity, policy in Gujarat clearly sees a need to bring large areas of wasteland under use by granting lease to big companies or expert farmers. All the states stress on the involvement of private players in development of biofuel program. Some states like Chattisgarh and Uttarakhand are already providing subsidies, tax and excise exemption to the companies.

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<sup>12</sup> Source: <http://164.100.24.208/lq14/quest.asp?qref=56641> accessed on 13/05/2008. India has 28 States and 7 Union Territories

### **Allocation of Land:**

At present, states of Chattisgarh, Andhra Pradesh, Gujarat, Rajasthan, Madhya Pradesh, Uttarakhand and Orissa have a clear policy on leasing out wasteland for cultivation of biofuel crop. Despite the fact that Chattisgarh has one of the lowest area of wasteland available, the state is a leader in promotion of biofuel plantations with 154,000 hectares of plantations done on wastelands till 2007<sup>13</sup>. However, it is not clear whether the wastelands have been leased or not. Rajasthan state has identified wastelands in various districts and has started plantation of Jatropha on these areas and degraded forest areas. Andhra Pradesh government has also demarcated some areas for operation by different private companies. Besides wasteland, degraded forest land is also targeted for plantation of Jatropha in various states (SPWD 2006).

### **State institutions for biofuel development**

Various institutions have been formed to promote biofuel development in the states. Either the biofuel promotion agenda has been linked to already existing departments (as in Rajasthan and Andhra Pradesh, where the responsibility has been given to District Poverty Initiative Program and Rain Shadow Area Development Authority respectively), or new organizations have been created with the task of promotion of biofuel in the state (e.g. in Chattisgarh and Uttarakhand).

In terms of institutional set up, Chattisgarh and Uttarakhand are the leading states in India for biofuel. CBDA was formed in January 2005 with the objective of promoting biofuel industry and program in the Chattisgarh state. Uttarakhand Biofuel Board, which is the main agency in the state of Uttarakhand for promotion of biofuels, has been formed with a partnership between state government, Forest Development Corporation (FDC) and entrepreneurs. In this business model FDC will undertake plantations on Van Panchayat lands<sup>14</sup> and provide certainty of raw material supply to entrepreneurs who purchase the feedstock and produce biodiesel. However, the purpose and where the produced biofuel will be sold by the entrepreneur is still uncertain, as is evident from an entrepreneur's statement

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<sup>13</sup> Source: [www.cbda.com/cbda.htm](http://www.cbda.com/cbda.htm) accessed on 12/05/08

<sup>14</sup> Van Panchayats are Local Forest Councils, which have the rights over development and use of forest land around their village for forestry purposes. Van Panchayats is a unique institution in Uttarakhand recognized by constitution of India.

‘I’m not going to sell to the oil companies because they pay just Rs 26.50 a litre. I’m going to sell it to a whole range of other industries that can use it for their machines’ (Civil Society News 2007).

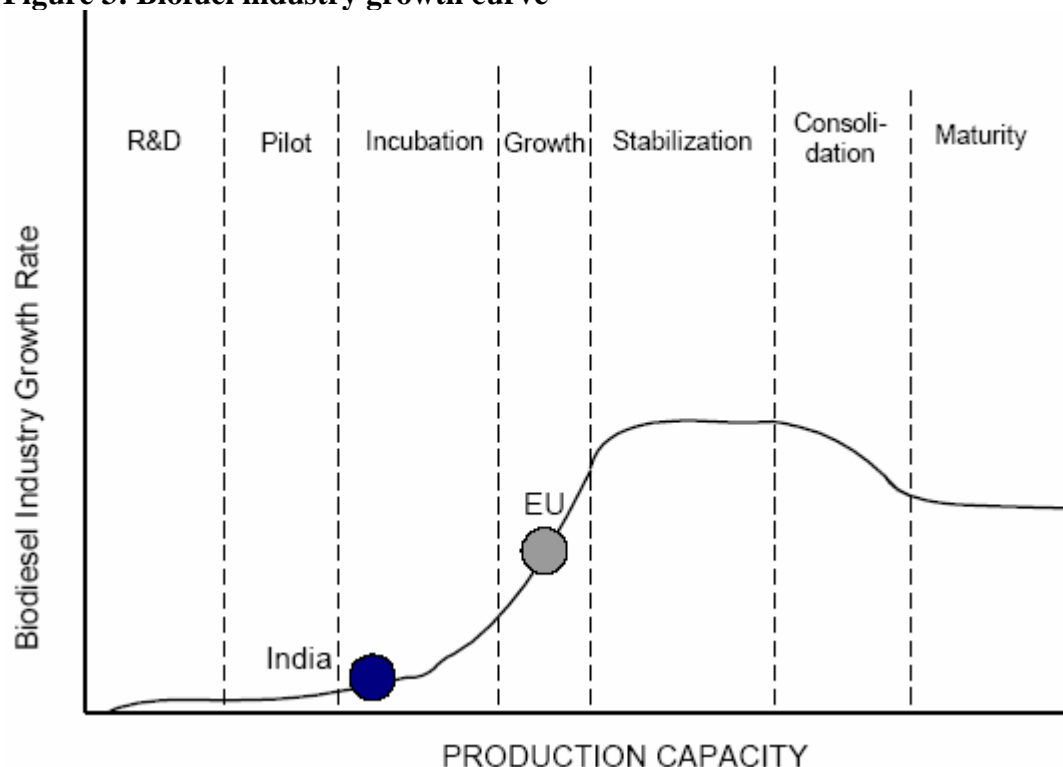
Thus, At the national level the biofuel development program in terms of policy and institutionalisation in India does not seem to have progressed much. The national policy is still under consideration and planning commission, which initiated the idea, has cautioned about its impact on the pastoral livelihoods.

In terms of the states, whereas a few states have taken lead in biofuel programs, many are yet to come out with clear policies on the issue of biofuel. Overall however, it can be said that all the states are positive on the development of biofuels and have initiated programs for facilitating production of biofuels.

### Private Sector in the biofuel discourse

Biofuel industry in India is still in its incubation phase and is behind its European counterparts (see figure 3). This chapter discusses interests and issues of this fledgling industry.

**Figure 3: Biofuel industry growth curve**



Source: Gonsalves, 2005

## **Interests of the business community**

The Private sector in India is looking at biofuels in two ways. One, to use it in production process or in house transportation, and secondly to commercially produce it. Whereas companies like Rajasthan State Mines and Minerals are involved in in-house use of biodiesel, D1-Mohan and Reliance have plans or are already producing it commercially. Further, there has been collaboration between Indian companies and mostly European companies in producing feedstock, biodiesel as well as its marketing. This arrangement might also be evolving to cater not only to the domestic market in India but European markets as well.

For making investments in the upcoming industry, as their counterparts in Europe, Indian industry also requires an assurance from the government about the sustainability of the biofuel industry in terms of a coherent government policy. Many industrial houses are in-fact waiting for announcement of such a policy before they enter into the sector (Frost and Sullivan 2006).

As an infant industry, biofuel companies are also seeking incentives viz. income tax, excise and sales tax exemptions etc. from the central and state governments so that cost of production could be minimized. This has been granted to a certain extent as some industries have got land from the government and subsidies are provided to the farmers for planting fuel crops. Further there are tax incentives and excise cuts from the government as is evident from the statement in the annual report of Southern Online Biotechnologies, which says that

‘[t]he policy...[should be] encouraging the production and usage of Biodiesel. Several financial incentives such as reimbursement of stamp duty, exemptions in sales and income taxes, rebates on power, subsidy on cleaner production measures, quality certification etc. are available’ (SOBL, 2007, 19).

The government in 2007-08 budget has also provided a pass-through status to biofuel projects set up by industry<sup>15</sup>. However, Kojima and Johnson (2005) argue that these protection measures need to be temporary in nature otherwise inefficient allocation of resource may result.

Ensuring availability of feedstock is one of the main factors in developing biofuel industry. Though various state governments have come out with wasteland allocation orders, there seems to be less enthusiasm in industry to take these lands. This is evident from the fact that

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<sup>15</sup> A pass-through status means that no income tax or no dividend distribution tax is levied. <http://www.thehindubusinessline.com/2007/05/05/stories/2007050505331000.htm>

some big industries like Reliance, Mission Biofuels and D1 have gone for contract farming instead of large-scale plantations<sup>16</sup> on degraded lands themselves.

Sufficient feedstock does not seem to be available as yet from domestic sources for production of biodiesel and the industry is banking on the maturity of domestic feedstock crop. Meanwhile, various companies have established their refineries for production of biodiesel. At present these companies are importing feedstock from East Asia in terms of palm oil, fat and used oil etc. But to protect the domestic biofuel plantation industry, MoNRE has sought the Cabinet's approval for imposing duties and taxes on imported bio-fuels<sup>17</sup>. This will be done in consultation with the finance ministry and agriculture ministry. Nonetheless, the industry is banking on maturity of the domestic feedstock crop.

### **Issues in the biofuel industry**

There are two main issues related to the private sector with regards to the production of biofuel in India. Diversion of farm land for growing fuel crop and export of biodiesel from India.

Although the government's rhetoric is that no agriculture land or food crop will be diverted for production of biofuel, the business strategy of industry seems to rely on productive farm land. This goes against the sustainability argument frequently given in favour of the biofuels in India. In a workshop on biofuel in 2006, a representative of Reliance Life Sciences said

‘[the] research of reliance shows that Jatropha will not come in a big way from Reliance's own land or from those of high end farmers. Typically 25-30% land is fallow, which all said and done will be the major source of Jatropha. Apart from that 5-10% of the land of small farmers will have to be targeted...the idea is to offer partnerships in terms of local organizations/ farmer producer organizations’ (SPWD 2006).

There is a possibility that oil seeds and other food grains may also be used for biofuel production in India. This is evident from a news report in which Minister of Agriculture said that India has to go for importing food grains because the existing food grain and oil seeds were being diverted for biofuel production (Chaudhary 2007). The Minister of Agriculture, in response to a question in Parliament, also conveyed the possibility of diversion of food grains

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<sup>16</sup> Though the companies mention their plans for large-scale plantation, no data is available on the scale of plantation undertaken except contract farming. Moreover, it is the government departments and NGOs that are involved in plantations on degraded lands. It may be that companies may also attempt to procure feedstock from government agencies, producer companies, village cooperatives or other groups or traders.

<sup>17</sup> <http://www.hindustantimes.com/Search/Search1.aspx?q=bio-fuel&f=1%2f1%2f2006&t=4%2f30%2f2008>

for industrial use<sup>18</sup>. Further, feedstock from other countries that is coming from agriculture lands is being used for biofuel production in India<sup>19</sup>. In-fact organizations like UNIDO are encouraging Indian companies to undertake plantations of fuel crops in African countries (ET, 2007). However, as the Frost and Sullivan (2007) report suggests, the import of feedstock may be a stopgap arrangement till the domestic biofuel crops start production.

### **Export of biodiesel**

Some companies like Naturol and Southern Online Biofuels in India have been set up as Export Oriented Units. What this means is that the biofuel that is produced by the company will be sold in the export market. While the companies mention on their websites that domestic markets would also be catered to, if the price of biodiesel is more in the European market, the units will be more interested in exporting. This is evident from Naturol website, which states that

‘[h]igh quality raw material (Crude Palm & Soya Oils) are available from Indonesia, Malaysia and South America and Naturol's structuring as an Export Oriented Unit enables tax efficient import of the raw materials...[e]xports are contemplated to Europe in view of significant market scope and better value for the end product. Confirmed arrangements are already in place for sale of 100% of the output.’<sup>20</sup>

There are also European biofuel companies that are eyeing Indian biofuel market. "India is a rather new thing for us but we can buy *Jatropha Curcas* from India to begin with," said Osmo Kammonen, senior vice-president, communications, Neste Oil<sup>21</sup>. According to Abhishek Maharishi, CEO, Centre for *Jatropha* Promotion and Bio-diesel, Rajasthan, if the Indian government implements its policy on *jatropha* cultivation in right earnest the country could be a leading exporter<sup>22</sup>.

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<sup>18</sup> Source: <http://164.100.24.208/lsq14/quest.asp?qref=31517> accessed on 05/05/08

<sup>19</sup> Source: <http://www.biodieselnw.com/forums/t/18578.aspx> accessed on 20/05/08

<sup>20</sup> Source: [http://www.naturol-bio.com/inside/projects\\_bm.php](http://www.naturol-bio.com/inside/projects_bm.php) accessed on 11/05/08

<sup>21</sup> Source: <http://www.hindustantimes.com/StoryPage/StoryPage.aspx?id=5e52552c-f73a-473d-ba0d-4b9654cb1844> accessed on 11/05/08

<sup>22</sup> Source: <http://www.hindustantimes.com/StoryPage/StoryPage.aspx?id=5e52552c-f73a-473d-ba0d-4b9654cb1844> accessed on 11/05/08

**Figure 4: Naturol Biodiesel Shipping Routes**



Source: Naturol Website<sup>23</sup>

Moreover, most of these production facilities are based in eastern coast port of Kakinada to reduce the cost of transportation for import of feedstock from East Asia and export of the produced biodiesel to the markets in Australia, Japan, US and EU (see figure 4). The fact that produced biofuel may be exported to markets outside India to fetch a better price goes completely against the government’s plan to ensure energy security.

## Civil Society in the biofuel discourse

### NGOs and the discourses

There are two sets of positions and discourses within the NGOs, pro-biofuel and anti-biofuel. Both the positions, actors involved and arguments are analysed in this section.

#### Pro-biofuel

##### *Biofuel for commercial purpose*

A number of NGOs are involved in facilitating the production and sale of biofuel crop from farm areas. The nature of involvement is mostly in using their association with rural households and their groups in facilitating extension of material and

#### *Box 2: Cases of Pro biofuel NGOs*

##### **Biofuel for commercial purpose:**

Dhan Foundation, through its supported producer Company KTL has tied up with Mission Biofuels company to utilize its network of 20,000 Self Help Groups for contract farming over 25,000 acres of land in eight districts of state of Tamil Nadu (MBIL 2006). It is envisaged that this arrangement will benefit below poverty line families also which account for half of the 400,000 families associated with. KTL’s responsibility in this endeavour is to organize farmers to undertake this activity whereas Mission Biofuel would be responsible for developing planting material and providing quality *Jatropha curcas* seedlings to farmers. Mission Biofuel company would also provide micro credit facilities to farmers to meet the cost of farming biofuel crop. KTL would benefit in terms of service charges and incentives on productivity. On the other hand any benefit arising from carbon trading would be accrued to Mission Biofuel.

##### **Biofuel for rural electrification:**

Winrock, an NGO, is implementing ProBIOS project aimed at facilitating Government Officials and other stakeholders through strategic capacity building and appropriate technology partnership with European Union (Winrock 2006). Winrock is also involved in the project of rural electrification from the produced biofuel in Chattisgarh. Through the success of the project Winrock attempts to influence government’s policy for improving rural India’s access to clean and affordable energy. Although Winrock accepts the current attention given to blending of biodiesel, it urges for also looking at other uses of biodiesel. Winrock seems to be in favour of biofuel however their objective or end use of biofuel is rural electrification rather than diesel substitution in transportation. However, the NGOs promoting biofuel for rural electrification justify using wasteland for the production.

<sup>23</sup> Source: <http://www.naturol-bio.co>

knowledge required for production of biofuel feedstock, mostly *Jatropha*. Most of these NGOs are using institutional forms of cooperatives and producer companies to organize farmers into producing and selling biofuel crops to the companies for production of biodiesel to be supplemented in petroleum fuel (See box 2).

#### *Biofuel for rural electrification*

There are a small number of NGOs that are involved in using biofuel as means for rural electrification in remote villages. NGOs like Winrock in Jharkhand, IRADE in Haryana and Gram Vikas in Orissa are involved in providing electricity in remote villages through biofuel run generators.

#### *Arguments for biofuel*

Pro-biofuel NGOs believe in the same arguments of win-win situation, sustainable development and rural prosperity that government and industries are providing. This is not only true for NGOs that are promoting biofuels for use as commercial commodity but also those NGOs that are promoting it as fuel for electricity generation. For example, Winrock's pro-biofuel argument is based on efficient use and development of wasteland, contribution of the project to national and local energy security and stimulating local economy.

### **Anti-biofuel**

#### *Failure of earlier programs*

Organizations taking the anti-biofuel position view the whole biofuel program as a repeat of earlier failed program of promotion of *Eucalyptus* on government and private land. As a consequence their argument is

‘the projections do not take into consideration various environmental, economic and social aspects, which have direct impact on the suitability of the crop as a commercial product or cultivation for cash income superseding existing land use’ (Negi et al 2006)

#### *Issue of wasteland and livelihoods*

The issue of wastelands is the most important argument raised by the anti-biofuel organizations. The argument is that wastelands are usually the common property resource of the village on which the small, marginal and landless as well as livestock rearing communities depend and thus biofuel production on these lands marginalizes these communities and threatens their livelihood security. The argument is based on the studies

carried out by academicians like N.S. Jodha and others on the contribution of common lands to the rural livelihoods especially in the dry land regions of India. Further it is argued that though the lease of land is given for a particular period it seldom happens that it is cancelled and land given back to the village community (Negi et al 2006). Moreover, the mechanism involved in identifying wasteland is not a transparent one and can be influenced by the companies. Negi et al (2006) argue that whether it is farm land or common land, food security is an issue with growing of biofuel.

‘When agricultural lands are diverted from food crops to biodiesel crops, there is scarcity of food. When common lands are diverted to *Jatropha* from fodder, there is less food for animals and the livestock economy is undermined. Less animals means less dairy products which directly affects the nutritional security of the people especially the children. Less animals also means less organic manure which undermines food security by robbing soils of vital organic matter needed for renewal of soil fertility’

Although there are projections of generation of millions of man days from biofuel industry, the opportunity cost of shifting land use has not been calculated (Shiva and Sankar 2008). Further as Shiva and Sankar argue, land grabbing by private companies in collusion with the state is happening in the name of biofuel program

‘Land is being acquired in many parts for India to fuel the cars of the rich... land grab for biofuels has emerged as a threat for the agrarian and livestock economy in many states in India. It is also threatening the decentralized democracy of the country, which has made local communities, the competent bodies to make decisions on natural resources...[t]his kind of land grab will totally pauperize our peasantry and destroys their livelihood.’ (Shiva and Sankar 2008)

### *Other Arguments*

It is also argued that the scientific basis for a viable yield of biodiesel from plants is doubtful and there is a high probability that biodiesel produced will be marketed to European markets and thus will not lead to energy security of the country (Negi et al 2006).

## **Academia**

### **Status of biofuel research**

Figure 5: Science Citation Index

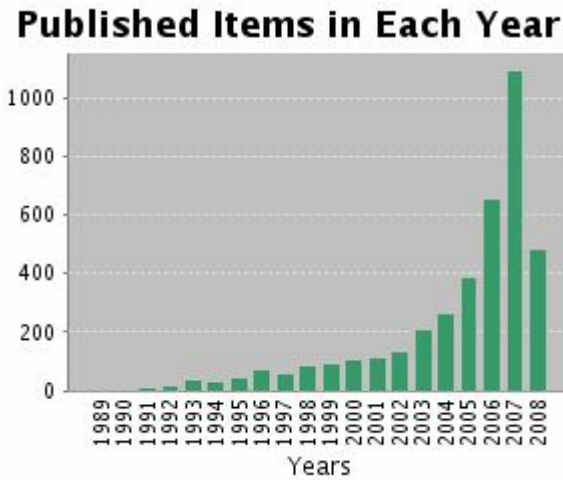
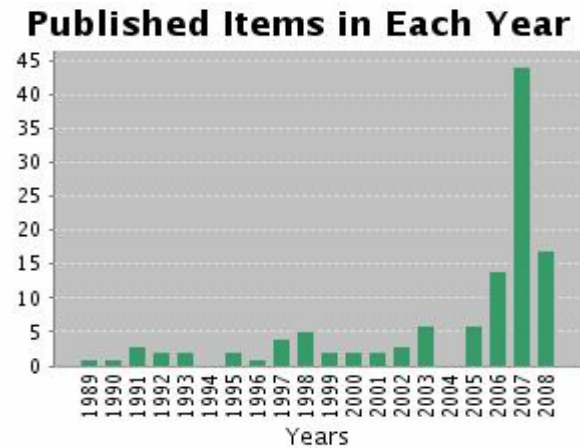


Figure 6: Social Science Citation Index



Source: ISI Web of Knowledge<sup>24</sup>

Biofuel is an intensely debated issue mostly at the international level. In India, the research on the biofuel issue is almost non-existent, especially in the social sciences. Figure 5 and 6 depict the number of articles published about biofuels in scientific and social science journals respectively and suggest that in the international academic circles it is the scientific aspect of biofuel that is being researched most than the social science aspect of the biofuel. Moreover, it is also clear from these figures that the interest in the biofuel issue is also of recent origin.

Further, whatever findings are available in the social sciences, they tend to be non specific to the context and equivocal and uncertain about the environmental, social and economic impacts. There have also been instances of scientific studies that showed biofuels in positive light and influenced policy but were in fact based on wrong or 'bad' science. Pimentel and Patzek mentions that a 'review of the reports that indicate that corn ethanol production provides a positive return indicates that many inputs were omitted...[which mislead] policy makers and the public.' (Pimentel and Patzek, 2005, 65)

### Science of biofuels

Although there is plethora of studies on the positive environmental benefits of biofuels, considerable doubt has been expressed about these benefits especially in terms of CO<sub>2</sub>

<sup>24</sup> A query about biofuel on the ISI Web of Knowledge Science Index resulted in 3918 records as on 9<sup>th</sup> May 2008 whereas the same query on Social Science index resulted for only 120 records. Search on (biofuel OR biofuels OR bio-fuel OR bio-fuels OR biodiesel) in Web of Science All Years Science Citation Index, Social Science Citation Index and Arts and Humanities Citation Index

emission reduction and impact on virtual water flows (Fargione et al 2008; Peters and Thielman 2007; Achten et al undated; Hughes et al 2007).

Although some studies suggest that second-generation biofuel like *Jatropha* are better because they can grow on less fertile soil without requiring much water (see Openshaw 2000), others like Russi (2007) argue that biofuels may not provide the environmental benefits that it envisages. This is due to a need for intensive cultivation and thus increasing use of fertilizers, pesticide and machinery especially on poor quality lands. Quoting various authors Russi also argues that Energy Return On Investment<sup>25</sup> of biofuels is low and therefore the claim that it provides energy security may not hold ground (ibid).

### **Research on socio-economic aspects**

As with the scientific research on energy and environmental benefits, socio-economic research is also not certain about the benefits of biofuels. At the macro level, some studies point to the unintended effect of biofuel promotion. For example, production costs of biofuels are still higher than those of fossil fuels and therefore governments need to come out with promotion measures such as tax exemptions or blending quotas (Kher 2005).

There has also been concern regarding the livelihood objectives of the biofuel program. Rajagopal (2007) argues that there are diverse needs of the rural poor from the wastelands that are unlikely to be fulfilled by *Jatropha* plantations and shifting land use may lead to potential conflicts at the micro level.

### **Research Institutions**

Various Universities in India like Tamil Nadu Agriculture University in the state of Tamil Nadu and Maharana Pratap University of Agriculture and Technology in Rajasthan are undertaking research on biofuel development. Such programs in the universities are primarily funded by Indian Council for Agricultural Research as well as industry in which the industry will fund the research and would benefit from the research outputs. Though a fair arrangement, it has come into question following a case involving biopiracy by D1 plc, a multinational biofuel company<sup>26</sup>.

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<sup>25</sup> EROI = energy output/ (indirect+direct energy input)

<sup>26</sup> D1 hired head of Department of Forestry of the University, who was also responsible for projects on developing high yielding variety of *Jatropha*. Soon after he left university and joined D1 as technical director, theft of germplasm was reported by university. The germplasm was later found in the house of the accused and a case has been filed Source:  
[http://www.downtoearth.org.in/full6.asp?foldername=20060228&filename=news&sec\\_id=4&sid=13](http://www.downtoearth.org.in/full6.asp?foldername=20060228&filename=news&sec_id=4&sid=13) accessed on 23/05/08

### *Box 3: Cases of Research Institutions*

#### **International Crops Research Institute for the Semi-Arid Tropics (ICRISAT)**

Funded by IFAD to the tune of US \$1.5 million, ICRISAT has been involved in researching on a crop Sweet Sorghum, which they term as smart crop as it can produce ethanol from the juice of its stalk and seeds can be eaten. ICRISAT believes that food security and biofuels can coexist (ICRISAT 2008). ICRISAT is also in collaboration with various industries for commercialisation of the smart biofuel crop. ICRISAT's research also has strong partnership with the government as well. Government's funding to ICRISAT has increased from US\$ 400,000 in 2005 to US\$ 1.4 million in 2006. ICRISAT is also leading a consortium of partners for developing sweet sorghum as a source of biofuel under the National Agricultural Innovation Program of the Government of India. ICRISAT's emphasis on sweet sorghum counters the global debate against biofuels, which are said to be taking away food crop agricultural lands for growing biofuel crops. Highlighting this position, Director General of ICRISAT said "We develop systems that increase the incomes of the poor, not those that trade off biofuels against food and feed security or the environment," (ICRISAT 2008).

#### **The Energy and Resources Institute (TERI)**

TERI is involved in research and undertakes projects in the area of energy and natural resources. TERI has considerable influence on the policy especially after its Director General became Chairman of the IPCC and shared Nobel Peace Prize in 2007 on behalf of IPCC with Al Gore. TERI is involved in a \$9.4 million Project Green with BP International Limited to plant 8000 hectares of land in the state of Andhra Pradesh with *Jatropha* for production of biodiesel. TERI has also drafted a detailed project report for use of wasteland for biodiesel production, which is under the consideration of Ministry of Agriculture.

Various other institutions like ICRISAT and TERI are also involved in research on biofuel crops and its promotion. These institutions again get their funding either from the government or from other organizations whose mandate is to promote biofuels (See Box 3). Whereas the position of these institutions is pro biofuel due to the funding that is received, the recent debate of food vs. fuel seems to affect their discourse as well. This is evident from the cautious approach sought by Director General of TERI in relation to biofuel development

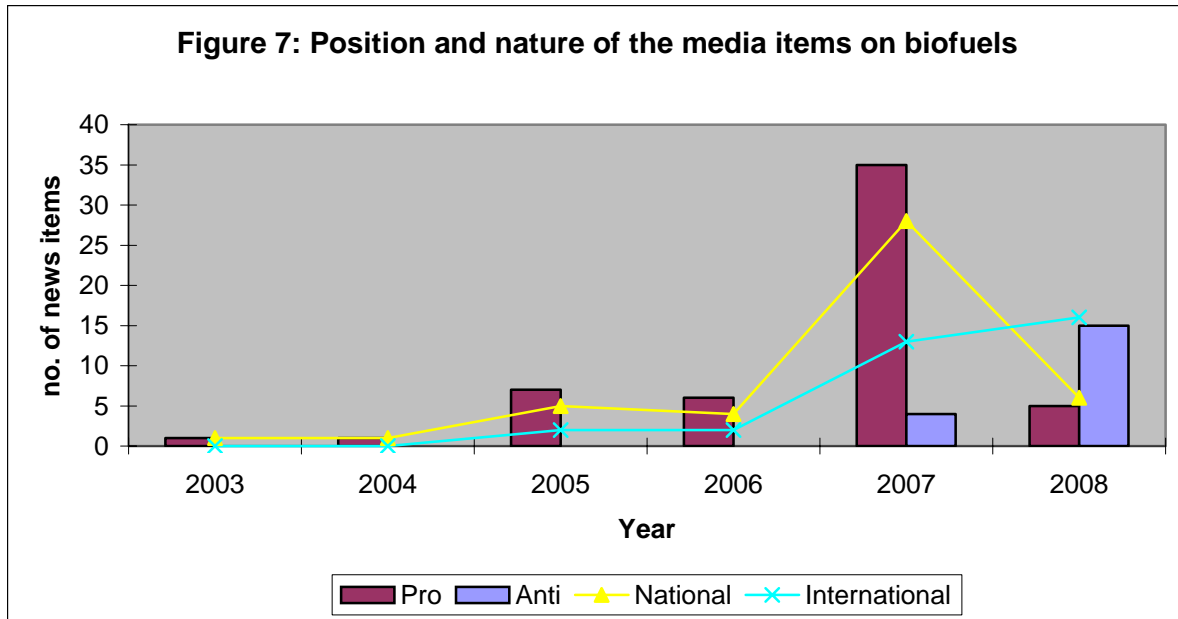
"We should be very, very careful about coming up with biofuel solutions that have major impact on production of food grains and may have an implication for overall food security," (Reuters 2008)

## **Media**

A newspaper, Hindustan Times was reviewed as a representative of media for news on biofuel from January 2002 to May 2008<sup>27</sup>. As seen in figure 7, a content analysis of the

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<sup>27</sup> Selection of Hindustan Times was done on the basis that it is the largest selling single edition English language daily newspaper in India. The website of the newspaper was searched for news items related to biofuel (biofuel or biofuels or bio-fuel or bio-fuels or biodiesel or bio-diesel). A total of 70 items were found relevant and were analysed.



Source: Own calculations

media items on biofuel reveals that there is significant coverage about biofuels in 2007 and 2008. This trend is similar to the trend shown in the academia. While it was the pro biofuel news that was dominating the coverage till 2007, in 2008 there are more news items about anti biofuel. Anti biofuel news items are largely international in nature and pertain to the food price rise and its link with the diversion of food crops for producing biofuels, especially in US. The issue of food price rise started in late 2007 and has dominated the biofuel agenda in the media since then. The issue of wasteland and pastoralist livelihoods finds mention only once in June 2007. In fact out of nineteen news items that convey the anti biofuel view, only two are not related to food price rise.

Thus, it is obvious that media has largely been positive about the biofuel issue till 2007, which is when the issue of food price rise and its link with biofuel became prominent. The issues raised by some NGOs and academia, which seem to be more relevant to the national context do not find space in the media. This points to the weakness or powerlessness of the anti biofuel discourse in the country. However, another anti biofuel discourse, that of food vs. fuel, which is international in character and origin, has been able to get more attention in the media signifying its power.

Thus, from the nature of research that is being pursued in biofuels, it is obvious that the approach for biofuel development is more techno-centric and focuses on technical aspects of producing biofuel rather than its impact on socio-economy especially livelihoods. Also, such technocratic approaches only look at energy demand and supply options and reduce

environmental concerns to a secondary level which leads to failure of the biomass programs based on such approaches (Cadenas and Cabezudo 1998).

NGOs as well as the Research community (both physical and social science) are divided in their opinion with regards to benefits of large-scale plantation and use of biofuels, especially in the developing countries.

Though most of the universities and research institutions are positive about the development of biofuels, issues related to knowledge transfer and biopiracy need to be addressed. Moreover, because of the issue of food vs. fuel, research institutions have become cautious about the development of biofuels.

Media's position was positive till 2007 when the issue of food price rise became the dominant one and biofuels were criticized. However, this criticism was international in nature and issues raised by anti biofuel actors within India still remain largely unrecognised.

## Discussion

An analysis of context and actors involved and their viewpoints suggests the presence of two sets of discourses, pro-biofuel and anti-biofuel (see table 6). 'Anti-biofuel' discourse does not mean that the discourse and actors are completely against development of biofuel, but it is against the dominant view of seeing biofuel only in terms of its blending with petroleum fuels and import substitution. The Anti biofuel discourse is also critical of the role and interests of various actors involved in the promotion of biofuels.

*Table 5: A description of factors in favour and against the biofuel*

Factors/ Discourses	Pro	Against
Context	Increasing fossil fuel requirement, increasing import bill, land degradation, need (non-obligatory) to reduce Green House Gas emissions	Rural use of biomass, option of developing decentralized energy systems, wasteland catering to livestock economy
Actors	Central Government, State Governments, Industry, NGOs, Academia, Research Institutions	NGOs, Academia
Arguments	<ul style="list-style-type: none"> <li>• Energy security</li> <li>• Rural prosperity</li> </ul>	<ul style="list-style-type: none"> <li>• Land grabbing by industries</li> <li>• Adverse impact on</li> </ul>

	<ul style="list-style-type: none"> <li>• Environmental benefit</li> </ul>	<p>pastoral livelihoods</p> <ul style="list-style-type: none"> <li>• Environment and energy benefits of biofuels debatable</li> </ul>
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**Discourse coalitions in the biofuel issue**

In the biofuel issue there are two sets of coalitions that have emerged and which are formed around pro and anti biofuel discourses. Whereas the pro biofuel discourse can be associated mainly with State and Private Sector, the anti biofuel discourse has a few NGOs and a section of Academia as actors. These actors employ specific sets of arguments to push forward their agenda in the policy environment.

**Pro-biofuel arguments**

The arguments of energy security, rural prosperity and environmental benefit are the major story lines that are used by the actors within pro biofuel coalition. However, at the ground level, industry seems to be using it only as rhetoric to further its interests. This is evident from the fact that some industries are planning to export biofuel, which runs counter to the objective of energy security. Further these industries are also promoting contract farming for production of feedstock, which is against the government’s plan of not diverting agricultural land for biofuel production.

Besides employing a particular set of arguments in the struggle for dominating discursive space, these actors also view the contextual realities in a particular way. The Pro biofuel discourse coalition is based on contextual factors of a growing economy that imports majority of its petroleum fuels from geo-politically risky regions (middle-east). Moreover, there has been rising price of petroleum fuels, which is providing further push for alternatives to be sought. Further, lack of technological alternatives except biofuels to petroleum fuels in the transportation sector adds emphasis to the pro biofuel argument. Therefore, automobile and oil industry also sees it as a positive sum option. Although India has ratified Kyoto protocol, as a developing country it does not have binding targets. However, there is an international pressure on India to reduce the overall emission. Thus, we see a ripe contextual background in which the idea of production of fuel by using wastelands is emerging.

Industries’ role and motivation are also major factor in providing push for biofuels in India. Biofuel has become a lucrative sector for industries because of subsidies and tax exemptions provided by government. Moreover, biofuel development involves intensive research in

improving oil yield of the plant, which requires well-developed biotechnology resources. India has expertise in biotechnology sector, which is seen as the next sunrise industry after Information Technology sector (Scoones 2006) and would benefit from an emphasis on development of biofuels. This is more relevant for big industries that are planning for forward as well as backward linkage in the biofuel program. Reliance is such an industry in India, which has expertise in biotechnology, processing and retailing of petroleum oils. Industry also employs similar arguments of creating wealth in the rural areas and augmenting livelihoods. This is evident from the statement of Chief Executive Officer of Reliance Industries Limited

‘It is possible to develop hybrid and transgenic technologies to use marginal lands for producing biofuel crops. It is possible to create a whole value chain that links marginal farmer with global energy markets. In the process, we can put more wealth into the hands of Indian farmers instead of wealthy sheikhs in desert kingdoms’<sup>28</sup>

### **Anti-biofuel arguments**

The Anti-biofuel discourse is associated with certain NGOs, social movements and a section of the academic community. The arguments are based on earlier experiences of such programs, wasteland allocation as a problem issue, equivocalness of research and private sector interests, which may not lead to achievement of objectives that the planning commission envisages.

Though the issues raised by the actors associated with anti-biofuel discourse are significant, till now these issues seem to be peripheral for policy makers and other actors. Except that the problem of using wastelands for biofuel was raised in the parliament once, there is hardly any consideration of the fact that a large rural population is dependent on wastelands for their subsistence needs. Even the coverage by the media is negligible about these issues, which has mainly been positive about the development of biofuels.

### **Hegemony of Pro Biofuel Discourse**

Initial planning commission documents, while suggesting use of wastelands, highlight two end uses, viz. that of blending of biofuel with petroleum fuels and of using biofuel for producing decentralized energy in rural areas. While the production of biofuel for substitution in petroleum fuels can be regarded as a commercial project, production of decentralized

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<sup>28</sup> Source: <http://www.hinduonnet.com/holnus/218200708212123.htm> accessed on 27/05/08

energy can be regarded as a social objective rather than a commercial one. Planning commission, which is the main institution for setting out national priorities, initiated the commercial idea but has later become more cautious with it, suggesting that the use of wasteland may be detrimental to pastoral livelihoods. Although, it has stressed on both the alternatives equally, it is the idea of diesel substitution in transport sector that has been taken up enthusiastically by various ministries, state governments and Private sector.

Pro biofuel discourse has been able to exert hegemony over anti biofuel discourses, which is evident from the institutionalisation that has happened at the state level and the non-recognition of anti biofuel discourse by the central government. This discursive hegemony is evident in the push for biofuel program that various state governments have provided. This push has been in terms of state governments coming out with orders for allocating lands to industries for biofuel production and creating institutions in the state for promotion of biofuel program. CBDA in Chattisgarh and Uttarakhand Biofuel Board in Uttarakhand are example of such discourse institutionalisation. These bodies are involved in promotion of biofuel production and industry in their respective states. Such an institutionalisation projects the inherent power of pro biofuel discourse.

Although the pro biofuel discourse and different actors associated with it have been successful in bringing about various policies in different states for biofuel production, it has not yet been successful in finalizing a coherent biofuel policy at the central level. The next section examines the shift in discourse within the pro-biofuel coalition that might explain this.

### **Discursive shift and cautious approach to biofuel**

At the central level, the pro biofuel discourse has shifted slightly towards approaching the issue in a cautious way. The shift is visible in the statement of the Planning Commission, which was the initiator of the pro biofuel discourse. The central government has also raised concerns about biofuels impact on food security and food prices. While, a shift in the position of planning commission seems to have been caused by recognition of adverse impact of biofuel program on pastoral livelihoods, which is a national issue and directly relevant to the biofuel program, the central government's concern relates to the more general global concern over food vs. fuel issue.

Although the planning commission recognizes that using wasteland for biofuels would harm the interests of pastoralist, this concern is not visible in the statements of the government. It

was only in the late 2007 and early 2008 when the issue of price rise became a global issue that central government, including the PM, made statements regarding being cautious with biofuel development. However, there was also a perception that India's biofuel program may not affect food price rise because it is based on non-edible oils and uses wastelands instead of farm land. But the fact that the government has not come out with a policy even after so long points to the fact that pro biofuel discourse has been affected by price rise issue, which signifies the power of the food vs. fuel discourse. Further, a recognition of the link between food price rise and biofuel by international organizations like World Bank, FAO and other UN bodies may also be adding weight to the food vs. fuel discourse. The context of present government being a coalition government with the critical support of Left parties and this year being an election year also might be adding to this hesitation in developing a coherent national biofuel policy.

## **Conclusion**

This paper set out to look at the factors and discourses, which affect the formulation of a national policy on biofuels in India. The preceding chapters have presented the discourses around the issue of biofuels as expressed by three sets of actors, viz. the government (central and states), the private sector, and civil society (NGOs, academia and media).

In conclusion, it can be said that policies are influenced by discourses depending on how powerful these are, not only in terms of what the discourses are conveying but also the context and issues these are talking about. This seems to be the case for biofuel policy in India. As shown by the above analysis, various contextual factors, actors and discourses seem to be influencing the emergence of biofuel policy in India. It has been shown that though the issue of biofuel is around five years old, there is not much progress at the central government level in developing a coherent national policy on the subject. However various states have initiated programs of allocating wastelands for biofuel plantations and created institutions with the responsibility of promotion of biofuels. In doing this, states and industries as well as a few NGOs and research institutions are following a pro biofuel discourse with a particular contextual view. At present, as shown by the above analysis, it is the pro biofuel discourse that is dominating the policy arena. The Indian anti-biofuel discourse, which has a different view of the context and which suggests that the interest of actors especially industry may be against the objectives of the program, does not seem to affect the dominant discourse.

Though Indian anti-biofuel discourse lacks power, it is the global food vs. fuel discourse that has caused some concern in the policy arena. The food vs. fuel discourse has been widely discussed in the political circles and the media in EU and elsewhere in the world. Various UN agencies have also joined in criticizing the role of biofuels in food shortage and price rise, which has made the food vs. fuel discourse powerful. Food security being a strategic, moral and political issue, the Indian government in this penultimate election year seems reluctant to come out with a national policy on biofuels, which inevitably would involve the issue of land use change especially wastelands. This issue is problematic because the Left parties, on whose support the present central government has been formed, are against leasing of wasteland to the private sector. These factors may have provided some advantage to the anti-biofuel discourse, and it can be concluded that the anti-biofuel discourse is lately beginning to gain ground in India. But for the time being, the pro-biofuel discourse seems to be the dominant one.

Though it would require further research, this paper also points to different scenarios that might emerge with regards to biofuel in India. The issue of fuel price rise and import dependency may lead central government to come out with a coherent biofuel policy, which encourages the development of biofuel industry in India. However, the objective of reducing import of petroleum fuel will not be achieved if the industries continue exporting biodiesel to lucrative markets in Europe. Banning the export of biofuel may be one of the alternatives that the Indian government has, but this will have to be pursued in conjunction with providing other incentives to the industry and raising the support price of biodiesel so that the fledgling biofuel industry can become viable. However, in all these cases, the issue of land use is central. Whereas shifting wastelands for biofuel production would have its impact on the pastoral livelihoods, using agriculture land would be detrimental to food security. Thus it can be concluded that if the Indian government decides to go ahead with biofuels it will have to confront the issue of land use change, whether it pertains to wastelands or agriculture land.

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