Future for Bio-fuel Consumption and Energy Security: India's Policy Advocacy

Dr. E. N. Ashok Kumar* and Gurunath Swami**

*Professor and Director Centre for Foresight Studies,
**Masters' student, Department of Rural Development, School of Social Sciences. Solapur University, Solapur, Maharashtra State, India.

Bio-fuel Policy Target

- Mainstreaming Bio-Fuels by 2022
- 6% Renewable Energy in the total Energy mix.
- 10% Renewable Energy in total Electricity mix.

What are Bio-fuels?

- Bio-fuels are energy forms derived from renewable biomass resources;
- They are liquid or gaseous fuels produced from biomass and used in place of, or in addition to, diesel, petrol, or other fossil fuels;
- Biomass resources are the biodegradable products, wastes and residues from agriculture, forestry and related industries;
- The scope of the policy covers bio-ethanol, bio-diesel and other bio-fuels.
- Bio-ethanol is produced from sugarcane, sugar beet, sweet sorghum, corn, algae etc;
- Bio-diesel is produced from vegetable oils, edible and non-edible;
- Other bio-fuels are bio-methanol and biosynthetic fuels.

(Source: Policy document)

National Policy on Bio-fuels

Vision and Goals

- Aims at mainstreaming bio-fuels in the energy and transport sectors;
- Promotion of cultivation, production and use of bio-fuels to substitute petrol and diesel for transport and stationary applications;
- The goal is to ensure minimum availability of bio-fuels on regular basis in the market;
- A target of 20% blending of bio-fuels has been enforced already and is applicable both for bio-diesel and bio-ethanol.

(Source: Policy document)

Major issues

1. What are the probabilities to mainstream the Bio-fuels (Bio-diesel & Bio-Ethanol)?
2. What would be the preferable conditions needed for achieving the target?
3. What are the probable responses of stakeholders to further interventions and enabling mechanism envisaged in the national policy on Bio-fuels?

Methods

- Horizon scanning of policy documents and related literature;
- To enable futures planning, SWOT analysis of PESTEL (Political, Economic, Socio-cultural, Technological, Environmental and Legal factors) of Bio-fuel policy is carried out;
- Developing Matrix of Stakeholders of Bio-fuels and their response to "Enabling Mechanisms" provided by the policy, to map probabilities;
- Scoring method is used for Identification of most desirable stakeholder responses;
- Scenario analysis of selected combination of Stakeholders vs Enabling Mechanisms; and
- Construction of preferable stakeholder scenario to achieve the policy targets.

Political factor

Strength	Weakness	Opportunity	Threat
Political will to mainstream RE sources.	Lack or supportive policies in the states where opposition parties are in ruling.	Favourable policy frame work for stakeholders in Bio-Fuel production.	Protest by opposition parties from formulating appropriate policies for RE.
Favourable international cooperation for Bio-Fuels.	Lack of support for policies in the upper house of the parliament.	Allocation of funds.	Criticism and propaganda by the opposition parties.
Patronage for international agreements and signatory to CO2 reduction resolutions.	Fragile international relations and rapidly changing alignment of countries.	Governance and regulatory mechanism for development of grid.	Opposition from state government to implement policies of RE in true spirit
Recognition and endorsement by the citizens as popular support.	Collective consciousness which is yet to be in place for Bio-Fuels.	Policy impetus for creation and expansion of markets.	Misuse of policy incentive by the wasted interest.
Creation of several institutional Mechanism.	Lack Integration of Bio-Fuels at various institutional levels.	Policy incentives for private sector participation in Bio-Fuels.	Strategies and counter strategies by different political interest groups.
Support from the local Panchayat Raj Institution to take part in the program.	Unclearly define land tenures/ownership and classification of land for Bio-Fuel cultivation.	Flagship program for providing energy for rural households.	
	Uncertainty of local power groups to internalise RE issues.	Energy politics to win elections and woo voters.	

Economic Factors

Strength	Weakness	Opportunity	Threats
Abundant resource apply base in India.	Lack of policy coherence In some states of Indian federation.	Increasing prise of crude oil and fluctuating market.	Subsidies and preferential treatments for petroleum products.
Skilled cultivators by a very long traditional .	Non availability of fine tuned Bio-Fuel technologies.	Ever increasing gap between demand and supply for energy.	Droughts, floods, pests and natural threats to the Bio-energy sources.
Rich seasonal and regional diversity of resource base.	The costs are still high for Bio-fuel production.	Pressure on convectional sources of energy such as Coal and petroleum products.	Policy changes/favours for conventional energy sources.
Vast-educated unemployed youth to engage.	Non availability of plans/blue prints for on grid/off grid Bio-energy.	Vast areas of population without adequate energy supply and no grid connected power supply.	Competitiveness within the RE sectors like Solar, Wind and other threat.
Potential investors and also growing neo-elites .	Lack of environmental awareness among young users	Possibility for reduction in the cost of Bio-fuel technologies.	Increasing R&D cost for innovations in Bio-fuels.
Network of extension personnel and machinery.	Transport/automobiles technologies are not yet modified for ideal use of Bio-fuels.	Income generation to the households through employment generation.	Segmented markets, unorganised production and distribution system.
Institutional infrastructure already available for agricultural commodities .	Stationary energy production technologies are not yet in place.	Rich agro climatic diversity.	Lack of arrangement for continuous and regular supply of raw material.
Growing entrepreneurial spirit among youth.	R&D is still weal to boost Bio-fuel production		

Socio-Cultural Factors

Strength	Weakness	Opportunity	Threats
Bio-fuel are mostly rural based suitable for communitarian production.	Caste-class conflicts may hamper the programme.	Production of Bio-fuel raw martial can be organise as a farmers' cooperative	Corruption and unfair practices can creep into the programme.
Land based activities have cultural acceptability in rural areas.	Indebtedness of marginal groups may create hindrance to their participation.	Producers can be brought under some lobbying group to safe guard their interest.	Benefits may be sabotaged by the vested interests.
Scope for integrating employment generation programs into Bio-fuel production.	Dependency syndrome of weaker sections on the government schemes may pose setback for further sustainability.	Women self -help groups can be harnessed for Bio-fuels.	In some pockets of the country, food production may be affected due to policy violations.
	Socio-cultural situation in the rural areas is not conducive for privatisation of production.	Small/marginal land owning groups can be motivated in the production of Bio-fuel crops on waste lands.	Large farmers, money lending groups may take undue benefits leading to unequal distribution of benefits
	Political factionalism may be an obstacle for organising cultivators for a common interest.	Some regions of India are ideal for cultivation of Bio-fuel crops can be notified for the production of Bio-fuel crops through appropriate legislation.	

Technological factors

Strength	Weakness	Opportunities	Threat
Favourable policies for technological promotions.	Supportive implementation infrastructure is not yet developed	Huge scope for R&D initiatives	Change proneness of policy support to R&D.
Educated man power to work on new technologies.	High cost of technologies.	There is scope for precision and sophisticated technologies.	Market impetus to innovations in fossile-fuel.
Already available technocrats in RE.	Mass appeal in lacking	Second generation Bio-fuel technologies are heading for a breakthrough.	Institutional framework for technological promotion.
Indigenous entrepreneurs may take interest in manufacturing equipment's	Reliability of equipment's is doubtful	Grid and storage system for Bio-fuel energy.	Peoples attitudes for adopting new technologies in Bio-fuel is uncertain.
Off-grid technology is maturing.	Skilled man power is inadequate.	Hybridisation of Bio-energy.	Cost-effectiveness of available technologies.
Engineering and technology institution are plenty and working in RE sector.	Distribution and service infrastructure for Bio-fuel technologies are yet to be developed.	Conversion of Bio-energy into electricity has ample scope.	Conventional vs. new technology
Growing awareness about new RE technology.		Scope for developing versatile applications of Bio-energy.	Lack of technology transfer mechanism in Bio-fuels.

Environmental Factors

Strength	Weakness	Opportunities	Threat
Favourable Agro-climatic diversity for the production of different species of oil seeds.	Inadequate database management on land use pattern.	Eco-sensitive policies such as reduction in coal stalk allocations.	Dilution of conservation policies visa-a-visa development policies.
Availability of Educated, semi-educated, skilled, semi-skilled, unemployed youth.	Misuse of incentives and price support mechanism In the plantation of oil seeds.	Manifestations of Global Warming climatic change leading to public support.	Certain international policies undermining climate change and environmental concerns.
Rural base of the Bio-energy sources are ideal for Indian conditions for green canopy.	Lack of clarity in the calculation of opportunity cost of land use in various regional contexts.	Growing eco-sensitivity of end-users of the Bio-fuel energy.	non-ratification of certain powerful countries for international environmental treaties.
Availability of vast tracks of unutilised, non-cultivable, shallow lands for the cultivation of the oil seeds.	Lack of linkages, forward and backward, in Bio-fuel production and consumption.		Growing unemployment in west/north and compelling situation to undermine environmental conservation.
Potential for bringing oil seeds under afforestation, waste land development and shallow land development programs.	Unorganised nature of cultivators, oil producers, distributers and end-users of Bio-fuels.		Economic stagnation to speed up production ignoring environmental concerns.
	Low motivation level of corporate houses to invest on Bio-fuel crop cultivations.		

Legal factors

Strength	Weakness	Opportunities	Threat
Conducive environment for up-bringing Bio-fuel projects under the purview of new legal system.	Inadequate legal support system.	Availability of favourable legal framework such as national energy policy, electricity act, national action plan on climate change, clean development mechanism, Kyoto protocol and so on.	Politicization and misuse of misuse of legal provisions.
Coordination across various ministries and departments for enforcements.	Weak enforcement mechanisms of legal provisions related to Bio-fuels.	New business rules of Ministry of New and Renewable Energy(MNRE).	Inefficiency and ineffectiveness in the delivery legal services.
Institutional mechanisms like Panchayat Raj which can introduce legal bindings at the grass root level.	Lack of public participation while formulating legal framework.	Extra duties and taxes on the import of oils and related substitutes.	Sectoral interests within REs coming in the way of Bio-fuels development.
A vast pool of legal practitioners who can be oriented do deal with the legal problems of Bio-fuels.	Over crowding of courts, dispute settling institutions and tribunals to sort out legal issues.	Introduction od standards and certifications example IS-15607 Bio-diesel IS:2796:2008 for mixing 5% Ethanol's.	Non cooperation by other stakeholders while enforcing Bio-fuel legalities.

Matrix of response for "enabling mechanism"(Bio-fuel Policy)

Stakeholders / enabling mechanism	Plantations	Processing	Distribution / marketing	Financing	Fiscal Incentives/ Role of states	R&D	Quality	Intervention/ cooperation	Import/ Export	Awareness/ capacity building	Institutional mechanisms
Technology promotion (R&D)(31)	1	5	0	5	5	---	2	4	5	1	3
Equipment manufacturers (37)	3	5	0	5	4	5	5	5	4	0	1
State government /Regulators (49)	5	3	4	5	5	5	5	5	4	4	4
Different Ministry(39)	3	2	2	5	5	5	5	5	3	1	3
IREDA/ financial partners(32)	1	3	4	5	3	2	3	3	3	1	4

Continued…

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International Financers (32)	1	2	4	0	0	5	5	5	5	1	4
Developers/ Investors (43)	5	4	5	5	3	5	3	3	5	1	4
NGO"s(19)	4	1	1	2	0	0	2	2	0	5	2
End-Users (16)	0	0	3	1	3	0	2	0	3	3	1
Raw Material producers (34)	5	3	2	3	3	0	4	0	4	5	5

Inferences

- State and the associated regulators in alliance with Developers and Investors appears to be prime drivers in promoting bio-fuels;
- The preferable scenario is to give free hand to these two stakeholders to play a major role in mainstreaming bio-fuels;
- NGOs and Civil Society Organizations appear to be having limited role in the promotion of bio-fuels owing to the policies of the present government at the centre;
- The end users appear to be having little stakes in the program to make use of the enabling mechanisms given by the policy; and
- The immediate futures for bio-fuels therefore, is determinant upon political and policy space available to bring in the developers and investors to promote bio-fuels, while other stakeholders would assume supplementary and complementary roles.

THANK YOU.