DRAFT BIO FUEL POLICY FOR KARNATAKA

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The Background

India, one of the largest consumers of petroleum energy in the world

Import	70%
Local production	30%

Demand growing for this liquid fuel at 30% for every 5 years

In this context bio fuels provide a ray of hope to offset a reasonable margin of the imports serving as a good substitute for the fossil fuels.

Bio fuels focused in the policy are

BIO DIESEL AND ETHANOL

This is particularly because

wider acceptance due to its environment friendly,
providing energy security at grass root level
providing employment to rural community and
improved income generation.

Bio diesel is made from the raw oil from plant sources of non-edible type, used vegetable oil through trans- esterification

- little or no engine modifications up to 20% blend

- minor modification for higher percent blends.

- bio diesel use, considerable reduction of un-burnt hydrocarbons, carbon monoxide and particulate maters
  almost no sulphur, no aromatics
  has about 10% build in oxygen,
  which helps it to burn fully,
  Its higher cetane number also improves combustion.

The western world uses even the edible vegetable oil for bio fuels like soybean, sunflower, rapeseed etc.

Thailand uses palm oil,
Ireland uses frying oil and animal fats.

In India it is proposed to use only non-edible oil for manufacture of bio diesel.

RATIONALE OF BIO FUELS FOR TRANSPORT IN INDIA

- Alternative to the petroleum based fuels that is petrol and diesel
- Bio fuels are environmentally superior fuels and their use becomes compelling if the prescribed emission norms are to be achieved
- Need to meet the global environmental concern about climate change
- Ensure energy security, reduce imports, generate employment for the poor
- Achieve a number of other objectives of the country plan.

BIODIESEL
Problems in the use of petroleum derived High speed Diesel

- fossil fuels makes way for addition of extra carbon to the atmosphere.
- diesel adds particulate matter that affects human beings
- emits carbon monoxide, sulphur, hydrocarbon on a higher level.
- incompletely burnt oil is known to have carcinogenic effects.

RATIONALE FOR USE OF BIODIESEL AS BLEND IN INDIA

- Biodiesel superior to HSD from environment point of view
- Use of bio diesel helps in maintaining emission standards
- Provide energy security to the country
- Provide additional employment
- Improvement of land resource through soil and water conservation
- Greening of the surroundings
- Address the issues of global warming
- Reduce crude oil imports
- Benefits from carbon trading

SCOPE FOR USE OF BIOFUEL PLANTS IN KARNATAKA

The state has over 120 different species of plants that yield oil in the range of 20 -70% in their seeds.

Large number of species that can suit to different agro climatic and ecological conditions providing oil seeds over a period of 6-8 months in a year providing substantial feed stock for expelling oil.

The diverse species dependence brings down issues of monoculture, disease and pest attack etc. and provides scope for sustainability for both industry and to the community.

Major species considered for initiation of the activity in the state and also immediate take of the program as most of the stock plants are already available in the rural set up.

MOST COMMONLY KNOWN SPECIES

Bevu (Neem) The oil content in seeds varies from 35-40%.

Turukaharalu (*Jatropha)*
The kernel contains 35-45% of oil.

Honge (Karanja)
The kernels contain 27-39% of oil.

Paradise tree (*Simarouba)*
The tree yields about 10-20 kg of seed/ tree. The kernel contains 55-60% oil

Kokum (*Garcinia)*
The oil content of the kernel is about 40%

Hippe (Mahua) The kernel contents about 50% oil.

Surahonne Yield about 55-65 % oil in the seeds.

ETHANOL PRODUCTION FOR USE AS FUEL FOR BLENDING

Production of ethanol:

Raw material

Starch as grain, corn, tubers etc.

Sugar plants (sugar beet, sugar cane, sweet sorghum)

Cellulose plants (plant biomass)

STATUS OF RAW MATERIAL FOR PRODUCTION OF ETHANOL IN KARNATAKA

Karnataka state is one of the major sugarcane growing states in the country, producing sugarcane around 350-400 lakh tonnes annually.

The state has 47 sugar factories with a crushing capacity of 1.39 lakh tonnes per day and crushes about 275 lakh tonnes in a season.

The molasses production on this quantum of crushing at 4% is around 11.00 lakh tonnes.

Sugarcane ethanol, major alternative to petrol is a boon to the country

- a renewable source
- eco-friendly
- reduction in oil import
- save foreign exchange
- scope for higher price to farmers

The present policy of 5% blend of ethanol with petrol in the country, expected to be raised to 10%.

The present consumption of petrol in Karnataka is around 55000 kiloliters per month.

Blending of ethanol at 5% gives a demand of 2750 kilolitres per month and 33000 KL per year.

One tonne of molasses yields 240 litres of ethanol.

To meet the requirement of 33000 KL ethanol per year will require about 1.40 lakh tonnes of molasses.

In Karnataka there are 5 ethanol units attached to the distilleries of sugar factories and one independent distillery.

The production capacity is 210 KL per day.

ADVANTAGES OF SUGARCANE ETHANOL PROGRAMS

- availability of raw material (molasses available on a large scale)
- ethanol production enterprise can go in a big way
- low project cost for implementation
- economically feasible
- State road transport successful use of ethanol blend upto 7.7% with diesel
- Problems of excess sugar production could be balanced linking it to ethanol production

Policy proposals for ethanol

Mandatory blending of 5% ethanol with petroleum fuels increasing it to 10 % in the coming years

Tax holiday for ethanol being used as blend with petroleum fuels for the next 10 years

Policy for production of sugar / ethanol ratio
- based on sugar demand
- Free trade provision

Interstate movement of ethanol
Ethanol and other bio fuels to covered under ‘Declared Goods’ for the purpose of CST act.

EFFORTS IN THE STATE ON BIOFUEL FRONT

Bio-diesel activity has steadily emerged as a major program in the last 5-6 years from a trial production in backyard type pilot plants to full industrial scale production. Efforts are made in developing marketing system.

It is gaining popularity owing to its multitude benefits ranging from energy security, employment generation to low environmental problem and has now emerged as a viable technology option as a bio fuel in many countries.

The experience of the University Agricultural Sciences, Bangalore and Dharwad, Department of Agriculture, Government of Karnataka, SUTRA, SAMAGRA VIKAS for the past five years has developed proven strategies for augmenting the feed stock supply.

The state of Karnataka is blessed with variety of environmental conditions and a large array of plant species that yield oil in substantial quantity for exploiting the oil content for use as direct fuel as well as conversion in to bio diesel.

MARKETING MODEL

A model initiated in Doddaballapur taluk on the lines of Milk cooperative for collection, processing and marketing of products has found to be viable.

The University of Agricultural Sciences Bangalore initiated a mega model “BIOFUEL PARK” in Hassan District to be replicated elsewhere.

TRAINING

Training / awareness camps conducted across the state for the farming communities / ngo’s, lead department staff to take up growing of biofuel plants with a view to build feed stock resource base

THE POLICY AIMS TO

- Promote growing of bio fuel crops in the rural and urban areas utilizing the back yards, bunds, waste lands, community lands etc. and build feed stock resource base without affecting agriculture production

- Establish models that provides additional income over and above the farm income periodically

- Employment generation to rural people for about 15-60 days in a year in the village

- Establish collective market system on the lines of milk unions with assured price and purchase policy

- Value addition to oil seeds at village and community level

- Optimize utilization of land resources and improve green cover and conserve soil and water
- Derive benefits of Kyoto protocol through carbon trading
- Participation of industries and user groups on larger footing to establish efficient system of bio fuel production which includes bio diesel and ethanol
- Establish end to end linkages involving the farmers and entrepreneurs

- Establish a Board to oversee the implementation of bio fuel policy, research and development, monitoring etc.

ACTIVITIES TO SUPPORT IMPLEMENTATION OF THE AIMS OF THE POLICY

- Provide quality planting material to the farmers and growers to assure better yield
- Provide facilities for value addition to oil seeds by way of oil expelling at home scale / community scale
- Establish market network for procuring the seeds / oil at village level
- Establish bio diesel / ethanol production plants at district level / sugar factories

- Assured purchase of oil for use by state run road Transport Corporation, Railways, Fleet operators and other institutions at the first instance to popularize the use of bio fuel
- It shall be mandatory for all state machineries to use Bio fuel for state owned vehicles including public sector undertaking and also corporate bodies with static machineries like generators, oil engines etc.
- The cost of Bio fuel at present may be little more than that of Diesel (this fact should not be hindrance to the bio fuel production industry)- this shall be absorbed in appropriate ways to encourage use of bio fuels

"To meet **the bio-fuel needs of the state reasonably and improve rural economy**" **Actions Plans Building the resource base**

- Identify all sources of seed borne oil yielding perennial crops on a sustainable basis. Initially promote **Pongamia, Jatropha, Simarouba, Neem,Mohua** can be utilized in this respect.
- The state does have vast area of waste lands- the barren and cultivable wastes together constitute 720000 ha. Use all wastelands, marginal lands, bunds, back yards etc. for growing oil yielding plants
- Selection of best suited species for different agro climatic zones
- Ex. Pongamia and neem can be promoted in dry zones. Jatropha in transition zones, Mohua in hilly and transition zones.
- Identification of elite plant material and mass multiplication and planting in appropriate areas.
- Maintenance of germplasm at UAS of state for further improvement
- Cultivation of **Sweet sorghum, Sugar cane, Sweet corn and Sugar beet** to produce fuel grade ethanol

Program for resource assessment

- Assessment of available stock of the selected oil yielding species Viz. Pongamia, Neem etc. dominent in certain regions of the state like Pongamia in Tumkur, Chitradurga, Bidar, Koppal, Kolar, Mysore, Hassan etc. where the average availability of stock of seeds vary from 25000 to 50000 tons/ year while Neem is in the range of 10000 to 20000 tons/year
- Planting of growing stock – need to be carried out both on farmers land (margins, bunds backyards etc.) and community land (schools, gomals, temple, burial ground, panchayath land, village forest etc.)
- Quality planting material is produced using identified candidate plus trees in model nurseries at taluk places and at various research stations of the university.
- Model plantations be established on government lands / Institutional farms for demonstration
- Monitoring and evaluation of the activity be undertaken through governmental agencies using remote sensing and GIS

Harvest and Processing

- Harvest and semi processing / processing (shelling, dehusking, oil expelling) be done at village level
- The government to **fecilitate** initially to install small scale processing units / encourage establishment with financial support processing units at Panchayat / Hobli level **– to be managed by community / entrepreneurs**
- Provide simple technologies for de shelling, de husking, oil expelling and other related activities
- Establish efficient oil expelling units at Taluk / Hobli level / Village level
- Establish units to produce bio-diesel / ethanol at District level

Establish marketing network:

- Establish efficient collection and storage of yields from farmers at village level
- Provide assured purchase price for the produce

- Network establishment on the model of Milk unions functioning in the state

- Participation of SHG's and other voluntary organizations be encouraged in this regard

- Marketing network shall be within a 20 km radius to minimize the transport cost

PRICING

Assured minimum price for all seeds above 30 %

Assured procurement of all produce

Assured price for the oil expelled at village / community level

Actions for sustaining the bio-fuel production activities

- Use oil cake from oil expeller locally to improve the soil fertility
- Setting up rural industries for use of Glycerin and other byproducts obtained during bio-fuel production
- Provide tax holiday / exemption / benefits for equipments used in production of bio-fuel
- Remove Excise bottleneck in use of ethanol produced in sugar industry for use as bio fuel
- As a first step, state transport corporation to use bio-diesel / blend in their vehicles
- Encourage growing of Sweet sorghum, Sweet corn, Sugar beet to produce fuel grade ethanol during lean period for optimal use of land resource
- Subsidize the bio diesel in the initial years to promote use of the same as a blend with fossil fuel.

Bio Fuel Board

- Constitution of state level Bio fuel board for monitoring and to facilitate production, processing, marketing, R&D usage of products and maintenance of quality standards at various levels of activities
- The bio fuel board – an autonomous body headed by a senior officer of the state with members drawn from various fields
- Integrated development of bio fuel crops and technology.
- Thrust on research and development to support bio fuel program in the state as an ongoing program
- Technology development in improved production technology of bio fuels

Farming network

Involvement of farmers on greater footing

Involvement of farmers in community growing of bio fuel crops on waste lands, forest lands etc. on the lines of joint forest planning and management

Stake holding in production of oil and biofuel

BENEFITS EXPECTED FROM THE PROGRAM

Additional income generation for the farming community

Saving on import of oil and foreign exchange

Greening of the land mass & Ecosystem sustainability

Improvement in soil and water conservation

Eco friendly fuel reducing green house effect and global warming

Benefits from Carbon trading as per Kyoto Protocol

Minimized methane production

Meet the requirement of Carbon emission reduction by 2012 as per Kyoto protocol agreement

MAJOR POLICY ACTIONS

Gradual increase in blending proportion of bio fuel

2012	-5%
2015	-10%
2020	-15%
2025 onwards	-20%

Sale tax / customs / excise / income tax exemptions at all levels of bio fuel production including Machinery

Decentralised activities to minimise the costs

To bring legislation to use bio fuel

Provide financial subsidy and working capital facility

Support for by-products of bio fuel industry

Providing all support for increasing the feed stock supply


Thanks