The Biofuel Policy: Global Trends with Impact in Odisha

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FOREWORD

The biofuel perspective projects a responsibility and preparedness to face the depleting resources of mineral fuels. Biofuel policy papers are among the few policy statements that are primarily scientific with little or no political element in them, and rather represent a political responsibility with a scientific approach. However, in reality(and unfortunately) they have rather become effective mediums of a political economy that allows vested interest groups to humbly dominate the scene and flourish their business. In brief, the cause of earth & its people turns into the cause of some seed-suppliers and related business groups.

India as a country and Odisha as one of its states have been facing a lot of socio-economic disturbances owing to disparity in land ownership & use. Even the left-wing extremism is supposed to be based more or less primarily on this. Poor & disadvantaged people own negligible or even no land, and have critical dependency on common property resources that are fast depleting due to rapid urbanization, mining & industrial establishments, other development projects, and encroachments. On such a backdrop, biofuel policy provides further scope for diversion of large areas of land for so-called energy plantations that not only threaten the food security but also expedite the process of resource marginalization.

The present report has attempted to briefly analyse how the greater perspectives of biofuels have actually turned dangerous & risky for the earth & its people. The original research study/analysis was done by Gurshabadjeet Singh as a part of his internship with RCDC, and under the supervision of the then Programme Manager Dr. Somnath Hazra. Although Gurshabad submitted his report in June 2010, RCDC felt a need to make it more enriched, systematized, and substantiated. Accordingly, the report was revised in August'10 by the undersigned. Mr. Hemant Bag, presently Programme Officer in RCDC, has contributed to this effort. A second revision was made in May 2011 so as to incorporate the revised government policy guidelines of energy plantations(annexure-4) which superseded the previous resolution(annexure-3). This latest edition also has a small case study(annexure-6). It may be mentioned here that a booklet in Odia is being published on the basis of this analysis & findings so that the common people and villager farmers can be benefited.

We take this opportunity to thank all those individuals and organizations/agencies/departments whose work, information, or other kinds of support have made this compilation well-documented. We however request constructive feedback from the readers so as to make it overcome the present limitations.

Bikash Rath
Sr. Programme Manager

ABBREVIATIONS/GLOSSARY

Bbl/d	Oil barrel/day
Bcf	Billion cubic feet
BIS	Bureau of Indian Standards
BPUT	Biju Patnaik University of Technology
CPR	Common Property Resource
CSBP	Council on Sustainable Biomass Production
DOE	Department of Energy
DPR	Detailed Project Report
DRDA	District Rural Development Agency
DTIE	Division of Technology, Industry and Economics, UNEP
DFO	Divisional Forest Officer
EPACT	Energy Policy Act
EBP	Ethanol Blending Programme
EC	European Community
EU	European Union
GBEP	Global Bioenergy Partnership
GHG	Greenhouse Gas
GDP	Gross Domestic Product
Hec/Hect	Hectare
Karanj	*Pongamia piñata* tree
Mahul	*Madhuca indica* tree
MITS	Majhighariani Institute of Technology and Science
NABARD	National Bank for Agriculture and Rural Development
NEMB	National Energy Management Blueprint
NOVOD	National Oilseeds and Vegetable Oil Development Board
OFDC	Orissa Forest Development Corporation
ONCC	Orissa Nature Care Council
OREDA	Orissa Renewable Energy Development Agency
OUAT	Orissa University of Agriculture and Technology
PESA	Panchayati Raj Extension to Scheduled Areas
Polang	*Calophyllum inophyllum* tree
PRI	Panchayati Raj Institutions(for local self-governance at rural level in India having three institutions, most immediate for the villagers being the Gram Panchayat or GP having a Sarpanch(elected) as its chief functionary.
SHG	Self Help Groups
UN	United Nations
UNEP	United Nations Environment Programme
US	United States
USDA	United States Department of Agriculture
FAS	United States Department of Agriculture-Foreign Agriculture Services
VSS	Van Samrakshan Samiti
WL	Wildlife

Contents

Chapter-I

UNDERSTANDING BIOFUEL

Biofuels : An Introduction

This section introduces the concept of biofuels and discusses the interface of biofuels with the following issues:

- ⇒ Biofuels and GHG abatement
- ⇒ Biofuels and impact on natural environment
- ⇒ Biofuels, food security and the poor

Biofuels and Greenhouse Gas abatement

The greenhouse gas abatement potential of biofuels is one of the main reasons cited by their advocates for increased biofuels production. In fact it is the strongest argument in favor of liquid fuels as some biofuels have the potential to lead to reduced emissions and hence contribute inn climate change mitigation, but there are biofuels which may lead to emissions even higher than the fossil fuels. The GHG emissions of biofuels are dependent on a number of variants: nature of land used, crop choice in different agro-climatic conditions, nature of agricultural practices adopted, level of mechanization required, amount and nature of fossil fuel-based inputs required in the process and the type of production pathway chosen.

The issue of biofuels and GHG emissions is very complex because biofuels have been said to trigger land-use changes, direct as well as indirect. Though the direct land-use changes are traceable and subject to impact assessment, the indirect land-use changes are difficult to track. And since the big players in the biofuels market have set-up blending targets with deadlines, the latter act as strong drivers for local as well as off-shore, and direct as well indirect land use changes. For example, the EU directive of 2003, establishing minimum blending levels is said to be indirectly responsible for large scale loss of forested wetlands in Indonesia. (Lewis, 2007)

Further,doubts have been raised by recent studies that weaken the biofuels argument by undermining the GHG emission reduction potential of biofuels, assessing the recent experiences and pointing out the biofuel failure to reduce GHG emissions. Some studies even estimate a net increase in GHG emissions in certain scenarios, some of them pointing out that the emissions may far outweigh the emission reductions. (Fargione, Hill, Tilman, Polasky, & Hawethorne, 2008), (Searchinger, et al., 2008)

However, the GHG emission potential of biofuels depends on the production pathway adopted and a careful strategy may stand a chance to ensure that if biofuels do not add to the emission reduction, they should not add to the emissions either. Further, though different methodologies to calculate net GHG emissions from biofuels exist yet a holistic methodology suggesting context specific, emissions efficient project pathways is needed so that the mist around the GHG abatement potential of biofuels is cleared and the project decisions are adequately informed in this regard.

Biofuels and impact on environment

Biofuels, throughout their production pathway have significant interactions with the natural environment and like all the energy options are responsible for both positive as well as negative effects. This section considers the effect of biofuels on following aspects of the natural environment

- Water
- Biodiversity
- Land

Biofuels and water

Since most of the biofuel plantation is taking place in the form of energy plantations, the effect that increased biofuels cultivation has on water sources is similar in nature to that of agriculture. According to UN World Water Development Report, 2009 agriculture is the biggest user of global freshwater supply, its share ranging from 70-80%. (United Nations World Water Development Report, 2009)

Biofuel-water interaction occurs during various stages of the production pathway viz. cultivation, conversion of feedstock into liquid fuel etc. Currently only 2% or 44 km^3 of the water withdrawals for agriculture are for biofuels, which will however have to register an increase of 180 km^3 to implement current national targets. (The UN World Water Development Report-Facts and Figures)

Further the amount of water consumed in biofuel production is dependent upon the production pathway, type of feedstock used, land management practices adopted and specific geographic and climatic conditions. Table-1 shows the consumption rate in terms of the water footprint of all the major biofuel crops:

Table 1: Total Weighted Global Average Water Footprint[1]

Crop	*Total WF*	*Blue WF*	*Green WF*	*Total Water*
Ethanol (m^3 per GJ[2] ethanol)				
Sugar Beet	59	35	24	1388
Potato	103	46	56	2399
Sugar Cane	108	58	49	2516
Maize	110	43	67	2570
Cassava	125	18	107	2926
Barley	159	89	70	3727
Rye	171	79	92	3990
Paddy Rice	191	70	121	4476
Wheat	211	123	89	4946
Sorghum	419	182	238	9812
Biodiesel (m^3 per GJ biodiesel)				
Soybean	394	217	177	13,676
Rapeseed	409	245	165	14,201
Jatropha	574	335	239	19,924

(Source: Winnie Gerbens-Leenes et al. *2009)*

The WF of bioenergy is large when compared to other forms of energy, and that of jatropha is maximum in the list of crops mentioned in table-1. Scientists conclude that in general, it is more efficient to use total biomass, including stems and leaves, to generate electricity than to produce a biofuel(**Winnie Gerbens-Leenesa *et al*, 2009).** . Biofuels interaction with water has to be seriously considered by the policy makers as improper biofuels production could have multi-pronged effects on the environment, society and the economy. Depletion of water bodies may affect biodiversity of local ecosystems, natural species composition and variability in flora. On the other hand, right to access to water is one of the important Millennium Development Goals and ensuing lack, thereof significantly undermines social development process. Further, there also have been some reports suggesting relationship between groundwater

[1] The WF of a product is defined as the volume of freshwater used for production at the place where it was actually produced. The WF consists of 3 components: the green WF, the blue WF, and the gray WF. The green WF refers to rainwater that evaporated during production, mainly during crop growth. The blue WF refers to surface and groundwater for irrigation evaporated during crop growth. The gray WF is the volume of water that becomes polluted during production, defined as the amount of water needed to dilute pollutants discharged into the natural water system to the extent that the quality of the ambient water remains above agreed water quality standards.(Source: Winnie Gerbens-Leenes *et al. 2009*)

[2] 1.0 gigajoule (GJ) = 10^9 joules = 0.948 million Btu = 239 million calories = 278 kWh(Source: http://bioenergy.ornl.gov/papers/misc/energy_conv.html)

depletion and GDP, the latter having fallen by 2.1% in Jordan and 1.3 % in Egypt. (Making the Most of Scarcity : Accountability for Better Water Management Results in the Middle East and North Africa, 2007).Therefore bio-fuels water interaction stands considerable while evaluating the environmental impacts of biofuels production and need to be accounted for by the decision makers.

Biofuels and biodiversity

Biofuels production has generally been said to be harmful to the biodiversity profiles of the cultivated areas since most of the biofuels cultivation is in the form of large scale, monocrop energy plantations by diverting the grasslands, tropical forests or other biodiversity rich zones. However there are mainly two issues which surface in the biofuels-biodiversity debate: use of genetically modified organisms and the use of potentially invasive feedstocks. The genetically modified crops are customized to better suit the conditions and endure competition from other crops which could enhance their invasive potential. In addition, a lot of crop species which are not native to a particular place are being introduced leading to invasion, thereby negating all the positive environmental impacts of biofuels. For example, *Jatropha curcas*, which originates from tropical regions in Americas is said to have a history of invasion in parts of Australia, South Africa, India and Galapagos islands (UNEP DTIE Energy branch).

In Odisha, the general practice has been to use jatropha as a fence since there is no livestock dependency on it. However, turing a fencing species into a crore crop, that too in large areas definitely threatens the food security alongwith other environmental impacts like toxicity.

However this problem can be tackled by fostering partnerships at both the international as well as project level. International initiatives like Global Bioenergy Partnership and project level linkages like Round Table on Sustainable Biofuels, Round Table on Sustainable Palm Oil and Better Sugarcane Initiative. Feedstock producers as well as feedstock processors need to be sensitized to the biodiversity imperative in the biofuels production process so that the biotic profile of the production lands is not damaged beyond repair. The national government should also bear the responsibility by instituting national monitoring mechanisms to check the biodiversity loss caused by large-scale biofuels production.

Biofuels and Land

The land used for feedstock production accounts for only 2.3% of the total land used for agriculture, however by 2030 the share would have to go upto 36% of the current arable land if the targets set by different national economies are considered(UNEP DTIE Energy branch). Biofuel land interaction basically

concerns land use change caused by feedstock production which poses a potential threat to the integrity of both the social and ecosystems by undermining food security and encroaching upon high conservation value areas. The integrity of the ecosystems would be affected if feedstock production encroaches upon the high conservation value areas as it would impact species richness and the provision of ecosystem services. On the other hand, there are also concerns about bioenergy production encroaching upon common lands which are used by landless peasants to practice subsistence agriculture. However, these issues can be dealt with by checking unsustainable land-use changes and guarding against encroachment of feedstock production into high conservation value areas.

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Chapter-II

GLOBAL DYNAMICS OF BIOFUELS

Global Biofuels context

This section analyses global biofuels context; tracing the history of biofuels production, analyzing major international biofuels initiatives and summarizing regional biofuels policy frameworks, with a special emphasis on Asian biofuels policies.

Global biofuels production: A Brief History

Though bioenergy has been harnessed by humans since times immemorial to meet their energy needs, history of modern form of bioenergy i.e. liquid biofuels is very recent. The history of global biofuels production dates to early 1930s when Brazil began diverting its sugarcane plantations for ethanol production, though its highly subsidized national ethanol programme, Proalcool was launched in 1975 only. Brazil is one of the largest producers and exporters of ethanol in the world. The other major players in the global biofuels market are U.S., which began production of ethanol from its maize stocks in the 1980s, and EU which entered the global biofuels stage at the turn of the century with a focus on biodiesel derived from vegetable oil seeds. Their most of the biofuel production is used up for internal consumption. Both U.S. and EU had set ambitious blending targets through renewable fuel standard (those targets have been subsequently revised to a higher number[3]) and EU renewable energy directive respectively, which could not have been fulfilled by their indigenous production alone. So a number of countries in other regions, especially developing countries have taken up biofuels production on large scales, cases in point being palm oil biodiesel in Indonesia and Malaysia, Jatropha biodiesel in a number of Asian and African countries including India's ambitious National biodiesels mission, 2003.

[3] U.S. President's January 2007 proposal to cut down American consumption of gasoline by 20% in by 2017 (popularly know as '20 in 10') set an alternative fuel target of 35 billion gallons by 2017 as against 7.5 billion gallons envisaged in renewable fuels standard under the Energy Policy Act of 2005. Further on under the Energy Independence and Security Act, 2007 a target of 36 billion gallons per year, constituted by 15 billion gallons of first generation fuels and 21 billion gallons of advanced biofuels, by the year 2022 was set up.

Since biofuels have been extensively promoted as a solution to triplex problems of climate change, energy insecurity and poverty in the international policy discourse, almost all the developing nations in the global south have formal or informal biofuels programmes in function. Though there is no consensus on the promise of biofuels, the latter; given the recent global food crisis (biofuels were blamed in part for it), latest research pointing to not so substantial GHG abatement potential, and anti-poor biofuels experience definitely stand a weaker ground than ever before. Further there are issues regarding sustainability of the blending targets fixed by the governments world over. For example in 2007, 23% of the coarse grain product ion in US and 47% of the vegetable oil production was used for bioethanol and biodiesel respectively but the share of biofuels in total energy consumption remained a very modest 0.36 % (Eide, 2008).There are concerns that large shares of agricultural production will be consumed for very small increases in share of energy use in case of biofuels. The liquid biofuels share in world's transport sector which is roughly 1% now, is expected to increase to 2.3% in 2015 and 3.2 % in 2030 and given the current trends does not augur very well for the global food architecture (Eide, 2008).

International initiatives

- Council on sustainable biomass production
- Global Bioenergy partnership
- Basel criteria for responsible soy production
- Green Gold Label 2: Agriculture source criteria
- Round Table on Sustainable Biofuels

Council on Sustainable Biomass Production

The Council on Sustainable Biomass Production saw light in 2007 with an aim to develop voluntary sustainability standards for biomass production as well as conversion, and promote low carbon biomass in the United States. The Draft CSBP Standard, which was released in September 2009, applies to biomass produced from non-food sources and comprises nine principles, based on which a set of criteria and indicators have been developed(Council on Sustainable Biomass Production).

The principles are:

1. Soil
2. Biological diversity
3. Water
4. Climate change

5. Socio-economic well being
6. Legality
7. Transparency
8. Continuous improvement
9. Integrated resource management planning

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Global Bioenergy partnership

The Global Bioenergy Partnership has its roots in the commitments of G8 countries under Gleneagles Plan of Action, 2005 regarding deployment of biomass and biofuel in developing countries. It evolved and gained acceptance over the successive G8 meetings and the 2009 summit lauded its work on developing methodological frameworks to measure GHG emissions from biofuels. In 2008, a task force on sustainability was se up under the stewardship of UK to: inventories global bioenergy sustainability initiatives, develop scientific criteria and indicators for biofuels sustainability, and spread awareness about the plausible best practices. (Global Bioenergy Parnership) The provisional criteria considered by GBEP partners in December 2009 fall under the following heads:

1. Environmental
2. Socio-economic
3. Governance
4. Food security

The partnership currently has 29 partners (10 national governments) and 30 observers (23 national governments)

Round Table on Sustainable Biofuels

The Roundtable on Sustainable Biofuels came into existence in 2006 and was aimed at developing a globally acceptable set of principles and criteria for biofuels project pathways. (Roundtable on Susatinable Biofuels) This multi-stakeholder process came out with a Version Zero of draft principles and criteria in August 2008, which following the consultations was approved for pilot testing in November, 2009 as 'Version One'.

The guiding principles of the draft are:

- Legality
- Planning, Monitoring and Continuous Improvement;

- Greenhouse Gas Emissions
- Human and Labour Rights
- Rural and Social Development
- Local Food Security
- Conservation
- Soil
- Water
- Air
- Use of Technology, Inputs, and Management of Waste
- Land Rights.

The operators identified by the standard are:

1. Feedstock producers
2. Feedstock processors
3. Biofuels producers
4. Biofuels blenders

Global Biofuels Policy Environment

The United States

The basic United States bioenergy argument is energy security and reduction in GHG emissions and its supporting legislations are designed to that effect. The production of liquid biofuels in United States has grown rapidly in recent years and as of 2006 represented roughly a quarter of bioenergy.2 The policy frameworks promoting bioenergy in United States are:

- Energy Policy Act of 2005 (EPACT 2005),
- Farm Bill, 2007
- Biomass Research Development Act of 2000 (amended)

In addition, U.S. President's January 2007, '20 in 10' proposal which sought to reduce dependence on gasoline by 20% in 10 years and mandates increasing alternative fuels use to 35 billion gallons by 2017 acted as an important driver of the biofuels production in the country. Later on however, under the Energy Independence and Security Act, 2007 a target of 36 billion gallons per year, constituted by 15 billion

gallons of first generation fuels and 21 billion gallons of advanced biofuels, by the year 2022 was set up. Earlier this year a revised renewable fuel standard was released which saw the revision of annual targets though the initial 2022 was affirmed. There is neither a national level mandate setting targets for electricity generation from biomass and nor are any specific policies defined to address heat generation from biomass. (FAO/ GBEP, 2007) The main thrust is on reducing dependence on fossil fuels in the transport sector by making biofuels a viable alternative for which end a lot of money is being pumped into research and development as well as subsidies for the development of an indigenous biofuels industry.

The agencies primarily responsible for the coordination of initiatives aimed at development of biofuels in United States are:

- United States Department of Energy (DOE)
- United States Department of Agriculture (USDA)
- United States Environmental Protection Agency (EPA)

<u>European Union</u>

The European Union (EU) has enacted legally binding bioenergy policies, under which it has been issuing directives which the member states are expected to comply with, failure of which is followed up by legal action. In case of EU, biodiesel is the most important form of biofuel, and the main feedstock used is rapeseed (up to 80 %), the rest being covered up by sunflower and soyabean oil.

The subsidies offered by EU for biofuels production are:

1. Tax exemptions on biofuels
2. Subsidies to agricultural producers under Common Agriculture Policy framework

EU council adopted Directive 2009/28/EC, common framework for promotion of renewable sources in April 2009. This directive also known as EU renewable Energy directive sets the following targets:

1. A 20% share of renewable energy in the final EU energy consumption
2. A 10% share of renewable energy in each member state's transport energy consumption

The directive also lists out a set of sustainability criteria for biofuels and bioliquids, which have to be complied for the biofuels/ bioliquid production to be accounted for the obligations set out by the directive and, to be eligible for financial support(European Union, 2009).

The criteria mainly deal with the following aspects:

- biodiversity;
- protection of rare, threatened or endangered species and ecosystems;
- Greenhouse gas emission savings.

Africa

Triggered by the increased demand driven by the United States and EU's blending targets, countries in the African continent have been instituting national biofuels missions. A lot of countries have large tracts of arable lands but balancing food security and biofuels production will remain key to African share in biofuels market.

Mozambique

Mozambique's biofuels policy was announced in March, 2009 and envisioned a three-phase biofuels development:

1. Pilot phase till 2015
2. Operational phase till 2020
3. Expansion of production after 2020
4.

It focuses on sugarcane and sorghum for ethanol production and jatropha and coconut for biodiesel production. However, long before the policy was announced the government of Mozambique's biofuels plan had been boosted by global partnerships like those with Brazilian Petrobras and Italian ENI.

Nigeria

In Nigeria, the Nigerian National Petroleum Corporation had been assigned the task of formulating the Nigerian biofuels policy. The policy framework arrived at upon by the Nigerian National Petroleum Corporation envisages a two phase biofuels programme:

Phase 1: Seeding the market

Phase 2: Biofuels production programme

Tanzania

Tanzania does not currently have a national biofuels policy, though it is under formulation. However, Tanzania earlier had instituted a national biofuels task force mandated with the responsibility of formulating a biofuels policy. Though a set of guiding principles, biofuels guidelines govern the issues regarding

biofuels in the interim period. The first draft of the guidelines was unveiled in September, 2008 while the final draft was presented in March, 2009 which was approved in December, 2009.The improved institutional framework calls for a one-stop biofuels centre under the aegis of Tanzanian investment council and, setting up of biofuels steering committee and a biofuels technical advisory group.

Madagascar is also in the process of developing its ethanol industry on the basis of sugarcane. Zambia is reported to have a large amount of high-potential available land and could become an important ethanol producer. It has also set fuel blending targets and is promoting the planting of Jatropha.

ASIA

China

The Chinese biofuels production and consumption is looked after by National Development and Reform Commission while a National Ethanol Promotion Team has been designated for promoting biofuels development for automobiles. The Chinese target is to meet 15 percent of its transportation needs through biofuels by 2020.

Out of the two, bioethanol programme is in a more robust state than the biodiesels programme in China, though the huge boost for the biodiesel programme is imminent, given China's ever rising crude oil consumption and the competing food security claims in case of bioethanol production. Corn is the main feedstock used for bioethanol production in China, about 40% of the industrial corn is used up as a feedstock for ethanol production.
Chinese fuel ethanol production was estimated at 1,450,000 tonnes in 2007, up from a recorded output of 1,300,000 tonnes in 2006, reporting a 12 percent increase from 2006(USDA-FAS, 2009).Further, Chinese ethanol exports have jumped from 138,00 tonnes in 2005 to 865,000 tonnes in 2006, as a reaction to world petroleum prices(Kojima, Mitchell, & Ward, 2007).

Indonesia

Indonesia is the world's largest producer of palm oil since 2007, and the government of Indonesia has been □ocusing on alternate energy industry in the aftermath of the global fuels price soar. The government did away with the fuel price subsidies in early 2005, hence making bioenergy viable. In 2005, National Energy Management Blueprint (NEMB) wad issued and led to establishment of a target for biofuels contribution of 5% to the total energy consumption by 2025. On the same hand palm oil exports

of Indonesia have risen rapidly, and there have been reports of massive land use changes and loss of forest land.

Malaysia

The biofuels framework was announced in 2006 and Ministry of Plantation and commodities was assigned the task of implementation. The government promoted a 5% blend of processed palm oil with petroleum biodiesel and started application to government vehicles on a trial basis(Palm oil news).However, the government failed to scale up the mandatory blending and had been struggling to introduce the requisite measures. However, the government is all set to roll out the blended fuel, which it calls the green fuel in 2011 and has already granted 56 licenses. The oil marketing companies will be required to share the cost of subsidy along with the government ton provide the much needed spur to the biofuels consumption in the country(Malaysia to launch long-delayed biofuel mandate in 2011).

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Philippines

Philippines passed Republic Act No. 936790 in 2007 which promotes the use of alternative transport fuels in accordance with the Cebu Declaration on East Asian Energy Security. The Act envisions establishment of a National Biofuels Programme, which would deal with issues of feedstock supply security, investment in supply infrastructure, identification of feedstock for production of biofuels. The Act also created a National Biofuel Board, responsible for monitoring the supply and usage of feedstock. Initially the Act recommended that atleast 1% of the biodiesel be blended with conventional diesel but the targets have been subsequently revised to 5% by 2010, 10% by 2015, 15% by 2020 and 20% by 2025. Philippines is the world's largest coconut producer and its biodiesel programme is dependent on coconuts. A massive coconut tree-replanting programme has been initiated by the National Coconut Authority to supplement the increasing pressure on the coconut production(Commodity online).

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Chapter-III

THE INDIAN BIOFUEL SCENARIO

This section will detail the Indian biofuels policy, identify the perspectives and concerns of different stakeholders and flag the possible gaps in the Indian biofuels context.

India: A brief energy profile[4]

In 2006, India was the sixth largest oil consumer in the world and despite the economic slowdown due the recent crisis; its energy demand is expected to increase, especially in the transport sector owing to the increased vehicle ownership(Department of Energy, 2009).More than half of India's energy demand is met by coal, followed by oil (31%), Natural gas (8%) and hydroelectric power (6%).

Oil:

India's oil consumption touched 2.8 bbl/d in 2007, making it fifth largest oil consumer in the world whereas with a net import of 1.8 bbl/d, 68% of India's oil requirement is dependent on imports.

Natural Gas:

In case of Natural gas, power and fertilizer sector account for three-fourths of natural gas consumption. Though both the production and consumption of natural gas in India have been increasing, the consumption in recent years has outpaced production, raising India's net imports to 353 Bcf in 2007.

Electricity:

In 2006, nearly 80% of the electricity produced in India came from conventional thermal-generated power within which majority of the thermal power came from coal operated plants. Hydropower accounted for 16 percent of the power generated, nuclear power contributed around 2% while geo-thermal and other renewable energy constituted only 1% of the total.

[4] This section has been sourced from EIA-India Fact Sheet, Department of Energy, United States, 2009

Table 2: Share of Future Energy Supply 1997-98 to 2024-25

Share of Future Energy Supply (During 1997-98 to 2024-25) (Percent)					
Year	Coal	Oil	Gas	Hydel	Nuclear
1997-98	55	35	7	2	1
2001-02	50	32	15	2	1
2006-07	50	32	15	2	1
2010-11	53	30	14	2	1
2024-25	50	25	20	2	3

Source: www.indiastat.com

The Indian Land Utilization Context

According to official sources about 64 million hectares of land in India is lying waste and is unsuitable for cultivation. The wastelands have been classified into 13 categories as given in the Table 3.Otherwise too the land resource in India is under tremendous pressure with it having to sustain 16% of the world's population and 25% of the world's livestock on a mere 2.5% of the world's geographic area.1 However, these lands are not totally unused or waste as the name wastelands would suggest, these lands are an important part of the common property resource system, integral to the rural India and vast majority of landless people are dependent on them for food, fuel and fodder. So if these wastelands are appropriated for energy plantations, then a lot of marginal livelihoods would be endangered.

Table 3: Area of Different categories of Wasteland in India

Sl.No.	Category	Area (million hec)	%of total wasteland
1	Snow covered/glacial	5.6	9%
2	Barren rocky/ sheet rock	6.5	10%
3	Sands- inland/coastal	5.0	8%
4	Land affected by salinituy	2.0	3%
5	Gullied or ravenous land	2.1	3%
6	Upland with or without scrub	19.4	30%
7	Waterlogged and marshy	1.7	3%

8	Steep sloping area	0.8	1%
9	Shifting cultivation land	3.5	6%
10	Mining/ industrial wastelands	0.1	0%
11	Degraded/pastures/ grazing land	2.6	4%
12	Underutilized/ degraded notified forest land	14.1	22%
13	Degraded land under plantation crop	0.6	1%
	Total	**64**	**100%**

Source: http://dolr.nic.in/wasteland.htm

Indian Biofuels policy: A brief background

Though this report specifically focuses on biodiesels policy of India, Indian biofuels policy is two-pronged, catering to the production of bioethanol and biodiesel, the policy context of both being discussed here.

Ethanol programme

Indian Power Alcohol Act, 1948 mandated the blending of power alcohol with petrol and had provisions for determining the procurement price for power alcohol meant for the blending purposes, though the provisions were never implemented and the Act was repealed in 2000 as a part of drive to do away with defunct legislations. However, in September 2002 the Government of India Notification on Ethanol Blending Programme directed ethanol blending of 5% mandatory in 9 states and 3 union territories. The first phase of EBP could only be a partial success due to erratic supply of ethanol which came to a virtual halt in September, 2004. However the sugar and molasses production in the marketing year 2005-06 recovered and the government also cast a re-look at EBP and announced the second phase, mandating 5% ethanol blending with petrol in 20 states and 8 union territories, subject to commercial viability. Lengthy negotiations between ethanol suppliers and the oil marketing companies followed, resulting in the delayed implementation of the programme. Further, by the time the negotiations were completed, the sugar production dipped again and led to a shortage of molasses blocking the progress of the programme. The government which was planning to launch the third phase of EBP and increasing the mandate blending from 5% to 10%, did not proceed due to this shortage of supply. However, in the recently announced national biofuels policy the government has announced a blending target of 20% by 2017.

The Biodiesels programme

The biodiesel programme commenced in 2003 when the government announced a two-phased National Mission on Biodiesels. The first phase envisioned setting up of a demonstration project between 2003-07 to develop jatropha nurseries, cultivate 400,000 hectares with jatropha, set up seed collection and processing centres. The phase 2 in the mission proposed expansion of the mission so as to make biodiesel account for 20 per cent of the country's diesel requirements by 2011-12. The Ministry of Rural Development was made the nodal agency in 2003 and in 2005 ministry of petroleum and natural gas announced its purchase back policy, under which oil companies were to purchase bio-diesel and blend it with high-speed diesel at 5 per cent. The government did not provide any financial assistance expect for the exemption from central excise tax, though there were some incentives on offer for jatropha cultivation. However,the national mission on bio-diesel was shelved even before it could become fully functional due to standing concerns over its effects on rural livelihoods as well as land utilisation patterns (Biodiesel mission set to pull down shutters, 2008).However, in December 2009, the government approved a comprehensive national biofuels policy which is discussed in the next section and lent clarity to the biofuels discourse in India.

National Policy on Biofuels: A Brief Summary

The National Policy on Biofuels was cleared by the Cabinet in December, 2009 to clear the mist around Government of India's position on Biofuels, especially in the wake of self-contradicting decisions in the recent past confusing the stakeholders(Biodiesel demand ban come together, 2009).The preamble mentions the need to create synergies between economic growth and energy security and touts the potential of renewable energy sources towards this end. Further it discusses Indian dependence on crude oils, the volatile nature of crude oil market and the feasibility of biofuels as a sustainable and cost-effective alternative to petro-based fuels. Further, the preamble categorically focuses attention on non-edible feedstocks raised on degraded wastelands, thereby demonstrating sensitivity towards food security threat posed by the biofuels production.

The vision statement

The policy document proposes a central role for biofuels in both the transport and energy sector and list the following as the key drivers for the policy:

- Energy security
- Climate change mitigation

- Creation of new employment opportunities
- Environmentally sustainable development

The goals statement

The policy sets a 20% indicative blending target for both bioethanol and biodiesel, though the target is recommendatory in case of latter while binding in case of former.

Salient features of the national policy on biofuels

The salient features of national policy on biofuels can be discussed under the following heads:

- Institutional mechanisms
- Interventions and enabling mechanisms
- Quality standards
- International cooperation
- Import and export of biofuels
- Role of states

Institutional mechanisms

The Ministry of New and Renewable Energy is the nodal agency for coordinating the biofuels related activities in the country, including the research and development related to different applications of biofuels. The other ministries who are involved in the institutional arrangement are:

- Ministry of Environment and Forests
- Ministry of Petroleum & Natural Gas
- Ministry of Rural Development
- Ministry of Science and Technology

A National Biofuels Coordination Committee under the leadership of Prime Minister and a Biofuels Steering Committee under the leadership of cabinet secretary, membered by the involved ministers and secretaries respectively, have been proposed to monitor and coordinate the biofuels on national level.

Interventions and enabling mechanisms

The national policy on biofuels proposes interventions and enabling mechanism under following categories:

- Plantations
- Processing

- Distribution and marketing
- Financing
- Financial and fiscal incentives
- Research and Development

Quality Standards

Bureau of Indian Standards has been given the responsibility of reviewing and updating the existing standards and developing new standards and guidelines for sustainable end-use applications as well as product performance and reliability. The Bureau of Indian Standards (BIS) already has developed (IS-15607) for Bio-diesel (B 100), and has also published IS: 2796: 2008, specification of ethanol blending.

Import and Export of Biofuels

The policy bans the import of Free Fatty Acid oils for the production of biofuels, though the extent and nature of import and export will be decided by the National Biofuels Coordination Committee subject to certain conditions and considerations.

International Cooperation

The policy does not list any concrete partnerships or measures but lists out possible cooperation in the fields of joint research and technology development, field studies and pilot scale plants as the potential areas of international cooperation.

Role of the states

The states need to designate a nodal agency for development and promotion of biofuels in areas under their jurisdictions and involve state forest departments, universities, research organisations and Panchayati Raj institutions in the process. The states also need to announce their respective state biofuels policies and decide land-use patterns for their non-edible feedstock cultivation and create the necessary infrastructure for the support of biofuels projects across the value chain.

Gaps and Issues with the National Policy on Biofuels

Wastelands, Jatropha cultivation and the poor

The Indian Biofuels policy as discussed in the previous section categorically mentions production of biofuels by raising non-edible oil bearing feedstocks from wastelands, thereby allaying the fears about dangers to food security. However there are lots of doubts amongst the researchers regarding the

wasteland status accorded to these lands. It is argued that these lands which are categorised as wastelands actually are not wastelands and that they sustain several marginal livelihoods, forming an integral part of the common property resource (CPR) regimen in rural India.

CPRs are the resources based on collective ownership, access and resource usage and contribute to rural livelihoods by providing for daily needs like fuel, food, fodder and thatching material. So the wasteland management is very crucial and that the opportunity cost for the wastelands should be weighed in terms of the loss of numerous marginal livelihoods. Further cultivating jatropha on these 'wastelands' would neither provide any fodder (leaves of jatropha are not suitable for livestock consumption) nor any fuel (jatropha yielding marginal amount of wood mass per tree).In some cases villagers are dependent on CPRs for major portion of their fuel and fodder requirements.

Jatropha: the ground reality

Though Jatropha has been hailed as the magic crop and a harbinger of sustainable prosperity to the poor of the world, most of the optimism about jatropha's potential is misguided and ill-informed by the ground experience. Jatropha for all its qualities as a hardy species and being resistant to pests and droughts is after all an agricultural crop and its yield is dependent to changes in important parameters like nutrient requirements, seed yield, oil content etc. Jatropha can grow in drought like conditions but the yield would be lower than the jatropha crop grown in properly irrigated conditions. Even the horticultural studies carried out suggest that jatropha crop yields are better in irrigated conditions and that there is a yield variation range from 0.4 tons to 12 tons per hectare, varying with the different levels of irrigation (Prayas).There is further no standardised seed material available and plantations are being done by procuring whatever variant of seed the cultivators can get hold of, complicating the matters further.

The Big Business Approach

Though the Government of India's biofuels policy cites rural development and employment generation as one of the important drivers for the national biofuels programme, the scheme has an in-built bias towards bigger players. Given that perennial crops like jatropha and pongamia piñata take longer time to gestate, require investment till the final harvest and the air of confusion around the biofuels, the poor marginal farmers cannot afford to risk their livelihoods. Only farmers with large tracts of land, who by no coincidence are also early adopters of innovations are all set to benefit from the governments biodiesel cultivation incentives. Further, the small landholders who take up cultivation will have to contract their harvest with the

bigger players in the agri-procurement market and will not be able to reap any benefits as envisioned in the policy.

Further the policy does not propose a specific distribution chains and their nature though it rests the responsibility of marketing biodiesel upon the oil marketing companies. This makes it clear that the government is not very keen on a local production for local use kind of arrangement in case of biodiesel production and given the ambitious plantation plans of energy majors in different parts of India, the rural development aspect of the programme does not stand on a very steady ground.

Further, the government has made no provision to guard against cropland being used up for energy plantation, given the huge export potential of both the processed biofuels as well as feedstock due to the urgency on part of EU and United States to meet their blending targets.

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Chapter-IV

THE ODISHAN BIOFUEL PROGRAME

Odisha: A brief agricultural profile[5]

Odisha, also known as Orissa, is an eastern state in India having about 73 % of its workforce engaged in agriculture sector which contributes about 30% to the Net State Domestic product, making Orissa an agrarian economy. The yield per hectare in Orissa is 1080 kg, considerably lower than the national average of 1620 kg. The state is divided into 10 agro climatic zones and Paddy is the main crop (77.7%) while pulses, oilseeds, fiber crops and other cash crops constitute the rest. In fact the state contributes one-tenth of the rice production in India. The total food grain in Orissa was 7214.8 thousand tones while the oilseeds production was 185.1 thousand tones in 2008-09.Odisha's share of irrigated land rose from 21 per cent in1991-92 to 23 per cent in 1995-96; the percentage of unirrigated agricultural land stood at 64.98 in the year 200. The government of Orissa has been making attempts at improving the status of irrigation in the state through institutional arrangements like Biju Krushaka Vikas Yojna, Pani Panchayat and projects like Mahanadi Basin Development Plan and Orissa Integrated Irrigated Agriculture & Water Management Project etc.

Oilseeds production in Odisha

The main oilseeds grown in Orissa are sesame, groundnut, mustard, castor and linseed, ground nut and castor being the hardier crops suitable for cultivation on marginal and semi-marginal lands. However the production of oilseeds in Orissa has been decreasing over the years; it fell from 244.95 thousand MT to 175 thousand MT in 2004-05, though it was 185.1 thousand MT in 2008-09. In 2007-08 kharif(winter crop) oilseeds production was 93.1 thousand MT while the rabi(summer crop) oilseeds production stood at 103.5 thousand MT.

Odishan Biodiesels policy: A Brief Summary

The Odishan Biodiesel Policy(annexures-3 & 4) aims at utilization of 30% of the state's wasteland and expects to generate 10 million person-days of work through biodiesel production in the state.

[5] This profile has been constructed by collecting data from the following sources.
1. www.indiastat.com
2. Orissa government online portal

The biodiesel policy lists out the following objectives driving biodiesel production in the state:

- Effective usage of barren, uncultivated and fallow land in the state through energy plantations.
- Enabling disadvantaged people to take up cultivation of oil seed bearing trees.
- Encouraging entrepreneurship for biodiesel production plants.
- Provision of suitable market linkages to the bio-diesel producers.
- Setting up quality control facilities to ensure production of biodiesel conforming to standards set by Bureau of Indian Standards.

The policy first suggested *Jatropha curcas* as the most accepted biodiesel species , but in its revised version dtd. 23 November 2007(annexure-4) the emphasis on jatropha though indirectly with a justification that it is suitable for almost conditions, was carefully balanced with simultaneous mention of *Pongamia piñata* at par with jatropha. In fact the revised version seems to be more elaborative and carefully drafted although it still lacks on certain points(like, support to farmers below poverty line).

Seed supply

The policy proposes raising of private as well as government nurseries to ensure secure seed supply to the interested cultivators, co-operatives and SHG groups.

The policy emphasizes on raising the plantations on marginal and degraded lands and vests the responsibility of identification of eligible lands in the designated government departments and agencies, following which the lands would be leased to the VSSs, panchayats, co-operatives and SHGs.

The policy deems all the families as eligible for the incentives offered for energy plantations, though it lays emphasis on collectives like farmer groups, SHGs, associations etc.

Further, the policy mentions that though the land allocation for plantation will take place under the respective regulations, pending a state wastelands policy there is no restriction on energy plantations on lands other than wastelands.

Incentives offered by the state government:

The policy mentions the subsidies offered by National Oil seeds and Vegetable Oil Development board and National Bank for Agriculture and Rural Development and also envisions setting up of a revolving fund under the stewardship of OREDA and OFDC.

The provision of financial assistance to the different stakeholders has been proposed as below:

Collectives like VSSs, Pani panchayats[6], Co-operatives, Self –help Groups etc.	50%
Individual farmers above the poverty line.	33%
Individual farmers as groups.	50%

Further the policy points towards potential interlinkage between the biodiesels programme in the state and the different development programmes and institutional arrangements like Swaranjayanti Gram Swarozgar Yojna, Revised Long Term Action Plan, National Rural Employment Guarantee Act, Integrated Tribal Development Agency, Compensatory afforestation, Backward Regions Grant Fund, Western Orissa Development Council, National Rural Health Mission, Orissa Tribal Empowerment and Livelihoods Programme , Western Orissa Rural Livelihoods Project etc.

The policy directs the setting up of private seed collection centers, having the facilities for storage, gradation and certification of the seeds.

The policy also mentions setting up of small, decentralized biodiesel production centres in rural areas under a local production-local use model and makes the entrepreneurs eligible for subsidy offered by industries department under the Self Employment Programme and incentives provided under Prime Ministers Rozgar Yojna, Industrial Policy Resolution and the Biodiesels policy.

Further, the policy mentions setting up of quality control centres which shall supervise the biodiesel production which is in conformance with the standards prescribed by the Bureau of Indian Standards. The

[6] Society of farmers for localy managing small & medium irrigation systems.

responsibility of monitoring the quality control facilities has been vested in the nodal agency i:e Orissa Renewable Energy Development Agency.

The institutional arrangements

OREDA-Orissa Renewable Energy Development Agency

It has been designated as the nodal agency for biodiesel programme development in the state and has also been given the responsibility of facilitating and supervising the plantation of *Jatropha curcas* in the state.

OFDC-Orissa Forest Development Corporation

It has been entrusted the role of nodal agency for intensive cultivation of karanja and polanga on degraded forest land.

Orissa University of Agricultural Technology and Biju Pattnaik University of Technology:

Both these universities have been entrusted with the responsibility of providing scientific and technological inputs to the biodiesel programme in the state.

Involved departments

A committee to monitor the biodiesel programme in the state has been proposed with the Chief Secretary made its head. Its membership will be derived from the representatives of the following departments:

- Finance Department
- Science and Technology Department
- Panchayati Raj Department
- Industries Department
- Planning and coordination Department
- Agriculture Department
- Environment and Forests Department
- Revenue Department
- Orissa University of Agricultural Technology
- Biju Pattnaik University of Technology
- Indian Oil Corporation

- Indian Institute of Technology
- Orissa Renewable Energy Development Agency
- Chief Administrator, KBK region

Odishan biodiesels programme: The experience so far

Under National Biodiesels Mission, Rs 4 crore was released to the state of Orissa to carry out jatropha and karanja cultivation. Out of this amount, Rs 2 crore were allocated to Orissa Forest Development Corporation for karanja plantation and Rs 2 crore were with Orissa Renewable Energy Development Agency for jatropha cultivation. Of these, OFDC released Rs 18 lakhs each to the 11 forest divisions to raise 6 lakh karanja seedlings under the nursery programme 2007-08. The 11 forest divisions are:

1. Bhubaneswar
2. Khurda
3. Nayagarh
4. Athgarh
5. Cuttack
6. Dhenkanal
7. Angul
8. Parlakhamundi
9. Baripada
10. Balaosre (WL)
11. Bhadrak(WL)

The Department of Land Resources has enquired OFDC about the details of the plantation which has been carried through a questionnaire which has not been yet filled up by the respective DFOs. So there is no information regarding the area of forest land brought under the karanja plantation, the type of land utilized for karanja plantation and the related aspects as yet.

As far as Orissa Renewable Energy Development Agency's role is concerned, it has been supervising the biodiesel programme in the state and has formulated a scheme integrating the biodiesel programme with the national rural employment guarantee scheme. OREDA has established a renewable energy cell in the office of District Rural Development Agency in each district that coordinates with DRDA to identify potential beneficiaries and offer them benefits for the jatropha cultivation. Further a provision for the role of

facilitating organizations has also been made. OREDA has identified few districts to establish 'energy parks', and Angul is one of them.

As informed by OREDA office, there were 4 facilitating organizations in the state at the time of writing this report:

1. Orissa Nature Care Council
2. MITS-Rayagada
3. Nandan Biomatrix
4. Williamson Magor

The role of these facilitating organizations is to assist DRDA in identifying the potential beneficiaries and recommending them for the benefits under the NREGS scheme. However, Orissa Nature Care Council and MITS- Rayagada, when contacted in the course of this investigation and questioned about their business plans revealed that they had buy back agreements with most of the cultivators and further have supply deals with energy majors like UK based D1 oils , Shapoorji Pallonji Co Ltd, Emami group etc.

Further, Orissa University of Agriculture and Technology has been providing technical inputs to OFDC and OREDA in the matters of Biodiesel. Scientists from OUAT were instrumental in setting up a Biodiesel processing plant in the year 2006 with the cooperation of IIT Delhi at the premises of OFDC's divisional office in Bhubaneswar. Further research regarding the cultivation of jatropha is being carried out at the Phulbani campus of OUAT and work has also been completed on experiments checking the emissions of biodiesel run vehicles. However, only very few scientists in the whole state are actively involved in contributing to the biodiesels programme in the state. Though there has not been a long time since the announcement of the policy and its implementation, and that jatropha & karanja are perennial species, but still there are issues with the policy itself and with the way the policy has been implemented, which merit attention.

The Chief Secretary of Odisha, as reported in ***The Sambad*** on 28th August 2009, said that the 'current' bio-fuel production potential of the State was estimated at approximately 1000 Kilo litre per annum. With further utilization of about 30% wasteland of the state the production is likely to increase up to 14000 KL per annum. The government pointed out that about two million hectares of land is available under the categories of barren, uncultivated and fallow land, and a major portion of this land can be utilized for cultivation of oil seed baring trees. The irony is that although there are a number of indigenous species like

Karanj, Mahua, Polang, Kusum, Neem, Sal, Castor, and of course baigaba(*Jatropha curcas*) that produce oil seeds having potential for biofuel production, the thrust on promotion of a particular species(*Jatropha curcas*) in the name of better yield and improved variety, etc. is quite intriguing. Although the government in a high-level meeting in March 2007 is said to have taken a decision not to give much emphasis on jatropha and rather to promote other indigenous oilseed plans like karanj, polang, etc.(vide ***The Prajatantra***, 23rd March 2007), and OFDC was directed to take up plantation of karanj on 500 hectares in KBK-districts and 5000 hectares in non-KBK districts(***The Indian Express***, 6th December 2007), the actual policy seems to be otherwise.

The Biodiesel policy of the Orissa government practically targets 6 lakh hectares of waste land for the energy cultivation. The state government has announced incentives to panchayats, cooperatives; self help groups (SHGs) and farmers for undertaking large scale cultivation of bio-fuel crops. The policy claimed that the bio-fuel crop plantation would not only help production of 14,000 kilo litres of bio-fuels but would also produce 42,000 tonne of organic matter for soil fertility and generate 100 million person-days.

In 2007-08, the government had targeted a plantation over 1500 hectares in the KBK districts. However, the programme did not materialize due to lack of response from commercial financial institutions. Commercial banks were reluctant enough to finance jatropha cultivation as they considered the project not economically viable. ***(The Indian Express***, 4th May 2009***).*** Lack of specific policy guideline, and uncertainty about the oil content discouraged the financial institutions. When the government came out with a clear policy, and said that the seedlings identified by OREDA would have oil content between 33 to 36%, it created a base for the support of Banks(***The Indian Express***, 7th December 2007). Now, some banks (like the Andhra Bank) reportedly support contract framing on jatropha.

In 2009, jatropha cultivation was decided to be promoted under the NREGS programme too, through OREDA though it does not seem to have progressed much supposedly because of the controversy.

The Biodiesel policy, officially named as ***Policy guideline for intensive cultivation of oil seed bearing trees and bio fuels production*** also encouraged to raise energy plantation along the fence of cultivated lands, and also on marginal and degraded lands coming under common land, wasteland, canal and tank bunds, degraded forests, along the railway tracks, highways.

As per the promotional scheme of the Central government, different categories of farmers opting for energy crops can avail financial assistance under back ended credit linked subsidy programme of National Oilseed and Vegetable Development (NOVOD) Board under the Ministry of Agriculture, Government of India. For

cultivation of oil seed bearing trees at present subsidy @ 30% subject to the benchmark cost of Rs 30,000/- per hectare is available under the NOVOD guidelines. The pattern of assistance is 30% subsidy, 50% bank loan and 20% beneficiary share. ***(The Sambad,*** 28th January 2010***).***

Area under energy crops:

As per OREDA's website, the plantation activities for jatropha through this nodal agency was under progress as follows(November 2008):

Sl. No.	Name of the District	Area (in Acre)	Status
1	Angul	70.82	Land identified, DPR under preparation
2	Koraput	271.00	DPR prepared and submitted to Bank
3	Nowrangpur	580.00	DPR prepared and submitted to Bank
4	Keonjhar	955.00	DPR prepared and submitted to Bank, Plantation Started
5	Sundergarh	100.00	DPR under preparation.
	Total	**6240.82**	

(Source: http://www.oredaorissa.com/achivements.htm)

As regards karanj plantations, OFDC's website doesn't provide any clue on the progress so far; and sources privately reveal that the original plan/projection did not materialize properly. The money which OFDC gave to various forest divisions was reportedly used to raise more than 21.01 lakh seedlings of karanja, maximum coverage being in Parlakhemundi-(6 lakh), Bhadrak-(5 lakh), and Angul(4.25 lakh) divisions, and lowest being in the Athagarh division(only 752). Interestingly, the whole programme now seems to be an event of the past since neither OFDC nor the Forest Department (Office of the Principal Chief Conservator of Forest) could update us regarding the follow up status, i.e. to what extent this investment contributed to the propagation of karanj and what is the success rate of the plantations thus raised (if any). In fact, sources reveal in private that the instruction to go for this programme was rather perceived as an unnecessary burden for both parties.

The jatropha business is attracting MNCs too. The Mission Bio-fuels India Private Limited that has started its operation in the state is actually a subsidiary of the multi-national company Mission New Energy Ltd.. The company claimed to have invested rupees 42 crore for jatropha cultivation in 12 districts of the state as a result of which 58000 farmers were engaged in this cultivation in 1.46 lakh hectares of land. The company has a target to cover five lakh hectares by 2011. It also submitted a proposal to the state government to set up a bio diesel refinery in Orissa. (***The Samay,*** *30th January 2009****).***

Orissa Nature Care Council Private Limited is one of the oldest agencies involved in jatropha promotion in the state. It claimed that in 2006 the area under jatropha cultivation was only 4000 acres (***The Anupam Bharat,*** *14th March 2007;p.8*) and as its website now projects, the target by 2015 is to cover total 150500 acres(source: http://onccworld.com/ac.htm).

Another company Nandan Biometrics projected a target of 1 lakh acres in all the 30 districts of the state with a proposal of 1 expeller unit for every 3000 acres of jatropha(***The Samay***, 8th June 2009).

It is quite evident by now that the scene is dominated by private entrepreneurs and that more with a hidden agenda of taking maximum advantage of the situation than actually ensuring renewable & alternate energy. Although it was originally said that jatropha would be promoted on degraded/barren/ waste lands, the practice went beyond that threatening food security. It also accelerated land grabbing

Private companies eye fertile land

XPRESS NEWS SERVICE

Balangir, April 2: Till now, farmers of Balangir were allegedly harassed by 'Mahajans' (money-lenders) and despite possessing acres of fertile lands, they migrated in search of work. Their condition, however, remains the same.

This time, their lands are being eyed by private companies who are planning to grow jatropha for extracting bio-diesel and other kinds of bio-fuels. With the companies promising rich dividends, farmers too, are entering into contract with the companies.

Experts who have done extensive research in jatropha and its impact on environment, said that growing the fruit would create an alarming situation.

They said that the farmers of Vidharba and Andhra Pradesh had started cultivating Bt cotton after a good variety of cotton was promised but later, many farmers committed suicide after incurring heavy loss. Similarly, the promise of good returns through cash crops like jatropha will be counter-productive, they added. Initially, it was claimed that jatropha was immune to pests but later, studies proved it wrong.

Recently, agriculture scientist Pankaj Oudhia, had visited the district in order to spread awareness among the farmers about the imminent threat of jatropha cultivation to traditional farming. He had then said that cultivation of crops like jatropha will not only alienate the lands but also create health problems for people. He added that jatropha plantation is found to have negative impact on the environment, health as well as agro bio-diversity.

Oudhia said that a few years back, an experiment in Thailand revealed that jatropha had considerable potential of causing cancer. The fruit was banned in Japan when the research organisation proved that jatropha oil and other parts of it contained carcinogenic elements.

JATROPHA CULTIVATION

Research organisations in Japan revealed that the fruit had potential to cause cancer

Meanwhile, there are several farmers who had already lost their lands to private companies.

Farmers of Ghumer, Ghunghutipali, Jalpali in Patnagarh block have lost about 340 acres for jatropha cultivation to an Agra-based private company, Taj Gas Limited. Farmers of Ghumer alleged that 51 acres were purchased at the rate of only Rs. 7,000 per acre by the company.

Meanwhile, Collector R. S. Gopalan said that a team of officers was recently sent to Patnagarh to inquire into the matter and it revealed that the allegations of the farmers were found to be true.

"However, no documents were found pertaining to the fact that the farmers were cheated by the company," he added. "Earlier, we used to earn around Rs. 5,000 to 10,000 through cultivation but now, in absence of any kind of benefits or lands, our livelihood has been crushed," said farmer Tarani Sahu.

(This media report in ***The Indian Express***, dtd. 3rd April 2007, narrates how some farmers in the Balangir district of Odisha lost their valuable land to jatropha promoters because of their own ignorance the advantage of which was taken by the latter.-Ed.)

Besides massive promotion of jatropha cultivation by private companies, the high cost of inputs involved in jatropha cultivation was forcing increased farmers dependency on external inputs which came through private companies and the credits, which left them in debt traps.

The Odishan Biodiesels Policy: Gaps and issues

A detailed investigation into the Odishan Biodiesels policy was carried out, consulting all the relevant stakeholders, and gaps and issues identified as have been discussed in this section.

Gaps in policy implementation

The state of Odisha does not have a wastelands policy and there is no mechanism in place to check the diversion of cropland for energy plantation which poses a serious danger to the food security scenario in Orissa where 9 percent of the people are classified as extremely food insecure (consuming less than 1800 kilocalorie per day).

Despite the fact that Orissa is one of the 9 states covered under Fifth schedule and the national policy explicitly mentioning respect for provisions of PESA, the Odishan biodiesel policy is silent in this regard. After all 11 of Odisha's 30 districts are fully or partially covered under the provisions of PESA.

Although the policy categorically mentions setting up of nurseries to ensure secure seed supply, the supply at the ground level is very erratic and the cultivators are procuring seeds from the nearby states to cultivate Jatropha in their fields. Even the demonstration bio-diesel processing plant at OFDC premises has been shut due to lack of seed supply. The supply situation is further worsened by the heightened demand for Jatropha seeds from the biodiesel producers in the neighboring states like Chhattisgarh, who offer higher prices to the cultivators and procure the seeds.

Going by the current policy implementation, there is no indication of a local production for local use model being followed, as advocated by the policy thereby weakening the rural development argument of the biodiesels programme. Moreover, the ground reality does not give many reasons to believe that the rural poor are not being exploited, they are not being provided any insurance against crop failure whereas the facilitating organizations have formal or informal buy-back arrangements with them, thereby binding them to sell their produce to them. Of the two facilitating organizations contacted, both of them had seed supply agreements with big business houses and a quasi-formal buy-back agreement with the cultivators.

There is no subsidy on methane which is an integral part of the biodiesel production process, which also raises the cost of Biodiesel and makes it commercially unviable.

Though information about the exact land diversion due to Jatropha cultivation is not available, there are concerns in the field about jatropha cultivation adding to the food insecurity in the state and huge diversions of cropland driven by the need for energy majors to procure seeds for their biodiesel refineries.

On the other hand Jatropha's promise of a gold crop is turning out to be a false one as the yields promised in the production estimates have not been realized due to their fallacious assumptions. The yields could have been realized only under ideal agricultural conditions but the propaganda around jatropha as a golden crop has mystified the whole biodiesel policy discourse, leading to a lose-lose situation for the poor cultivators and the powerful energy majors as well. But still the state governments country over are buying into the jatropha argument and formulating biofuels policies centred around jatropha cultivation(vide annexure-5).

Ethanol & biodiesel production in the state:

Odisha produces considerable quantity of sugar cane and mahul flower that have good potential for production of ethanol. Sugar cane is cultivated with sugar and/or molasses production as the prime target whereas mahul flower is a forest product used primarily for production of liquor. However, the production potential of ethanol is not utilized at present chiefly because of the conventional mindset and partly due to lack of necessary support & infrastructure. However, a leading sugar industry is known to be planning to diversify into ethanol production on the backdrop of repeated problems of ensuring consistent & adequate supply of sugar cane for sugar production.

Some non-government agencies are known to have experimented with small scale units of biodiesel production at local level, but these units are not reported to be commercially viable. On the other hand, OFDC has set up an integrated biodiesel plant at Satyanagar, Bhubaneswar which has been only experimentally & occasionally operational due to want of raw materials. The plant used only karanj seeds(wild collection), but the produced biodiesel was not viable economically.

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Chapter-V

POLICY RECOMMENDATIONS

This section compiles the suggestions gathered from the various stakeholders and deemed fit by the investigation team as well, so that a more robust and equitable biodiesel programme can be evolved in the state.

The recommendations are as under:

⇒ The present practice of land use for energy plantations is not only threatening food security, but environmental security also, besides adverse socioeconomic impacts on the long run. This should be immediately checked.

⇒ It is apprehended that contract farming is a convenient method of acquiring virtual ownership over the land of scheduled caste & tribes which are otherwise no so easily saleable, and jatropha plantation seems to be a good help to that. Further, planting material suppliers have their own tactics of cheating/exploiting farmers(vide annexure-6). There need to be adequate safeguarding measures against all these so that the promotional strategy of the government doesn't serve these vested interest groups.

⇒ The state government should come up with a draft wastelands policy as soon as possible so that there is clarity regarding the pattern of wasteland distribution and its usage. Further, there are thirteen categories of wastelands and all the wastelands are not suitable for oilseeds production; so the government has to clearly declare the categories of wastelands it deems fit to be utilized for the purpose. Additionally wastelands are an integral part of the commons and they sustain livelihoods of the rural poor of Orissa, and any wasteland utilization cost-benefit analysis should not remain blind to this reality.

⇒ Gram sabhas[7], with demonstration of due knowledge of the pros & cons of energy plantations should be the ultimate authority in deciding whether or not commercial farming for biofuel would be allowed in their area. While allowing for such cultivation (if any) they need to justify how the food security, livelihood security, environmental security, land use pattern, and other important factors have been duly considered. The Panchayat functionaries should be accountable for any deviation in the promised security.

⇒ If the government is actually interested in promoting rural development via biodiesels programme in the state, it should make stringent provisions ensuring that a local production-local use model is followed instead of local production-commercial use pattern which is indicative of the real situation now. The government has to balance the biodiesel usage between the power and the transport sector and it'll do good by diverting a portion of its biodiesel produce for rural electrification instead of letting it all fuel the transport sector alone.

⇒ Further, instead of relying solely on Jatropha and Karanja, the biodiesel programme should also focus on crops like sweet sorghum, neem and sal seed. The fact that Jatropha and karanja are perennials and have a long gestation period, also does not help the matters much.

⇒ Though the policy announces subsidies for the farmers taking up jatropha cultivation, it has to ensure that the banks are ready to finance these projects and that the subsidies on offer do not go unavailed. Further, farmers have to be provided a safety net as an incentive to take up the production of a crop which does not have a history of mass cultivation, neither in the state nor in the country.

⇒ The policy guidelines should incorporate appropriate subsidy provisions for women-, physically challenged-, and below-poverty-line farmers.

⇒ The government needs to evolve draft guidelines regarding the contract farming in the state because most of the energy majors, through the agency of so called 'facilitating organisations' are following the route of contract farming to procure the requisite number of oilseeds required to

[7] Assembly of all the voters of a revenue village is called Palli sabha in Odisha, and Gram sabha implies to the assembly of all the voters of a Gram Panchayat(consisting of several revenue villages). The Panchayat office headed by the Sarpanch implements the decision of the Gram sabha/Palli sabha. The Indian Constitution has given lot of power to Gram sabha(villagers' assembly), particularly in the tribal-dominated scheduled areas.

meet their production targets. Regular survey & monitoring of status of the land under contract farming, farmers involved, legal validity & farmer's security in the contract agreement, returns to them and possible future implications need to be carried out so as to take timely steps before the situation worsens.

⇒ The nodal agency OREDA should have a more active field presence rather than delegating the responsibilities to the facilitating organizations, which may or may not have their vested business interests as well and owe no accountability to the exchequer. It should have an updated website data on the progress made, and failures & difficulties faced(if any).

⇒ There should be focused effort on promotion of mahul as a major source of biofuel so that its diversion for liquor production can be checked.

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Bibliography

Making the Most of Scarcity : Accountability for Better Water Management Results in the Middle East and North Africa . World Bank, 2007.

Biodieel mission set to pull down shutters. August 4, 2008. http://economictimes.indiatimes.com/News/News_By_Industry/Energy/Oil__Gas/Biodiesel_mission_set_to_pull_down_shutters/articleshow/3322496.cms (accessed May 2010).

Biodiesel demand ban come together. September 28, 2009. http://economictimes.indiatimes.com/Biodiesel-demand-bancometogether/articleshow/5063632.cms (accessed May 2010).

"Commodity online." http://www.commodityonline.com/news/Philippines-bio-diesel program-runs-on-coconut-oil-28142-3-1.html (accessed May 2010).

Council on Sustainable Biomass Production. http://csbp.org/files/survey/CSBP_Draft_Standard.pdf (accessed May 2010).
Department of Energy. *EIA-India fact sheet.* Department of Energy, United States, 2009.

Eide, Asbjørn. *Right to Food and the Impact of Liquid Biofuels(Agrofuels).* Rome: FAO, 2008.

European Union. *EU Renewable Energy Directive.* 2009.

FAO/ GBEP. "A REVIEW OF THE CURRENT STATE OF Bioenergy Development in G8+5 Countries." 2007.

Fargione, J, J Hill, D Tilman, S Polasky, and P Hawethorne. " Land clearing and the biofuel carbon debt." *Science*, 2008.

Global Bioenergy Parnership. "GBEP-website." http://www.globalbioenergy.org/ (accessed May 2010).

Kojima, Masami, Donald Mitchell, and William Ward. *Considering Trade Policies for Liquid Biofuels.* ESMAP, 2007.

Lewis, Jonathan. *Leaping before they looked.* Boston: Clean Air Task Force, 2007.

Malaysia to launch long-delayed biofuel mandate in 2011. http://www.reuters.com/article/idUSTRE62N15D20100324 (accessed May 2010).

Palm oil news. http://www.palmoil.com/index.php?q=D1VTW1tASgIEAhEbVg9RAgsIBw== (accessed May 2010).

Prayas. *Jatropha in horticulture programme of Employment guarantee scheme.* Pune: Prayas.

Roundtable on Susatinable Biofuels. "RSB Principle and Criteria." http://cgse.epfl.ch/page84341.html (accessed May 2010).

Searchinger, T., et al. " Use of U.S. croplands for biofuels increases greenhouse gases through emissions from land use change." *Science*, 2008.

The UN World Water Development Report-Facts and Figures. http://www.unesco.org/water/wwap/facts_figures/food_supply.shtml (accessed May 2010).

UNEP DTIE Energy branch. *Issue Paper No. 1.* UNEP.

UNEP DTIE Energy branch. "Issue Paper No.3."

United Nations World Water Development Report. UNESCO, 2009.
USDA-FAS. "Peoples Republic of China: Biofuels Annual Report." 2009.

Winnie Gerbens-Leenes et al. 2009. The water footprint of bioenergy. *published in* Proceedings of the National Academy of Science, 2009, 106(25), 10219-10223, accessed through http://www.pnas.org/content/106/25/10219.full?sid=f8d12f83-af65-4f7e-a733-6d9a7f37b2d6

Annexure-1

The list of people and organizations contacted by the original researcher:

- ⇒ Mr. A.K. Choudhary, OREDA
- ⇒ Mr. B.P. Koner, OREDA
- ⇒ Mr. M.K. Panda, OFDC
- ⇒ IMCO, Bhubaneswar
- ⇒ Dr M.K. Mohanty, Associate professor, OUAT
- ⇒ BPUT
- ⇒ Divisional office, Bhubhneswar, OFDC
- ⇒ ONCC, Berhampur
- ⇒ MITS- Rayagada

Annexure-2

The Biofuels Research design:

Research Design

Study on national and international policies on agro and bio-fuel, types and nature of bio-fuels produces in the country.

Background:

Indian economy is one of the fastest growing economies in the world which implies huge demand for energy. The present energy architecture is primarily dependent on petroleum-based fuels thereby exposing the economy to market fluctuations in the crude oil price and threatening the economic growth process. Alternative fuels based on indigenously produced renewable feedstocks are being touted as a viable solution to this economic growth conundrum. The Indian Biofuels Policy was approved by cabinet on 25th December, 2009. It focuses solely on raising non-food feedstocks on degraded or wastelands not suited to agriculture, thereby trying to rule out a direct conflict with the important goal of food security. The policy mandates the setting up of a National Biofuels Coordination Committee and a Biofuels Steering Committee, chaired by the Prime Minister of India and the Cabinet Secretary respectively. It also directs the states to

announce their respective Biofuels policies and designate a nodal agency for biofuels development in the state. The Department of Science and Technology, Government of Orissa has also announced Orissa's Biodiesel policy which focuses on plantation of *Jatropha curcas* and *Pongamia pinata* as the main non-edible oil bearing plants for production of biodiesel in the state. Orissa Renewable Energy Development Agency has been designated as the nodal agency for the state's biodiesel programme whereas the programme has also been brought under the ambit of various central and state-sponsored development schemes.

However, these policies need to be scrutinized to gauge their impact on a vast array of issues like gender, health, natural resource management, agrarian structure, food security, biodiversity, energy security, climate change, employment generation and agro-industrial development. Since this question lies at the convergence of people, profits and planetary considerations, a research study to detail the various issues attached is imperative.

This study basically proposes to analyse the Indian and Odissan Biofuels policies and explore alternatives in a sustainability context.

Objectives:

1. To provide a brief overview of bio-fuels policies of select countries and sum up the global bio-energy context.
2. To analyze the biofuels policy in Indian and Odishan context and issues therewith.
3. To assess the perspectives of various stakeholders towards biofuels based energy architecture.

Methodology:

- The report will explain the biofuels policy context at international, national, and state level through a review of secondary literature/reference materials generated from various sources.
- The literature would be analysed critically to identify different discourses in the biofuels policy debate and the actors involved therein.
- After identifying the relevant stakeholders, they would be personally contacted so as to assess their perspectives.
- Discussions with relevant state level departments, institutions, businesses, development programmes and agencies like Orissa Renewable Energy Development Agency, Orissa Forest Development Corporation, Orissa University of Agriculture, Biju Patnaik University of Technology,

Western Orissa Livelihoods Project, Orissa Tribal Empowerment and Livelihoods Programme, Watershed Missions, DRDAs, Integrated Tribal Development Agencies would be conducted to assess their perspectives.

- Filed visits to the relevant sites would be conducted to understand the problems at the micro-level and understand the perspectives of energy farmers.
- Based on above a comprehensive report will be arrived upon which will be in consonance with the stated objectives.

Sources of information:

- Government policies
- Research publications
- News publications
- Business reports
- Scientific manuals
- Secondary data etc.

Major Areas of Data Enquiry:

- The Indian Biofuels Policy
- The Orissa Biodiesel Policy
- Western Orissa Livelihoods Project
- Orissa Tribal Empowerment and Livelihoods Programme
- Centre and state sponsored rural development schemes.
- Relevant Government of India publications.
- Biofuels policies of other select Indian states.

Tools of Data Collection:

- Secondary literature review.
- Field visits- primary information collection.
- Interviews with relevant stakeholders.

Time Plan:

Days	10 days	10 days	15 days	10 days	5 days
Preparation for the study					
Collection of information from government officials					
Analysing and compiling the data					
Drafting the report					
Final draft					

Annexure -3

Policy Guidelines for Intensive Cultivation of Oil Seed Bearing Trees and Bio-diesel Production

GOVERNMENT OF ORISSA

Science & Technology Department

RESOLUTION

Sub: Policy guidelines for intensive cultivation of oil seed bearing trees and bio-diesel production

Bio-diesel produced from vegetable resources is fast emerging as a viable alternative to petro-diesel, particularly in the face of its diminishing supply and the resulting steep increase in price.

Production of Bio-diesel also supplements the general economic growth by way of waste land utilization, employment generation, entrepreneurship development, augmentation of additional source of power, increasing share of organic manure in agriculture etc.

1.0 Potential of Bio-diesel Production

The current bio-diesel production potential of the State has been estimated at approximately 1000 KL per annum With further utilization of about 30% wasteland of the State the production is likely to increase up to 14000 KL per annum. At B20 this oil can be blended with 70000Kl of Diesel and at B5 the same can be blended with 280000Kl of diesel.

2.0 Quantification of Benefits of Bio-diesel production

Total expected production: 14000 KL per annum

Utilization of wasteland: 0.6 Million Hectares

Employment generation: 100 million man days

Additional organic manure: 42,000 tons

With the above consideration in view, Government has been pleased to decide the following guidelines for implementation and promotion of Biodiesel in the State.

3.0 Objectives and strategies

The main objective of the policy is to enhance economic growth through maximisation of production of bio-diesel in the state. Other objectives are:

3.1 To put at least 30% wasteland of the State into effective use though cultivation of oil seed bearing trees;

3.2 To enable the poor and disadvantaged people of the society to take up cultivation of oil seed bearing trees;

3.3 To fix up the minimum support price of oil seeds;

3.4 To enable interested and eligible entrepreneurs to set up bio-diesel production plants;

3.5 To provide suitable market linkage to bio-diesel producers to sell their product, and

3.6 To set up quality control facilities to guide entrepreneurs to produce BIS standard bio-diesel.

4.0 Operative period

The scheme for promotional and fiscal incentives for intensive of cultivation of tree borne oil seeds and establishment of bio-diesel production units will come into operation with immediate effect and will remain in force for a period of TEN years.

5.0 Cultivation of Oil seed bearing trees

5.1 *Propagation of oil seeds*:

Although several oil bearing trees like Karanj, Mahua, Polang, Kusum, Neem, Simarauba, Sal, Linseed, Castor, Baigaba etc. are native to Orissa, systematic propagation and processing of these seeds is very important in view of large scale commercial production of bio-fuels. However,

the proposed magnitude of the campaign calls for well laid out actions and well defined roles and responsibilities of different stakeholders.

5.2 *Selection of Oil bearing Trees:*

Except Polang which grows well in regions closer to the sea coast all other species can be grown all over the State even on marginal and degraded lands. Oil seed bearing trees can be chosen depending upon the local agro-climatic conditions and economic feasibility for large scale bio-diesel production. Jatropha Curcas, however, is a generally accepted bio-diesel species because of its adaptability to all types of harsh conditions.

5.3 *Supply of seedlings:*

Government and private nurseries shall be encouraged to prepare seedlings of Bio-fuel trees and supply the same to interested farmers, co-operatives, Self Help Groups etc. at moderate prices. Financial incentives should be provided to women self help groups, grass root level Non Government Organizations/Community Based Organizations and individuals in tribal sub-plan areas for raising nurseries so as to build up a strong and continuous seedling supply chain.

5.4 *Availability of land for cultivation of oilseed bearing trees:*

About 2 million hectares of land is available under the categories of barren and uncultivated land and fallow lands. A major portion of this land can be utilized for cultivation of oil seed bearing trees. Besides, huge areas of degraded forest are also available in the State where such cultivation can be taken up. Cultivation of oil seed bearing trees can also be taken up on field boundaries, tank bunds, fences etc.

5.5 Distribution of land:

5.5.1 *Identification of land*

While farmers have to be encouraged to cultivate Bio-fuel plants along the fencing and the bunds of cultivated lands, the very success of the programme depends on raising such plantations on marginal and degraded lands. Such areas coming under common land, wasteland, canal and tank bunds, degraded forests, along the railway tracks, highways have to be identified by designated Government Departments and given on long term lease to interested Van Sanrakshan Samittees ,

Pani Panchayats, co-operatives, Self Help Groups,Tree Growers' Societies etc. for plantation purpose.

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5.5.2 *Eligibility*

Under these policy guidelines all families living below poverty line are eligible for government incentives for cultivating oil seed bearing trees. Self Help Groups, other farmers groups, associations, consortia etc. with more than 50% members belonging to the BPL category will be preferred.

5.5.3 *Allocation of wasteland*

Waste land in suitable agro-climatic zones will be identified by concerned Government functionaries and allotted for the purpose of cultivation of oil seed bearing trees to different categories of beneficiaries as under:

Individual farmers : 2.5 hectare per beneficiary belonging to BPL categories

SHGs/ VSS/
Bhumi Panchayats/
Other recognised
farmers groups etc. : 25 hectares per group

Allocation of land will be made as per prevailing Acts of the Revenue Department under OLR/OPLE/OGLE.

Van Suraksha Samittees with due permission of the forest Department may also raise oil seed bearing tree plantations in forest and degraded forest lands. In such cases the quantity of land to be allocated per VSS may be decided by the forest department.

The above arrangement, however, does not prevent others to grow plantation on their own land.

5.6 Financial incentives:

5.6.1 *Support price of oil seeds:*

In order to facilitate farmers to sell their oil seeds, State Government shall fix up remunerative support prices for purchase of different oil seeds suitable for production of Bio-fuels.

5.6.2 *Incentives for raising commercial plantations:*

For raising commercial plantations different categories of cultivators can avail financial assistance under back ended credit linked subsidy programme of National Oilseed and Vegetable Development (NOVOD) Board under the Ministry of Agriculture, Government of India. (Annex-I)

For cultivation of oil seed bearing trees at present subsidy @ 30% subject to the benchmark cost of Rs 30,000/- per hectare is available under the NOVOD guidelines. The pattern of assistance is 30% subsidy, 50% bank loan and 20% beneficiary share.

6.0 Establishment of Seed collection centres and buy- back arrangements

Government /private /NGO managed seed collection centres with adequate infrastructural facilities shall be established at well connected locations for collection and preservation of seeds. Such collection centres shall have facility to determine the oil content of seeds, grade and certify the seeds on the basis of their oil content and purchase the same from the farmers at support prices determined by government.

7.0 Establishment of Bio-diesel production centres

Bio-diesel production can be low tech, and is not capital intensive. Bio-diesel production does not require economy of scale. There is no minimum size for a bio-diesel facility and small decentralized bio-diesel facilities do not require dedicated technical staff support; they can be operated by locally trained non-technical staff.

Eligible entrepreneurs shall be entitled to subsidy as per the special package offered under Self Employment Programme implemented by the Industries Department. Such special package allows 15% capital subsidy and 3% interest subsidy.

Financial assistance and other incentives for setting up complete bio-diesel production units shall be given to individual entrepreneurs as well as groups as per relevant provisions of IPR, PMRY, and KVIC/KVIB.

All such incentives shall be in consonance with the Self Employment Policy of the State Government.

7.1 *Selection of Entrepreneur:*

Entrepreneurs for setting up bio-diesel plants shall be selected as per selection procedure in vogue of the District Industries Centres (DIC).

8.0 Preparation of Detailed Project Reports

Standard priced DPRs for different capacities of Bio-diesel Plants shall be made available to the selected entrepreneur by OREDA. Location specific amendments to the DPR, if any, shall be incorporated by OREDA subject to verification of details and on payment of costs of such verification etc.

9.0 Establishment of Quality Control centres

Bureau of Indian Standards (BIS) has specified standards for quality of Bio-diesel for blending with petro-diesel in India. Indian Oil Corporation has also set up certain quality standards and norms for procurement of Bio-diesel by them.

The entrepreneurs in order to sell their bio-diesel must adhere to the above standards and norms and such adherence should be monitored by suitable Quality Control Facilities created under the State Nodal Department / Agency.

Such facilities shall also duly certify the Bio-diesel following which sale to indenting buyers or consumption for one self can be affected by the respective Bio-diesel unit.

10.0 IEC Activities

As of now, there is very little mass awareness about organized plantations of oil seed bearing trees in the State. The opportunities and potential to various beneficiaries like farmers, traders,

industry and consumers have to be properly articulated. Booklets, brochures, manuals etc. have to be prepared in Oriya detailing the package of practices in plantation of bio-fuel trees, collection and preservation of seeds, buy back arrangements, economics, financial incentives, loans etc. and widely circulated among farmers. Government Departments like Agriculture, Forest, OUAT, Krishi Vigyan Kendras , PRIs, NGOs and other grass root level extension functionaries , electronic media, etc. should be adequately geared up to take up the task of awareness and education. Suitable budgetary provisions should be made by the State Government for such extensive awareness and education campaigns.

11.0 Role of OREDA

Orissa Renewable Energy Development Agency, in short OREDA, will act as the Nodal Agency for the entire programme and function as the single window for promotion and facilitation of all projects prepared under these guidelines.

(Source: http://www.orissa.gov.in/panchayat/biodieselpolicy.pdf)

Annexure -4

POLICY GUIDELINES FOR RAISING OF ENERGY PLANTATIONS AND BIO-DIESEL PRODUCTION

GOVERNMENT OF ORISSA
Science & Technology Department

ORISSA RENEWABLE ENERGY DEVELOPMENT AGENCY (OREDA)
S-3/59, Mancheswar Industrial Estate; Bhubaneswar – 751010
Ph.: 91-674-2588260/2586398/2585898; Fax: 2586368
Website: www.oredaorissa.com

POLICY GUIDELINES FOR RAISING OF ENERGY PLANTATIONS AND BIO-DIESEL PRODUCTION
GOVERNMENT OF ORISSA Science & Technology Department

No. 5345/Bhubaneswar Date.: 23.08.2007

RESOLUTION

Sub: Policy guidelines for Raising of Energy Plantations and biodiesel production

The question of framing up of Policy Guidelines on matter relating to 'Raising Energy Plantation and Bio-diesel Production' was under active consideration of Government.

After careful consideration and in superssion of Resolution No. 4813/ ST dated 23.07.2007 of Government of Orissa in Science & Technology Department, Government have been pleased to formulate Policy Guidelines for raising Energy Plantations and Bio-diesel Production, 2007 as follows:-

Bio-diesel produced from vegetable sources is fast emerging as a viable alternative to fossil fuels, particularly in the face of diminishing supply and the concomitant steep increase in price of fossil fuels.

Production of Bio-diesel also supplements the general economic growth by way of waste land utilization, employment generation, entrepreneurship development, augmentation of additional source of power, increasing share of organic manure in agriculture, etc.

1.0 Potential of Bio-diesel Production

The current bio-diesel production potential of the State has been estimated at approximately 1000 Kilo Litres (KL) per annum. With further utilization of about 30% wasteland of the State the production is likely to increase up to 14000 KL per annum.

2.0 Quantification of Benefits of Bio-diesel production:

Total expected production: 14000 KL per annum
Utilization of wasteland: 0.6 Million Hectares
Employment generation: 100 million man days
Additional organic manure: 42,000 tonnes

With the above consideration in view, Government has been pleased to decide the following guidelines for implementation and promotion of Bio-diesel in the State.

3.0 Objectives and strategies:

The main objective of the policy is to enhance economic growth through maximisation of production of bio-diesel in the state. Other objectives are:

3.1 To put barren, uncultivated and fallow land of the State into effective use through raising of energy plantations;

3.2 To enable the poor and disadvantaged people of the society to take up cultivation of oil seed bearing trees;

3.3 To enable interested and eligible entrepreneurs to set up biodiesel production plants;

3.4 To provide suitable market linkage to bio-diesel producers to sell their product and endeavour for a minimum support price.

3.5 To set up quality control facilities to guide entrepreneurs to produce bio-diesel conforming to the standards set by Bureau of Indian Standards.

4.0 Operative period:

The promotional and fiscal incentives for raising of energy plantations and establishment of bio-diesel production units will come into operation with immediate effect and will remain in force for a period of TEN years.

5.0 Raising of Energy Plantations:

5.1 Propagation

Although several oil bearing trees like Karanja, Mahua, Polanga, Kusum, Neem, Simaruba, Sal, Linseed, Castor, Jatropha etc. are native to Orissa, systematic propagation and processing of these seeds is very important in view of large scale commercial production of bio-diesel. However, the proposed magnitude of the campaign calls for well laid out actions and well defined roles and responsibilities of different stakeholders.

5.2 Selection of Trees:

Except Polanga, which grows well in regions closer to the sea coast all other species can be grown all over the State even on marginal and degraded lands.

Oil seed bearing trees can be chosen depending upon the local agro-climatic conditions and commercial viability for large scale bio-diesel production. Pongamia piñata and Jatropha curcas, however, are generally accepted biodiesel species.

5.3 Supply of seedlings:

Government and private nurseries shall be encouraged to prepare seedlings of Bio-diesel tree species and supply the same to interested farmers, co-operatives, Self Help Groups (SHG) etc. at moderate prices. Financial incentives shall be provided to women self help groups, grass root level Non Government Organizations/Community Based Organizations (CBOs) and individuals in tribal sub-plan areas for raising nurseries so as to build up a strong and continuous seedling supply chain.

5.4 Availability of land for raising energy plantations:

About 2 million hectares of land is available under the categories of barren and uncultivated land and fallow lands. A major portion of this land can be utilized for cultivation of oil seed bearing trees. Besides, huge areas of degraded forests are also available in the State where such cultivation can be taken up. Cultivation of oil seed bearing trees can also be taken up in JFM mode on field boundaries, tank bunds, fences etc.

5.5 Distribution of land:

5.5.1 Identification of land:

While farmers have to be encouraged to raise energy plantations along the fence and bunds of cultivated lands, the very success of the programme depends on raising such plantations on marginal and degraded lands. Such areas coming under common land, wasteland, canal and tank bunds, degraded forests, along the railway tracks, highways have to be identified by designated Government Departments/Agencies/Panchayati Raj Institutions/Urban Local Bodies and given on long term lease to interested Van Sanrakshan Samittees , Pani Panchayats, co-operatives, Self Help Groups, Tree Growers' Societies etc. for plantation purpose.

5.5.2 Eligibility

Under these policy guidelines all families are eligible for admissible government incentives under different programmes for raising energy plantations.

Self Help Groups, other farmers groups, associations, consortia etc. will be preferred. Groups and families belonging to BPL category would get SGSY subsidy as admissible.

5.5.3 Allocation of land:

Allocation of land may be made as per prevailing Acts of the Revenue Department under Orissa Land Reforms/Orissa Prevention of Land Encroachment Act/Orissa Government Land Settlement Act to self-help groups and others as mentioned in para 5.5.1.

Van Suraksha Samittees may also raise energy plantations in forest and degraded forest land as per their approved JFM plans. In such cases the quantity of land and subsidy to be allocated per VSS may be decided as per the existing norms of Forest Department. Besides, Panchayats can avail use of revenue land under the Sabujima scheme for raising energy plantations.

The above arrangement, however, does not prevent others to grow plantation on their own lands or to take up contract farming as per the existing laws until a state waste land policy is drafted and accepted prescribing models for various types of plantations.

5.6 Incentives for raising commercial plantations:

For raising commercial plantations different categories of cultivators can avail financial assistance under back-ended credit linked subsidy programme of National Oilseed and Vegetable Development (NOVOD) Board under the Ministry of Agriculture, Government of India. Full advantage should be taken up of their back-ended subsidy. The pattern of financial assistance under NOVOD is appended to this policy guidelines as Annexure – A. NABARD also supports development of wastelands through energy plantations, bio-diesel crop as one of its thrust areas. It extends 100 per cent refinance to banks at concessional rates of interest. The model unit cost and quantum of refinance circulated by NABARD is enclosed at **Annexure - B.**

5.6.1 For raising energy plantations at present subsidy @ 30% subject to the benchmark cost of Rs 30,000/- per hectare is available under the NOVOD guidelines. The pattern of assistance is 30% subsidy, 50% bank loan and 20% beneficiary share.

For all group activities 50% subsidy could be available to the group and in case of loan no collateral security would be needed. OREDA/ OFDC would operate with a revolving fund to start with and claim reimbursement of admissible subsidy from NOVOD Board on a group basis in due course.

In any central, state or centrally sponsored scheme provided for taking up land development and plantation in eligible private lands full advantage would be taken up by the administrative department.

5.6.2 Subsidies:

For raising bio diesel plantations different categories of beneficiaries shall be entitled to subsidies under existing provisions as given below:

a) Van Sanrakshan Samittees , Pani Panchayats, Co-operatives, Self Help Groups,Tree Growers' Societies etc. : 50%

b) Individual Farmers above poverty line : 33%

c) Individual farmers as groups : 50%

Subsidies and investments on infrastructure allowed under SGSY, RLTAP, NREGA, ITDA, Compensatory afforestation, BRGF, WODC, NRHM, OTELP, WORLP etc. would be admissible as per existing norms and special provision in these pogrammes. Funds received from Government of India would be routed through OREDA and OFDC for Jatropha and Karanj plantation respectively.

6.0 Establishment of Seed collection centres and buy- back arrangements:

Seed collection centres with adequate infrastructural facilities shall be promoted in private sector at well connected locations for collection and storage of seeds. Such collection centres shall have facility to determine the oil content of seeds, grade and certify the 5 seeds on the basis of their oil content and quality.

7.0 Establishment of Bio-diesel production centres

Bio-diesel production can be low tech, and is not capital intensive. Bio-diesel production does not require economy of scale. There is no minimum size for a bio-diesel facility and small decentralized bio-diesel facilities do not require dedicated technical staff support; they can be operated by locally trained nontechnical staff.

The Biodiesel production units shall be eligible for the incentives provided under PMRY, IPR and under the Biodiesel Policy.

Eligible entrepreneurs shall be entitled to subsidy as per the special package offered under Self Employment Programme implemented by the Industries Department. Such special package allows 15% capital subsidy and 3% interest subsidy.

Small bio-diesel production centres will be encouraged in rural areas for different local applications like water pumping, village electrification etc.

Indian Oil Corporation has agreed to buy entire bio-diesel produced in the State, subject to quality and regulation of supply.

7.1 Selection of Entrepreneur:

Entrepreneurs for setting up bio-diesel plants shall be promoted by OREDA/OFDC to be selected as per selection procedure in vogue of the District Industries Centres (DIC) so that subsidies are made available under PMRY and other self employment programmes.

8.0 Preparation of Detailed Project Reports (DPR):

Standard priced DPRs for different capacities of Bio-diesel Plants shall be made available by OREDA, who would work in close coordination with IIT, Delhi.

9.0 Establishment of Quality Control centres:

Bureau of Indian Standards (BIS) has specified standards for quality of Bio-diesel for blending with petro-diesel in India. Indian Oil Corporation has also set up certain quality standards and norms for procurement of Bio-diesel by them.

The entrepreneurs in order to sell their bio-diesel must adhere to the above standards and norms and such adherence shall be monitored by suitable Quality Control Facilities created under the State Nodal Department / Agency.

Such facilities shall also duly certify the Bio-diesel following which sale to indenting buyers or consumption for one self can be effected by the respective Bio-diesel unit.

10.0 Information, Education and Communication Activities:

As of now, there is very little mass awareness about organized plantations of oil seed bearing trees in the State. The opportunities and potential to various beneficiaries like farmers, traders, industry and consumers have to be properly articulated. Booklets, brochures, manuals, etc have to be prepared in Oriya detailing the package of practices in plantation of bio-fuel trees, collection and preservation of seeds, buy back arrangements, economics, financial incentives, loans etc. and widely circulated among farmers. Government Departments like Agriculture, Forest, Orissa University of Agriculture and Technology, Krishi Vigyan Kendras , Panchayati Raj Institutions, Non Government Organisations and other grass root level extension functionaries , electronic media, etc. should be adequately geared up to take up the task of awareness and education.

Suitable budgetary provisions shall be made by the State Government for such extensive awareness and education campaigns, to be given as grants in aid to OREDA/OFDC.

Propagation of Bio-diesel plantations shall be taken up as a livelihood improvement activity as well as an entry point activity in different rural development programmes.

11.0 Role of Different Government Agencies:

11.1 Role of OREDA

Orissa Renewable Energy Development Agency, in short OREDA, will act as the Nodal Agency for bio-diesel development in the State and function as the single window for promotion and facilitation of all projects prepared under these guidelines. It shall also act as the nodal agency for propagation of non-forest oil seed bearing tree species like Jatropha curcas.

11.2 Role of Orissa Forest Development Corporation (OFDC) LTD

OFDC Ltd shall act as the State Nodal Agency for intensive cultivation of forest Bio-diesel species like Karanja, Mahua, Polanga etc. on degraded forest land.

11.3 Role of Orissa University of Agriculture and Technology (OUAT) and Biju Patnaik University of Technology (BPUT)

OUAT and BPUT shall act as support agencies for technological and scientific inputs and mass awareness generation at grass root level. They may be suitably assisted for R&D Projects.

11.4 Role of Other Agencies:

Organisations like WORLP, OTELP, Watershed Mission, DRDAs, ITDAs etc. shall also give priority to various promotional activities under these policy guidelines under their existing provisions.

12.0 Monitoring Committee:

A State level monitoring committee under the Chairmanship of Chief Secretary comprising of the following members shall monitor various activities under these policy guidelines on a quarterly basis and submit reports to Government in Planning and Co-ordination Department with pertinent suggestions.

List of members:

i. Chief Administrator, KBK
ii. Development Commissioner

iii. Agriculture Production Commissioner
iv. Secretary to Government, Finance Department
v. Secretary to Government, Science and Technology Department
vi. Secretary to Government, Panchayati Raj Department
vii. Secretary to Government, Industries Department
viii. Secretary to Government, Agriculture Department
ix. Secretary to Government, Forest and Environment Department
x. Secretary to Government, Revenue Department
xi. Special Secretary / Additional Secretary Planning and Coordination Department.
xii. Vice Chancellors of OUAT/ BPUT
xiii. Two Representatives of Industry
xiv. Representative of Indian Oil Corporation xv) Representative of IIT, New Delhi
xv. Chief Executive, OREDA, Member Convener

Besides, the subject of bio-diesel production shall be regularly discussed in important forums like State Level Bankers' Committee (SLBC), District Level Coordination Committee (DLCC), Block Level Coordination Committee (BLCC), Panchayat Samittees.

13.0 District level Task Force:

A district level task force shall be constituted involving representatives of OREDA, OFDC, DRDAs, ITDAs, NGOs , local engineering colleges and other academic institutes to regularly monitor and follow up various activities concerning energy plantation and bio diesel production at the district level.

Order: Ordered that this Resolution be published in the extra ordinary issue of Orissa gazettee.

By the order of the Governor
N. C. VASUDEVAN
Principal Secretary to Government
Science & Technology Department

Annexure -A

SCOPE, ACTIVITIES & GUIDELINES
NATIONAL OILSEEDS & VEGETABLE OILS DEVELOPMENT BOARD
Ministry of Agriculture, Govt. of India
Plot No. – 86, Sector – 18, Institutional Area
Gurgaon – 122015
(July, 2004)

NATIONAL OILSEEDS AND VEGETABLE OILS DEVELOPMENT BOARD
SCOPE, ACTIVITIES AND GUIDELINES

1. THE BOARD

National Oilseeds and Vegetable Oils Development (NOVOD) Board was created under NOVOD Board Act, 1983 (No.29 of 1983) and came into being on 8th March, 1984. The Act provides for integrated development of oilseeds and vegetable oils industry under the control of the Union Government. The Board has comprehensive functions as per the provisions under the Act and covers all aspects of development of oilseeds and vegetable oils industry including production, processing, marketing, trade, storage, research & development and financing. It has as advisory role in the formulation of integrated policy and programmes of development of oilseeds and vegetable oils.

2. COMPOSITION OF THE BOARD

The Board has 36 members including the Chairman. Union Minister of Agriculture is the Chairman of the Board and Secretary (A&C), Deptt. of Agriculture & Cooperation, Govt. of India is its Vice-Chairman. The Board consists of representatives of the Central Government (10), Central Autonomous organisations (5), State Governments (11), Members of Parliament (3), Representative of oilseeds growers (3), Representative of Trade & Industry (2) and other interests (2).

The NOVOD Board Act also provides for a Managing Committee of the Board which is headed by the Secretary (A&C), Govt. of India, to look after its day-to-day affairs. The Committee has been delegated appropriate powers to carry out its function.

3. OBJECTIVES

The Board has been entrusted with the nodal responsibility for integrated development of tree borne oilseeds with focus on generation of rural employment through exploitation of existing potential and augmenting the future potential. The brief objectives of the scheme for the implementation during 10th plan are given below :

- Improve the quality of seeds of TBO collected by unemployed women and tribal by augmenting handling through creation of appropriate infrastructure.
- Promote the plantation of potential TBOs in wasteland through augmentation of superior planting material, production technologies and handling system.
- Develop and refine the technologies for improved productivity, quality, value addition etc by assisting capable institutions to take such programmes.
- Create awareness through training, seminar, workshop, publication & publicity etc. among farmers and primary processing industries for improved agronomic practices and new technologies.
- Generate income and employment opportunities for small and marginal farmers and other weaker sections of society, particularly those living below poverty line and women folk etc.

4. PROGRAMMES:

A. Back-ended credit linked subsidy programme:

- Establishment of seed procurement centres;
- Installation of multi-purpose pre-processing and processing facility;
- Installation of oil expeller;
- Nursery raising.
- Commercial plantation & maintenance.

B. Promotional Programmes

- Technology development & refinement;
- Development of elite planting material;
- Model plantation & maintenance;
- Establishment of TBOs garden;
- Feasibility studies for various components;

C. Transfer of Technology

- Farmers training;
- Trainers training;
- Publicity and publicity material;
- Observation-cum-study tour;
- Seminar/Workshop/Exhibition.

5. IMPLEMENTING AGENCIES:

A. Back-ended credit linked subsidy programme:

- Government/Semi-Govt. Organizations, Co-operative Institutions, Federations, Corporations, NGOs/VOs/ Individual etc.

B. Promotional programmes

- Central and State Government organizations, Autonomous bodies like Institutes of ICAR, ICFRE and CSIR; Central/State/Deemed Universities, etc.

C. Transfer of Technology

- Central and State/Semi-Government organizations, Central & State Research Institution, Corporations, Federations, Co-operative Institutions, NGOs/VOs etc.

6. GUIDELINES FOR SUBMISSION OF PROPOSALS FOR "IN PRINCIPLE APPROVAL (IPA)" AND RELEASE OF SUBSIDY

A. Back-ended credit linked subsidy programmes:

i. The pattern of assistance shall be 30% subsidy, 50% bank loan and 20% beneficiary share. The subsidy shall be restricted to 30% of project cost and the ceiling of amount shall be as indicated in paragraph 8 below.

PROCEDURE FOR IPA

ii. The beneficiaries will submit the Project Proposal for "In Principle Approval (IPA)" for back-ended credit linked subsidy programme to the Executive Director, NOVOD Board, Gurgaon in prescribed format (Annexure-I).

iii. After scrutiny the NOVOD Board shall place, all such proposals before the MC for "In Principle Approval" of the subsidy component and the same shall intimated to the beneficiary.

iv. The IPA will be valid for one year from the date of issue. The beneficiary will accordingly approach Bank/Financial Institution of his choice immediately after obtaining the IPA from NOVOD Board and get his/her term loan sanctioned by Bank/FI within a period of one year.

v. Mere issuance of the IPA would not guarantee the grant of subsidy to the beneficiary unless the proposal is implemented in accordance with the overall guidelines of the scheme.

vi. NOVOD Board will not entertain any cost escalation over and above the expenditure shown in the IPA.

vii. Additional cost, if any will have to be borne by the beneficiary.

viii. While deciding the subsidy the Board will restrict the expenditure on any component as per the ceiling fixed by it.

ix. The project will not be eligible to receive subsidy under NOVOD Board programme in case benefit of subsidy for the same from another agency of the Central/State Govt. has been availed.

PROCEDURE FOR RELEASE OF SUBSIDY

x. The project would be completed within a period of 2 years from the date of the sanctioned of loan. The payment of back-ended subsidy will be made after project has been successfully completed, according to the terms & conditions of the loan. Thereafter, the Executive Director, NOVOD Board could sanction the release of subsidy of the Bank/Financial Institution on their request in prescribed format (Annexure-II).

xi. Bank will submit to NOVOD Board the progress of investment subsidy achievement in the format (Annexure-III).

xii. On completion of the project, the concerned bank would inform the NOVOD Board, that the project has been completed, and also furnish a Utilization Certificate (Annexure-IV) of the subsidy released by the NOVOD Board.

xiii. Any dispute arising out of the above shall be subject to the jurisdiction of Gurgaon Court.

B. Promotional and transfer of technology programme

a. The pattern of assistance shall be as per scales/ceiling indicated in paragraph 8 below.

b. Proposals for financial assistance under the promotional and technology transfer programmes shall be submitted

by the following implementing agencies to the Executive Director, NOVOD latest by 31st January of every year for financial support into the following year, in the application form (Annexure-V) for promotional programme, Annexure-VI for Technology Refinement and Annexure-VII for Transfer of Technology Programme).

(i) State Governments i.e. Deptts. of Agriculture, Horticulture, Soil Conservation, Forest.

(ii) Semi-Govt. organizations, Research Institutes, SAUs, Oil Federations, Co-operatives, PSUs and other Semi Government Organization. The Semi-Government Organization may submit their project

proposals through State Department of Agriculture in respect of production programmes and through the concerned department of the State Govt. for other programmes and the research institutions through their apex bodies like ICAR and CSIR as the case may be to avoid duplicacy. Semi-Govt. organizations have also to sign a MOU for long term R&D projects, before release of funds to them (Annexure-VIII).

(iii) Non-Govt. Organizations (NGOs)/Voluntary Organization (VOs). NGOs/VOs, have to furnish the following supporting documents alongwith their proposals:

- Valid registration certificate, audited accounts and annual reports of the previous three years,
- Recommendation from the Distt. Authorities like District Collector or District agriculture/Horticulture Officer of the concerned Districts.
- The views/comments of State Deptt. of Agriculture in case the proposal contains the production programmes for any cultivated oilseed crop.
- All NGOs/VOs are required to sign a bond on non-judicial stamp paper (ten rupees only) in the District Court, Gurgaon, as per Annexure-IX. However, in exceptional cases, the E.D. may consider grant of exemption from this requirement.
- In case NGO/VO is associated in long term R&D projects, it has to sign MOU also before release of funds to them (Annexure-VIII).
- The necessary travelling expenses by ordinary bus or IInd class train fare will be borne by the Board for the authorized signatory of the NGO alongwith his two sureties for signing the Bond in case of NGOs/Vos.
- Board shall also undertake physical verification of infrastructure of NGO's/VO's who have prima/facie furnished satisfactory information. Such verification by the Board would be aimed to satisfy credentials, ability and potential of such organization for the purpose of particular schemes of the Board to be implemented by them.
- Utilization Certificate in respect of funds released by the Board, in format GFR 19-A (Annexure-XI).

(iv) Viability of the Project Proposals received under the promotional programme will be examined by the Board and placed before the Project Appraisal Committee (PAC) constituted for the purpose. The Board can also refer the Project Proposals to State Governments/Experts for their opinion.

(v) Projects found viable will be placed before the Managing Committee(M.C.) and or the Board, depending on the quantum of assistance for approval. The quantum of assistance to be extended to the project will be decided by the M.C./Board subject to monitory limits prescribed hereunder at Sr.No.8, i.e. Pattern of Financial Assistance.

7. MONITORING OF THE PROJECT

Except for the back-ended credit linked subsidy schemes, each beneficiary will submit a progress report to the Board on a quarterly basis. The progress report will indicate the status of implementation of the project, activities undertaken during the quarter, physical progress, utilization of funds, bottlenecks, if any. Projects will be visited by the Board's Officers individually or with a team of experts at least once during the season/course of implementation. However, research projects are to be reviewed by a team of experts on annual basis.

8. PATTERN OF FINANCIAL ASSISTANCE:

The scheme-wise pattern of funding for various components under the back-ended credit linked subsidy programme, as well as promotional programmes shall be as under:

1. **Back-ended credit linked subsidy programme (30% subsidy, 50% bank loan, 20% beneficiary share)**

Implementing agencies –

Government/Semi Govt. Organizations, Co-operative Institutions, Federations, Corporations, NGOs/VOs/Individual etc.

Under this scheme, following two separate projects will be considered:

Project -1: Establishment of model seed procurement centre & Installation of pre-processing and processing equipments

Quantum of assistance - Subsidy restricted to 30% of project cost with the ceiling as under:-

i. Government/Semi Govt Organizations, Co-operative institutions, Federations, Corporations etc. : 4 projects with a ceiling of Rs.25.00 lakhs

ii. NGOs/VOs/Individual - One project with a ceiling of Rs. 6.50 lakhs

1.1. Establishment of model seed procurement centre : One

Sr. No.	Component	Tentative cost (Rs.)	Back-ended credit linked subsidy restricted to 30% of project cost with ceiling of Rs.
I.	Cost of building (PCC floor with asbestos roof)Process-ing shed+godown for keeping raw material and storage for oil and cake 50x40 sq.ft.@ Rs. 200 per square (2000 sq.ft.)	4,00,000	1,20,000
II.	Cleaner and grader	25,000	8,000
III.	Decorticator/dehuller	25,000	8,000
IV.	Drier	25,000	8,000
V.	Depulper	25,000	8,000
VI.	a. Oil expeller (5 MT per day capacity) b. 40 HP motor c. Starter/main switch d. Installation e. Conveyor/Elevator f. Electric line from main feeder upto centre	5,00,000 40,000 3,000 10,000 25,000 10,000	1,50,000 12,000 1,000 3,000 8,000 3,000
VII.	Security deposits for electric connection 3 phase, water connection etc.	38,000	11,600
VIII.	Stitching machine	6,000	2,000
IX.	2 storage tank for oil – 1 MT each @ Rs. 5000/-MT	10,000	3,000
X.	Filter press	25,000	8,000

XI.	Weighing machine	25,000	8,000
XII.	Moisture meter (1)	10,000	3,000
XIII.	Gunny bags for oil cake etc.	20,000	6,000
XIV.	Drying floor – 2000 sq.ft. (40 ft.x50 ft.) PCC @ Rs. 100/-sft.	2,00,000	60,000
XV.	DG set - 1 (10 KVA)	2,00,000	60,000
XVI.	Furniture & stationary	65,000	20,000
Total		**16,87,000**	**5,10,000**

Sub centre - One

i.	Weighing machine @ Rs. 0.10 lakh	10,000	4,000
ii	Office & store @ Rs. 1.00 lakh	1,00,000	30,000
iii	Miscellaneous such as furnit-ure, stationery etc	20,000	6,000
	Total	**1,35,000**	**40,000**

1.2. Installation of multi-purpose pre-processing and processing equipments

Sr. No.	Component	Unit cost (Rs.)	Back-ended credit linked subsidy restricted to 30% of project cost with ceiling of Rs.
i.	1. Depulper	25,000	8,000
	2. Drier	25,000	8,000
	3. Decorticator/ dehuller	25,000	8,000
	4. Cleaner & Grader/ any other equipment	25,000	8,000
	Total	**1,00.000**	**32,000**

1.3. Installation of oil expeller

Sr.No.	Component	Unit cost (Rs.)	Back-ended credit linked subsidy restricted to 30% of project cost with ceiling of Rs.
i.	Oil expeller for TBO's	1,50,000	45,000/-

Project-2: Nursery raising, commercial plantation & maintenance

Quantum of assistance - Subsidy restricted to 30% of project cost with the ceiling as under:-

i. Government/Semi Govt Organizations, Co-operative institutions, Federations, Corporations etc. : One project with ceiling of Rs. 25.00 lakh.

ii. NGOs/VOs/Individual - One project with ceiling of Rs. 6.5 lakh

1.4. Nursery raising & commercial plantation

Sr. No.	Name of TBO	No. of Plants per ha.	Cost of cultivation (Rs./ha.)	Back-ended credit linked subsidy restricted to 30% of project cost with ceiling of Rs.
1.	Simarouba	500	16,000	4,800
2.	Neem	400	11,000	3,300
3.	Jojoba	2500	80,000	24,000
4.	Karanja	500	13,000	3,900
5.	Mahua	200	9000	2,700
6.	Wild apricot	400	10,000	3,000
7.	Jatropha	2500	25,000	7,500
8.	Cheura	250	9,000	2,400
9.	Kokum	250	10,000	3,000
10.	Tung	500	14,000	4,200

1.5. Maintenance (From 2nd year onwards of plantation during gestation period)

Sr. No.	Name of TBO's	Gestation period (year)	Cost of maintenance per ha. upto gestation period	Back-ended credit linked subsidy restricted to 30% of project cost with ceiling of Rs.
	Simarouba	5	14,500	4,400
	Neem	5	12,000	3,600
	Jojoba	4	15,000	4,600
	Karanja	4	11,000	3,100
	Mahua	8	23,500	7,100
	Wild apricot	4	10,500	3,200
	Jatropha	2	5,000	1,500
	Cheura	4	9,000	2,800
	Kokum	6	13,000	3,900
	Tung	4	12,000	3,700

2. Promotional programmes:

Implementing agency – Central and State Government organizations, Autonomous bodies like Institutes of ICAR, ICFRE and CSIR; Central/State/Deemed Universities., etc.

Quantum of assistance - Following financial assistance will be provided

Central and State Government organization, Autonomous bodies like ICAR, ICFRE and CSIR; Central/State/Deemed Universities.etc. - Rs. 75.00 lakhs (Maximum)

2.1 Technology development & refinement

100% assistance towards cost of need based project staff purely on contract basis, equipments, chemical / consumables / agricultural input, POL and institutional charges @ 10% of the project cost.

2.2. Development of elite planting material & model plantation

Sr. No.	Name of TBOs	No. of plants Per ha.	X Plan (actual expenditure subject to ceiling of Rs./ha.)
1.	Simarouba	500	16,000
2.	Neem	400	11,000
3.	Jojoba	2500	30,000
4.	Karanja	500	13,000
5.	Mahua	200	9,000
6.	Wild apricot	400	10,000
7.	Jatropha	2500	25,000
8.	Cheura	250	9,000
9.	Kokum	250	10,000
10.	Tung	500	14,000

2.3 Maintenance (for 2 years after plantation)

Sr. No.	Name of TBOs	Year of maintenance	X Plan (actual expenditure subject to ceiling of Rs. per year)
1.	Simarouba	2	1,500
2.	Neem	2	1,500
3.	Jojoba	2	2,500
4.	Karanja	2	1,500
5.	Mahua	2	1,500
6.	Wild apricot	2	1,500
7.	Jatropha	1	2,500
8.	Cheura	2	1,500
9.	Kokum	2	1,500
10.	Tung	2	1,500

2.4 Establishment of TBO garden/park

80% of the actual expenditure subject to ceiling of Rs. 0.40 lakh/ha garden area towards cost of nursery raising, plantation, maintenance, fencing, irrigation facilities etc.

2.5 Feasibility studies for various components

Actual expenditure towards survey, project staff, survey equipments, contingency or any other expenditure.

3 Transfer of technology

Implementing agency – Central and State Government Organizations, Semi Govt. Organizations, Autonomous bodies like Institutes of ICAR, CSIR, ICFRE, Central/State/Deemed Universities., Co-operative Institutions, Federations, Corporations, NGOs/VOs etc.

Quantum of assistance - Following financial assistance will be provided

i. Central and State Government Organizations, Semi Govt. Organizations, Autonomous bodies like Central/State/Deemed Universities., Institute of ICAR, CSIR, ICFRE etc, Co-operative Institutions, Federations, Corporations etc. - Rs. 2.00 lakh/year
ii. NGOs/VOs - Rs.1.00 lakh/year

3.1 Farmers training & trainers training (2 days for 50 participants)

Sr. No.	Component	Trainers training (Actual expenditure subject to the ceiling)	Farmers Training (Actual expenditure subject to the ceiling)
i.	Boarding & lodging	15000.00+	7000.00*
ii.	Literature	12500.00++	5000.00**
iii.	Honorarium & incentive to staff @ Rs.4000/- per training	5000.00	4000.00
iv.	POL, stationery, field	6000.00	3500.00
v.	Audio-video aids @ Rs.500/training	2000.00	500.00
	Total	40500.00	20000.00

+Rs.150/participant/day
++Rs.250/participant/trg.
*Rs.70/participant/day
**Rs.100/participant/trg.

3.2 Publication & publicity material

100% assistance for publication and publicity material in regional languages on different TBOs

3.3 Observation-cum-study tour

Rs.31,500/- plus actual bus fare/Second Class Train Fare for 50 farmers/seed collectors for visit to potential areas/institutions.

3.4 Seminar/workshop/exhibition

Assistance as per norms of Govt. of India and availability of funds

4. Monitoring, evaluation & technical support

Actual expenditure

ANNEXURE-1

Application for In Principle Approval (IPA) under the scheme "Back-ended Credit Linked subsidy programme on Tree Borne Oilseeds".

i) Date of application……..

ii) File No. ……

To

The Executive Director
National Oilseeds & Vegetable Oils
Development Board
Plot No.86, Sector 18, Institutional Area
Gurgaon-122015 (Haryana)

(Application In Principle Approval (IPA) under the scheme "Back-ended Credit Linked subsidy programme on Tree Borne Oilseeds" of National Oilseeds & Vegetable Oils Development Board)

A. PROMOTERS PROFILE

1. Name and address of the beneficiary/organization:
2. Status whether Govt/Co-operative/NGO/Private:
3. Registration No……. Date of Registration……
4. Area of operation : Name of district/tehsil/taluka
5. Name and address of the Nationalized Bank from which term loan is proposed to be availed.
6. Details of financial assistance availed by the applicant in the past for the similar activity at the same piece of land, if any

Name of Programme/Project	Funding agency	Duration	Amount (Rs. lakhs)

7. Details of financial assistance, if availed for any other project:

8. Whether any scheme with NOVOD Board assistance implemented: (If yes, please write name of scheme and year of implementation):

B. PROPOSED PROJECT

1. Name of the project:
2. Objective of the project:
   i) Use of wasteland/degraded problematic (acidic/alkaline) etc.
   ii) Compact area plantation
   iii) Name of the plant/trees proposed
3. Location
4. Nature/main activity proposed under the project
   i) Availability of land (in ha.) for nursery and plantation
   ii) Capacity in MT in case of primary processing unit/procurement centre/sub-centre:
   iii) Technology tie-up, if any

C. PROJECT COST (COMPONENTWISE)

1 Raising of nursery and commercial plantation:
2 Maintenance of plantation:
3 Establishment of model seed procurement centre:
4 Installation of multi-purpose pre-processing and processing equipments
5 Installation of oil expeller

D. PROPOSED MEANS OF FINANCE

1. Promoter's share
2. Term loan from Banks (address of the Bank branch)
3. NOVOD subsidy
4. Other sources viz. Assistance from State Govt/
5. Govt. of India Agencies, if any.

E. DETAILS OF LAND

1 In case of own land, copy of latest title/papers be enclosed
2 In case of lease/contract/tenancy, a copy of the registered agreement be enclosed.

F. DETAILS OF SEED COLLECTION/MARKETING

1 Name of the TBOs
2 Expected collection in qutls.(for each TBO)
3 Cost of collection per qutl. (for each TBO)
4 Name of the agency with which marketing tie-up exists(Backward/forward linkages)

G. IMPLEMENTATION SCHEDULE

1 Proposed month for undertaking the project + land development
2 Proposed month for nursery raising
3 Expected month of commercial plantation
4 Duration of completion of civil works for establishing model seed procurement centre/installation of multipurpose pre-processing and processing equipments.
5 Proposed date for start of the unit in case of processing units

(Authorized signatory)
Name & Address

ANNEXURE-II

Format for claiming Final Installment of Subsidy under the scheme "Integrated Development of Tree Borne Oilseeds"

(To be submitted by Bank in triplicate to NOVOD Board)

Investment Subsidy Scheme for Cultivation / Processing of TBOs

Part-I

For use by Bank

1.	Name & Address/Location of Project	
2.	Name & Address of beneficiary	
3.	Name & Address of Financing Bank	
4.	Date of Sanction of Term Loan by Bank	
5.	Date of Sanction of Refinance by NABARD,	
	if applicable	
6.	Date & Amount of Refinance released by NABARD	
7.	Item wise Financial Projection	
8.	i. Total Cost of Project	Rs.
	ii. Beneficiary Contribution	Rs.
	iii. Bank Loan	Rs.
9.	Additional Capacity to be created :	

(a) Establishment of model new procurement centre and installation of pre-processing and processing equipments

Components	No. of unit	Capacity in MTs
i. Existing Unit ii. Expansion/New iii. Renovation/Upgradation		

Or

(b) Nursery raising, plantation and maintenance (ha.)

Components	Species/ plants	Area (ha.)	No. of plants	Unit Cost/ ha
i. Existing ii. Expansion/ new iii. Maintenance				

10. Advance Subsidy:	
i. Date of Receipt	
ii. Amount	Rs.
11. Rate of Interest being Charged by Financing Bank	% p.a.
a. In the case of CBs PLR	% p.a.

b. In the case of others PLR	% p.a.

12.. Whether construction/expansion/renovation has been carried out as per the technical parameters envisaged under the project. Yes/No.

13. Since the above project is complete as per terms and conditions stipulated under the scheme, final inspection of the processing unit / plantation has been arranged and an amount of Rs._____ (Rupees _____) being the final installment of subsidy may please be released for crediting to the Subsidy Reserve Fund Account Borrower wise.
Copy of the inspection report of inspection committee is enclosed.

14. It is certified that the observation made by the Inspection Committee have been complied with. A copy of the Inspection Report of Inspection Committee is enclosed.

Seal and signature of the Branch Manager

Place : _____
(Bank)
Date : _____

B. For use by NOVOD Board

Name of Scheme:	Name of Project:
State:	Bank:
District	1. Total cost of project 2. Total amount of eligible subsidy 3. 50% of advance amount of eligible subsidy

An amount of Rs._____ is released as final installment of subsidy to _____ (Name of the Bank) vide subsidy disbursement advice No._____ (Copy enclosed) against the project proposal submitted by _____ party.

(_____)
Authorised Signatory, NOVOD Board
(Name & designation)

Date _____

ANNEXURE-III

Progress of Investment Subsidy Scheme for Processing of TBOs (ABSTRACT) under Integrated Development of Tree Borne Oilseeds
(To be filled by Bank)
STATUS AS ON _____

A. Financial Progress

S. No.	State	Name of the Party	Location	Capacity Tonne/ acreage	Total Financial Outlay	Bank Loan	Beneficiary	Total Eligible Subsidy	Subsidy released to beneficiary

B. Physical progress/Achievement

Sr. No.	Component	Physical Progress		Expenditure		Remarks
		Target	Achievement	Target	Achievement	
1.	Establishment of model seed procurement centre					
2.	Nursery raising					
3.	Commercial plantation					
4.	Maintenance of plantation					

* The above information break up be furnished in the same format for schemes sanctioned in NE States, Hilly Areas i.e. location above 1000 meters mean sea level, SC and STs separately.

ANNEXURE-IV

(For the use of Financing Bank to be submitted by
(Bank in triplicate to the NOVOD Board)
Investment Subsidy Scheme for Cultivation / Processing of TBOs
Utilisation Certificate

1.	Name & Address and Location of Beneficiary and Project	

2.	Name of the Financing Bank	
3.	Name & Address of Financing Branch	
4.	Date of Sanction of Loan by Bank	
5.	Date of Inspection by Inspection Committee	
6.	Date of Commission of the Unit	
7.	i. Total Financial Outlay	Rs.
	ii. Margin Money	Rs.
	iii. Bank Loan	Rs.
	iv. Subsidy Received	

Subsidy Received	Letter No. & Date of Receipt from NOVOD Board	Amount (Rs.)	Date of Credit to the Subsidy Reserve Fund A/c of the Borrowers
50% Advance Subsidy			
Final Installment of Subsidy			
Total			

8. Capacity Created:

		No. of unit	Capacity in MTs
i	Existing Unit		
ii.	Expansion/New		
iii.	Renovation/Upgradation		

9.	Rates of Interest charged by Financing Bank	% p.a.
	a. N the case of CBs	PLR - % p.a.
	b. In the case of others - PLR of Convenor Bank of SLBC	

This is to certify that amount of Rs._____ received as subsidy from NOVOD Board in respect of the above project has been fully utilised for the purpose for which it was sanctioned (by way of crediting to the "Subsidy Reserve Fund Account - Borrower wise") and adjusted in the books of account under the sanctioned terms and conditions of the project within the overall guidelines of the scheme. Remaining un-utilized balance subsidy of Rs. _____ (if any) on completion of the project or non-implementation of the project has been surrendered to the Board

Seal and signature of
the Branch Manager (Financing Bank)

Place _____

Date _____

ANNEXURE-V

PROFORMA FOR PREPARATION OF PROJECTPROPOSAL FOR INTEGRATED DEVELOPMENT OFTREE-BORNE OILSEEDS (TBOs)

1 Name of Organisation :

.....

2 Status : Whether Govt./ Cooperative/ NGO/ Private.

3. Area of Operation : Name of distts : .....
Inside/outside of the forest compact area/farm/bunds/canal side, road side, railway track.

4. Objectivess
i) Use of waste land-degraded problematic (acidic/alkalines) etc.
ii) Compact area plantation with viable combinations (early/late bearing or intercropping of crops with perennial trees for example retanjyot and simarouba with neem or pulse crops with perennial oil bearing trees.
iii) Name of the plants/trees proposed

5. Present status under proposed plants in the proposed Districts/ areas

Name of the tree	Distt.	Soil type	Area occupied (ha)	Approx. No. of trees	Present use collection (qtls.)

6. Future Prospects

Name of the tree	Distt.	Land availability Area Type (ha)	Ownership Govt./Coop. NGO/Pvt.	No. of seedlings required

7. Nursery

7.1 Method of raising seedlings
a) By seed
b) By vegetative propagation i.e cutting, layering etc.

7.2 Cost of inputs/seedlings (Input means seed, fertilizer, Poly-bags etc.).

7.3 Action plan of raising seedling.

Tree	Distt.	Availability of the parent material	Year	No. of seedlings/ samplings to be raised

8. Plantation programmes

Name of the tree	Year	Time of plantation	Area to be covered Area No of plants	Cost per plant (Digging, fert, irrigation etc.)	Gestation Period

9. Cost of maintenance and watch & ward for proposed area:

To be borne by the programme implementing agency. Source to meet the cost.

10. Seed Collection/Marketing

Tree	Year	Expected collection (Qtls.)	Cost of collection per (Qtls.)	Agency

11. Post Harvest Technology Programmes (PHT)

Components		Present Status Future Plan (with details)
i)	Drying facility	
ii)	Transport	
iii)	Storage without use of pesticide	
iv)	Extraction of oil	
v)	Value addition for export/ modification of fats.	

12. Financial Requirements (Rs. in lakh)

Tree	Year	Nursery	Plantation	Collection PHT	Training	Total

13. Technology Upgradation : (For Example requirement/ actions for genetic improvements, quality standardisation, addition of national / inter-national know-how.

14. Recommendations.

ANNEXURE-VI

PROFORMA OF APPLICATION FOR GRANT-IN-AID FOR RESEARCH AND DEVELOPMENT PROGRAMMES FROM NATIONAL OILSEEDS & VEGETABLE OILS DEVELOPMENT BOARD

Title of Scheme

1. Name & address of the Organisation: _____ with phone, _____, Telex, Fax No. _____
2. Status (Govt./Semi-Govt./NGO)
3. Facility to be provided by the Centre for the proposed project :
   ¨ Staff :

¨ Equipments/Apparatus :
¨ Laboratory :
¨ Transport :
¨ Area of land for experimentation :
¨ Other facilities :

4. Name of the Scientists/Deptts. of each Centre(s) to be associated in the project: _____

5. Name & Address of Principal Investigator : _____ and Co-Principal Investigator (Phone, Talex _____ Fax No.) with details expertise/experience, schemes handled, publications etc.

6. A) Research work conducted on the subject by the Institute :
   i) at its centre : _____
   ii) in India : _____
   iii) abroad : _____

   B) Programme activity:

7. Title of the scheme/project : _____

8. Duration of the project : _____

9. Specific Objectives : _____
   _____
   _____

10. Area of Operation: - Institutional research farms
    - Community land
    - Forest area
    - Waste land etc.

11. Type/Qt./No.of equipments/ : _____ apparatus required

12. Action plan and Expected outcome (yearwise)/with practical/ scientific utility

S.No	Year	Activity	Outcome	Utility
1.				
2.				
3.				

12.1 Programme Schedule

13. Main items of observations : _____

: _____

: _____

14. Budget Estimates

(Rs.in lakhs)

S.No.	Component	YEAR 2004-2005	2005-2006	2006-2007	Total
1.	Salary *				
2.	Equipments **				
3.	Chemical consumable/ nursery input ***				
4.	POL				
5.	Institutional OR contingency charges @ 10%				
	Total				

* Need based on contractual basis only. Please indicate name / No.of the post with salary per month as per existing norms of the Institute alongwith their prescribed qualifications.

** List of equipments with cost.

*** Detailed list of Chemical/consumable & other inputs with cost estimate.

UNDERTAKING

15. Certified that

i) The research work proposed in the scheme does not in any way duplicate the research work already done and being carried out elsewhere on the subject.

ii) The present scheme will not be combined with any scheme financed by the Central and State Governments, Universities or Private Institutions etc.

iii) We undertake to abide by the guidelines provided by the Board for the implementation of the Project.

Place : Signature:
_____

Date : Name :
_____

Designation of the Principal Investigator

16. Remarks/recommendations from the Head of the Instt./Centre
_____
_____

17. Recommendations: (From the apex bodies of the Institute i.e. ICAR,CSIR, ICFRE as the case may be)

Signature :
_____
_____

Name :
_____
_____

Head of the Organisation/Institute

ANNEXURE-VII

PROFORMA FOR PREPARATION OF PROJECT PROPOSAL ONTRAINING FOR INTEGRATED DEVELOPMENT OF TREE-BORNEOILSEEDS (tbos)

1. Name of Organisation :
_____
_____

2. Status : Whether Govt., Semi Govt. i.e. Cooperative Or Federation, NGO/Private. If NGO, Please indicate -:

Registration No _____ and Date of Registration
_____

3. Area of Operation :
a) Name of distts :

b) Name of Block :

4. Current area of activities :

Activities in Hand	Amount	Duration	Funding Agency

5. Details of available infrastructure :

a) Office - whether Rented/Own

b) No. of staff with their qualification and area of specialization

c) Transport facility

d) Source of funding

6. Status of Tree-Borne Oilseeds in your Districts/Areas :

District	Name of the tree	Approx. No. of trees	Approx. potential(Qtls.).	Collection		
				Quantity (Rs./Kg)	Price	Name of the buyer

7. Title of the project: Trainers' training/ Farmer's training programme for quality collection of Tree Borne Oilseeds (TBOs) like neem seed, mango kernel etc.

8. Training & publicity :
   a) Availability of resource personnel along with name and address

   b) Number of beneficiary to be trained

   c) Tentative date and duration of Training

   d) Componentwise cost proposed:-
      i) Boarding & lodging
      ii) Literature
      iii) Stationery and POL & field visit
      iv) Honorarium & incentive to staff
      v) Audio visual aid

Total

ANNEXURE-VIII

MEMORANDUM OF UNDERSTANDING BETWEEN THE NATIONAL OILSEEDS AND VEGETABLE OILS DEVELOPMENT BOARD AND THE .....IN RESPECT OF RESEARCH & DEVELOPMENT PROJECT ON .....FOR FINANCE FROM THE GRANT IN AID OF NOVOD BOARD

The National Oilseeds and Vegetable Oils Development (NOVOD) Board and ..... (Implementing agency) agree to co-operate in conducting research and development project entitled "....." sanctioned by the Board and communicated to the implementing agency vide this Board's letter No..... dated

…….. to be located at ……. Under the supervision and the leadership of Shri/Dr./Prof……

I. In order to achieve the objectives set out in the project within the targetted time, the National Oilseeds and Vegetable Oils Development Board agree to provide for the following:

a. Salaries of the project staff to be engaged purely on contract basis for project period as per I.C.A.R. NORMS.

b. Travelling allowance as per their Institutional norm.

c. Recurring and non-recurring contingencies to the extent provided in the project.

II. The implementing agency agrees for the following:

a. To start the implementation of the project including the appointment of contractual staff within 2 months from the date of approval of the project by the NOVOD Board.

b. To provide their existing equipment and other physical facilities as are required for the project work.

c. To arrange land and laboratory facilities required for the project.

d. To arrange such skilled and unskilled labour required for the project work.

e. To provide on their own such ancillary staff as Field/Laboratory Assistants or Attendants, Clerks and Stenographers etc., as are required for the project work.

f. To avoid transfer of the scientific staff associate in the project without the concurrence of the Board.

g. To allow the project staff to exchange experimental material, literature etc. between the similar Research Centres within the State as well as outside the state.

h. To permit the scientific staff to attend the relevant workshop, Seminars, symposia, Conference, Group meetings etc.

i. To use the staff exclusively for the project work.

j. To use the funds provided under the project exclusively for the project work.

k. To render accounts to the Board periodically in time.

l. To furnish regularly and on time satisfactory half-yearly and annual reports.

III. The National Oilseeds and Vegetable Oils Development Board and the implementing agency mutually agree that:

a. The project staff provided under the project would be utilized exclusively for the project work.

b. Change of Principal investigator/ Leadership is not normally acceptable. However, in exceptional cases, whenever there is sufficient justification, which is acceptable to the Board, such changes may be agreed to but this provision should be used very sparingly.

c. Scientific staff would attend the workshop, meetings and present their data for discussion.

d. Normally grants are released in two installments in case of Semi. Govt Organization and in three installments in case of NGOs. The first installment would be released immediately after the issue of the final sanction and acceptance of the terms & conditions by the implementing organization. The second and subsequent installments would depend upon the receipt of the satisfactory progress reports.

e. The implementing agency would ensure the submission of satisfactory progress of work under the project as per the approved technical programme.

f. Five copies of final and consolidated report would be submitted to the Board by the Principal Investigator within three months after the closing of the project.

g. The experimental material built-up under the project/ centre for free supply to the other centres working on similar project in the country. However, the produce in excess of the research

requirement may be disposed of by the agency in consultation of NOVOD Board in the manner it deems fit and proceeds may be credited to its accounts under intimation to the NOVOD Board.

h. The institute is not permitted to seek or utilize funds from any other organization (Government, Semi-Government, Autonomous or private) for the work that is supported under this project/scheme. Any unspent part of the amount sanctioned would be surrendered to NOVOD. Carry forward of funds to the next financial year for utilization under the same project may be considered only with the specific approval of the NOVOD Board.

i. At the conclusion of the project, the NOVOD will be free to sell or otherwise dispose of assets, which are the property of NOVOD. The institutions shall render to NOVOD necessary facilities for arranging the sale of these assets. The NOVOD has the discretion to gift the assets to the institute, if it considers it appropriate.

j. NOVOD will be free to get the progress of the project reviewed in detail by a Group of Experts assigned by NOVOD at the end of each year. In addition, Board's Officer may visit the institute periodically for ascertaining the progress of work and resolving any difficulties that might be encountered in the course of implementation.

k. The institute will furnish to the NOVOD, Utilization Certificate and an audited statement of accounts pertaining to the grant within six months following the end of each financial year.

l. The know-how generated from the project would be the property of NOVOD, any receipt by way of Sale proceeds, if any, resulting from the project arising directly from funds granted under the scheme shall be remitted to NOVOD may, at its discretion, allow all or a portion of such a receipts to be retained by the institute.

m. NOVOD will have the right to call for drawing specification and other details necessary to enable the transfer of know-how to other parties and the institute should supply the needed information at the request of NOVOD.

n. The institute may not entrust the implementation of the work for which grant is being sanctioned, to another institution and to divert the grant receipts as assistance to other institute. In case, the institute itself is not in a position to execute or complete the project, it may be required to refund forthwith to NOVOD the entire amount of grant-in-aid received by it. In exceptional cases, this condition may be relaxed by NOVOD.

o. The staff that may be employed for the project by the institution are not to be treated as employees of NOVOD and the employment of such staff at the time of completion or termination of the project will not be the concern/responsibility of NOVOD. They will be subjected to administrative control and service rules as applicable (Leave, T.A.& D.A. etc.) of the institute.

p. For the expenditure on implementation of the research project, the Investigator Incharge will take the assistance of the supporting staff of the institute concerned as also in the process of selection and appointment of staff and payment to them.

q. NOVOD reserves the right to terminate the grant at any stage, if it is convinced that the grant is not being properly utilized or appropriate progress is not being made.

r. The project will become operative with effect from the date on the grant is received by the institute. The date will be intimated by the institute to the NOVOD.

s. Fund sanctioned by NOVOD will not be utilized by the institute for foreign travel of any employee.

t. The seedlings/saplings prepared during the project period would be utilized for plantations in the compact areas by the programme implementing/concerned centre and through the developmental organizations in consultation with NOVOD Board.

u. In case of any dispute arising between the parties, the dispute shall be referred to the sole arbitrator to be appointed by the NOVOD Board. The decision of the sole arbitrator so appointed shall be final and binding on both the parties.

v. The R&D know how developed under this project will be patented in the joint name of NOVOD Board and the institute.

This Memorandum of understanding shall become effective from the date of issue of the administrative approval.

Signature (Executive Authority/ Authorized Officer) Implementing agency	Signature Secretary National Oilseeds and Vegetable Oils Development Board.

ANNEXURE-IX

FORM OF AGREEMENT/BOND TO BE EXECUTED BEFORE RELEASE OF GRANTS-IN-AID TO VOLUNTARY ORGANIZATIONS AND NGOs

AN AGREEMENT made on …….day of ……. One thousand nine hundred and ……. BETWEEN …….. (hereinafter called the Beneficiary which expression shall include his heirs, administrators, executors and legal representatives) of the one part and the National Oilseeds & Vegetable Oils Development Board (hereinafter called the NOVOD Board, which expression shall include his successors and assignees), of the other part.

Whereas the Beneficiary has applied to the NOVOD Board for a grant-in-aid of Rs. ……..for the purpose of ……. and whereas Board has agreed to grant the Rs. …….. to the Beneficiary on the terms and conditions hereinafter contained.

a. Before a grant is released, the grantee institution is required to execute a Bond, with two sureties.
b. It will abide by the terms and conditions of the grant as was annexed with the sanction letter and completion of the programme by the target dates, if any, specified therein,
d. It will not divert the grants and entrust execution of the scheme of work concerned to any other institution or organisation, and
e. It shall abide by any other conditions specified in this agreement and in the event of its failing to comply with the conditions or committing breach of the bond, the grantee and the sureties, individually and jointly will be liable to refund the entire amount of the grant with interest thereon or the sum specified under the bond.

NOW IT IS HEREBY AGREED Between the parties hereto that

In consideration of the sum of Rs…….. to be paid by the NOVOD Board to the Beneficiary, the Beneficiary hereby agrees with the NOVOD Board that amount released to them will be utilized strictly in accordance with the terms of the sanction, within the prescribed time frame failing which the full amount will be refunded to the NOVOD Board together with interest. The decision of the NOVOD Board or any of the officer authorized by it for the purpose, regarding non-utilization of the above sum for the said purpose or violation of any of the terms contained in the sanction letter shall be final and binding on the parties.

All the disputes will be subject to the jurisdiction of the District Court, Gurgaon.

IN WITNESS/SURETIES whereof the BENEFICIARY has hereunto set his hand and Shri ……in the NOVOD Board ……. for and on behalf of the NOVOD Board has hereunto set his hand.

* Signed by the said in the presence and with the sureties of

1 ……. .
……..
2 ……. .
……..

(Signature of witnesses and sureties) (Signature and designation of the Beneficiary)

For and on behalf of the NOVOD Board in the presence of
1 ……
……..
2 ……
……..

(Signature of Witnesses) (Signature and designation of the officer)
*Name and designation of the Beneficiary (This is to be signed at Gurgaon)

ANNEXURE-X

FORM GFR 19-A
Form of Utilisation Certificate under
NOVOD Programmes

S.N.	Letter No and date	Amount in Rs.	Certified that out of Rs..... of grants-in-aid sanctioned during the year ..... in favour of ..... under this Ministry / Deptt. Letter No. given in the margin and Rs..... on account of unspent balance of the previous year a sum of Rs..... has been utilised for the purpose of.....for which it was sanctioned and that the balance of Rs..... remaining unutilised at the end of the year has been surrendered to Govt. (vide No.....) will be adjusted towards the grants-in-aid payable during the next year.....

2. Certified that I have satisfied myself that the conditions on which the grants-in-aid was sanctioned have been duly fulfilled/ are being fulfilled and that I have exercised the following checks to see that the money was actually utilised for the purpose for which it was sanctioned.

Kinds of checks exercised.

1.
2.
3.
4.
5.

Date.....

(G.I, M.F, O.M.No. F14(i)-E.II (A)/73, dt. the 23rd April, 1975).

Annexure - B

SCHEME OF NABARD

Introduction

NABARD, as an apex institution with regard to policy, planning and operation in the field of agriculture and rural credit, is actively involved in extending credit support for renewable energy development in rural areas along with other financial institutions. Development of wastelands through energy plantations, biodiesel crops / tree borne oilseeds is identified as a thrust area for which NABARD is extending 100% refinance to banks at concessional rate of interest.

Among the many species, which can yield oil as a source of energy in the form of biodiesel, Jatropha curcas has been found most suitable due to its various favourable attributes like hardy nature, short gestation period, high oil recovery and quality of oil, etc. It can be planted on degraded lands through Joint Forest Management (JFM), farmer's field boundaries, fallow lands and as agro forestry crop.

Description

Jatropha curcas belongs to the family Euphorbiaceae and is thus closely related to other important cultivated plants like rubber, castor etc. It is believed to be a native of South America and Africa but later spread to other continents of the world by the Portuguese settlers. The Arabs have been using this plant for medicinal purpose. Today it is found in almost all the tropical and sub tropical regions of the world.

There are more than 200 names for it all over the world, which indicates its significance to man, and the various possibilities of its use. In India, Jatropha curcas is found in almost all the states and is generally grown as a live fence for protection of agricultural fields from damage by livestock as it is not eaten by cattle or goat.

BOTANICAL FEATURES

It is a small tree or shrub with smooth gray bark, which exudes a whitish colored, water, latex when cut. Normally, it grows between three and five meters in height, but can attain a height of up to eight or ten meters under favourable conditions.

Leaves

It has large green to pale-green leaves, alternate to sub-opposite, three-to-five lobed with spiral phyllotaxis.

Flowers

The petiole length ranges between 6-23 mm. The inflorescence is formed in the leaf axil. Flowers are formed terminally, individually, with female flower usually slightly larger and occur in the hot seasons. In conditions where continuous growth occurs, an unbalance of pistillate or staminate flower production results in a higher number of female flowers.

Fruits

Fruits are produced in winter when the shrub is leafless, or it may produce several crops during the year if soil moisture is good and temperatures are sufficiently high. Each inflorescence yields a bunch of approximately 10 or more ovoid fruits.

A three, bi-valved cocci is formed after the seeds mature.

Seeds

The seeds become mature when the capsule changes from green to yellow, after two to four months from fertilization. The blackish, thin shelled seeds are oblong and resemble small castor seeds.

Ecological Requirements

Jatropha curcas grows almost anywhere- even on gravely, sandy and saline soils. It can thrive on the poorest stony soil. It can grow even in the crevices of rocks.

The leaves shed during the winter months form mulch around the base of the plant. The organic matter from shed leaves enhances earthworm activity in the soil around the root-zone of the plants, which improves the fertility of the soil.

Regarding climate, Jatropha curcas is found in the tropics and subtropics and likes heat, although it does well even in lower temperatures and can withstand a light frost. Its water requirement is extremely low and it can stand long periods of drought by shedding most of its leaves to reduce transpiration loss. Jatropha is also suitable for preventing soil erosion and shifting of sand dunes.

Cultivation practices

It can be easily propagated on massive scale by direct seeding as well as planting stem cuttings. Hot and humid weather is preferred for good germination of seed. Plants bear fruits in the beginning of winter. Approximately 5-6 kgs. of seed is adequate to raise one hectare of plantation. The spacing maintained is about 2m x 2m and for high density planting 2m x 1m distance can be recommended. Seeds or cuttings can be directly planted in the main field. Some times the seedlings are grown in poly bags and then transplanted in the main field. The land should be ploughed once or twice depending upon the nature of soil. In direct planting system the seed/cuttings should be planted in the main field with onset of monsoon at a spacing indicated above. Apart from organic manure, mixtures, fertilizers containing NPK should be applied near the planting hole. To keep the land free from weeds in the initial stage, 3-4 hand weedings are necessary; it does not require supplementary irrigation. However, the approximate yield of 1200 kg seed per hectare may be obtained from irrigated plantations in comparison to 750 kg seed (per hectare) from rainfed plantations. This is expected from 3rd year onwards. The economic life of the plant is about 35-40 years. Jatropha oil is extracted by hydraulic press method after grinding and steaming of the seed.

Unit cost

The cost of cultivation of Jatropha curcas in one hectare at an espacement of 3m X 2m i.e., 1666 plants per ha has been worked out at Rs.25,826/- per ha. (unirrigated condition). The details of various items of expenditure are viz. land preparation, digging of pits, plant and material, manure and fertilizer, inter culture, watering and plant protection etc. The unit cost break up of Jatropha curcas is as follows:

UNIT COST OF Jatropha curcas CULTIVATION IN ONE HECTARE WASTELAND(seedling)
ESPACEMENT: 3 M x 2 M AVG. WAGE RATE: Rs.50/MD
NO.OF TREES/HA.: 1666 CASUALTY REPLACEMENT:10 %
SURVIVAL/HA.: 1500 Nos.

YIELD AND INCOME PER HECTARE OF JATROPHA CULTIVATION ON WASTELANDS

YEAR	SEED PER TREE(Kg.)	NO.OF TREES	QNTY.OF SEED(KG)	COST PER KG.	TOTAL INCOME (RS)
3	0.50	1500	750	5	3750
4	0.50	1500	750	5	3750
5	1.00	1500	1500	5	7500
6	1.50	1500	2250	5	11250
7	2.00	1500	3000	5	15000
8	2.50	1500	3750	5	18750

Economics of Jatropha cultivation in one Hectare of wasteland

Years	1	2	3	4	5	6	7	8
Cost	16220	5825	3780					
Benefits			3750	3750	7500	11250	15000	18750
Net Benefit	-16220	-5825	-30	3750	7500	11250	15000	18750
PWC @ 15%	20994.30							
PWB @ 15%	24970.74							
BCR	1.19							
IRR	19.41%							

Commercial uses of the Plant

The increasing gap between demand and supply of fuel wood leads to fast depletion of forest cover. There is need to search for alternative source of energy derived from non-wood sources. For this purpose high density plantation of Jatropha, as an energy crop, may provide energy on regular basis annually for a period of 40-45 years without replanting, unlike other fuel wood crops. With suitable technology, jatropha could possibly be used as furnace fuel to facilitate electricity generation in a decentralized manner and at a lower cost as compared to the existing power generation system, which requires massive infrastructure for distribution of power.

Besides the above, the following additional benefits can also be expected:

a. Jatropha oil is a potential substitute for diesel providing the country cheap and renewable source of energy for transport & power and can effect sizeable savings on foreign exchange.
b. Jatropha oil has a very high saponification value and is being extensively used for soap making, lubricants and candles. The protein content in Jatropha oil cake may be used as a raw material for plastic and synthetic fibre.
c. Jatropha plant has high medicinal value. The latex of Jatropha curcas contains an alkaloid known as Jatrophine, which is used in medicines.
d. Jatropha oil cake is rich in nitrogen, phosphorous and potassium and can be used as organic manure.
e. Revegetation of barren and denuded hills with Jatropha plants combats environmental pollution.

Thus, owing to its multiple uses, simple and cost effective technology, with or without irrigation makes it promising and profitable agro forestry crop ensuring optimum utilisation of land and manpower. It is a crop with low capital investment, short gestation period, long productive period and unlimited employment potential in rural areas.

Yield & Economics

The plant starts giving yield from the third year onwards and the benefits increase over the years and stabilizes in the 8th year. In the financial analysis with the above parameters of the investment cost & yields, the BCR & IRR works out to 1.19 & 19.41% respectively.

Repayment of Loan

A moratorium of four years for repayment of principal and two years for payment of interest may be allowed.

Beneficiaries Contribution / Margin Money / Down Payment

The beneficiaries may contribute towards down payment ranging from 5 to 25% depending upon their category, i.e., small and other farmers in accordance with NABARD's norms. Beneficiary's own labour can also be taken as his contribution towards the margin money requirement.

Quantum of Refinance

The loans extended by the banks to individual farmers and / or groups of individuals such as co-operatives under Wasteland development projects are eligible for refinance from NABARD to the extent of 100% of Bank loan.

Rate of Interest

The rate of interest on refinance from NABARD will be as per the circulars issued by NABARD from time to time. The rate of interest to be charged to the ultimate borrowers would be decided by the financing banks. However for working out the financial viability and bankability of the model project we have assumed the rate of interest as 12%.

Memo No 5346/ST dated the 23.08.2007

Copy forwarded to the Director, Printing & Stationary & Publication, Orissa , Cuttack for Publication in the extra ordinary issue of Orissa Gazettee.

500 copies of the resolution may be supplied to this Department.

Annexure -5

Don't fall for jatropha plants, warns UN body

26 Jul 2010, 0516 hrs IST,Prabha Jagannathan,ET Bureau

NEW DELHI: In a significant implication for the country's biofuel policy, a specialised arm of the United Nations has warned that the developing countries should not buy blindly into the 'jatropha for biodiesel' argument. Warning against the hype and half-truths around jatropha curacas, an oil seed plant touted as a major potential source of biofuels, the United Nations Food and Agriculture Organisation has warned in a special report that yields need to improve significantly for the crop to give an adequate return.

"Although there have been increasing investments and policy decisions concerning the use of jatropha as an oil crop, they have been based on little evidence-based information," the report said, adding that identifying the true potential of jatropha requires separating the evidence from the hyped claims and half-truths."

The report comes two weeks after two researchers at Belgium's University of Leuven said that the crop requires more water than had been thought, and was best suited for small-scale farming in remote areas, where alternative fuel supplies are erratic and expensive.

The cautioning report is also a pointer to several giant corporate houses worldwide such as GM that have invested in the crop. US automobile giant GM was one of the companies that invested in jatropha following a surge of interest five years ago in the potential for biofuels.

In April, it announced a five-year programme with the US Department of Energy and India's Central Salt and Marine Chemicals Research Institute to demonstrate the oilseed's commercial potential. A good chunk of India's biofuel programme rests on the success of jatropha as a green diesel alternative, but the FAO report has said that it is unrealistic to expect jatropha to substitute oil imports significantly in the developing countries where it is grown.

The FAO has also punctured the argument that growing jatropha utilizes marginal lands effectively. The level of economic returns needed to secure private sector investment "may not be attainable on degraded land", FAO said, noting considerably better gross margins which can be gained on sugar cane and oil palm plantations. The UN organisation, however, does not rule out the oilseed completely, but has flagged an urgent need to multiply the yields.

The FAO acknowledged that while there was limited information available on private sector work in jatropha, "it may be assumed that advances have been made". Interestingly, recently shareholders of D1 Oils, the loss-making, London-listed jatropha specialist, foiled a coup by activist investor Brian Myerson, who last year lost an attempt to switch the group's resources to producing cane ethanol.

(Source: http://economictimes.indiatimes.com/news/economy/policy/Dont-fall-for-jatropha-plants-warns-UN-body/articleshow/6217031.cms)

Annexure -6

Jatropha threatened food security

The topic of jatropha cultivation irritates Georgebel Gomang of Ragidi, Laxman Bhuyan of Badigaon, Chakala Gomang of Lakhisar, and Hada Gomang of Kuttam village in the Gumma block of Gajapati district. About 400 such tribal farmers in 20 villages trusted the private company which assured them that jatropha cultivation would give them high returns, and when the company asked for a deposit of Rs.1200/- for 1000 seedlings required per acre of plantation they paid it. They abandoned traditional crops, followed the guidance of the company for farming jatropha, and raised the plantation. Laxman Bhuyan used to harvest from his 2-acre field a local variety of pulse(kandula) which was worth about Rs. 12000 to Rs.15000 per annum. However, 50% of the seedlings did not survive. More or less same happened to other farmers. Gergebel Gomang, a good local organizer, whom the company recruited to promote its business, was the

person who had explained to his fellow villagers the 'great benefits of jatropha'; so when they suffered set back in cultivation he went to report to the company for necessary measures, but the local office of the company was found locked. Needless to say, the planting material supplier company did not care to take any responsibility after it sold the seedlings, nor did it bother to honor its own promises of how jatropha

can greatly benefit the farmers. The frustrated farmers therefore abandoned jatropha, but at a considerable cost.