



## **Biodiesel manufacturing market is expanding in India**

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Biodiesel is being promoted in world over as a green fuels to mitigate harmful exhaust emissions from diesel vehicles. Biodiesel besides helping in reducing the air pollution improves lubricity of low sulphur diesel fuels required for meeting Euro IV & Euro VI emission norms. It is safe to handle as the flash points of biodiesel is higher than the conventional diesel. Blending of biodiesel with diesel would result in the reduction of un-burnt Hydrocarbons, Carbon Monoxide and Particulate matter in auto emissions, and will be in line with the objectives of the government.

Bio-diesel is a Fatty Acid Methyl Ester (FAME), for use in compression ignition engines designed for using stand alone fuels or as a blend stock for diesel fuel (IS15607:2016). The main feedstock being used in India is Used Cooking Oil(UCO), Palm stearin (by product) and small quantities of acid oils, fatty acids, TBO's. Bio-diesel is an environmentally friendly fuel, which has almost no sulphur, no aromatics and has about 10% built-in oxygen & bio-degradable in nature.

The higher density of Biodiesel results in more calories per liter resulting in same power output. Bio-diesel having higher Cetane Number improves the combustion.

### **A Sunrise Industry**

Biodiesel industry is a sunrise industry with huge potential for job opportunities and revenue to the governments. The industry is being encouraged since last two years under the visionary leadership of Prime Minister Narnedra Modi. The Biodiesel industry can substitute about 5% of fuel provided it gets feedstock that is Used Cooking Oil and others. Indian consumes about 23.8Mn Tons of vegetable oils which will generate about 4 Million tons of UCO that can be converted into equal amount of Biodiesel.

Currently, the industry produces and supplies close to 0.5 million tons and is gearing up to deliver up to 1million tons of Biodiesel by 2019 and this will provide half a million direct jobs and one million jobs to ancillaries.

The Industry has seen a growth of 1375% in terms of volumes during the financial year ended 2016. The consumption for the year ended 2017 .....was. The production and consumption till 30th September 2016 were about 7.8 crore liters. This was possible due the unflinching support from the Government on various policy issues pending for last one decade. That has enabled the starting of this green industry that was almost written off during the last 10 years.

Biodiesel has become the most favored fuel globally. Argentina is a net exporter of biodiesel, nearly all of which is shipped to Europe, which is also overtaking the US in production this year. As per the reports, Argentina ranks as the world's fourth largest producer after Germany, France



and Brazil due to its rapidly emerging domestic market. The leading biodiesel producing states are Andhra Pradesh, West Bengal, Gujarat, Maharashtra and Telangana.

### **Biodiesel & UCOs**

Used Cooking Oil (UCO) is being adulterated into our edible oils due to lack of awareness and preventive policies. UCO has been found to create major health problems resulting in obesity, heart disease and cancer. Hence there are Policies/ strict legal provisions in developed nations on its disposal. There is an urgent need in our country to create awareness about the health hazard of UCO. On the other hand, it has huge potential to fuel vehicles in the country. It is most suitable feedstock used making bio-diesel, a green and clean fuel.

India consumes nearly 23.8 million tonnes of vegetable oil and nearly 4 million tonnes of UCO is available for processing into Biodiesel. Imagine a city like Delhi with large amount of UCO can provide huge scope for blending and this can further enhance biofuel economy.

On the government part, several initiatives have been taken to promote biodiesel in the country. However, much more needs to be done to promote use of biodiesel which is cheap and environment friendly. India imports large quantity of fried oil and clubbed with domestic production, there is ample scope for extensive use of UCO in biodiesel production.

Oil feedstock cost is the major cost of biodiesel production accounting over 70 % of the total costs. Hence, if the waste vegetable oil is used as biodiesel feedstock, the economics of biodiesel can be significantly improved. Moreover, the use of waste cooking oil also reduces the waste treatment costs. Disposal of waste cooking oil into the drains creates several operation and maintenance problems. The disposed oil can solidify thereby blocking the drainage systems and also pollutes sewage and waterways. The cost of sewage treatment with high lipid content could be high.

The restaurants, at the same time, do not need to spend money to transport the waste cooking oil to discharge into specific locations. The municipalities involved in the sewage treatment could spend less money for sewage treatment if the lipid content in the sewage is low. Hence, recycling of waste cooking oil to produce biodiesel will increase the cost of waste treatment.

### **The Government & Blending Issue**

The Biodiesel manufacturers have already undertaken desired capacity expansion and modernization of their biodiesel plants. The Ministry of Petroleum and Natural Gas (MoP&NG) had issued the gazette notification on 10th August 2015 known as MS/HSD amendment Order, 2015 allowing bulk sales of biodiesel. The Indian Railways has started using Biodiesel on Pan India Basis after approvals at RDSO,



Lucknow. The Oil Marketing Companies (OMCs) have been successfully blending Biodiesel across the states of West Bengal, Andhra Pradesh, Telangana, Tamil Nadu, Orissa and Gujarat.

The Union Cabinet chaired by the Prime Minister on the 16.01.2015 had given its approval for amending the Motor Spirit/ High Speed Diesel (MS/HSD) control order for regulation, Distribution and Prevention of Malpractices dated 19.12.2005. The amendment allowed private biodiesel manufacturers, their authorized dealers and Joint Ventures (JVs) of OMCs as authorized by MoP &NG as dealers and give marketing/distribution functions to them for limited purpose of supply of biodiesel to consumers. It further relaxed the Marketing resolution dated 8.03.2002 of MoP &NG to allow private biodiesel manufacturers, their authorized dealers and Joint Ventures (JVs) of Oil Marketing Companies (OMCs) as authorized by MoP &NG for direct sales to consumers.

### **Socio-economic Benefits of Biodiesel**

Bio-diesel is safe to handle and the flash points of Bio-diesel is higher than the conventional Diesel. Blending of Bio-diesel with Diesel results in the reduction of un-burnt Hydrocarbons, Carbon Monoxide and Particulate matter in auto emissions, and will be in line with the objectives of the Auto Fuel Policy of the Government.

Biodiesel has lower energy content. It is denser than diesel fuel; the energy content is only 3.74% less on a per liter basis. Because diesel engines will inject equal volumes of fuel, the power loss may be even less than this because biodiesel's higher viscosity can decrease the amount of fuel that leaks past the plungers in the diesel fuel injection pump, leaving more fuel to be injected. The field trials show that biodiesel is more efficient than High Speed Diesel (HSD).

Air pollution, especially diesel vehicular emissions killed 81,000 in Delhi & Mumbai during the year 2015. In economic terms the air pollution cost the two cities \$10.66 billion in the year 2015 or about 0.71% of the national GDP as per new study conducted by the IIT, Mumbai.

The Government of India has been taking various steps for reducing vehicular emission which could improve the ambient air quality by substantially reducing the particulate matter. Biodiesel is the most appropriate tool being envisaged to achieve the GHG reduction targets. The European Union consuming 14 Million tons of Biodiesel has made blending mandatory and already achieved 7% blending across all member states. USA, South American countries & our neighboring ASEAN countries are promoting this green fuel.

Biodiesel is a clean burning alternative fuel that contains no petroleum, but it can be blended at any level with petroleum diesel to create a biodiesel blend. It can be used in compression-ignition (diesel) engines with little or no modifications. Biodiesel is simple to use, biodegradable, nontoxic, and essentially free of sulphur and aromatics.

Scientific research confirms that biodiesel exhaust has a less harmful impact on human health than petroleum diesel fuel. Biodiesel emissions have decreased levels of polycyclic aromatic hydrocarbons (PAH) and nitrated PAH compounds that have been identified as potential cancer causing compounds. Test



results indicate PAH compounds were reduced by 75 to 85 percent, except for benzo(a)anthracene, which was reduced by roughly 50 percent. Targeted nPAH compounds were also reduced dramatically with biodiesel fuel, with 2-nitrofluorene and 1-nitropyrene reduced by 90 percent, and the rest of the nPAH compounds reduced to only trace levels.

Biodiesel used as blends in different portions to petroleum diesel showed significant improvement in terms of reducing GHG emission. It was observed that on combustion of biodiesel – petroleum diesel blends, the level of carbon monoxide (CO), carbon di-oxide (CO<sub>2</sub>), smoke, particulate matter (PM) were reduced significantly; whereas the amount of oxides of Nitrogen (NOX) was slightly increased. Since biodiesel is oxygenated, engines have more complete combustion than with ordinary diesel.

India needs to seek public participation to fight a common cause for the betterment of Public Health. UCO should sell only to authorize collection agency. This will ensure UCO elimination from our food chain. India imports large quantity of fried oil and clubbed with domestic production, there is ample scope for extensive use of UCO in biodiesel production. The government needs to put in place a National Policy for Biodiesel Industry in order to prevent the interests of all its relevant stakeholders.

#### **Need of a National Policy on Biofuel**

It is a well-known fact that biodiesel across the world is being promoted as a green fuel which helps in mitigating particulate emission from diesel vehicles and reduces GHG (Green House Gas) emissions significantly. In view of this, the Biodiesel Association of India (BDAl) also seeks implementation of the pending National Policy on Bio-fuels. According to the industry players, the government should realize that European countries like UK, Germany, France and others have mandated the use of biodiesel of up to 7% in transport fuels and is planning to increase the same to much higher levels in the years to come. This has led to biodiesel being sold at a price premium to diesel in these countries. In India, which is a price sensitive market, a higher cost of biofuel to diesel will not work more so with no mandate to reduce pollution. The excise duty exemption that existed ensured that biodiesel was sold at price parity or even discount to diesel ensuring off take till the biodiesel market matured in India. Now the whole biofuel program will fail despite all the stakeholders namely OMCs, Railways etc and the producers having invested substantially in this renewable energy business due to high taxation.

India needs promotional policy and initially no tax for green fuel biodiesel. Promoting green fuel biodiesel would go long way in curbing vehicular emission and to protect the environment. At present, the use of Biodiesel is completely voluntarily and there is no mandate/obligation on the polluters to reduce the emission by using Biodiesel. A national policy that mandates the use of green fuels is urgent and the need of the hour given the rampant pollution across India. Any tax on Biodiesel will discourage the users and kill this sunrise Industry.

The industry produced and supplied close to 0.5 million tons to date and is gearing up to deliver up to 1million tons of Biodiesel by 2019 and this will provide half a million direct jobs and one million jobs to ancillaries. High taxation under the GST regime would not only put capacity building under pressure, but also pose a threat to jobs and the industry as a whole.



The Industry is hopeful that the government's intentions are clear and it would revive this green industry. The problems and challenges including higher GST rate would be taken care of by the government. There is an urgent need for course correction. National Policy on Biodiesel would go long way to create environment friendly fuel usage and promote a sunrise industry which has potential to provide multiple benefits to society and nation.