



# INDONESIA: BIOFUEL DEVELOPMENT

Author: Anasia Silviati  
Date: August 2008

## Summary

Indonesia started to develop the biofuel industry in 2006. The increase in mineral oil prices and the subsequent reduction of the fuel subsidy have considerably improved the feasibility of biofuel in Indonesia. In promoting the production of biofuel, the Indonesian government already had a number of legal instruments, including the Presidential Decree No. 5/2006 on national policies for optimizing energy use and the Presidential Instruction No. 1/2006 on the use of biofuel. This report focuses on recent developments and opportunities for U.S. suppliers of products and services in the biofuel industry.

## Market Demand

A few years back, biofuel had very limited recognition in Indonesia as an alternative source of energy. However, conditions are different now. Indonesia started to develop the biofuel industry in 2006 as a response to a progressive price increase of fossil based oil in the world, declining domestic crude oil production and considerable progressive increase in domestic oil consumption. Since then, various initiatives both from the government and private sectors underline efforts to develop biofuel industry in Indonesia.

The primary Indonesian government legal instruments/policies, include:

- Presidential Instruction No. 1/2006 on Provision and Utilization of Biofuel
- Presidential Regulation No. 5/2006 on National Energy Policy
- Presidential Decree No. 10/2006 on the Establishment of National Team for Biofuel Development
- Minister of Energy and Mineral Resources Decree No. 051/2006 on Guideline and Procedure for Biofuel Business
- Minister of Finance Decree No. 117/PMK.06/2006 on Credit for the Development of Biofuel Energy and Plantation Revitalization.
- Government Regulation No. 1/2007 on Income Tax Facilities for Investment Activities in Specific Industries and/or Particular Region

The recent increase in global oil prices and higher domestic demand are causing fuel shortage in several provinces in Indonesia and draining the government's budget. The fuel subsidy federal costs increased from Rp. 64.2 trillion in 2006 to Rp. 83.8 trillion in 2007. It was estimated that the subsidy will reach Rp. 180.3 trillion in 2008. In 2009, the government plans to reduce fuel subsidy to Rp. 101.4 trillion. The biofuel development will need additional investment of \$2.9 billion until 2025, which consists of \$2.3 billion for biodiesel development and \$6,124 million for bioethanol development.

Compared with other countries in the region, biofuel development in Indonesia remains sluggish. Beside lack of government support, there are several problems that have to be solved, such as:

- ability to produce high yield feedstock seeds, such as jatropha curcas, sweet sorghum and sugar cane,
- incomplete data on land ownership and land use,
- high price of biofuel feedstock especially Crude Palm Oil (CPO),
- high price of biofuel compared with subsidized fossil oil price,
- lack of national technologies capabilities on biofuel processing,
- an allegation that biofuel development will cause damages to Indonesia's forest

Indonesia has the potential to become a major producer of biofuel. There are around 60 crops that could be used as raw materials, including CPO, jatropha curcas, sweet sorghum, sugar cane and cassava. CPO can

be used to produce biodiesel, a replacement for diesel, while sugar and cassava can be used to produce bioethanol to replace gasoline. Besides biodiesel and bioethanol, the government would also promote the production of biooil made of vegetable oil and biogas, which can be used to replace gasoline.

CPO and molasses are the current primary feedstock used in Indonesia's biofuel production. Cassava, jatropha and sweet sorghum are other potential feedstocks. However, the development of those commodities is still in the early stage. To increase biofuel production, the government encourages private companies to build more processing plants. Without preparing the input availability it can create competition between biofuel and food.

Indonesia, the world's biggest palm oil producer, produced 700,000 tons of palm oil-based biodiesel in 2007 and is expected to nearly double to 1.3 million tons in 2008. However, the recent increase of CPO price has forced several manufacturers to cut their production capacities. PT Pertamina also has to cut the blend in its diesel fuel gradually from 5 percent to 2.5 percent and 1 percent. In 2007, the national bioethanol production reached 139,600 kiloliter, of which 80 percent was exported.

The government targeted that biodiesel and bioethanol production will reach 5.57 million kiloliter and 3.77 million kiloliter by 2010 respectively. In order to achieve this target, Ministry of Agriculture is preparing additional land for growing cassava, sugar cane and jatropha curcas. The area for cassava will be increased from 52,195 hectares in 2007 to 782,000 hectares in 2010. Sugar cane area will increase from 400,400 to 698,000 hectares and the area for jatropha will increase from 121,200 to 1,540,000 hectares and coconut. Several companies have expanded their areas for growing cassava such as PT Sungai Budi (25,000 Ha), PT Medco (10,000 Ha), PT Molindo (10,000 Ha), all of them in Lampung province and PT Sampurna (10,000 Ha) in Pawonsari. For sugar cane, PT Rajawali and PT PTPN 2,7,8,9,10, 11, 14 (state-owned plantation company) added 320,000 Ha, Sugar Group 70,000 Ha in Lampung and Salim Group 10,000 Ha in South Sumatera.

Through the Presidential Decree No. 10/2006, the government established a National Team for Biofuel Development. The team proposed several recommendations, including:

- the abolishment of VAT of 10% on pure ester ethyl acid as raw material for biofuel and
- the reduction of Motorized Vehicle Fuel Tax from 5 percent to 2.5 percent
- tax incentives for opening a bio diesel plant in certain areas
- a decree appointing PT PLN and PT Pertamina (both are the state-owned companies) as stand-by biofuel buyers
- the establishment of reliable and accurate data base of land use
- mandatory use for biofuel to constitute 1-3 percent of the nation's total fuel consumption. For industry 2.5%, transportation and power generation 1% for biodiesel and 3% for bioethanol.

The GOI is currently studying fiscal and non-fiscal incentives, or removing tax levies. In addition, the government promised to simplify the license process and reduce import tax for equipment used to produce biofuel in Indonesia. In order to secure domestic demand, the government plans to issue a new policy requiring fuel retailers to sell biodiesel at least one percent of their national fuel sales. The regulation will also require manufacturers to use at least 2.5 percent biofuel in their fuel consumption.

## Market Data

In June 2006, Indonesia started to sell biofuel in the form of bio solar, bio pertamax and bio premium through PT Pertamina, the state-owned oil and gas company. Since then, the use of biofuel has been increasing as can be seen at the table below.

Pertamina sells biodiesel which its formula consists of mixture 97.5% gas oil and 2.5% Fatty Acid Methyl Ester (FAME) or called B-2.5, with the brand name: BioSolar. The bioethanol product is a mixture dry bioethanol (purity

ethanol > 99.5%) and gasoline. The brand names are BioPremium E-3 (97% premium blended with 3% ethanol) and BioPertamax E-3 (97% pertamax blended with 3% ethanol).

Biofuel Sale in Indonesia

|             | 2006       | 2007       | January-June 2008 |
|-------------|------------|------------|-------------------|
| BioSolar    | 217,048 KL | 555,141 KL | 285,240 KL        |
| BioPremium  | 1,408 KL   | 3,776 KL   | 2,000 KL          |
| BioPertamax | 16 KL      | 9,958 KL   | 7,456 KL          |

Source: Ministry of Energy and Mineral Resources

The National Team for Biofuel Development had developed a road map for biofuel development. The plan sets a target of making biofuel account for 5 percent of the energy mix by 2025.

ROADMAP FOR BIOFUEL DEVELOPMENT

| Year   | 2005-2010   | 2011-2015   | 2016-2025   |
|--|---|---|---|
| Biodiesel  | Biodiesel Utilization<br>10% of Diesel Fuel<br>Consumption 2.41<br>million KL | Biodiesel Utilization<br>15% of Diesel Fuel<br>Consumption 4.52<br>million KL   | Biodiesel Utilization 20% of<br>Diesel Fuel Consumption<br>10.22 million KL |
| Bioethanol   | Bioethanol Utilization<br>5% Gasoline<br>Consumption 1.48 KL                  | Bioethanol Utilization<br>10% Gasoline<br>Consumption 2.78 KL                   | Bioethanol Utilization 15%<br>Gasoline Consumption 6.28<br>KL               |
| Bio-oil<br>❖ Biokerosene<br>❖ Pure<br>Plantation Oil<br>for Power<br>Plant | Biokerosene Utilization<br>1 million KL<br>PPO Utilization 0.4<br>million KL  | Biokerosene Utilization<br>1.8 million KL<br>PPO Utilization 0.74<br>million KL | Biokerosene Utilization 4.07<br>million KL<br>PPO Utilization 1.69 KL       |
| BIOFUEL  | BIOFUEL Utilization<br>2% of energy mix 5.29<br>million KL                    | BIOFUEL Utilization 3%<br>of energy mix 9.84<br>million KL                      | BIOFUEL Utilization 5% of<br>energy mix 22.26 million KL                    |

Source: Ministry of Energy and Mineral Sources

In 2010, the potential production of bio premium and bio pertamax will reach 4 million KL/year and 5,07 million KI/year respectively. In order to increase its marketing capability, PT Pertamina plans to increase its sales networks to several cities in Indonesia. Currently, Pertamina only sells biofuel in Jakarta, Surabaya, Bandung and Denpasar. Pertamina sells biofuel in 282 out of 4,050 fuel stations and will add 140 fuel stations in 2008. From 282 fuel stations, 232 stations sell BioSolar, 46 stations sell BioPertamax and 4 station sells BioPremium.

Biofuel demand per year (10% injection)

|                        | Transportation | Industry     |
|------------------------|----------------|--------------|
| Ethanol (Gasohol E-10) | 1,700,000 KL   | 3,500 KL     |
| Kerosene (B-10)        | 1,000,000 KL   | 9,600 KL     |
| Solar (Biodiesel B-10) | 1,100,000 KL   | 1,500,000 KL |
| MDF (B-10)             | -              | 50,000 KL    |
| MFO (B-10)             | -              | 40,000 KL    |

Source: PT Pertamina

As one of standby off takers appointed by the government, PT PLN has been using biofuel for its 24 diesel power plants in various provinces including in South Kalimantan (5), East Kalimantan (7), Maluku (7), Riau (2), Lampung (1), Bali (1) and North Sumatra (1). The capacity of those power plants is ranging from 150 kW to 13,000 kW and with the total capacity of 80,825 kW. PT PLN plans to use biofuel for its 144 diesel power plants in the future.

### Best Prospects

Although the biofuel industry in Indonesia is currently considered underdeveloped, there are opportunities waiting to be explored by U.S. suppliers, including:

- consulting and engineering services for design, construction and management of biofuel plants
- supply technology, machinery and equipment for biofuel processing
- supply of proper storage, handling, transportation and distribution of biofuel
- supply of automation systems, controlling equipment
- laboratory and testing equipment for developing alternative biofuel feedstock

### Key Suppliers

At present, local technology is only capable for developing a biodiesel factory with production capacity around 6,000 ton per year. For larger scale options, Indonesia uses technological licenses from overseas such as from: Lurgi (Germany), BDI (Austrian), Conneman (Germany) and Biox (Dutch). Indonesian companies are also looking the possibility to work with Praj Industries (India), CAMC (China), Alva Laval (Sweden), Japan Gasoline Company (Japan), Katzen and Delta-T (USA).

### Prospective Buyers

Biodiesel producers established an association called as APROBI (the Association of Indonesian Biofuel Producer). APROBI has 22 members with the total production capacity of 3.2 million ton per year and total investment value of \$800 million. Currently, only 5 companies that have been fully operating with the installed capacity of 1.1 million ton per year. The companies are PT Eterindo Group (240,000 tons), PT Indobiofuel Energy (50,000 tons), PT Wilmar (350,000 tons), PT Sumiasih (100,000 tons) and PT Musimas (300,000 tons). However, those companies only produce 150,000 tons per year or 15 percent of the total capacity due to the raw material scarcity and low domestic demand.

Even though the domestic market and biofuel pricing is out of sync, investors are interested in this industry. Several banks also showed their supports by giving credit to biofuel companies. In 2007, 58 joint cooperation agreements were signed with a total investment value of \$12.4 billion. The agreement involved 14 foreign investors and 23 local investors as well as 15 state-owned companies, cooperatives and non-governmental organizations. In 2008, several investors provided their commitments to invest in biofuel industry. For example, Sinopec, together with PT Puri Usaha Kencana, plans to develop a massive biofuel projects using palm oil and jatropha in Papua and Kalimantan. Sampoerna Group also will develop bioethanol from cassava and sugar cane with total capacity of 1 million ton per year by 2010.

Other companies such as Bronzeak from United Kingdom and Samsung from South Korea will also enter this industry.

Several biofuel producers in Indonesia:

- PT Eterindo Wahanatama Tbk is a holding company engaged in chemical industry. Established in 1992, the company had been listed in the Jakarta Stock Exchange in 1997. PT Eterindo is producer of specialty resin and PA with total capacity of 136,000 MT/year. In 2005, Eterindo started to produce biodiesel in its plant in Gresik, East Java. Using CPO as feedstock, Eterindo produces 240,000 MT/year.
- PT Molindo Raya Industrial, established in 1965, is the largest ethanol producers in Indonesia. The company has developed biofuel from molasses and produces 55,000 KL/year. The company invested \$25 million to increase ethanol production capacity to 100,000 KL/year by developing a new plant in Lampung. PT Molindo cooperates with PTPN X (sugar mills) to secure 100,000 – 150,000 tons of molasses for its ethanol production. In addition, the company will open 7,000 – 10,000 hectares of cassava plantation for alternatives feedstock.
- Wilmar Group is a foreign investment company, with the major shareholders of Kuok Group and Archer Daniels Midland Company. Founded in 1991, the company turns to be the largest palm biodiesel manufacturer in the world. From its biodiesel plant on Dumai, Riau, the company produces 350,000 MT/year. The company plans to expand its biofuel plants so that the total production capacity will reach 1.05 million MT/year.
- PT Sumiasih was established in 1982 as manufacturer of oleo chemical from CPO. The company started to produce biodiesel in 2006 with production capacity of 3,000 ton per month. PT Sumi Asih plans to expand capacity of their biodiesel plant in West Java with an investment of \$8 million and build a new biodiesel plant in Lampung with a possible investment of \$28 million.

## Market Entry

The Presidential Decree No.80/2003 regulates the procurement process for government agencies, which includes the state-owned companies, the Indonesian military and the Indonesian Police. Although it may be possible in some cases to sell directly to the Government, there is good reason to use the services of an agent or distributor for the early stages of project development, delivery, installation and service needs. Traditionally, most government procurement decisions have been based on long-established relationships. This does not necessarily mean illegal payments are involved, but these relationships often exclude participants not well known in the market.

Small and medium sized U.S. firms that would like to enter the Indonesian market would be well advised to use an agent or distributor. U.S. companies need to visit the Indonesian market in order to properly choose an appropriate agent or distributor. Appointment of a representative requires care, since it is difficult to get out of a bad relationship. Qualified representative will not take U.S. principals seriously unless they make a commitment to visiting the market on a regular basis. Patience and presence are key success factors.

Key factors in purchasing decisions in Indonesia are pricing, financing, technical skills, and after-sales service. Firms should be prepared to invest capital and manpower into making their local representative a first-class service provider.

## Market Issues & Obstacles

Biodiesel specification generally refers to American Society of Testing and Materials standards (ASTM D 6751) and European Committee for Standardization (CEN 14214). The Indonesian government also stipulates national standard for biodiesel specification, SNI 04-7182-2006 and for bioethanol SNI DT27-0001-2006. In addition, there is also Director General for Oil and Gas Decree No. 13483K/24/DJM/2006 regarding biodiesel specification for domestic market.

There are no non-tariff barriers inhibiting the importation of renewable energy equipment. Import duties have been progressively reduced over the years in a number of deregulation measures by the government. Since the government attaches great importance to the development of the renewable and green energy, imports of related equipment are as much as possible facilitated, to provide the necessary incentives to the private sector. With regard to technical and safety standards, Indonesia has adopted international norms and there are some guidelines for technical specifications of energy equipment.

To learn about activities and trade opportunities in Indonesian energy industry, there are several websites that can be accessed after paying a membership fee:

1. [www.tender-indonesia.com](http://www.tender-indonesia.com)
2. [www.iogonline.com](http://www.iogonline.com)
3. [www.petromindo.com](http://www.petromindo.com)

## Trade Events

Name: INDOENERGY 2009  
Date: 17-19 July 2009  
Location: Jakarta Convention Center  
Website: [www.napindo.com](http://www.napindo.com)

Name: RENEWABLE ENERGY INDONESIA 2009  
Date: 14-17 October 2009  
Location: Jakarta International Expo Kemayoran  
Website: [www.pamerindo.com](http://www.pamerindo.com)

## Resources & Contacts

Ministry of Energy and Mineral Resources, [www.esdm.go.id](http://www.esdm.go.id)

PT Pertamina, [www.pertamina.com](http://www.pertamina.com)  
Eterindo Group, [www.eterindo.com](http://www.eterindo.com)  
PT Molindo Raya Industrial, [www.molindo.co.id](http://www.molindo.co.id)  
Wilmar Group, [www.wilmar.com](http://www.wilmar.com)

## For More Information

The U.S. Commercial Service in Jakarta, Indonesia can be contacted via e-mail at: [Anasia.Silviati@mail.doc.gov](mailto:Anasia.Silviati@mail.doc.gov); Phone: 62-21 526-2850; Fax: 62-21 526-2855; or visit our website: [www.buyusa.gov/indonesia](http://www.buyusa.gov/indonesia)

## The U.S. Commercial Service — Your Global Business Partner

With its network of offices across the United States and in more than 80 countries, the U.S. Commercial Service of the U.S. Department of Commerce utilizes its global presence and international marketing

expertise to help U.S. companies sell their products and services worldwide. Locate the U.S. Commercial Service trade specialist in the U.S. nearest you by visiting <http://www.export.gov/>.

*Disclaimer: The information provided in this report is intended to be of assistance to U.S. exporters. While we make every effort to ensure its accuracy, neither the United States government nor any of its employees make any representation as to the accuracy or completeness of information in this or any other United States government document. Readers are advised to independently verify any information prior to reliance thereon. The information provided in this report does not constitute legal advice.*

*International copyright, U.S. Department of Commerce, 2008. All rights reserved outside of the United States.*