INDONESIA BIOFUELS SCOPING EXERCISE

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ENGINEERS AGAINST POVERTY

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Methodology

For the purposes of this scoping exercise, data was obtained through a combination of desk research and review of publicly available data and through interviews with industry sources and other relevant organisations and individuals. The data required for completion of this report and the matrix provided was not available in any one central organisation. Additionally, much of the data readily available is no longer current due to rapid changes in the industry in recent years. As a result, the research process involved cross referencing data across various sources. This process, whilst helpful to corroborate and verify information, was extremely time consuming and additionally, there were instances when information obtained from different sources were contradictory. In such cases, an assessment was made on the reliability of each source, the availability of any external corroborative material, and where both sources were equally reliable, the most recent data was used. Where industry sources were available, they were consulted.

The remit of this scoping exercise is focussed on biofuels projects in Indonesia. As a result, the implications of exporting feedstock or raw materials for processing into biofuels in other countries have not been included in this report.

The research process commenced with a mapping exercise aimed at identifying the biofuels producers currently operating in Indonesia. Due to rapid industry changes in recent years, the most reliable source of information on biofuel producers was determined to be Direktorat Jenderal Energi Baru Terbarukan dan Konservasi Energi, a renewable energy directorate within the Ministry of Energy & Natural Resources. Although this data was released in November – December 2012, it is possible that this list of producers is not exhaustive and there could potentially be other organisations operating or emerging in this space. Attempts were made to identify additional biofuel producers (additional to the Ministry's official statistics) and it was discovered that many organisations previously operating in this space have been consolidated or dissolved. Given the time constraints and the large numbers of companies previously involved, it was not possible to comprehensively review all biofuel companies referenced in other sources.

From this list of producers, the supply chain was traced backwards to the source of feedstock and related plantations/growers, and from there attempts were made to identify the data required for the matrix. Due to the nature of the industry and characteristics of biofuel feedstocks, data at the upstream end of biofuel production e.g. biofuel specific plantations and related information, is extremely difficult to obtain. This is because feedstock such as oil palm, sugarcane and cassava are intended for various purposes, not only for biofuels. As the feedstock is not segregated according to grower/intended use, there is real lack of traceability from processor to plantation level. This means that once the feedstock gets into the system, it is impossible to accurately identify which specific plantations or the portion of planted areas are specifically allocated for biofuels, or to ascertain the number of employees involved only in growing crops specifically intended for processing into biofuels.

Several companies were contacted to obtain this type of detailed data and as a result, several annual reports from listed companies were obtained. Most public companies have yet to publish the 2012 reports, but have committed to share these reports as soon as the information becomes available. The majority of private companies were unable to share this type of data, partly because the individuals contacted did not have the information to hand and partly due to concerns related to sharing private company intelligence and strategy. Given the time constraints on this assignment, which was exacerbated by the time difference between UK-Indonesia, it was not possible to conduct in-depth interviews or secure senior level participation of the /key personnel.

Due to the stagnation of the ethanol market since 2010, the current status of ethanol producers in Indonesia is unclear. The Ministry of Energy and Natural Resources has indicated that there are 7 ethanol producers currently producing ethanol. However, USDA and CIFOR reports suggest that there is very little production or development activity in the ethanol space. Industry sources also support this claim, but further investigation is required to comprehensively assess the situation.

The scope of this exercise is extremely broad, and the lack of traceability and sector transparency, or even centralisation of data adds further complexity. Given the short time frame for this exercise, this report provides only an overview of the biofuels industry in Indonesia and should not be considered a comprehensive analysis.

Introduction

Biofuel Feedstock

Palm oil[1] is the primary biodiesel feedstock in Indonesia. Jatropha oil and coconut oil are also domestically available but limited supplies make them less competitive than palm oil. Furthermore, the low oil extraction rate makes Jatropha-based biodiesel uneconomical. Indonesian researchers are working to develop high yield varieties of Jatropha, but these products are not ready for commercialization[2].

Molasses are the primary ethanol feedstock in Indonesia. Cassava provides additional potential for bioethanol.

Current Biofuels Landscape

Bioethanol[3]

Indonesia has not produced fuel ethanol since 2010. Fuel ethanol production costs have steadily increased (due to the increasing price of molasses) since 2009, squeezing profit margins and forcing domestic fuel ethanol producers to terminate production. A new biofuel price formula has been proposed to rejuvenate the 2013 bioethanol market. However, until the new price formula is approved, the fuel ethanol market remains in a state of flux. Consequently, there is currently very little activity or information on the bioethanol industry in Indonesia.

Although the industrial ethanol market has demonstrated limited organic growth, the Indonesian biofuels market is largely dominated by biodiesel. As a result, this report is biased towards biodiesel.

Biodiesel[4]

In contrast with the stagnant ethanol sector, Indonesia's biodiesel sector exhibited strong growth in 2011. Biodiesel production increased from 740 million litres in 2010 to 1.52 billion litres in 2011. Production is expected to increase to 1.8 billion litres in 2012, and then to 2.2 billion litres in 2013.

Despite this strong sector growth, palm oil–based biofuel development in Indonesia has been constrained by the demands of the dominant domestic food market and export market on palm oil products[5]. About 25.7% of Crude Palm Oil (CPO) produced in Indonesia is consumed as cooking oil and other edible fats, while only 6% of CPO is used for biofuels. About 73% of all CPO produced is exported[6].

In general, the government has fallen short of its biofuel targets. One reason is the failure to significantly reduce fossil fuel subsidies, which distort the energy market causing biofuels to be uncompetitive. Another reason is the high international price of CPO, which discourages biofuel production but encourages CPO for export instead. For example, the global spike in feedstock commodity prices in 2007 – 2008, saw many biofuel processing facilities forced to operate irregularly and well below their installed capacities, often temporarily suspending operations when facing unfavourable market conditions. Several plants ceased operations all together. With key players such as Synergy Drive exiting the market[7], the biodiesel production landscape has changed significantly.

Status of Biofuels Projects

Table 1 provides an overview of the biofuels industry in Indonesia

Detail	Ethanol	Biodiesel	Total
Number of producers	7	22	29
Installed Biofuels Production Capacity	273,000 KL/Y	4.2 million KL/Y	4.6 million KL/Y
2011 biofuel output	0	1.52 billion litres	1.52 billion litres
2012 biofuel output *(estimated)*	0	1.82 billion litres	1.82 billion litres
Total plantation area authorised (ha)	Difficult to Verify	Difficult to verify	Difficult to Verify
Current area under cultivation (ha)	Difficult to Verify	Difficult to verify	Difficult to Verify
Planned area for cultivation (ha)	Difficult to Verify	Difficult to verify	Difficult to Verify
Projected Land Area Required in 2010 (ha)[8]	2,250,000	3,000,000	5,250,000
Projected Land Area Required in 2014 (ha)[9]	3,250,000	7,000,000	10,250,000

Table 2 Summary of Indonesia Biofuels Sector

Discussion of Findings

Producers

There are 22 biodiesel producers and 7 bioethanol producers[10] with commercial business licenses to operate in Indonesia. In terms of distribution of key players, the industry is dominated by private enterprises, followed by small scale farmers and then state owned enterprises[11]. For more detailed information on individual biofuel producers in Indonesia, please refer to **Annex 1**.

Capacity

Installed capacity of biodiesel is 4.2 million KL/year and installed capacity of bioethanol is 273,000 KL/year[12]. Figure 1 shows the total installed capacity for biofuels in Indonesia in 2006-2011[13].

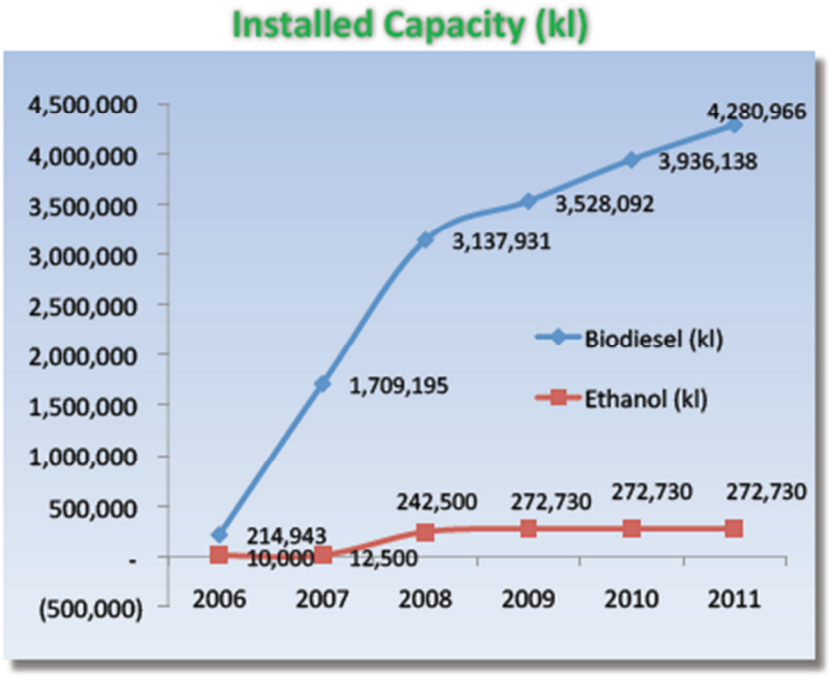


Figure 1 Installed Biofuels Capacity in Indonesia

Figure 2 and 3 corroborates the installed capacity data above, and provides further detail on current and forecasted production volumes and capacity in Indonesia[14].

Biodiesel - Conventional & Advanced Fuels (Mil. Liters)								
Calendar Year	**2006**	**2007**	**2008**	**2009**	**2010**	**2011**	**2012**	**2013**
Production, Total	65	270	630	330	740	1,520	1,800	2,200
Advanced Only	0	0	0	0	0	0	0	0
Imports	0	0	0	0	0	0	0	0
Exports	33	257	610	204	563	1,225	1,300	1,500
Consumption	5	22	23	60	220	304	500	700
Ending Stocks	27	18	15	81	38	29	29	29
Production Capacity - Conventional								
No. of Biorefineries	2	7	14	20	22	22	26	26
Capacity (Mil. Liters)	215	1,709	3,138	3,528	3,936	3,936	4,280	4,280
Capacity Use (%)	30%	16%	20%	9%	19%	39%	42%	51%
Production Capacity - Advanced								
No. of Biorefineries								
Capacity (Mil. Liters)								
Capacity Use (%)	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!
Feedstock Use - Conventional (1,000 MT)								
Feedstock A (CPO)	64	265	619	324	727	1,494	1,769	2,162
Feedstock B								
Feedstock C								
Feedstock D								
Feedstock Use - Advanced (1,000 MT)								
Feedstock A								
Feedstock B								
Feedstock C								
Feedstock D								

Source: Trade data (USDA and EU Statistic); Consumption (APROBI and PERTAMINA); Production and Ending Stock (APROBI and Post's Estimation)

Figure 2 Overview of Indonesia Biodiesel Production

Fuel Ethanol - Conventional & Advanced Fuels (Mil. Liters)								
Calendar Year	**2006**	**2007**	**2008**	**2009**	**2010**	**2011**	**2012**	**2013**
Production, Total	0.30	1.00	1.20	1.72	0	0	0	0
Advanced Only								
Imports	0	0	0	0	0	0	0	0
Exports	0	0	0	0	0	0	0	0
Consumption	0.05	0.66	1.81	1.26	0	0	0	0
Ending Stocks	0.25	0.59	0.07	0.61	0	0	0	0
Production Capacity - Conventional								
No. of Biorefineries	1	1	4	5	5	5	5	5
Capacity (Mil. Liters)	10	13	243	273	273	273	273	273
Capacity Use (%)	3%	8%	0%	1%	0%	0%	0%	0%
Production Capacity - Advanced								
No. of Biorefineries								
Capacity (Mil. Liters)								
Capacity Use (%)	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!
Co-product Production - Conventional only (1,000 MT)								
Product Y								
Product Z								
Feedstock Use - Conventional (1,000 MT)								
Feedstock A (Molasses)	1	4	5	7	0	0	0	0
Feedstock B								
Feedstock C								
Feedstock D								
Feedstock Use - Advanced (1,000 MT)								
Feedstock A								
Feedstock B								
Feedstock C								
Feedstock D								

Source: Indonesian Biofuel Producers Association (APROBI) and State-owned Oil Company (PERTAMINA)

Figure 3 Overview of Indonesia Bioethanol Production

Distribution

Data on land distribution (location and size) for biofuels is extremely difficult to obtain. This is because feedstock such as oil palm, sugarcane and cassava can be used for various purposes, including but not limited to biofuels. Often biofuels producers are integrated agribusinesses with multiple business streams and product lines, many of which use the same feedstock as biofuels. As the feedstock is not segregated at the plantation level according to intended use, it would be impossible to accurately identify which specific plantation or portion of planted area is specifically allocated for biofuels, or to ascertain the resources e.g. labour, specifically allocated to the biofuels production process. Additionally, while plantation permits, and specifically for oil palm, continue to be issued, there are no clear attempts to ensure that they correlate with the plan to produce biofuels[15].

Location

Although micro level data on the geographical distribution of specific biofuel estates is unavailable, data is available on the land suitability or potential distribution for energy crops at a macro level (Figure 4)[16].

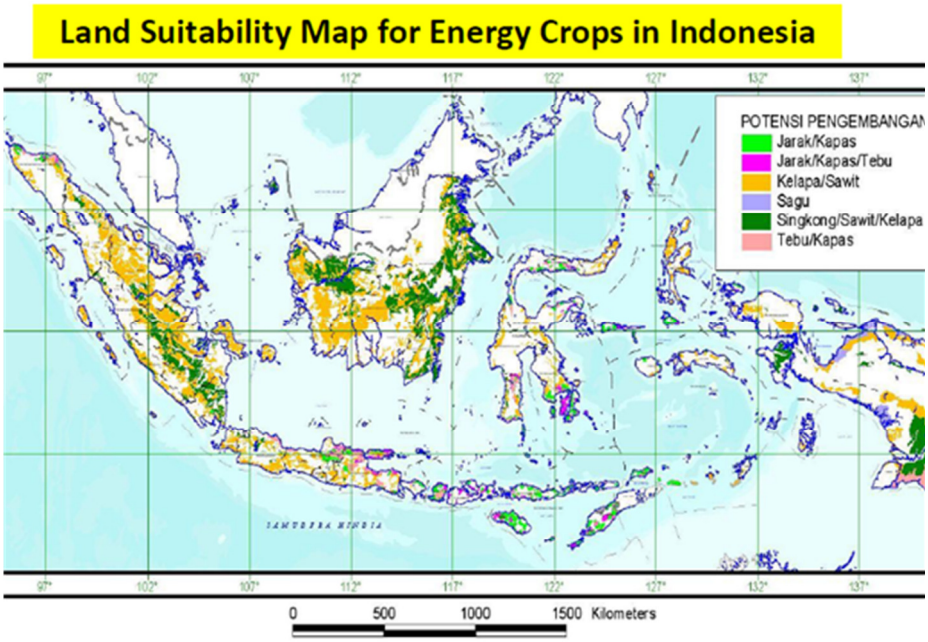


Figure 4 Land Suitability Map for Energy Crops in Indonesia

*Definitions: Jarak=Jatropha, Kapas=Cotton, Tebu=Sugarcane, Kelapa Sawit=Oil Palm, Sagu=Sago, Singkong=Cassava,

Oil Palm[17]

Oil Palm plantations are largely concentrated in Sumatera. In recent years, Kalimantan has become a feasible alternative as it offers a large potential land bank for developing palm oil plantation.

Sugar Plantations[18]

In the past sugar plantations were concentrated in Jawa, but now plantations have been opened in other regions including North Sumatra, South Sumatra, Lampung, South Sulawesi and Gorontalo. In Jawa plantations are found mainly in West Jawa, Yogyakarta and East Jawa. Expansions now are planned to West Kalimantan, West Sumatra, Riau, Merauke, South Sulawesi and Southeast Sulawesi.

Land Area/Size

Data for specific land areas allocated to biofuel feedstock production is unavailable. However, data on the total planted areas for oil palm and sugar cane could be a useful starting point (Figure 5).

Year	Oil Palm	Sugarcane
2004	3,496.7	344.8
2005	3,593.4	381.8
2006	3,748.5	396.4
2007	4,101.7	427.8
2008	4,451.8	436.5
2009	4,888.0	422.9
2010	5,161.6	436.6
2011*	5,306.1	435.0
2012**	5,406.9	456.7

Figure 5 Estates Area by Crops, Indonesia (000 Ha), 2004 – 2012[19]

*2011 & 2012 data are preliminary results
***Area for oil palm is the area planted at end of the year.
****Area for sugar cane is the monthly cumulative harvested area.

Oil Palm

In 2006, when various policies on biofuels were issued and started to take effect, the total area planted with oil palm in Indonesia was about 3.59 million ha. By 2009, this had increased to 4.5 million ha, an increase of 920 000 ha in 3 years[20]. In 2012, this had grown to 5.4 million-ha.

Figure 6 below provides further detail on the allocated and realised areas for oil palm in Indonesia[21].

Table 1. Land allocated for oil palm plantation and its realisation

Island/province		Allocated land (ha)				Planted area (ha)	Realisation (%)	Status
		Location permit	Plantation permit	Cultivation rights	Total			
Kalimantan	West	1 025 000			1 025 000	680 000	66	Jan 2010
	East	217 287	2 257 880	885 659	3 360 826	573 385	17	Oct 2010
	Central	973 163	1 576 996	575 639	3 125 798	1 631 216	52	Aug 2010
	South	373 919		259 344	633 263	312 669	49	Dec 2009
Sumatra	Jambi	1 100 000			1 100 000	486 136	44	Dec 2009
	South	1 400 000			1 400 000	708 056	51	Dec 2009
	Bengkulu	730 360			730 360	413 020	57	Dec 2009

Source: Slette and Wiyono (2011)

Figure 6 Palm Oil Land Allocation and Realisation

By 2011, nearly 11 million ha of land had been allocated for oil palm estates on these islands. On average, less than half of this area has actually been developed into productive plantations.

The main target for new concessions is eastern Indonesia, particularly Papua. In recent years, the area of land acquired for commercial plantation estates in Papua has increased significantly. Oil palm is by far the dominant plantation commodity for which land is being acquired. In 2010, 142 000 ha of land were allocated for oil palm plantations in Papua, of which 38 000 ha have been developed into productive plantations. In 2011, approximately 1.5 million ha of new plantation permits were being processed by government authorities, with an additional 2.1 million ha of oil palm plantations.

Sugar[22]

Planned expansion of sugar plantations is projected to increase to 766,613 hectares in 2014. The land will be made available from production forest lands or idle lands. Areas considered suitable for sugar plantations are Lampung, South Sumatra, Riau, Southeast Sulawesi, Maluku and Papua. In Papua, and 0.4 million ha of sugarcane estates were at the proposal stage in 2011.

Jatropha[23]

Although Timnas BBN Jatropha targets were to achieve 1.5 million ha of Jatropha plantation by 2010 and 3 million ha by 2015, the reality is that Jatropha is still in the early stages in Indonesia. Jatropha plantations grew from 2,600 ha in 2005 to 9,310 ha in 2009, an annual growth of 46.46%. According to 2010 forecasts[24], Jatropha plantations is projected to increase to 21 000 ha by 2014, with the potential to produce 8000 tonnes of Jatropha oil to supply domestic biofuel needs.

Uptake of Jatropha in Indonesia has been tentative due to previous unsuccessful attempts in various regions. For example, despite government support and investor interest, community-based Jatropha projects covering 50,000 ha in East Nusa Tenggara ended in failure in 2006. This failure was likely due to low quality seeds and poor irrigation. Additionally, Jatropha prices were too low to offset the cost involved and demand from buyers was low. Timnas BBN's 1.5 million ha target for Jatropha plantation is likely to be overambitious.

Note: The Projected Land Requirements for Biofuel Production provided by the Indonesia National Biofuels Taskforce (Timnas) in Table 1 above are very likely to be outdated, especially in relation to the ethanol industry given its stagnation in 2010. Land area requirements for ethanol feedstock crops are expected to be significantly lower than Timnas projections.

Other Resources

Due to the lack of traceability at the plantation level (mentioned above) coupled with the time constraints of this scoping exercise, it was not possible to obtain accurate or comprehensive data on the specific resource demands e.g. labour, for biofuels production. However, Timnas Projections in Figures 4 and 5 below provide some insight on the potential labour that could be required to meet Indonesia's biofuels development targets[25].

Table 3. Biofuel development in Indonesia, 2010 projection

Parameter	Unit	Palm oil	Jatropha	Sugarcane	Cassava	Total
Direct labour	People	750 000	500 000	1 500 000	750 000	3 500 000
Income per capita	US $/year/person	2 160	1 458	987	1 296	5 901
Bioethanol/ biodiesel	Tonnes of oil	6 000 000	2 250 000	3 750 000	4 615 385	16 615 385
Production	Tonnes	30 000 000	7 500 000	60 000 000	30 000 000	127 500 000
Industry	Unit	167	22 727	125	288	23 307
Land area	Ha	1 500 000	1 500 000	750 000	1 500 000	5 250 000
Indirect labour	People	1 167	68 182	6 250	11 538	87 137
Seed	Tonnes	202 500 000	3 750 000	6 000 000	12 000 000	224 250 000
On-farm investment	US $ (millions)	4 860	486	1 215	567	7 128
Off-farm investment	US $ (millions)	1 080	245	4 725	4 673	10 723

Note: Indonesian rupiah values are converted into US $ based on www.oanda.com, 10 May 2011.
Source: Timnas BBN (2006)

Figure 7 Projected Biofuel Resource Demands 2010

Table 4. Biofuel development in Indonesia, 2015 projection

Parameter	Unit	Palm oil	Jatropha	Sugarcane	Cassava	Total
Direct labour	People	2 000 000	1 000 000	3 500 000	750 000	7 250 000
Income per capita	US $/year/person	2 160	1 458	987	1 269	5 901
Bioethanol/ biodiesel	Tonnes of oil	16 000 000	4 250 000	8 750 000	5 100 000	34 100 000
Production	Tonnes	80 000 000	15 000 000	140 000 000	30 000 000	265 000 000
Industry	Unit	444	45 455	292	319	46 510
Land area	Ha	4 000 000	3 000 000	1 750 000	1 500 000	10 250 000
Indirect labour	People	3 111	136 364	14 583	12 750	166 808
Seed	Tonnes	540 000 000	7 500 000	14 000 000	12 000 000	573 500 000
On-farm investment	US $ (millions)	12 960	972	2 835	567	17 334
Off-farm investment	US $ (millions)	2 880	491	11 025	5 164	19 560

Note: Indonesian rupiah values are converted into US $ based on www.oanda.com, 10 May 2011.
Source: Timnas BBN (2006)

Figure 8 Projected Biofuel Resource Demands 2015

Whilst these projections provide an overview on the potential resources that could be required of the biofuels industry in Indonesia, it should be stressed (as mentioned above) that Timnas projections, particularly in relation to the ethanol industry needs reassessment given the stagnation of fuel ethanol production in 2010. Additionally, Timnas projections for Jatropha also appear over-optimistic.

Factors Affecting the Status of Biofuels Projects

National Policy

Policy and Programs[26]:

In conjunction with Indonesia's largest state-owned oil company, PERTAMINA, the Ministry of Energy and Mineral Resources' Directorate General of New and Renewable Energy and Energy Conservation (EBTKE) is enforcing various mandatory requirements to increase domestic biofuel consumption:

- Indonesian gas retailers, to include PERTAMINA and foreign-operated gas stations such as Shell, Total, PETRONAS, are required to sell non-subsidized biofuels from May 2012. EBTKE may impose punitive actions for non-compliance;

- As of July 2012, 2% of coal and mineral mining companies' total fuel consumption should be derived from biofuels.

Figure 9 provides further detail on the mandatory blend required according to sectors[27].

BIOETHANOL (Minimum)						
Sector	**2008**	**2009**	**2010**	**2015**	**2020**	**2025**
Transportation, Public Service Obligation (PSO)	3% (Existing)	1%	3%	5%	10%	15%
Transportation, Non PSO	5% (Existing)	5%	7%	10%	12%	15%
Industry		5%	7%	10%	12%	15%
BIODIESEL (Minimum)						
Sector	**2008**	**2009**	**2010**	**2015**	**2020**	**2025**
Transportation, Public Service Obligation (PSO)	1% (Existing)	1%	2.5%	5%	10%	20%
Transportation, Non PSO		1%	3%	7%	10%	20%
Industry	2.5%	2.5%	5%	10%	15%	20%
Electricity	0.1%	0.25%	1%	10%	15%	20%

Figure 9 Mandatory Blending by Sector

- PERTAMINA increased its blending rate for subsidized biodiesel from 5% to 7.5% as of February 2012.

- The Ministry of Energy and Mineral Resources will provide biofuel subsidies at 3,000 rupiah/litre for biodiesel, and 3,500 rupiah/litre for ethanol in 2013.

- EBTKE has proposed a new biofuel price formula which provides enhanced economic incentives to help fuel ethanol producers achieve positive margins. The new biofuel price formula is awaiting official approval from the Ministry of Finance (MOF).

    - If the new biofuel price formula is approved, the industry could produce as much as 20-30 million litres of fuel ethanol in 2013. However, due to the uncertainties pending approval, it is unlikely that the sector could respond instantaneously or that production and consumption could grow so rapidly in such a short time.

Sustainable Palm Oil

In March 2011, the government of Indonesia officially launched the Indonesian Sustainable Palm Oil (ISPO) standard, to be initially implemented on a trial basis but will be mandatory for all oil palm plantation companies operating in Indonesia by 2014. The ISPO standard will comprise 7 principles, 39 criteria and 128 indicators covering licensing and plantation management, cultivation and processing, environmental monitoring and management, labour, social and economy empowerment, and business[28].

Target Markets/Consumption

Domestic Market[29]

62% of the CPO produced in Indonesia is held back for domestic consumption; of this domestic use CPO, 50% is refined locally, 6% goes to the biofuel[30] (Figure 10).

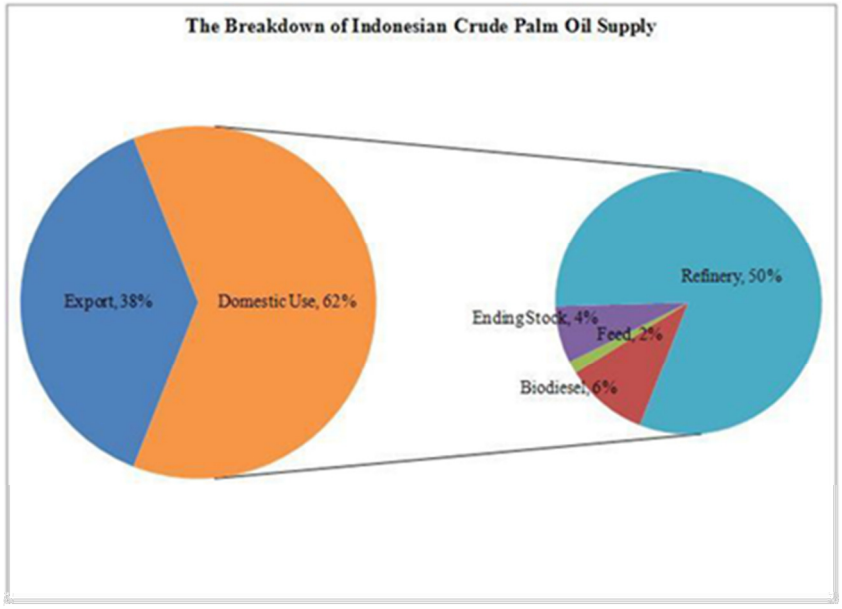


Figure 10 Breakdown of Indonesian CPO Supply

Indonesian biodiesel consumption increased from 220 million litres in 2010 to 304 million litres in 2011. Transportation is the primary sector driving biodiesel consumption in Indonesia.

Future Domestic Consumption

Domestic biodiesel consumption was expected to reach 500 million litres in 2012. This includes:

- Increased biodiesel consumption (approximately 165 million litres) in the transportation sector due to PERTAMINA's new biodiesel blending rate (from 5 to 7.5%) and PERTAMINA's planned expansion of biodiesel distribution outlets in West Kalimantan;
- 2% of biofuel target in the fuel mix for coal and mining companies will increase domestic biodiesel consumption by 25 million litres.

Biodiesel consumption is projected to rise to 700 million litres in 2013, expanding to include non-transportation sectors. PERTAMINA is also expected to escalate its biodiesel distribution outlets in other provinces of Kalimantan and Sulawesi.

Market Constraints and Challenges

Compared to the *potential* for biodiesel consumption, actual biodiesel consumption is still at a very low level. Estimated potential consumption for 2010 was reported at 643 million litres, but actual consumption only 220 million litres[31].

In Indonesia, biofuels cannot yet compete with petroleum-based fuel[32]. It is often assumed that biodiesel can be competitive and profitable when international CPO prices are on par with crude oil. However, in 2008, although crude oil prices rose dramatically to US $145 a barrel, biofuels were still more expensive than petroleum-based fuels and required heavy government subsidies. To address this issue, the government raised biofuel subsidies to IDR2,500 - 3000/litre in 2012.

Export Market

Without subsidies, domestic biodiesel prices are unable to deliver positive margins to producers. Producers are more likely to gain positive margins from overseas markets. Unsurprisingly, over 70%of Indonesian biodiesel is exported[33]. Figure 11 shows the export routes for biomass (energy)[34]

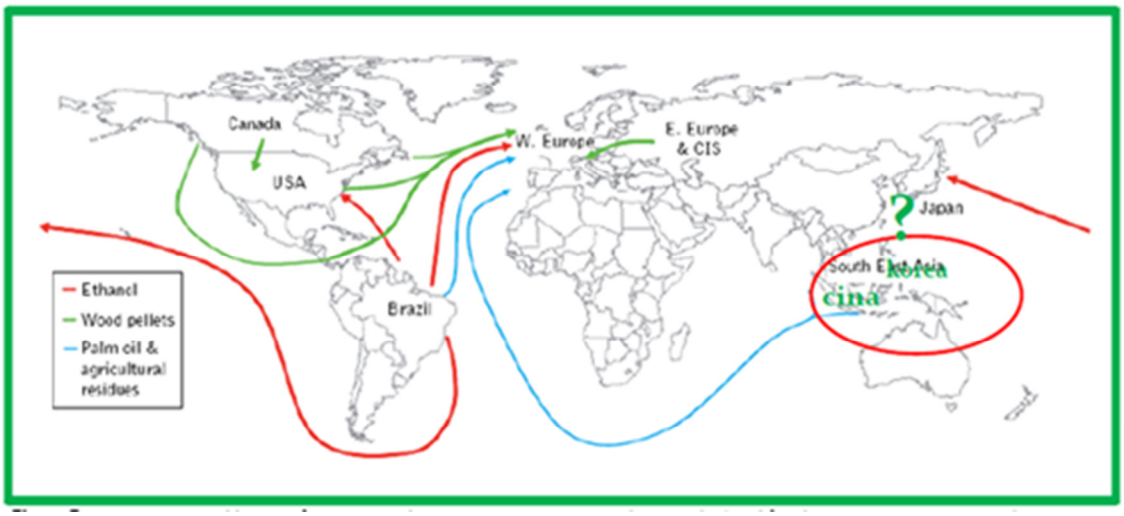
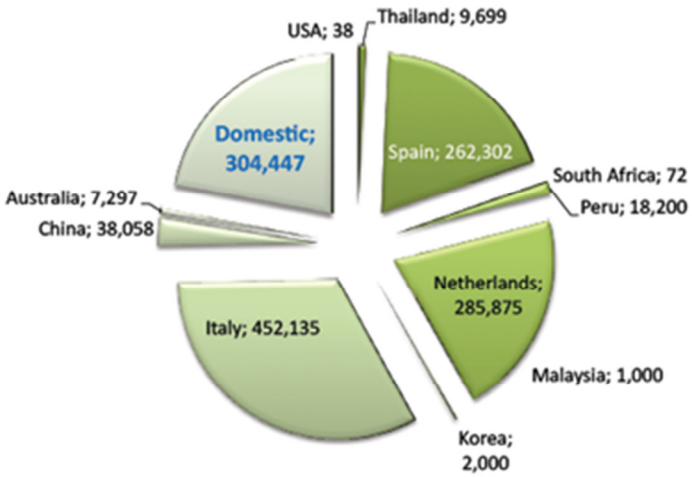


Figure 11 International Trade Routes for Biomass (Energy)

Figure 12 and 13 show Indonesian biodiesel production volumes and export channels for 2011 and 2012[35].



2011	Biodiesel Prod (Ton)
Domestic	304,447
Export	1,076,674
TOTAL	**1,381,121**

Figure 12 Biodiesel Production & Export Channels 2011

	Biodiesel Production 2012 (ton)
Domestic	600.000
Export	1.500.000
Total	**2.100.000**

Figure 13 Biodiesel Production & Export 2012

Europe has become a single largest biodiesel market for Indonesia, and Indonesia's market penetration in the region is trending upwards from 9% in 2008 to 39% of total European biodiesel import in 2011. This was partially driven by the low supply of rapeseed oil-based biodiesel due to a poor European rapeseed crop harvest and further forecasts of declining production, and partially by favourable national policies that increase price competitiveness for Indonesian biodiesel.

Future Export Potential

Provided conditions remain favourable, Indonesian biodiesel exports could reach 1.5 billion litres in 2013. However, the potential of the Indonesian biodiesel export market could be reduced by several factors including:

- The imposition of non-preferential import duty on biodiesel. The European Biodiesel Board (EBB) has been actively encouraging European Commission (EC) to impose non-preferential import duty on biodiesel products from the countries that adopt differential export tax policy to include Argentina and Indonesia.

- In 2012, the Government of Malaysia was considering a plan to reform their palm oil tax structure, along the lines of Indonesia's to increase competitiveness of Malaysian biodiesel.

Land Use/Issues[36]

Customary Rights and Local Communities

The Indonesian Constitution recognises the existence of 'adat' i.e. customary or indigenous rights, subject to national interests. Customary landowners have rights of forest management (often spanning many generations) but not forest 'ownership'. There have been numerous allegations that these rights have been repeatedly ignored in order to prioritise national economic development, and specifically for the purpose of establishing large scale plantations, which has displaced or marginalised local communities.

Deforestation

The Ministry of Forestry indicates that there are about 22.8 million ha of convertible forestlands that could potentially be used for biofuel plantations (MoF 2008). Timnas BBN has identified 4 types of land suitable for conversion to biofuel crop production, (specifically for oil palm, Jatropha and sugarcane) and this includes:

a) Forestlands which have been legally released for non-forestry purposes, but for which associated plantation business permits have not been issued (about 2.7 million ha);
b) Convertible production forestlands. Convertible production forest is forest which is projected to be deforested for purposes such as agriculture, estate crops and settlement. The decision to release this land from the forest estate is subject to ministerial approval based on proposals from industry.

The National Biofuels Taskforce (Timnas BBN) working group produced an estimate showing that Indonesia possesses approximately 27 million ha of 'unproductive forestlands' that can potentially be converted into plantations for biofuel feedstock. These 'unproductive forestlands' are forest areas considered damaged beyond recovery as a result of destructive logging, shifting cultivation and other activities.

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