



Palm Oil: From Food to Fuel – Trends and challenges of a hotly contested crop

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Palm Oil: From Food to Fuel – Trends and challenges of a hotly contested crop

Friedel Hütz-Adams

(Südwind e.V.)

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Preface

For several years partner organisations of „Brot für die Welt (Bread for the World) and membership organisations of United Evangelical Mission (UEM) Indonesia have called attention to the severe problem of expanding palm oil plantations in their home country.

Due to this expansion Indonesia has become the biggest producer of palm oil. In combination with Malaysia they provide 90% of the world market's production. This results in the destruction of huge areas of rain forest and displacement of the population. Especially the further expansion of plantations in West Papua will cause unpredictable problems.

Processed food, fuel, and chemical products contain palm oil. Up to now, 80% of palm oil is used for food production. The following study is written by Friedel Hütz-Adams of Südwind-Institute on behalf of „Brot für die Welt“ and UEM.

This study examines the development of the palm oil market and the importance that energy policy, especially the new European law for bio diesel admixture, will have on the further expansion of plantations.

The study supplies a broad overview of the current situation of oil palm cultivation, the manufacturing and use of palm oil and the problems resulting from these procedures. The future development of oil palm cultivation and its probable competition for space with food production depends on political guidelines.

Thus, the forecast for expansions is insecure. However, it is certain that the demand for palm oil will increase. The growing world population and rising incomes in many developing and emerging countries will lead to a growing demand for palm oil. Largest growth rates are therefore to be expected in India and China.

Another driving factor is the demand arising for biodiesel. Many fear that the cultivation of oil palms which are used for bio diesel will almost octuplicate till 2020.

Unrestricted growth causes long-lasting ecological damage and massive disturbances in the food supply. For the further production and trade of palm oil, „Brot für die Welt“ and UEM demand social and ecological standards for the local populations, especially indigenous people.

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1 Consumption, revenues and agricultural areas

1.1 Characteristics

Oil palms need a moist, tropical climate with a monthly rainfall of 100 mm and an average temperature between 24° to 28°C. Temperatures below 15°C or long dry spells do not agree with the plants. Because of these requirements, production can only take place in the tropical belt.

It is necessary to process the harvested fruit within 24 hours. This requires a considerable logistical effort. It is hardly surprising that the relatively well developed Malaysia was the first country with large-scale plantations. Companies from Malaysia were partly responsible for the development of cultivated areas for oil palms in neighbouring Indonesia. To achieve this, large investments in the transport infrastructure and the processing companies were necessary. Furthermore, bottlenecks have to be passed, as it takes several years for the trees to produce fruit on a large-scale basis.

The cultivation of the oil plant is very labour intensive. 350 workers per hectare are necessary. This is a much higher workforce than in the cultivation of other plants (World Bank 2010: 28).

It is estimated that up to 3 million people work in the Indonesian plantations (Teoh 2010: 9). As a rule the

trees yield their first fruit after 3 to 4 years, reaching good harvest performances at the age of 6 to 8 years. They achieve their highest output when 10 to 18 years old, with a declining crop later on. Generally, 130 to 145 trees per hectare are planted (USDA 2009). This means considerable investments have to be pre-financed for the operating companies.

Before the first crop can be harvested, the assembly of the plantation will normally lead to costs of 4,000 to 8,000 US\$ per hectare. In addition, nearby processing factories for the palm fruit are needed (World Bank 2010: 28; USDA 2009).

1.2 Increasing production

The global consumption of vegetable oils has tripled in the last 30 years. During this period, in comparison with the most important oil suppliers, palm oil had by far the largest increases and its production had grown tenfold. The market share of palm oil had thus grown from 11% to well over 30%. Adding palm kernel oil, the share increases up to 40% (Teoh 2010: 7; Table 1).

Between 2000 and 2009 the demand for palm oil increased by 2.2 million tonnes annually (USDA 2009). One reason for the massive rise in the use of palm oil is its multifunctional applicability. Because of its characteristics, palm oil can be mixed with other vegetable oils without any problems. It is estimated that about 50% of supermarket products contain palm oil, from foods and soaps to cosmetic commodities (Teoh 2010: 4; CBI

Table 1: World Production of Vegetable Oils (Million Tonnes)

Type of Vegetable Oil	1980	1990	2000	2009
Palm Oil	4.5	11.0	21.9	45.1
Soybean Oil	13.4	16.1	25.6	35.9
Rapeseed Oil	3.5	8.2	14.5	21.5
Sunflower Oil	5.0	7.9	9.7	13.0
Palm Kernel Oil	0.6	1.5	2.7	5.2
Other Vegetable Oils	12.8	16.1	18.1	12.0
Total Vegetable Oils	39.8	60.8	92.5	132.8

Source: Teoh 2010: 7

Table 2: International Prices (US\$ per Ton) / Annual (Oct/Sep)

	Soybean Oil	Palm Oil
2003/04	632	488
2004/05	545	419
2005/06	572	451
2006/07	772	684
2007/08	1,325	1,050
2008/09	849	682
August 2010	1,002	901

Source: FAO 2010b: 6

2009a: 39). Another reason for its popularity is its price: Palm oil is cheaper than its main market competitors. (Teoh 2010: 7; World Bank 2010b: 7; Table 2).

1.3 Revenues

The output per hectare, however, fluctuates greatly in respect to the intensity of cultivation. The quality and age of the trees, the maintenance of the plantations as well as the availability of fertilisers and spraying materials decide the yields of the harvest. In Indonesia 17 tonnes of palm fruit can be harvested, in Malaysia the figure is 21 tonnes (GTZ 2010: 10).

From this fruit, palm oil is produced. The two main growing countries have oil yields of 4.1 tonnes per hectare (Malaysia) and 3.5 tonnes per hectare (Indonesia). If one uses good cultivation methods, up to 8 tonnes of vegetable oil can be produced from the harvest of one hectare, which is well above the competing plants. The low price of palm oil is mainly due to this fact (Teoh 2010: 25; USDA 2009; Table 3). Another reason is, because the crop grows in tropical countries with low labour standards, cheap agricultural labour is readily available.

Table 3: Yields of Oil Plants (Kilogram per Hectare)

Oil Palm	3,500-8,000
Rapeseed	1,000
Groundnut	980
Sunflower	800
Coconut	395
Soya Bean	375
Cotton Seed	173
Sesame Seed	159

Source: CIFOR 2009: 11/ USDA 2009

1.4 Agricultural areas

Oil palms only grow on 5% of the area on which vegetable oils are cultivated (2008/2009). Due to high returns, 38% of the global harvest of vegetable oils is cultivated on this 5% of the total area (Nestle 2010: Table 7). Today oil palms grow only in about 1% of the world's agricultural areas (Teoh 2010: 18).

More than half of these areas are situated in Malaysia and Indonesia (Table 4). However one has to keep in mind that data about these areas differs drastically, depending on its origin. The different declarations of areas show how intransparent the market is.

The World Bank assumes that in 2008 up to 14.6 million hectares of land were planted with oil palms; including 5 million in Indonesia.¹

The Malaysian Palm Oil Board wrote to the author:

„For your information, total planted area for oil palm in Malaysia as of December 2009 is 4.69 million hectares.“²

¹ In the same study, the World Bank claims (page 14) that by the end of 2007, 6.3 million hectares had been planted with oil palms in Indonesia.

² Norihan Husain, Head of Industry Development Unit - Economics and Industry Development Division of the Malaysian Palm Oil Board, Mail of 15.9.2010

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Yields per hectare are higher in Malaysia than in Indonesia, therefore the Indonesian area planted with oil palms is at least 5 million hectares. Additionally, there are plantations which had already been planted with oil palms, but have not yet been harvested because the trees are too young (see page 18).

In Indonesia and Malaysia much more palm fruit per hectare is harvested than in African producing countries. Thus, in 2008 the cultivated areas in Nigeria were with 3.2 million hectares almost as big as in Malaysia, but the yield was less than 15% of Malaysia's harvest. (Table 4; see Indonesia Chapter 3).

1.5 Small farmers and multinational companies

Oil palms are cultivated by different participants. In 2008 there were about 1.5 million small oil palm farmers in Indonesia. On average their plantations covered two hectares. The small farmers work on roughly one third of the cultivated areas (World Bank 2010: 14).

Ten state owned companies were operating 176 plantations with an average size of 3 900 hectares. 814 private companies ran 1 006 plantations, averaging 3 500 hectares (USDA 2009). Some of the big companies own more than 200 000 hectares (World Bank 2010: 23).

There are several conglomerates operating in the palm oil sector, which have several subsidiaries and also factories for fruit manufacturing.

One of the biggest companies on the market is Golden Agri Resources (GAR), which has 125 subsidiaries, of which 53 are busy in the palm oil business (Greenpeace 2010b: 1). According to the company, Golden Agri-Resources Ltd is the second largest farmer of oil palms in the world (433 200 hectares). It operates more than 40 processing companies.³

Table 4: Land Use for Palm Oil Production (2008)

	Thousands of Hectare	Yields of Palm Fruit (Tonnes per Hectare)
Indonesia	5,000	17.0
Malaysia	3,900	21.3
Nigeria	3,200	2.7
Thailand	450	17.5
Guinea	310	2.7
Ghana	300	6.3
Cote d'Ivoire	215	5.6
DR Congo	175	6.5
Columbia	165	19.4
Ecuador	135	15.6
World	14,586	n/a

Source: World Bank 2010: 116

The main owner of the company, which is listed at the stock exchange in Singapore, is the Widjaja family, including Eka Tjipta Widjaja, who is one of the richest men in Indonesia, owning 2.4 billion US\$ (Forbes 2009).

The company itself is only part of the substantially larger Sinar Mas Group (Profundo 2009: 6). This company owns, among others, PT SMART as well as Asia Pulp and Paper (APP), Indonesia's largest paper manufacturers (Greenpeace 2010a: 8).

Another large group is Wilmar International. Its subsidiaries are farming oil plantations with a size of 235 000 hectares, 75% of which are in Indonesia. The company does not only own plantations, but is, in its own words, the largest palm oil producer in the world.⁴

The company is based in Singapore and the two founders belong to a group of the richest persons in Singapore

³ Source: Website of Golden Agri Resources (www.goldenagri.com.sg), 15.08.2010.

⁴ Source: Website of Wilmar, http://www.wilmar-international.com/about_index.htm, 15.11.2010.

(Kuok Khoon Hong) and Indonesia (Martua Sitorus). Martua Sitorus's wealth is estimated to be 3 billion US\$ (Forbes 2010).

Anthoni Salim, president of the Salim Group, is also one of the richest persons in Indonesia. The Salim Group is the biggest diversified conglomerate in the country. PT Indofood Sukses Makmur Tbk, a subsidiary, is the biggest food company in Indonesia. The Salim Group runs 406 519 hectares, of which 193 000 hectares are planted with oil palms.⁵

Other important companies in the palm oil sector are the Bakrie Sumatera Plantations, the Medco Group, the Musim Mas Group, First Resources, the Kayu Lapis Indonesia Group and the Rajawali Group. All of them operate big plantations and their owners belong to the richest group of persons in Indonesia.

This wealth goes hand in hand with connections to the politically powerful people in Indonesia. This gives the companies a major influence in the enforcement of their interests. In many regions NGOs have documented that the palm oil companies assert their interests in violation of existing laws and without regard to the local population (Colchester et al. 2006; FoE/I 2009; EIA/ Telepak 2009).

Companies that violate of the law are often supported by security forces. There are repeating allegations of corruption against political, administrative and law enforcement authorities (Marti 2008). On the corruption index of the NGO Transparency International, Indonesia, with 2.8 out of ten possible points, is far back on the list, holding place 110 of the 178 countries listed (TI 2010 262-267; TI 2010: 3).

⁵ Source: Website of Indofood (www.indofood.com), 15.08.2010.

2 Production, trade and use

2.1 Producers

As Indonesia and Malaysia own huge palm oil plantations with high yields, these two countries dominate the market and produce about 90% of the world crop. Since the beginning of the 1990s, Indonesia's annual increases of production were much more intense than those of Malaysia, so during the harvesting season 2005/06 the country rose to become the world's largest producer (Table 5).

Besides palm oil, which is extracted from the pulp of the fruit, a considerable amount of palm kernel oil, which is derived from the seeds of the fruit, reaches the market. This market is dominated by Indonesia and Malaysia as well (Table 6)

2.2 Consumers

The worldwide increase of the consumption of vegetable oils has a massive effect on the palm oil market. In the period 2006 to 2011 (prediction), India shows the highest growth of consumption of palm oil (plus 4 million tonnes) and is responsible for more than a third of the world's increase, consequently displacing China as the largest consumer. However, consumption has grown considerably in China and the EU as well (one million tonnes each). The EU contingent on consumption amounts to about 11% of the global harvest (Table 7). 70% of palm oil is used in Asia (Nestle 2010: Table 4).

2.3 Exporting countries

As could have been expected from the concentration of production in these two countries and despite considerable internal consumption, more than 90% of the world's palm oil exports can be allotted to Malaysia and Indonesia.

The enormous increase in the exports of Indonesia is remarkable; it doubled between 2003 and 2010 and, according to predictions (Table 8), will continue to rise.

2.4 Importing countries

The import market is dominated by only a few countries. China, India, the EU and Pakistan are responsible for more than half of the imports. The increase of imports to China and India had the most massive influence on the world market, because the above mentioned growth of palm oil consumption was completely attended to by imports.

The imports of palm oil of these two countries were with 7.6 and 6.3 million tonnes (2010/2011) much higher than that of the EU with 5.4 million tonnes. In addition, since 2003, imports of both countries have risen faster than that of the EU (Table 7 and 9).

There is no exact information about the target countries of Indonesia's exports. However, certain conclusions are possible from detailed data, published by Malaysia.

Table 5: Palm Oil: World Supply and Producer Countries (Thousand Tonnes)

	1982-84	1992-94	2003/04	2006/07	2009/10	2010/11
Indonesia	1,106	3,800	11,500	16,600	21,000	23,000
Malaysia	3,440	7,332	13,420	15,290	17,763	18,600
Thailand	52	268	840	1,170	1,345	1,500
Nigeria	540	607	780	810	850	850
Colombia	114	340	614	755	770	820
World	6,204	13,859	29,586	37,329	44,818	47,912

Source: Töpfer 2009: 34 / USDA 2010a: Table 11

Table 6: Palm Kernel Oil (Thousand Tonnes)

	1982-84	1992-94	2003/04	2006/07	2009/10
Indonesia	88	442	1,411	1,875	2,300
Malaysia	416	980	1,594	1,815	2,140
World	792	1,798	3,672	4,478	5,305

Source: USDA according to Töpfer 2009: 35

Tabelle 7: Palm Oil: Domestic Consumption (Thousand Tonnes)

	2006/07	2007/08	2008/09	2009/10 ^a	2010/11 ^a
India	3,671	5,065	6,475	6,953	7,750
China	5,138	5,222	5,618	5,930	6,277
EU	4,256	4,761	4,993	5,024	5,388
Indonesia	4,171	4,653	4,677	4,865	5,015
Malaysia	3,109	3,170	3,229	3,562	3,800
Pakistan	1,661	2,027	1,995	2,130	2,250
Thailand	742	873	1,229	1,360	1,380
Nigeria	1,155	1,190	1,208	1,232	1,240
United States	663	948	959	942	1,058
Bangladesh	880	796	700	880	880
Egypt	595	560	660	760	815
Colombia	483	515	556	665	692
Iran	400	538	639	599	619
Japan	521	551	531	581	580
Vietnam	415	516	500	520	560
Other	8,124	8,454	8,504	8,888	9,303
Total	35,985	39,839	42,473	44,891	47,607

^aEstimates

Source: USDA 2010: Table 11

Tabelle 8: Palm Oil: Exports (Thousand Tonnes)

	1982-84	1992-94	2003/04	2006/07	2009/10 ^a	2010/11 ^a
Indonesia	435	1,815	7,856	11,419	16,200	18,000
Malaysia	2,981	6,291	11,602	12,900	15,530	16,100
Benin	n/a	n/a	n/a	273	450	480
Papua New Guinea	n/a	n/a	n/a	357	435	426
Thailand	n/a	n/a	n/a	283	225	312
World	4,536	10,113	21,610	27,538	34,992	37,440

^a Estimates

Source: Töpfer 2009: 36 / USDA 2010 und 2010a: both Table 11

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The Association of Malaysian Producers claims that in 2009 Malaysia was exporting 4 million tonnes to China, 1.9 million tonnes to the EU, 1.76 million tonnes to Pakistan and 1.35 million tonnes to India (MPOB 2010: 1). Considering the import figures of the main consumer countries of palm oil, shown in the table below, and taking into account that the great majority of non-Malaysian imports derive from Indonesia, one

might draw tendentious conclusions about the recipient countries of Indonesia. The comparability is limited, as the Malaysian statistics cover the year 2009 while the above mentioned figures concern the business year 2009/10.

Excluding the imports from Malaysia, India buys 5 million tonnes from other countries. The EU (3 million

Table 9: Palm Oil: Imports (Thousand Tonnes)

	1982-84	1992-94	2003/04	2006/07	2009/10 ^a	2010/11 ^a
India	628	237	3,486	3,650	6,603	7,600
China	32	1,296	3,710	5,139	5,760	6,250
EU-27	840 ^b	1,668 ^c	3,371	4,332	5,100	5,400
Pakistan	381	1,051	1,297	1,618	2,200	2,300
Malaysia	n/a	n/a	n/a	403	1,250	1,250
United States	n/a	n/a	n/a	702	975	1,025
Bangladesh	n/a	n/a	n/a	898	900	900
Egypt	n/a	n/a	n/a	768	850	850
Iran	n/a	n/a	n/a	419	600	620
Japan	n/a	n/a	n/a	516	581	580
Other	n/a	n/a	n/a	8,295	9,570	9,995
World	4,336	9,489	21,733	26,740	34,389	36,770

^a Estimates, ^b EU-10, ^c EU-15

Source: Töpfer 2009: 38 / USDAA 2010: Table 11

Table 10: EU-27 Trade - Imports from Third Countries (Thousand Tonnes)

	2001	2002	2003	2004	2005	2006	2007	2008
Palm Oil	2,849	2,973	2,995	3,409	4,028	4,272	4,407	4,937
Source of Palm Oil								
Indonesia	1,101	1,310	1,108	1,382	1,557	1,809	1,652	2,119
Malaysia	1,328	1,242	1,426	1,503	1,760	1,906	1,961	1,918
Papua New Guinea	327	326	367	347	379	359	377	407
Colombia	27	44	64	125	186	137	227	213
Ivory Coast	0	7	0	12	29	8	0	37
Palm Kernel Oil	465	585	592	629	623	592	639	621
Source of Kernel Oil								
Malaysia	89	111	109	90	133	123	126	101
Indonesia	345	445	431	482	427	427	431	424
Total Oils	4,775	5,380	5,396	5,765	6,983	8,799	8,831	9,125

Source: Töpfer 2009: 40

tonnes) and China (1.8 million tonnes) also import vast amounts of palm oil from other countries than Malaysia. These imports are mainly from Indonesia.

2.5 Imports of the EU

Detailed information about the EU-imports is available until 2008. Roughly half of the imports of vegetable oils consist of palm oil, 80% of which is supplied by Malaysia and Indonesia. The increases in imports of the last few years originate mainly from Indonesia (Table 10).

2.6 Use

The consumption of palm oil, including the production of fuels, can be divided into the use for nutrition and the use for industry. Globally, the share of industrial consumption of palm oil is around 22% (2010/11); 78% is used for food (Table 11).

Table 11: Use of Palm Oil (Million Tonnes)

	Industrial	Food Use
1997/98	2.69	13.82
1998/99	2.81	14.89
1999/00	2.80	17.40
2000/01	3.29	20.28
2001/02	3.70	20.10
2002/03	4.70	22.00
2003/04	5.44	23.08
2004/05	6.78	24.98
2005/06	7.72	25.83
2006/07	8.57	26.74
2007/08	9.22	29.91
2008/09	9.23	32.46
2009/10^a	9.76	34.29
2010/11^a	10.45	36.23
^a Estimates		

Source: USDA 2010a: Table 19

Table 12: Use of Palm Oil

	2006/07	2007/08	2008/09	2009/10 ^a	2010/11 ^a
South East Asia					
Domestic consumption	8,947	9,742	10,194	10,885	11,353
of which food use	5,549	6,197	6,579	6,988	7,253
India					
Domestic consumption	3,671	5,065	6,475	6,953	7,750
of which food use	3,175	4,585	6,150	6,600	7,350
China					
Domestic consumption	5,138	5,222	5,618	5,930	6,277
of which food use	3,188	3,222	3,568	3,880	4,117
European Union (27)					
Domestic consumption	4,256	4,761	4,993	5,024	5,388
of which food use	2,656	2,720	2,968	2,897	2,988
Middle East^c					
Domestic consumption	1,552	1,803	1,868	1,944	2,080
of which food use	1,392	1,657	1,723	1,789	1,912
^a Estimates					
^b This includes Brunei, Burma, Cambodia, Indonesia, Laos, Malaysia, Philippines, Singapore, Thailand and Vietnam.					
^c This includes Bahrain, Gaza Strip, Iran, Iraq, Israel, Jordan, Kuwait, Lebanon, Oman, Qatar, Saudi Arabia, Syria, Turkey, United Arab Emirates, West Banks and Yemen..					

Source: USDA 2010a: Table 24-28

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If one adds palm kernel oil which is used to a large extent in industry, the emphasis shifts slightly. In that case the share of food production in relation to the total consumption of oils from palm fruit is 71%, followed by consumer goods (soaps, cosmetics, candles etc.) at 24% and the energetic use at 5% (Agentur für Erneuerbare Energie e.V. 2010: 20).

As far as the use of palm oil for nutrition and industrial purposes is concerned, there are differences in the contingents of the most important consumer regions and countries.

In the EU the share of industrial consumption is, with about 45%, well above the average of the world market. China and South East Asia, too, have a share of about 35%. In India and the Middle East palm oil is nearly entirely used for nutrition (Table 12).

2.7 German market

In Germany, too, various branches of the economy use vegetable oils:

- Domestic application: cooking oil and vegetable fats;
- Nutrition industry: margarine, bakery products, confectionery, nutriment, delicatessen, mayonnaise;
- Chemical industry: paints, varnish, soaps, detergents, pharmaceutical products, hydraulic and lubricant oils, bio fuels (<http://www.ovid-verband.de/unsere-branchen/daten-und-fakten/>).

Data on the German market for vegetable oils differ strongly. One of the reasons is the fact that many statistics do not enlist rapeseed oil, because this is used to a large extent for industry or for fuels.

Statistics show the importance of rapeseed oil. More than half of the oil processed in Germany is produced from rape, which is largely cultivated in Germany as well (Table 13).

Table 13: Use of Vegetable Oil in Germany (2008)

	Million Tonnes	Percent
Rapeseed Oil	3.2	57%
Palm Oil	0.9	16%
Soya Oil	0.6	10%
Sunflower Oil	0.3	5%
Palm Kernel Oil	0.3	5%
Coconut Oil	0.2	4%
Other Oils	0.2	3%
Total	5.6	100%

Source: <http://www.ovid-verband.de/unsere-branchen/daten-und-fakten/>

Palm oil is very important among the imported oils, and re-exports do not alter this relevance. All in all, statistics do not differ here: the consumption, and thus the import of palm oil into Germany, amounts to about 0.9 million tonnes per annum with an upward trend (Table 14).

In 2007, without considering rapeseed oil, the share of palm oil of the total consumption of vegetable oils in Germany was 45%. With an annual rise of 15%, the consumption of palm oil has grown much more quickly than that of the other oils (CBI 2009: 2 / Table 15). Because of China's and India's already much higher and

Table 14: German Market: Vegetable Oils and Fats (2008)

	Import	Export
Palm Oil	1.1 million t	0.2 million t
Rapeseed Oil	0.5 million t	0.5 million t
Palm Kernel Oil	0.3 million t	n/a
Sunflower Oil	0.3 million t	n/a
Soya Oil	0.2 million t	0.3 million t
Coconut Oil	0.2 million t	n/a
Total	2.8 million t	1.2 million t

Source: <http://www.ovid-verband.de/unsere-branchen/daten-und-fakten/>

Table 15: German Industrial Demand for Vegetable Oils and Fats, 2003-2007 (Thousand Tonnes)

	2003	2004	2005	2006	2007	Average annual
Palm Oil	509	622	653	784	891	15%
Coconut, Palm Kernel, Babassu Oil	601	637	664	664	648	2%
Sunflower & Safflower Oil	382	393	338	402	368	- 1%
Olive Oil	39	46	47	49	55	9%
Groundnut Oil	13	9	11	18	14	1%
Sesame Oil	9	12	12	11	11	5%
Maize Oil	23	12	15	21	10	- 19%
Total Vegetable Oils and Fats	1,576	1,730	1,740	1,949	1,996	6%

Source: FAOSTAT according to CBI 2009: 2

rapidly growing imports, the German growth rates do not mean that the country is extending its share of the world market, which is 2% at the moment.

Due to statistically non-divided exports, the range of use of consumption can only be classified in respect to the home market. Subtracting exports (41%) of the total consumption of vegetable oil in 2007, only 59% of the oil was used in the domestic market.

It can be calculated that on the domestic market, the share of use in the chemical industry was about 15% and around 85% for the food sector (Table 16).

Table 16: Market Segmentation for Vegetable Oils and Fats in Germany (% of Total Production)

Industrial food processing	19%
Margarine	22%
Household consumption	7%
Catering sector	2%
Oleo chemicals	9%
Export	41%

Source: Verband Deutscher Ölmühlen e.V. (2007) according to: CBI 2009: 3

3 Development of palm oil areas in Indonesia

3.1 Fast growth

In Indonesia the areas on which oil palms are cultivated have increased rapidly over the last decades and this growth has gathered momentum since the millennium.

Between 2000 and 2009 another 340 000 hectares were added annually and the harvest grew by 1.25 million tonnes per annum. In the same period the global demand for palm oil grew by 2.2 million tonnes per annum – which was covered by 57% by Indonesia (USDA 2009; Table 17).

Table 17: Oil Palm: Yearly Increase of Cultivated Area

1970-1979	14,000 hectares
1980-1989	71,000 hectares
1990-1999	293,000 hectares
2000-2009	340,000 hectares

Source: USDA 2009

One reason for the rapid growth of the oil palm areas in Indonesia is to be seen in some amendments in law facilitating the set-up of new plantations and easing the access of Indonesian and foreign companies and individuals to property.

From 2004 onwards the companies in some provinces were allowed to cultivate up to 100.000 hectares instead of 20.000 hectares and the permitted economic use was extended up to 95 years (Marti 2008: 27-32). Between 2000 and 2009 alone, land licences for over 10 million hectares were awarded. Companies were stockpiling at least 3.3 million hectares (so called „land banks“), but do not utilise them at present (USDA 2009).

70% of the plantations are on previously forested land (4.2 mill. hectares), 25% even on former peat banks

(World Bank 2010: 14). In the last few years, the proportion of peat bogs in the new plantations has risen to not less than 33%; in the province Riau on Sumatra even up to 80% (Edwards/Mulligan/Marelli 2010: 141).

Varied specification of acreage

Information about the cultivated areas differs considerably. Some observers of the market assume about 5.35 million hectares for the year 2009 (Teoh 2010: 5); other sources claim 7 million hectares (CAO 2009: 20). Surveys of the World Bank assume up to 6.3 million hectares in 2007 (World Bank 2010: 14).

Besides badly controlled statistics, one reason for the differences might be that productive areas are being counted. The United States Department of Agriculture assumes that in 2009 about 7.3 million hectares were planted with palm trees, of which some 2.2 million hectares had young plants, which will yield fruit in later years (USDA 2009). At the end of 2010, NGOs assumed that even 9.2 million hectares were planted with oil palms (SPKS 2010).

3.2 Growing plantations

Despite all the debates about the sustainability of the production of oil palms, there is no indication that the growth of the plantations will slow down in the near future. The only reason for a considerable decrease of growth would be a clear drop in the price of palm oil. However, in the light of rising demand, such a drop does not seem to be likely. Between 1999 and 2006 the price of a ton of palm oil was close to the cost of production of an estimated 400 US\$ per ton, presumably leading to low profit margins.

The rapid rise of prices since 2007 to triple short-term production costs has created extensive incentives for the creation of further plantations. Even the slump in prices in the course of the economic crisis in the autumn of 2008 to just less than 700 US\$ per ton, did not stop short of reaching the pre-crisis price level. In the spring of 2010 prices were again higher than the costs (USDA 2009; Table 2).

This is a strong incentive for the producers – no matter whether small farmers or multinational companies – to boost their investments in palm oil.

Government pushes expansion

In 2004 the government of Indonesia announced that a total of about 32 million hectares of the country's agricultural land was suitable for oil palm production. In different regions, it sees a great potential to extend the areas planted with oil palm trees substantially. Scenarios of the United States Department of Agriculture assume about 24 million hectares of expansion (Table 18).

Table 18: Indonesia: Potential for Further Expansion of Plantation per Region

Kalimantan	10.3 million hectare
Sumatra	7.2 million hectare
Western Papua	6.3 million hectare
Sulawesi	0.37 million hectare
Java	0.29 million hectare

Source: USDA 2009

The World Bank estimates that theoretically 20 million hectares exist, which are not (anymore) forested and said to be unproductive (World Bank 2010: 14-15).

4 Predictions for the extension of cultivation

The demand for palm oil will continue to rise in the next few years. One could see the growth of the world population and the rising income in many developing and emerging nations as initial factors, which will lead to a growing demand for oils and fats. Another important aspect is the demand for bio fuels (FAO 2010: 1).

4.1 The need for food increases

The annual consumption of edible oils and fats for the EU-27 countries is 59.3 kg per head, in the USA 51.7 kg respectively (2008/09); the global average of consumption is 23.8 kg per person. Nowadays, developing countries like India (13.4 kg), Pakistan (19.9 kg) or Nigeria (12.5 kg) consume much less, however consumption will increase.

Furthermore, demand for palm oil will rise because at present many people use rather inferior oils and will change to superior alternatives as soon as possible. Projections until 2020, assuming a growth of population of 11.6% and an increase in income of 5%, predict an additional global demand for vegetable oils of 27.7 million tonnes.

To cover this, palm oil would have to be produced on another 6.3 million hectares of land – or soya oil on 42 million hectares (Teoh 2010: 9-10).

Because of the low price, one can assume that a significant part of this rising demand for vegetable oil is covered by palm oil. If the trend of recent years continued, most of the additional supply would come from Indonesia. This could result in several million hectares of new plantations being laid out just for the food sector.

The demand for palm oil will also rise due to the fact that more and more other vegetable oils will be made into fuel, and will no longer be used for food. This also applies to the German-driven consumption of diesel from rape-oil:

„Palm oil is a key alternative to rapeseed for the food industry, so EU imports are likely to increase once the latter is diverted to bio fuel production.“ (IFPRI 2010: 26)

The expanded use of soya oil by Argentina and Brazil to produce bio diesel increases the demand for palm oil (USDA 2010a:1).

4.2 Increasing demand for fuel

In 2008 fuel-producing plants were cultivated globally on an area of 36 million hectares. Of these 8.3 million hectares were located in the EU (mainly rapeseed), 7.5 million hectares in the USA (mainly corn) and 6.4 million hectares in Latin America (mainly sugar cane). Thus, the areas have doubled since 2004 (World Bank 2010: 8).

15% of the world wide production of vegetable oils are used as fuels. Since 2003/2004 the quantity consumed rose from under two million tonnes to around 18 million tonnes in the harvest year 2009/2010, of which 1.8 million tonnes were palm oil.

Although this is still a relatively small part of the world crop of palm oil of about 50 million tonnes; five years previously, no palm oil at all was processed into fuels (Nestle 2010: Table 1-2).

The International Food Policy Institute (IFPRI) has written a study for the Directorate General for Trade of the European Commission about the future use of fuels obtained from vegetables. In this connection, the influence of the EU policy in respect to bio fuels on the world market, was calculated in various scenarios.

The foundation for the calculation is the analysis, which political decisions were made globally about the blending of bio fuels with ordinary fuels. The decisions about the highest rate of blending of bio diesel which, among others, could be used to create palm oil are available for Indonesia and Malaysia (Table 19). The EU wants to meet 10% of its fuel demand with biofuels by 2020 (IFPRI 2010: 10).

Table 19: Current Official Targets on Share of Bio fuel in Total Road-Fuel Consumption

Countries	Official Targets	Year	Products
Indi	5%	in near future	Biofuels
Japan	500 million litres	2010	
China	15%	2020	total renewable fuels
Thailand	2%	2010	Biofuels
Brazil	20-25%	2006	Ethanol
	40% increase in production	2005-2010	Ethanol
	2%	2008	Biodiesel
	5%	2013	Biodiesel
Indonesia	2% of total fuels	2010	Biodiesel (Palm Oil)
	5% of total fuels	2025	Biodiesel (Palm Oil)
Malaysia	5%	in near future	Biodiesel (Palm Oil)
United States	2.78%	2006	Ethanol
Canada	3.5%	2010	Ethanol

Source: IFPRI 2010: 114

If today's predictions are correct, the consumption of bio diesel between 2010 and 2020 could nearly double (and the one of Ethanol treble).

The largest part of the increases will be allotted to Indonesia/Malaysia (plus 3.37 million tonnes), the EU27 (plus 2.8 million tonnes) and the USA (plus 2.06 million tonnes) (Table 20).

The calculations of the IFPRI about the demand in the EU are based on controversial assumptions. Critics presume a stronger increase in the use of bio fuels than the IFPRI believes (Transport & Environment 2010: Table 9).

If all the present global plans for admixing bio diesel were realised, the requirement for new areas would grow further. To cover the EU's demand alone, another four million hectares of palm trees would have to be cultivated; a further million would be needed for China (Teoh 2010: 10).

Whether this in fact will happen, is an open question. There is a general debate in Europe about whether the mixing of bio diesel from palm oil is at all desirable from a climate point of view (CBI 2009a: 11; see Chapter 5).

4.3 Overall view of growing demand

Several studies have concluded that the demand for palm oil will increase. According to a forecast, the demand of India will double by 2019 to around 15 million tonnes and the one of China even triple to about 25 million tonnes. Overall, production could increase from under 50 million tonnes to nearly 80 million tonnes (Verburg 2010).

Another study concludes that between 2009 and 2020 the palm oil production in Indonesia will rise from 21 million tonnes to about 31 million tonnes. For Malaysia an increase from 18 million tonnes to 24 million tonnes is expected. In part these increases can only be achieved through higher yields per hectare. Thus the production areas have to grow (JRC 2010:41-43 und 59).

The IFPRI-Institute is of the same opinion, assuming a significant rise in demand. To meet this, the harvest of palm fruit is to rise until 2020 by 120 million tonnes to 250 million tonnes. Of this increase, solely 90 million tonnes can be allotted to Indonesia and Malaysia. The rest is nearly totally (15 million tonnes) contributed by Sub-Saharan-Africa (Table 21).

Table 20: Bio Fuel Production (Million Tonnes)

	2004	2008	2010	2012	2015	2020
Bio Diesel						
Brazil	0.33	0.32	0.32	0.32	0.34	0.36
China	0.01	0.02	0.03	0.06	0.12	0.23
EU27	5.35	6.33	7.44	7.48	7.73	8.15
IndoMalay	0.21	0.47	0.63	1.44	2.11	3.58
LAC	0.13	0.21	0.25	0.28	0.33	0.45
RoOECD	0.06	0.11	0.11	1.56	2.21	3.24
United States	1.40	1.79	1.72	1.99	2.67	3.46
World	7.50	9.24	10.51	13.14	15.51	19.46
Ethanol						
Brazil	11.38	11.91	14.55	18.00	21.96	28.51
CAMCarib	0.60	0.70	2.46	3.22	4.98	7.25
China	0.93	2.79	3.67	3.57	5.67	10.81
EU27	1.09	1.05	1.02	0.99	0.95	0.84
LAC	0.16	0.25	0.30	0.35	0.47	0.69
RoOECD	0.45	0.62	0.64	1.96	3.49	5.66
RoW	0.25	0.54	0.64	0.76	0.99	1.51
United States	12.39	12.77	19.14	22.21	26.57	29.10
World	27.26	30.64	42.43	51.07	65.08	84.38

Source: IFPRI 2010: Table B10

According to the figures of the IFPRI, the share of the global palm fruit harvest used for the production of bio fuels will still be relatively small despite an explicit rise in demand for the year 2020 (Table 22).

If the forecasts came true, the amount of oil palm fruits used for the production of bio fuels would rise in Indonesia and Malaysia from 2.2 million tonnes (2008) to 17 million tonnes (2020).

Table 21: Palm Fruit: Crop Production (Thousand Tonnes)

	2008	2020
Indonesia/Malaysia	160,167	252,546
Sub Saharan Africa	20,118	35,826
Central America / Carib. Countr.	3,161	4,796
Brazil	1,218	3,117
Other Latin America Countries	6,324	9,543
China	1,740	3,612
Rest of OECD	2,058	2,498
Rest of the World	7,318	10,757
World	202,104	322,696

Source: IFPRI 2010: Table S6

In the same period the total harvest will go up from 160 million tonnes to 252 million tonnes. This means that the share of land acreage used for bio

Table 22: Crop Consumption for Bio Fuel Production (Thousand Tonnes)

	2008	2020
EU27	1,935	3,880
IndoMalay	2,224	17,042
World	4,159	20,922

Source: IFPRI 2010: Table S6b

Table 23: Palm Fruit: Share of Land Acreage Used for Bio Fuel Production (Total Area in Thousand Hectares)

	Total Land Area 2008	Share for Bio Fuel 2008	Share for Bio Fuel 2020
Brazil	38		
CAMCarib	124	0.00%	0.02%
China	44	4.42%	1.59%
IndoMalay	4,858	1.96%	7.07%
LAC	257		
RoOECD	636	5.42%	5.50%
RoW	223	0.00%	0.00%
SSA	2,402	3.11%	7.47%
World	8,582	2.41%	6.52%

Source: IFPRI 2010: Table S12b

fuels from oil palms in relation to the total area of plantations will rise from currently just below 2% to 7% (Table 23).

According to recent figures, the imports of the EU will not have a large influence on this development, as the imports of bio fuels from Indonesia and Malaysia should

Tabelle 24: Bio Fuel Imports for the European Union (Millions of Tonnes)

	2008	2020
Bio Diesel		
Brazil	0.00	0.00
China	0.00	0.00
IndoMalay	0.12	0.44
LAC	0.07	0.19
RoOECD	0.00	0.00
United States	1.56	0.00
World	1.76	0.64
Ethanol		
Brazil	0.57	0.92
CAMCarib	0.03	0.04
United States	0.01	0.00
World	0.62	0.96

Source: IFPRI 2010: Table S2b

just rise by a relatively low extent to 440 000 tonnes until 2020 (Table 24).

4.4 Continuing Deforestation

According to current prognoses the primary forests of Indonesia and Malaysia will diminish between 2010 and 2020 by about 150 000 square kilometres, thus shrinking by more than 15%. This equals 15 million hectares (Table 25).

It is not foreseeable at present how many of these forest areas will be occupied or even replaced by palm oil plantations. The forecasts differ to a large extent. The IFPRI-study predicts an increase of just 500 000 hectares for Indonesia and Malaysia and a global growth of new plantations of about two million hectares (IFPRI 2010: Table S23).

Other predictions assume much higher figures and regard a global increase of ten million hectares of new plantations as being not unrealistic (Teoh 2010: 9-10). The pressure on forests is increased by the willingness of the Indonesian government to allocate forest areas, which may not be cleared for other uses, for plantations. Up to 12 million hectares, which were earmarked for palm oil, were cleared but not planted (World Bank 2010: 14).

Table 25: Indonesia and Malaysia: Land Use (Million km²)

	2004	2008	2010	2012	2015	2020
Pasture	0.03	0.03	0.03	0.03	0.03	0.03
Savannah, Grassland	0.08	0.09	0.10	0.11	0.12	0.14
Cropland	0.33	0.33	0.33	0.34	0.34	0.34
Other	0.47	0.52	0.55	0.57	0.60	0.64
Total	2.03	2.03	2.03	2.03	2.03	2.03
Forest Managed	0.06	0.07	0.06	0.06	0.06	0.06
Forest Primary	1.05	0.98	0.95	0.92	0.87	0.80
Forest Total	1.11	1.05	1.01	0.98	0.94	0.87

Source: IFPRI 2010: Table B11

Alternatives to Indonesia?

Chiefly Brazil and the DR Congo have access to considerable areas on which palm trees could be cultivated. According to recent predictions and despite possible extensive growth, they are far from reaching the areas of Malaysia and Indonesia (Butler/Laurance 2009: 3). The dominance of these two countries on the palm oil market should thus be sustained for a long time.

Significant crop increases possible

Even without newly planted areas, the quantities of harvest could rise significantly in Indonesia, if the rates of return per hectare, which are a mere 3.5 tonnes per hectare in Indonesia (Malaysia: 4.1 tonnes per hectare), were to increase. Experts assume that on the plantations of small producers, by breeding new oil palms, output could rise by 47% to five tonnes per hectare, even without using fertilisers. There is also a considerable growth potential on the large plantations, as the average amount of harvest is just 4.1 tonnes per hectare, while well-run companies reach up to eight tonnes. To increase the returns, the plantations have to be managed in a better way (USDA 2009; Teoh 2010: 25).

5 Consequences of political requirements

Political debates will have a decisive influence on the use of bio fuels from palm oil. Changes of parameters for the use of plants for fuel production and for the use of the land, and here specially forest areas, will have a direct influence on the markets. At present it is not clear what the future frameworks will look like.

Brake on bio fuels?

It is controversial which impact the increase in the use of palm oil for energy production will have on the global climate. In respect to the combustion of bio diesel from palm oil, the direct emissions of carbon dioxide are not greater than the amount of CO₂ that the plant has absorbed before. However, it has not been established how many climate-affecting gases arise for the cultivation, fertilization, harvesting, pressing, transporting and processing. Some studies have concluded that energy from palm oil has explicitly lower greenhouse gas emissions than fossil fuels (IFPRI 2010: 64-66). Other analyses, however, only see a positive climate balance, if the oil palm trees were grown on previously unused and non-forested land.

In the last three years a large number of studies have appeared, which deal with the indirect changes of land use that are triggered by the expansion of the bio diesel production. Older studies are accused of not adequately incorporating these effects into their calculations of the climate impact of agro-fuels.⁶

Here indirect effects are obvious: with each additional litre of vegetable oil that is used as a source of energy, the farming area has to grow and the cultivation of other food and agricultural products will displace carbon-rich ecosystems (such as forests, peat soils, etc.). A number of studies have thus reached the conclusion that the use

of palm oil as an energy source will have adverse effects on the climate (Öko-Institut 2010: 17; Bowyer 2010).

With the "Directive for Renewable Energy" the EU has issued parameters for the climate effect of bio fuels. The Directive requires biofuels to achieve a minimum 35% reduction in emissions compared to fossil fuels by 2010 and this will be raised to 60% by 2017. There are also requirements relating to emissions from indirect land use change (iLUC) arising from demand for biofuels. On the reductions in emissions from palm-based biofuels, the EU has ascribed to palm oil a 'default value' of 19% reduction compared to fossil fuel and a 'typical' GHG savings value of 36%" (Teoh 2010: 29).

There is a controversial discussion from a legal point of view, whether the EU-directive can be kept in its present form. Critics regard the parameters as leading to a preferential treatment of bio fuel-producers within the EU and consequently to a violation of international trade laws (Teoh 2010: 29).

Producers from Indonesia and Malaysia are threatening actions before the court of arbitration of the World Trade Organization.

Norwegian Initiative

A Norwegian initiative could have a big influence on the expansion of palm oil plantations in Indonesia. In May 2010 the governments of Norway and of Indonesia signed a "Letter of Intent" about their efforts to protect the Indonesian forest. Norway is willing to donate one billion US\$ to Indonesia in exchange for a stop in deforestation. This is meant to be a contribution to climate protection. The programme is to start in 2011 and to run until 2014.

The project has created fears of higher prices for palm oil. The FAO said that one of the reasons is the rising costs for land. Additionally the FAO assumes that In-

⁶ An overview of the research results is available in Transport & Environment 2010a. For details, see Öko-Institut 2010: 17; Bowyer 2010.

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Indonesian and Malaysian companies will try to develop new palm oil plantations in Western and Central Africa as well as in Papua New Guinea, thus avoiding Indonesian restrictions. Initial efforts in this direction are already in progress.

An Indonesian company has in mind to create a palm oil plantation of 200 000 hectares in Liberia (FAO 2010a: 3-4).

Roundtable on Sustainable Palm Oil (RSPO)

The debate whether the use of palm oil in foods should be limited for reasons of sustainability has been set in motion. Campaigns of environment protection and human rights organisations have increased the pressure on multinational corporations to ask the producers of palm oil to meet environmental and social standards.

Several studies have shown that the companies have repeatedly made false statements about the standards of production (e.g. Greenpeace International 2010a and 2010b). Therefore well-known manufacturers of food-stuffs are considering whether to stop obtaining Indonesian palm oil (FAO 2010b: 5).

In 2003, due to critical discussions on the impact of the expansion of palm oil plantations, the Roundtable on Sustainable Palm Oil (RSPO) was founded. Participants include companies and associations of industry, industrial manufacturers of palm oil as well as NGOs. The aim is to enforce sustainable farming practices for palm oil.

In 2009, 1.4 million tonnes of palm oil were put on the market which had been certified by the RSPO, 3.2% of the world harvest. This amount is to be doubled in 2010.

Massive criticism was voiced repeatedly of the RSPO. For Greenpeace, the criteria were not going far enough. In addition, Greenpeace verified that corporations received a certification from the RSPO for one part of their production, while at the same time other branches of the company cleared rain forests to expand plantations (Greenpeace 2008, 2009, 2010a, 2010b).

A number of companies from the nutrition sector, among them Nestlé, Rewe and Edeka, are working on standards that go well beyond the requirements of the RSPO (Burger 2010).

6 Scenarios and conclusions

The predictions about the expansion of the consumption of palm oil vary extremely. Several possible scenarios can be derived from the ongoing debate:

Scenario 1: Sustainability as the main issue

In the debate about the consumption of palm oil, the issue of sustainability becomes the key aspect. This means that only sustainably produced palm oil is processed into bio fuel. In addition, the use as fuel from other vegetable oils is limited to prevent the substitution of palm oil.

Palm oil farmers change their production structures for the sake of the food industry and introduce a sustainable management of their plantations. The use of palm oil which is grown as a monoculture is gradually reduced.

Precondition for such a development is the determination of the companies to drive this forward. Furthermore, the government of Indonesia has to proceed resolutely against illegal activities on the palm oil market of the most important producing country. This will require high standards of sustainability certification and the establishment of independent organisations that monitor compliance with the regulations.

Scenario 2: Strict sustainability criteria and legislation

The major growing states and the importing countries are passing legislation to impose environmental and social minimum standards. The compliance with the agreements is monitored by an organisation involving people from civil society, politics and industry.

More efficient use of the areas means that the land used in the production of palm oil will only rise slightly, despite a significant increase in harvest volumes.

New plantations are only developed on areas where the forests have already been cleared before 2005. With this

new system of plantations the rights of the current residents and users of the sites are being respected.

To achieve this, the producing countries have to introduce appropriate legislation and monitor the compliance. In addition, the governments of the importing countries have to act with one accord in their own legislation. Not only the Western governments, but above all China and India would have to build up pressure effectively to support such initiatives.

Scenario 3: Rapidly growing demand of the food industry

Although the use of palm oil for the production of bio fuels will not be expanded intensely, the needs of the food industry will continue to grow. Particularly in Asia demand will keep on rising until 2020. This increase will be reinforced by the fact that palm oil has to replace other oils in the food chain, which are now being used to produce bio fuels.

Based on today's rate, the demand for palm oil is going to rise until 2020 by around 50%. As the efficiency of plantations will be increased only modestly, about five million plantations will have to be created, most of which will be in Indonesia. The Indonesian government is still not in a position to monitor existing laws and forests are being cleared to make way for some of the new plantations.

Such a development can occur, if the initiatives of multinational food companies and the EU to enforce standards of sustainability in the palm oil production are enforced, but are not accepted by the rest of the world market. Hence, sales markets are open for producers of palm oil that do not participate in the implementation of sustainability standards.

Scenario 4: Unabated rise in foodstuffs and bio fuels

In addition to the increase in consumption of palm oil by the food industry, demand for palm oil-based bio diesel is rising sharply. Driving force behind this are Asian

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countries – Malaysia and Indonesia in particular – as well as the EU. To meet the demand, production areas are being extended on a large scale.

Most of this expansion is taking place in Indonesia, as the government continues to promote the industry heavily and allows only minor restrictions upon the clearing of forests.

The strong demand for palm oil in conjunction with simultaneously rising crude-oil prices is leading to significant price increases for palm oil and other vegetable oils. On the one hand, this is enlarging the incentive for the market-dominating major corporations to expand the areas further. On the other hand, the increase in prices leads to a massive threat to the food supply.

Claims

At a meeting in Jakarta in August 2010, Indonesian NGOs drafted comprehensive claims to their own government and to companies of the palm oil industry:⁷

1. Compensation for incurred damages: The main problems are caused by the expropriation of the indigenous population and the rural conflicts. The government should take care of the existing problems and also make certain that they do not occur in the future.

2. Strengthen security measures: Any investment in the oil palm sector should comply with international standards, including:

- the compliance with national laws and international agreements,
- the implementation of comprehensive reports on the social and environmental impact of the investment and the realisation of the results,

- the prevention of forced displacements,
- the acquisition of land in constitutional processes and voluntary agreements,
- the avoidance of land disputes and the resolution of outstanding conflicts,
- to respect the rights of the indigenous population,
- the requirement to obtain a Free, Prior, Informed Consent (FPIC) of the population concerned,
- to regard threatened habitats, species and ecosystems,
- the preservation of forests of high conservation value.

3. Carry climate responsibility: Because of large emissions of greenhouse gases, the government should stop the expansion of oil plantations in areas that are identified as forests or peat regions. In order to ensure this, a national land use policy monitoring the effects on climate has to be developed.

Claims of the Indonesian organisations induce EU-obligations:

- The European Union must step up efforts to enforce sustainability criteria for imports of palm oil for the food industry as well as the chemical industry.
- The use of palm oil for the production of fuel threatens food security, especially of the poor. Therefore, palm oil should only be used as fuel, if negative social effects can be excluded.
- The EU should demand of international bodies that efforts are accelerated to improve globally the environ-

⁷ The following claims are a summary of comments from NGOs, indigenous people and small farmers to a discussion paper of the World Bank about their continued involvement in the palm oil sector at a meeting in Jakarta in August 2010.0.

mental and social standards in the production of palm oil and strive for the establishment of uniform global standards of sustainability.

- The EU should advocate multinational institutions like the World Bank or the UN-managed Climate Protection Fund to make the preservation of rain forests a lucrative investment.

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