



Towards better practice in smallholder palm oil production

Sonja Vermeulen and Nathalie Goad

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Natural Resource Issues Series

If poverty is to be reduced and livelihoods improved, significant shifts in policies, institutions and markets will be required to encourage sustainable natural resource management. How to go about this is a major challenge facing governments and civil society groups. Much guidance is available for farming, forestry and fisheries, but in reality livelihoods depend upon many forms of natural capital and are not amenable to sectoral interventions. This series of reports aims to present material on key crosscutting themes of significance to many natural resource sectors, including water, soil, biodiversity, carbon and climate.

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Executive summary

Smallholder production has much to offer the future of the palm oil industry in terms of sustainability and credibility. Smallholders are not minor players. In the two countries responsible for over 80% of world oil palm production, Indonesia and Malaysia, smallholders account for 35-40% of the total area of planted oil palm and as much as 33% of the output. Elsewhere, as in West African countries that produce mainly for domestic and regional markets, smallholders produce up to 90% of the annual harvest.

The aim of this report is to compile and summarise the main types of current arrangements for smallholder palm oil production, and to identify promising options for improvement.

Smallholders are taken here to mean family-based enterprises producing palm oil from less than 50 ha of land (the definition used by the Roundtable on Sustainable Palm Oil). In practice, people in this smallholder category are often also holders of customary rights (or otherwise new settlers) and perhaps also labourers on nearby plantations, all of which affect the choices they make as smallholders.

At present, the main types of arrangements for smallholders are:

- **Supported smallholders:** Growers who cultivate palm oil with the direct support of either government or the private sector. The basic concept is that the government agency or private plantation company provides technical assistance and inputs of seed stock, fertilisers and pesticides, on a loan basis, sometimes partially subsidised by government. There may be a verbal or written contract delineating the agreement and possibly including guarantees of sales, plus terms for calculating the mill price. Examples of supported smallholder schemes are nucleus-plasma (PIR) in Indonesia and the variety of land resettlement and rehabilitation schemes in Malaysia (RISDA, FELCRA, FELDA).
- **Independent smallholders:** Growers who cultivate palm oil without direct assistance from government or private companies. They sell their crop to local mills either directly or through traders. In Malaysia, independent growers are proliferating as independent mills multiply and FELDA schemes mature towards less regulation and subsidy.
- **Collective landowner schemes** are another option for local communities who hold land title or recognised customary land rights. These are land leases or joint ventures, whereby local landowners rent out use rights of their land to a plantation company, or collect a share of profits based on the equity value of their land. This is not strictly a smallholder model, but can

be an attractive alternative for local landowners. The mini-estate or Konsep Baru in Malaysia (Sabah and Sarawak) and Lease-lease-back schemes in Papua New Guinea are current models.

The efficiency gap between large plantations and smallholders is closing as smallholders increase their annual yields and continue to keep the costs of inputs relatively low. However, there is huge variation in smallholder practice and results, mainly depending on how central palm oil is to their income strategy. Supported smallholders continue to achieve higher yields than independent growers, mainly because of access to better quality seed stock, but independent smallholders can in some instances achieve greater returns to their investments.

Both plantations and smallholders face social problems, particularly around the legitimacy and security of their land holdings, but also availability of and conditions for labour, and effects on wider communities. While it is tempting to compare the environmental performance of smallholders favourably (e.g. better biodiversity conservation) or unfavourably (e.g. greater incidence of dry-season fires) against plantations, there is little empirical evidence to support these views.

Smallholders face a number of constraints in maximising their potential from palm oil production while maintaining local choice and autonomy. There are isolated examples of innovations to deal with these problems and improve the contribution of smallholders to sustainable palm oil production. Examples of constraints and responses include:

- **Ownership status:** Disagreements and uncertainty over land tenure are widespread – and can be violent. While strong public policy is essential for resolving long-standing conflicts over land, initiatives led by companies and government agencies to improve fairness and transparency have included granting of full land title once loans are paid off, going beyond legislation in terms for settling land disputes, and share-based land management in place of individually owned smallholder blocks.
- **Securing capital to meet upfront expenses:** Smallholders typically cannot meet basic conditions of collateral and minimum loan size to secure bank financing. Micro-finance institutions are the main solution. These may include interest-free loans for specified inputs, renegotiable terms and equity based on forms of recognition of land ownership other than formal land title.
- **Getting good technical, policy and market information:** Access to trustworthy information – on prices and pricing policies, market opportunities, technical aspects of production and site management, and more fundamentally on rights and options under national law or formal

agreements – is also a major difficulty. Responses to this problem include access-to-information services from NGOs and international agencies, but their reach is geographically specific.

- **Balancing cash crops with food security:** Early palm oil developments often deprived smallholders of sufficient land and time to feed their households. Both intercropping among young oil palms and set-aside land for agriculture have become more common. Some companies have introduced flexible labour schemes for smallholders and labourers to help them allocate their time optimally.
- **Coping with market risk:** Independent smallholders are particularly at risk from crop price fluctuations, and this is the main incentive to enter into or remain within supported schemes. Monopsony purchase by mills and lack of bargaining power among smallholders exacerbates the problem. Innovations have included national or internationally-indexed pricing standards and emergence of smaller-scale independent mills, but formal insurance for palm oil smallholders remains elusive.

New trends offer growing opportunities for smallholders to secure their place in modern markets. The Roundtable on Sustainable Palm Oil (RSPO) includes a dedicated Smallholder Task Force to work towards inclusion of smallholders in the RSPO principles and criteria. Accelerating demand for biofuel crops is expected to keep palm oil prices buoyant and perhaps to offer new technologies and standard-based niche markets specifically for smallholders. Smallholders with access to the latest technology have already demonstrated their ability to produce as efficiently as large-scale plantations. Local and national representative bodies are now growing in scale and stature, providing much-needed voice for smallholders in immediate business negotiations and wider policy dialogue. Consumer-based initiatives such as Fair Trade remain a distant prospect for oil palm, but public policy initiatives like the Social Fuel seal in Brazil offer a workable means of supporting smallholder production.

The challenge now is to share good practice more widely. Real progress will require action from a range of stakeholders, including smallholders, smallholders' associations, government agencies, plantation and milling companies, traders and retailers, and key third parties (e.g. people's organisations, NGOs, banks, insurance agencies) – to develop and try out the variety of mechanisms that can help improve sustainability and equity in palm oil production.

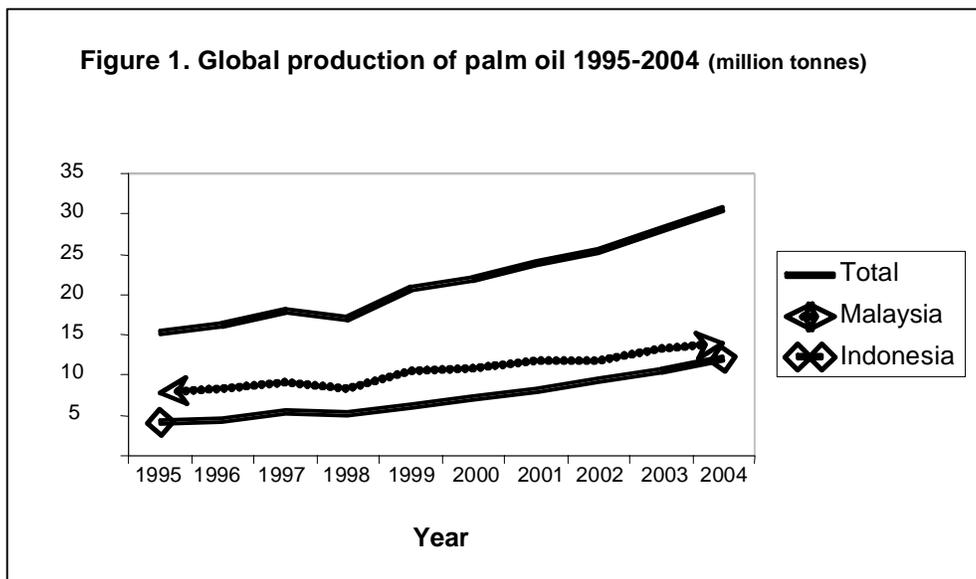
Acronyms

APKASINDO	<i>Asosiasi Petani Kelapa Sawit Indonesia</i> , Indonesian Association of Palm Oil Farmers
BOPP	Benso Oil Palm Plantation, Ghana
FEDEPALMA	<i>Federación Nacional de Cultivadores de Palma de Aceite</i> , National Federation of Palm Oil Growers, Colombia
FELCRA	Federal Land Consolidation and Rehabilitation Authority, Malaysia
FELDA	Federal Land Development Authority, Malaysia
FOE	Friends of the Earth
GAPKI	<i>Gabungan Pengusaha Kelapa Sawit Indonesia</i> , Indonesian Palm Oil Producers' Association
IDR	Indonesian Rupiah
ILG	Incorporated Land Group, Papua New Guinea
IPM	Integrated Pest Management
IPOC	Indonesian Palm Oil Commission
KKPA	<i>Koperasi Kredit Primer Anggota</i> , cooperative credit scheme, Indonesia
MAPA	Malayan Agricultural Producers' Association
MEOA	Malaysian Estate Owners' Association
MPOA	Malaysian Palm Oil Association
MPOB	Malaysian Palm Oil Board
MPOPC	Malaysian Palm Oil Promotion Council
NASH	National Association of Smallholders, Malaysia
NBPOL	New Britain Palm Oil Limited, Papua New Guinea
NCR	Native Customary Rights, Malaysia
NPV	Net Present Value
NUPW	National Union of Plantation Workers, Malaysia
OPIC	Oil Palm Industry Corporation, Papua New Guinea
P&C	Principles and Criteria
PAN	Pesticide Action Network
PIR	<i>Perkebunan Inti Rakyat</i> , nucleus-plasma scheme in Indonesia
POME	Palm oil mill effluent
PORAM	Palm Oil Refiners' Association of Malaysia
RISDA	Rubber Industry Smallholders Development Authority, Malaysia
RSPO	Roundtable for Sustainable Palm Oil
SALCRA	Sarawak Land Consolidation and Rehabilitation Authority, Malaysia
SLDB	Sabah Land Development Board, Malaysia
SPKS	<i>Serikat Petani Kelapa Sawit</i> , Union of Oil Palm Farmers, Indonesia
WALHI	<i>Wahana Lingkungan Hidup Indonesia</i> , Indonesian Forum for Environment

1. Introduction and rationale

Smallholder oil palm production has the potential to secure mutually beneficial outcomes for large and small producers and processors, enhance social and environmental sustainability at the landscape scale, ease land disputes between smallholders and large plantations and promote credibility among consumers – going beyond simple criteria for corporate responsibility.

Demand for palm oil is growing fast. Global production has doubled over the past ten years and is expected to double again in the next decade (Figure 1). A major opportunity exists to meet the rising demand in an environmentally and socially sustainable manner through expansion and improvement of smallholder production. Smallholders already play a significant part in the palm oil industry. In the two countries responsible for over 80% of world oil palm production, Indonesia and Malaysia, smallholders account for 35-40% of the total area of planted oil palm and up to 33% of the output. In other countries, considerable numbers of smallholder producers are present, but are often less well linked to world markets.



Source: Oil World Annual

Palm oil fresh fruit bunches must be milled within 24 hours of harvest to avoid deterioration in quality. Thus all smallholders must deliver their harvest rapidly to a nearby mill. In practice this often necessitates a close relationship, sometimes contractual, with the company or government agency that owns the only mill within delivery distance. It is widely accepted that the nature of these arrangements has a direct bearing on the type and direction of environmental and development impacts associated with palm oil production.

The aim of this report, based on a literature review and inputs from key informants, is to provide a systematic overview of the main types of arrangements for smallholder palm oil production, and to identify the most promising current options for improving practice, particularly in arrangements of smallholders with plantation companies and government agencies. The Roundtable on Sustainable Palm Oil has identified a need for such a review, and one purpose of this report is to feed into the work of the RSPO Smallholder Task Force.

2. Current practice in smallholder palm oil

2.1 Types of smallholders and other local stakeholders

The term 'smallholder' is now common currency in dialogue on sustainable palm oil. Some observers use the term to mean a broad spectrum of local residents involved in the palm oil industry in some way, including (DTE 2006):

- Peasant farmers who have chosen to grow oil palm on their own plots
- Settlers and transmigrants in areas under large-scale plantation, often brought in specifically to provide labour
- Indigenous people whose customary land rights have been overridden by land rights granted by the government to a plantation company
- Farmers in debt to company-established cooperatives

The RSPO defines smallholders more tightly as *family-based enterprises producing palm oil from less than 50 ha of land* (note that in Malaysia, the term smallholding has an even more specific legal sense of aggregate land of less than 40.46 ha). In this report we follow the RSPO definition, but with the understanding that people in this 'smallholder' category often fall into several other of the important palm oil stakeholder groups, for example as holders of customary rights, or settlers, and/or wage labourers on palm oil plantations. It is important to remember that smallholders and other local involvements in palm oil are not always voluntary. Local people may have a low degree of choice when expansion of palm oil is seen as a major development pathway by local government, national government and the international donor community.

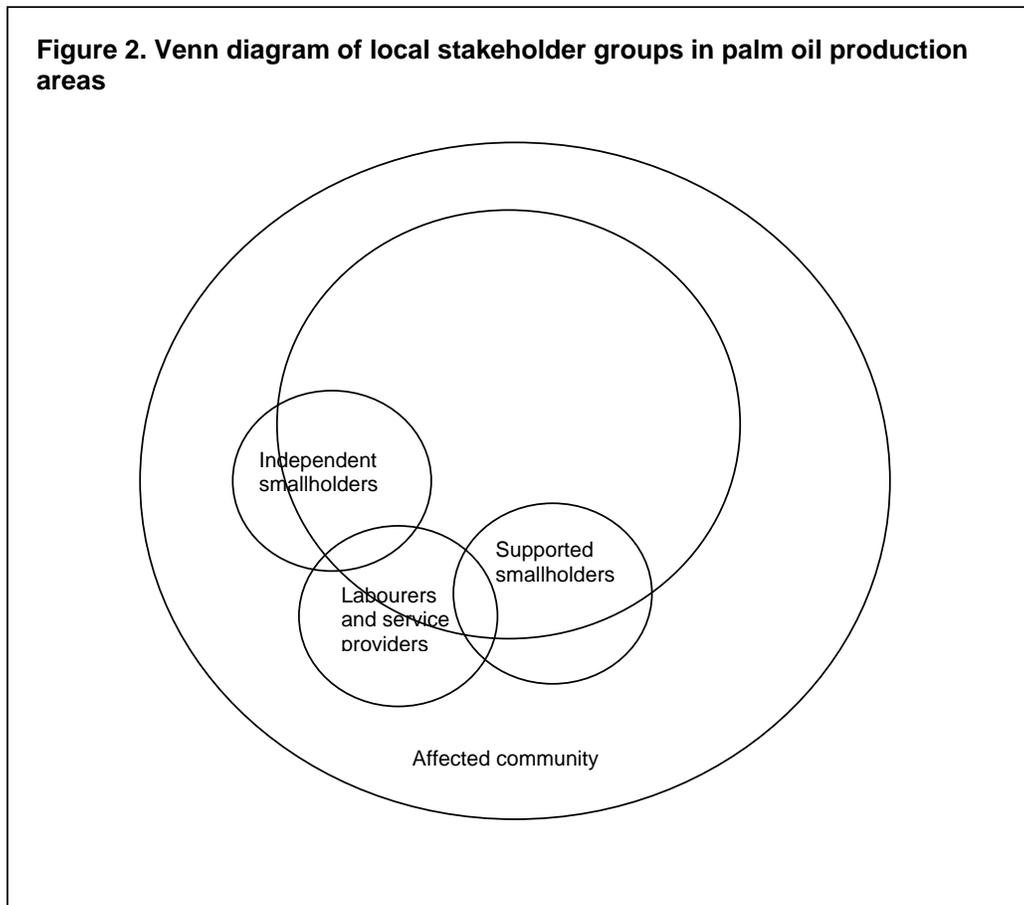
The Venn diagram (Figure 2) provides a basic guide to the overlapping categories of local stakeholder groups in palm oil production areas, showing how smallholders fit into the wider context.

Among smallholders, the most important distinction is between *supported* growers and *independent* growers. The key stakeholder groups at local (village) level are:

- ***The affected community***: All local residents who experience the impacts of oil palm production, whether they are indigenous or settlers.
- ***Landowners***: Some or all of the affected community will be individual or collective landowners, under state or traditional systems.
- ***Labourers and service providers***: Labourers work for wages in the palm oil sector, either for a company or government, or for smallholders. Service providers are self-employed, providing services such as trade or transport of fresh fruit bunches. Companies' use of casual labour can blur the distinction between labourers and service providers.

- **Supported smallholders:** Growers who cultivate palm oil with the direct support of either government or the private sector. The basic concept is that the government agency or private plantation company provides technical assistance and inputs of seed stock, fertilisers and pesticides, on a loan basis, sometimes partially subsidised by government. There may be a verbal or written contract delineating the agreement and possibly including guarantees of sales, plus terms for calculating the mill price.
- **Independent smallholders:** Growers who cultivate palm oil without direct assistance from government or private companies. They sell their crop to local mills either directly or through buyers (service providers).

Since the exact ownership of the land cultivated by independent growers or supported growers may be unclear or disputed, both groups are shown as overlapping between landowners and the broader community in the diagram.



2.2 Spread and status of smallholder palm oil production

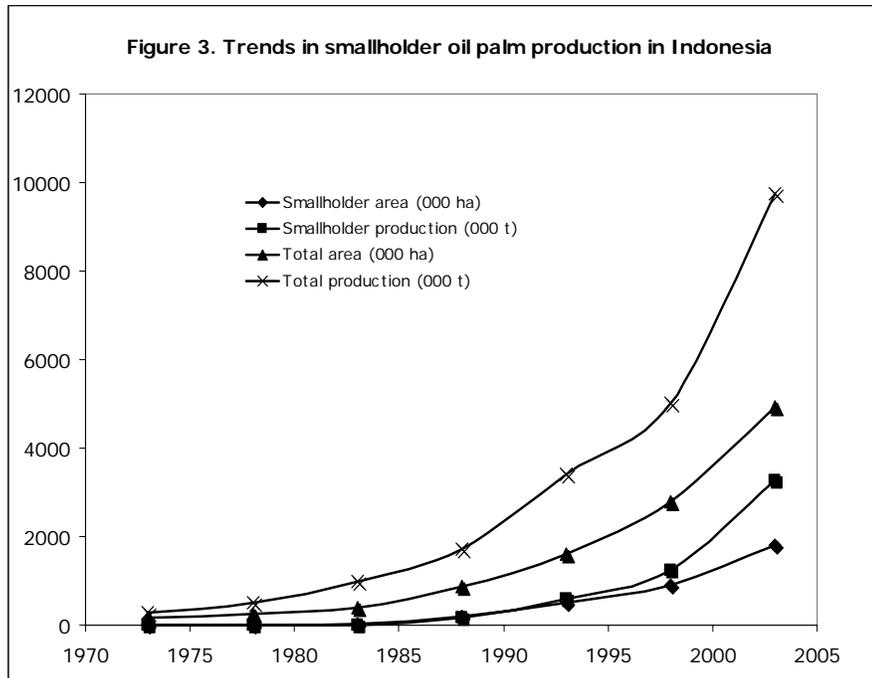
Smallholders account for a substantial proportion of the world's oil palm. Between the two countries that dominate world production, Malaysia and Indonesia, smallholders are responsible for 37-40% of the total area under oil palm (Table 1); see Appendix 1 for contrasts between the two countries). It has often been pointed out that the relative production of smallholders falls well below their relative cropping area. But this gap is closing rapidly: for Indonesia, the country where the palm oil sector is growing fastest, smallholders' production is growing at a faster rate than their area (Figure 3), and they now account for at least a third of the country's annual production.

Table 1. Smallholders' contribution to oil palm in major producer countries

Country	Annual national production*	Area under smallholders	National production from smallholders	Source and year
Malaysia	13,976	1.37 million ha; 40% of total**	11% from independent smallholders	MPOB 2003
Indonesia	12,100	1.81 million ha; 37% of total**	33%	Gov of Indonesia 2003
Nigeria	790	1.65 million ha (semi-wild or intercropped)	80%	WRM 2001
Colombia	632	< 100,000 ha		FEDEPALMA 2003
Papua New Guinea	345		50%	NBPOB 2006
Cote d'Ivoire	270	135,000 ha; 70% of total (up from 40% in 1980s)		FAS 2002; WRM 2001
Brazil	140		Perhaps 3-4%	Agropalma 2006

* In thousands of tonnes; Oil World Annual figures for 2004-5

** Figures include both supported and independent growers



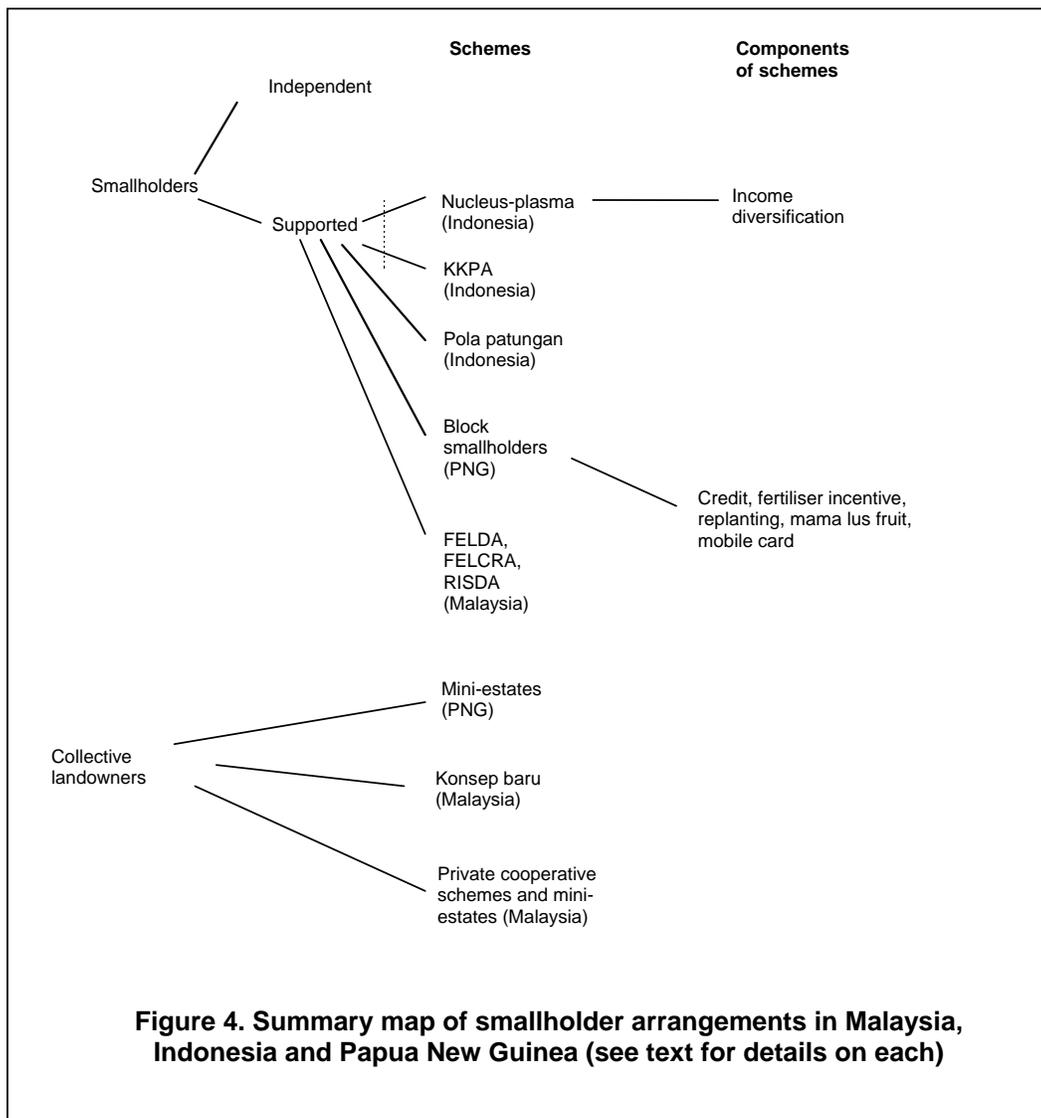
Source: Indonesian government data

2.3 Types of smallholder schemes

There are three main categories of arrangements with local communities (private or collective landowners) for the production of palm oil: independent smallholders, supported smallholder schemes, and collective landowners' schemes. This section gives details of examples of supported smallholder schemes and collective landowners' schemes from Malaysia, Indonesia and Papua New Guinea (Figure 4).

Supported smallholder schemes are found in most of the major palm oil producer countries, including Nigeria, Colombia, Cote d'Ivoire and Brazil as well as Malaysia, Indonesia and Papua New Guinea. This section concentrates on the schemes in South-east Asia, which give a good overall idea of currently available options (further details of individual schemes in other countries can be found in Appendix 2).

As described in Section 2.1, supported smallholders are growers who cultivate palm oil with the direct support of either government or the private sector. This support may be in the form of loans, technical assistance, guaranteed markets or prices, assistance with land access or titling, legal support and/or institutional development.



While supported schemes in the palm oil sector are superficially similar to ‘contract grower’ or ‘outgrower’ schemes in other agricultural sectors such as fresh fruit and vegetables, there are some important differences:

- Detailed written contracts are less common
- Systems for calculating prices for the crop are based closely on current market price (in some other sectors, particularly forestry, contract growers may be protected from market fluctuations)
- The buyer of the crop is commonly a producer (plantation company) as well as a processor (milling company)
- Governments as well as private companies operate large plantations and run supported smallholder schemes
- Very large areas of contiguous land are involved in single schemes, so the

geographic and managerial demarcation between plantation and smallholdings may be blurred

- In Malaysia and Indonesia particularly, land tenure and use rights of the smallholding may overlap among government, company, community and individual, so that land ownership cannot provide a clear legal basis underpinning a contract

Another option for local communities who hold land title or recognised customary land rights are the range of collective landowner schemes. These are land leases or joint ventures, whereby local landowners rent out use rights of their land to a plantation company, or collect a share of profits based on the equity value of their land. Although this is not a smallholder option in the sense that land is worked by the company rather than by individual smallholders, it is covered here to give an idea of alternative partnering arrangements available to local landowners.

The remainder of this section provides details on the various schemes and sub-schemes mapped in Figure 4.

Malaysia

FELDA: A number of different government smallholding schemes operate in Malaysia, the largest run by the Federal Land Development Authority (FELDA). It was established in 1956 with a mandate to diversify agriculture in Malaysia and resettle landless families. FELDA has since set up over 442 schemes, covering roughly 800,000 ha and involving more than 100,000 families (FELDA 2006). These schemes are located relatively far from existing rural villages and consist of new urban settlements in connection with large newly established plantations.

The FELDA contract system is complex and has changed strategy several times. In the initial phase, settlers were given individual titles to land, and each settler family was designated about 4 ha, a house and a garden plot, situated within a larger management block of land. FELDA's role was to improve the physical infrastructure around the settlements, provide advisory and management services, provide credit, supply agricultural inputs such as seed, fertilisers and pesticides, and market the crops. Settlers worked on an individual piece-rate basis and participated as equal owners with no rights over any particular plot of land.

A second phase in the 1970s changed to a 'block' system with the aims of increasing the settlers' collective responsibility and facilitating links between different settlements, while maintaining estate-like efficiency, productivity and product quality (Fold 2000). It also sought to address problems of absenteeism, and of farmers sub-contracting land to illegal Indonesian workers (Ghee and Dorall 1992). Access to credit was facilitated and the amount of

land under cultivation rapidly increased. Under this system, each settler is responsible for roughly 4 ha land. Settlers are organised into groups of 20 for cooperative work, each cooperative operating a block of roughly 80 ha oil palm. Settlers get housing, infrastructure and agricultural inputs, and each block has 1.5 ha for subsistence farming. Individual farmers are responsible for the transport of the oil palm fruit bunches from their own field to the road, but the communal block pays for the transport to FELDA-oriented processing facilities. Profit from block sales of fruit bunches is divided equally between members.

Title to land is only given to farmers once they have repaid the debts incurred to finance the costs of agricultural inputs; it takes most settlers on existing schemes a minimum of 15 years to do so (Ghee and Dorral 1992). Once the debt has been repaid, smallholders are given the choice to opt out of FELDA arrangements and cultivate palm oil independently, or to renew a 25-year agreement with FELDA (this reflects the life-cycle of replanting the palms). A small percentage of smallholders choose to opt out of FELDA arrangements and cultivate palm oil independently. Most prefer to stay within the FELDA scheme because there may be little access to alternative plantation-owned or independent mills or affordable inputs (Mr S Palaniappan, personal communication, 2006).

FELDA introduced a third phase in 1985. This involved a 'share' system whereby settlers were expected to work for a fixed wage and receive dividends from a share equivalent to 4 ha oil palm. After repayment of debts, the settlers obtained a title to a house with a small adjacent plot of land for subsistence production, and a share in the plantation. However, this system was unpopular with settlers and arrangements returned to the block system (Pletcher 1991).

By the 1990s FELDA's put increasing emphasis on commercial success and financial independence from government, rather than social development (Sutton and Buang 1995). FELDA management of settler schemes remains, but new land has also been developed into 'non-settler' plantations, owned by FELDA subsidiaries and worked by labourers who earn wages and bonuses at similar rates to private plantations. Many workers are immigrants, and are employed on a casual or contractual basis. Nearly 40% of FELDA's total plantation area of 750,000 ha is now managed under non-settler arrangements. FELDA continues to own a large part of the chain of production in Malaysia's palm oil industry, owning 72 mills and seven refineries (FELDA 2006).

FELDA is no longer opening up new land for development (although it is not ruling it out in the future; Mr S Palaniappan, personal communication 2006). Major activity has been the rehabilitation of the older palm oil and rubber schemes through FELCRA and RISDA, and the opening up of NCR lands for plantation development through Konsep Baru (see below).

FELCRA: The Federal Land Consolidation and Rehabilitation Authority (FELCRA) is responsible for the rehabilitation of unsuccessful state-managed schemes and the consolidation of unused 'idle' land on the fringes of villages for the purpose of maximising landholdings of farmers for agricultural production. FELCRA provides a number of subsidies for the supply of agricultural inputs, and basic infrastructure for smallholders of palm oil on these lands.

RISDA: The Rubber Industry Smallholders Development Authority (RISDA) again is responsible for improving and extending smallholdings throughout Malaysia. RISDA provides replanting funds to rubber smallholders who wish to switch to oil palm. Like FELCRA, RISDA provides subsidies, and manages basic infrastructure and processing of the crop. RISDA also provides social development activities through its Smallholders Development Centres (Arshad and Noh 1994).

Konsep Baru: The Malaysian government introduced the land-lease scheme Konsep Baru (New Concept) in the mid 1990s as a strategy for rural land development on land under Native Customary Rights (NCR). A Konsep Baru arrangement involves the setting up of a three-way joint venture. A private plantation company, selected by the government, holds 60%. The plantation company does not need to buy land; it provides financial capital for landowners to develop the land for palm oil production. The local community that holds native customary rights to the land is awarded a 30% share for this investment. A Land Bank mechanism allows farmers to register their land in a bank as an asset. This enables the private company to use the land as a deposit to borrow money locally or abroad. Finally, the government, acting through a parastatal agency, acts as trustee and power of attorney, and holds the remaining 10% (Majid-Cooke 2002).

The three main parastatal agencies spearheading this development in Malaysia are the Sarawak Land Development Board (SLDB), Sarawak Land Consolidation and Rehabilitation Authority (SALCRA) and the Land Custody and Development Authority (LCDA). They guarantee the venture and facilitate interactions between private companies and landowners. The landowners essentially do not have any say in day-to-day decisions in the joint venture since they are required to sign a power of attorney to hand over all rights to the land to the guarantor when the project begins.

Land titles are issued to the joint venture for 60 years. On expiry, the NCR landowners can apply to the Superintendent of the Land and Survey Department to renew the lease or opt out of the scheme. A caveat exists in the agreement that allows the company to extend the land lease after 60 years if no profit from the venture has been made (Songan 2000).

Many NCR landowners in Sarawak have been opposed to Konsep Baru due to a number of concerns such as:

- Lack of real choice – communities have been told to participate or risk having their land developed anyway, because of provisions in the Sarawak Land Code which allows the government to designate any piece of land for development
- Landowners feel as if they have had little control over the negotiating process and have not received adequate explanation of the terms of the joint venture (Sarawak Penan Association 2005)
- An understanding among indigenous peoples that land is inherited, communal and inalienable. There are real concerns over handing over land to a management company, which shifts their status from landowners to workers and minor shareholders in plantation companies. Smallholding status can instead allow for the greater control over their livelihoods (Doolittle 2005).
- Methods used by the Land and Survey Department to determine NCR land boundaries are questionable as they delete existing boundaries and result in the amalgamation of NCR lands into one large block of 5000 ha with a single land title
- Fears over whether the land will be returned and how it will be split up once the 60 year lease is up (Thien 2004)
- Issues of political patronage on behalf of the government in awarding leases to plantation companies, and the ability of parastatal agencies to monitor their activities (TAHABAS 2005).

Mini-estates: Mini-estates are viewed by planners as an alternative to large-scale plantations implemented under Konsep Baru. The difference between the two is that mini-estates involve joint venture schemes between local farmers' associations rather than communities, and the leases are typically shorter in length – roughly 25-30 years (Majid-Cooke 2002).

Private cooperative schemes: FELDA, FELCRA and RISDA are schemes set up to facilitate production and distribute benefits to farmers, without self-interest. Some non-government cooperatives exist among 'small farmers' (who have more land than smallholders, i.e. > 50 ha). The largest cooperative is the National Land Finance Cooperative Society (NLFCS), which operates roughly 25,000 ha plantations (oil palm, rubber and coconut), plus subsidiary companies owning mills and refineries. Current membership is around 70,000 small farmers. Subscribing farmers share ownership of the plantations and receive dividends. The cooperative supplies loans to members for education, housing, small business development and medical treatment.

Indonesia

Nucleus-plasma schemes: Between 1978 and 2001, the Government of Indonesia provided policy support and the World Bank financial support to *nucleus-plasma* (*Perkebunan Inti Rakyat* or *PIR*) supported grower schemes, in which plantation companies would develop palm oil plots for smallholders in

a 'plasma' area around their own plantation 'nucleus'. Management of plasma plots, generally 2 ha of oil palm plus 1 ha for other crops, would be transferred to individual smallholders after 3-4 years. The nucleus-plasma schemes were conceived as an integral part of the government's resettlement (*transmigrasi*) programme, through which Javanese and Sumatran people transferred to start a new life in the less populated islands. Thus many, though not all, of the plasma smallholders have been new settlers.

Nearly 900,000 ha of palm oil smallholdings were established under variations of this model (Table 2). Land for the schemes was allocated by central government from a land category called conversion forest. Much of this land was simultaneously under the management and traditional ownership (*adat*) of local communities, who in this sense were, consensually or not, contributing a capital investment of land into the nucleus-plasma schemes. The original apportionment between nucleus and plasma was 20-80, but this tended towards 40-60 over time.

In a typical scheme, holders of the plasma plots would be supported in the early years before the palm oil reached maturity through employment and (often inadequate) subsistence agriculture. The management of the plasma area would come officially under a cooperative of smallholders, which would generally contract technical functions back to the nucleus plantation company. Hence growers often work as labourers on their plots. They receive additional income through the guaranteed sale of fresh fruit bunches at a price set through a government formula (though the efficacy and fairness of this has been questioned, and it was revised in 1997; Zen et al 2005).

The nucleus-plasma schemes continue, though government sponsorship of expansion stopped in 2001 following Indonesia's major decentralisation of government functions that year, and a renewed support for traditional individually owned smallholdings. Zen et al (2005) report that, although there are exceptions, many of the smallholders in mature nucleus-plasma schemes are getting good incomes today (Table 2). But underlying issues such as control over land remain unresolved. Nucleus-plasma schemes not only occupy lands where there are overlapping systems of customary (*adat*) ownership, but also disrupt *adat* arrangements, for example by allocating plasma farmers 2 ha plots belonging to another community or even in another sub-district (Alexander 2006).

Table 2. Types of nucleus-plasma schemes in Indonesia

Type	Main features	Performance
A. PIR <i>Lokal</i> , from 1978	On government plantations only. Each smallholder allocated 2 ha oil palm so long as member of scheme.	Not good. Major problems will failed subsistence crops and food security. Few income sources in 4 yrs of immaturity then limited incomes from 2 ha, especially as govt stipulated low price for FFB + 30% deduction. Many abandoned schemes.
B. Assisted PIR, from 1984	On government and private plantations, partly funded by WB and ADB. Priority to (1) locals and (2) transmigrants (some from failed schemes, thereby releasing land). Each smallholder allocated 2 ha oil palm and 1 ha food crops. Schools, health centres, markets, roads etc also provided.	Reasonable. Problems again with food and incomes. But improvements following govt's upward revision of prices in 1987. Rules relaxed in 1997 to allow farmers to plant food crops, leading to better food security and higher yields from 9-10 yr old mature palms. Diversification of income activities and many smallholders able to pay off loans.
C. Special PIR, from 1984	On government and private plantations, funded by govt. Priority to (1) transmigrants and (2) locals. Similar to B except additional 35 m ³ for housing.	
D. Accelerated PIR, from 1984	On government and private plantations, funded by govt. For transmigrants only. Conditions as in C.	
E. PIR <i>Trans</i> and KKPA, from 1986, replacing B, C & D	On government and private plantations, funded by govt. For both transmigrants and locals. KKPA loan repayments with limited subsidy, repayable at 16%.	

Source: Zen et al. 2005

KKPA schemes: The Indonesian government introduced the KKPA (*Koperasi Kredit Primer Anggota*, which literally translates as Members' Primary Credit Co-operative) scheme as a general rural microfinance programme, through which formalised local cooperatives could borrow up to a maximum of IDR50 million (today EUR4,500), at a partially subsidised repayment rate of 16%, for small business development (McGuire et al 1998). The scheme was widely applied in the palm oil sector from 1995 onwards, replacing the basic nucleus-

plasma scheme. Cooperatives of smallholders have more autonomy under KKPA than under earlier nucleus-plasma models.

Both nucleus-plasma schemes and the modified KKPA schemes are not without problems – smallholders report an abiding set of difficulties, such as (DTE 2005):

- Long delays (of up to eight years) in receiving allotted land and credit
- Allocated plots are inaccessible
- Roads are poorly maintained
- Traditional intercropping disallowed
- Decision-making is in the hands of the company (land allocations, recruitment of labour, prices for fresh fruit bunches)
- After production, land reclamation costs are high
- Broader scale social and environmental impacts such as rivers drying up and cost of living rising

Pola Patungan scheme: In a variation on the nucleus-plasma/KKPA schemes, the *Pola Patungan* (Joint Venture Model) scheme gives local residents, who are settlers under the Indonesian transmigration programme, share certificates for their 2 ha, rather than allocating an actual block of land. Shareholders are then given the choice of working either in the plasma under the cooperative, trained by the plantation company, or in the nucleus staff. The reasoning behind this is to pre-empt conflicts arising from the variable performance of individual blocks, but another outcome was greater efficiency – analogous to the Malaysian FELDA scheme. Anecdotal evidence suggests that the standard of living is relatively high among participants in this share certificate scheme (Zen et al 2005).

Income diversification sub-scheme: A medium-sized plantation company in Sumatra, Indonesia, distributed 3 cattle to every one of 500 employees, with supplementary feeding on oil palm waste and kernel cake; the cattle are used for breeding, fattening and transporting fresh fruit bundles and the scheme is considered a huge success economically and socially (Zen et al 2005).

Papua New Guinea

Smallholder credit sub-schemes: Companies extend interest-free short-term in-kind credit, repayable at 50% of gross fresh fruit bunch income over three months (tools), one year (fertiliser) or two years (seedlings). Smallholders' yields on 2-10 ha plots have increased following the introduction of the schemes – provided the inputs are readily available for purchase. Avoidance of repayments has been a problem where smallholders have been able to sell produce to private contractors, recorded in the name of the contractor rather than the grower. Debt avoidance has not prevented the schemes from being successful, but has caused companies to modify the terms slightly (Koczberski et al 2001).

Fertiliser incentive sub-scheme: NBPOL has given smallholders cash payouts per unit fertiliser applied, motivating smallholders to apply fertiliser immediately rather than leaving it stacked up. The upfront cash payments are then added to the debt of the smallholder to the company. The popularity of the scheme demonstrates how poor smallholders may tend to prioritise immediate cashflow over their longer-term economic interests (Koczberski et al 2001).

Replanting sub-schemes: Company-led schemes to encourage smallholders to replant declining stock were not successful. Smallholders were reluctant to participate for reasons such as high levels of debt and arrears, potential short-term loss of income, tenure insecurity, poor roads and disbelief in the efficacy of replanting (Koczberski et al 2001).

Mama lus fruit sub-scheme: Wastage of loose fruits has been an important and avoidable source of loss in among Papua New Guinea's palm oil smallholders. The 'mama lus fruit scheme' has been a successful intervention that pays women directly to collect loose fruit. Women's ability to sell loose fruit through their 'mama cards' gives them an extra source of income, which can be managed independently of the household's core income from palm oil (usually managed by men). In spite of problems (e.g. households selling not only loose but cut fresh fruit bunches through the mama card to avoid debt repayments), this scheme has been popular and successful among plantation companies and both men and women smallholders (Koczberski et al 2001).

Mobile card sub-scheme: This was a build-on from the successful 'mama lus fruit scheme' to promote mobility of labour among smallholder blocks by guaranteeing payments for labour during harvesting of fresh fruit bunches. Card-holding labourers are not paid in cash but in fruit: a proportion of the value of the fresh fruit bunches harvested and weighed. Before work starts, the block holder and mobile-card holder must sign a contract specifying the type of work, timing and split of earnings. Productivity increased by as much as 50% under the mobile card scheme. Participants also benefited from labour and financial security, more equal income distribution within households and reduced social conflict (Curry and Koczberski 2004).

Mini-estates (lease, lease-back schemes): These arrangements have come about to make possible the direct use of customary land by private plantation companies. A customary land-owning group registers as an Incorporated Land Group (ILG) and leases their land to the government, which registers the land and leases it back to the ILG. The ILG can then sublet this land to a plantation company on a 20 or 40 year lease, in return for annual rental fees and royalties. The usual rent is about USD20 per ha paid quarterly in advance, a royalty of 10% of the mill price of fresh fruit bunches and a limited offer of company shares. During the period of the lease, the company has full rights to

develop the land, including construction of roads, culverts and other infrastructure.

The main attraction of these arrangements to landowners is the steady cash flow with low labour opportunity costs (Hunt 2002). Payments start well before the first harvest and the royalty payments mean that landowners support efficient land management by the plantation companies. Lease, lease-back schemes have become popular for oil palm and in other sectors such as forestry and mining, but there are concerns around the disenfranchisement of less powerful people within the customary land-owning group, such as poorer families and women (Koczberski et al 2001).

2.4 Smallholdings versus large-scale plantations

This section provides a summary of some of the key differences between smallholders and large-scale plantations in palm oil production, to indicate the areas that need to be considered in developing incentives and policy instruments for smallholders that differ from those applicable to plantations (Table 3). Reliable information on all aspects is scanty.

Table 3. Contrasts between plantations and smallholders

Plantations	Smallholders
Agricultural and economic	
Yields high, predictable and tightly linked to current technology	Huge variation in individual smallholder yields (e.g. 50% around the mean at one site in Indonesia, Zen et al 2005; similar in PNG, Koczberski et al 2001)
Exposure to both annual price fluctuations and long-term declines in real prices can force defaulting on large loans	Decline in monopoly marketing and service provision has removed <i>de facto</i> taxes on producers, but made smallholders far more vulnerable to global price volatility (NRI 2003)
Popular development option among national and local governments (Casson 2000; NRI 2003; Potter and Babcock 2004)	Gaining increasing credibility as an efficient alternative system of palm oil production
High on-site investment in infrastructure (mills, refineries) but most plantations companies owned by parent companies able to invest profits externally	Capital is more easily contained and reinvested locally
Social	
Displacement of communities to	Smallholder oil palm production

clear large plantation areas; often inadequate resettlement provisions (Sutton 2001; Alexander 2006)	tends to occur as an offshoot of plantations, so immediate effects on communities cannot be disaggregated
Land tenure issues: Long-term, large land areas often overlap with community rights and claims, causing protracted disputes (Kartohardjo and Supriono 2000)	Collective and individual land rights often not recorded; use of land for palm oil may strengthen community land claims (Potter 2001)
Employment issues: new local jobs, but low wages, dangerous work, large numbers of immigrant workers (causing further social tension; Spaan et al, 2002); sometimes employ piece-rate labour via contractors, avoiding statutory employee benefits (Navamukundan and Subramanian 2003)	Family labour used more than hired labour (Ismail et al 2003; NRI 2003), hence family takes on health risks
Concern over accountability of companies and governments, e.g. issues of government patronage and concession allocation (Majid-Cooke 2002; FOE 2004)	Supported smallholder schemes (e.g. FELDA, nucleus-plasma) designed to enhance local equity; communal ownership schemes (e.g. mini-estates, Konsep Baru) more open to appropriation
Environmental	
Land clearance: Fire is the most economical means to clear land for both plantation companies and smallholders and is often used in conjunction with other methods (Suyanto et al 2004)	
Biodiversity maintenance: Current design of plantations creates low diversity landscapes and restricts migration of large animals (Brown and Jacobson 2005)	Potential for less land conversion and hence greater maintenance of agricultural and wild biodiversity (Clay 2004)
Pest management: Use of paraquat in Malaysia and Indonesia, banned elsewhere; emerging use of IPM	Limited efforts so far to introduce IPM approaches among smallholders
Pollutants and waste management: Worst from mills – palm oil mill effluent (POME), a mixture of water, crushed shells and fat residue, produced in large quantities deadly to rivers (FOE 2004)	

2.5 Economics of oil palm for the smallholder

The phenomenal expansion in oil palm means there can be no doubt of its economic competitiveness as a land use under current global market conditions. But does this mean that palm oil is a more economic land use and livelihood option than alternatives for smallholders? According to official figures in Malaysia, the incidence of poverty among oil palm smallholders has

been negligible since the early 1980s, compared to small-scale producers of other agricultural commodities such as fish and rice, among whom poverty has persisted (Simeh and Ahmad 2001; index of poverty not reported).

Such a comparison displays national trends, but does not provide much insight into local choices, since fishermen and rice paddy farmers mainly live in areas and situations where palm oil is not an option. One local-level comparative study in Indonesia found that farmers could earn more from maize than from palm oil (Wakker 2005). Of course the relative costs and profits from different crops will differ from place to place and from year to year, especially given the fluctuations in the oil palm price internationally. In Malaysia for example, after several years of decline, smallholders' incomes from palm oil doubled between 2001 and 2004 as world prices rose again (Ismail 2004).

Entering into palm oil production is a long-term decision, not to be entered into lightly. A study found four main constraints for independent growers in Indonesia in converting their land to palm oil (Papenfus 2000):

- Uncertainty over market access (improving as the market grows and the number of independent mills increases)
- Lack of technical knowledge, exacerbated by poor extension services
- Large initial capital outlays
- Long-term risk, so that even if investments appear sound now (through explicit or implicit estimates of net present value NPV), irreversibility of land use decisions combined with year-by-year price volatility is off-putting

Once palms are mature and production is up and running, smallholders do not achieve uniform or predictable harvests. Two studies have found surprisingly high variation in productivity among palm oil smallholdings in the same vicinity – of as much as 50% around the mean (Zen et al 2005; Koczberski et al 2001). The study in Papua New Guinea (Koczberski et al 2001) found that the wide variation in productivity among individual smallholders was due to a range of underlying factors from land tenure security to intra-household relationships. While some smallholders put a great deal of effort into applying technologies and maximising outputs, others prefer to invest more in other crops or other livelihood strategies. For large plantation companies, production of oil palm is the 'core business', but for smallholders oil palm is just one of an array of agricultural and non-agricultural means of making a living.

2.6 Independent smallholders compared to supported smallholders

One major reason that milling/plantation companies have favoured supported smallholders over buying from independent growers is that productivity of supported growers, who receive considerable technical backing, comes close to productivity of large-scale plantations (Table 4; Table 5). The main factor that keeps independent smallholders' yields down is use of low quality seed

stock. An emerging category of 'high yielding' independent growers in Indonesia have made the transition to high yielding varieties. They are mainly current or ex- staff from plantations, or relatively wealthy local business people (Zen et al 2005).

Independent smallholders' lower yields and per-hectare earnings do not mean lower cost-effectiveness. A recent study in Malaysia (Ismail et al 2003; Table 4) challenged the assumption that independent growers are less efficient in their production than large plantations on which economies of scale can be made. A sample of 300 independent smallholders in Johor, the largest palm oil producing state in Malaysia, showed the following characteristics:

- Older age group (45-76 years), with little opportunity for off-farm employment
 - Greater use of family labour than hired labour, and little use of fertilisers due to the capital required
 - Only 7% used mechanised in-field collection, but owners of power carts also benefited from hiring them out
 - Lower yields than plantations or counterpart smallholders in FELDA
- But lower production costs than plantations, mainly due to absence of 'joint estate cost' charges and of fertilisers.

Table 4. Economic comparisons of supported smallholders and independent smallholders in Malaysia and Indonesia

	Malaysia (Johor State)			Indonesia (national)			
	Plantations (govt + pvt)	Supported growers (FELDA etc)	Independent growers	Plantations (govt + pvt)	Supported growers (Nucleus-plasma)	Independent growers	
						High yielding	Low yielding
Total land area (000 ha)	1351	1031	32s1	3116	897	250	650
Typical land holding	-	4 ha	3 ha (though some > 10 ha)	-	2 ha	>10 ha	2 ha
Yield per hectare (t)	21	19	16-17	21	19	17	10
Net return (USD / ha / year)	-	343	326	705	561 (not all to s'holder)	422	163
NPV (USD / ha)	-	-	-	1280	660	750	-ve
With land cost	-	-	-	1670	1050	1170	480
Without land cost							

Source: calculated from data given in Ismail et al. 2003 and Zen et al 2005 (note that the data from the two countries apply to different years and conditions and hence are not strictly comparable; February 2005 exchange rates of USD1=MYR3.718 and USD1=IDR9,251 are used).

Table 5. Summary of relative advantages and disadvantages of supported smallholders and independent smallholders

	Supported smallholders	Independent smallholders
Advantages + opportunities	<ul style="list-style-type: none"> • Guaranteed market access • Access to inputs such as planting materials and credit • Rapid access to new technologies enabling high-end productivity 	<ul style="list-style-type: none"> • Free to seek highest prices for fresh fruit bunches • Able to shift labour and other inputs between palm oil and other crops depending on prices • Low costs of inputs
Disadvantages + risks	<ul style="list-style-type: none"> • Can suffer over-dependence on a single crop with price volatility • Less flexibility in land use and labour allocation • Hierarchical and rigid arrangements often limit farmer decision-making 	<ul style="list-style-type: none"> • Risk that mill will not buy fresh fruit bunches • Reduced access (and risk aversion) to credit and technology • Often viewed as unreliable by mills that purchase fresh fruit bunches

The authors did not analyse relative returns to labour or capital, which might be even more in the favour of independent growers. In Sumatra, Indonesia, the labour requirement for establishing independent smallholder palm oil is 130 person-days/ha – substantially less than smallholder rubber or plantation palm oil (Papenfus 2000). When the full set of costs are factored in, high-yielding independent smallholders in Indonesia make better net returns and achieve higher net present value than supported smallholders.

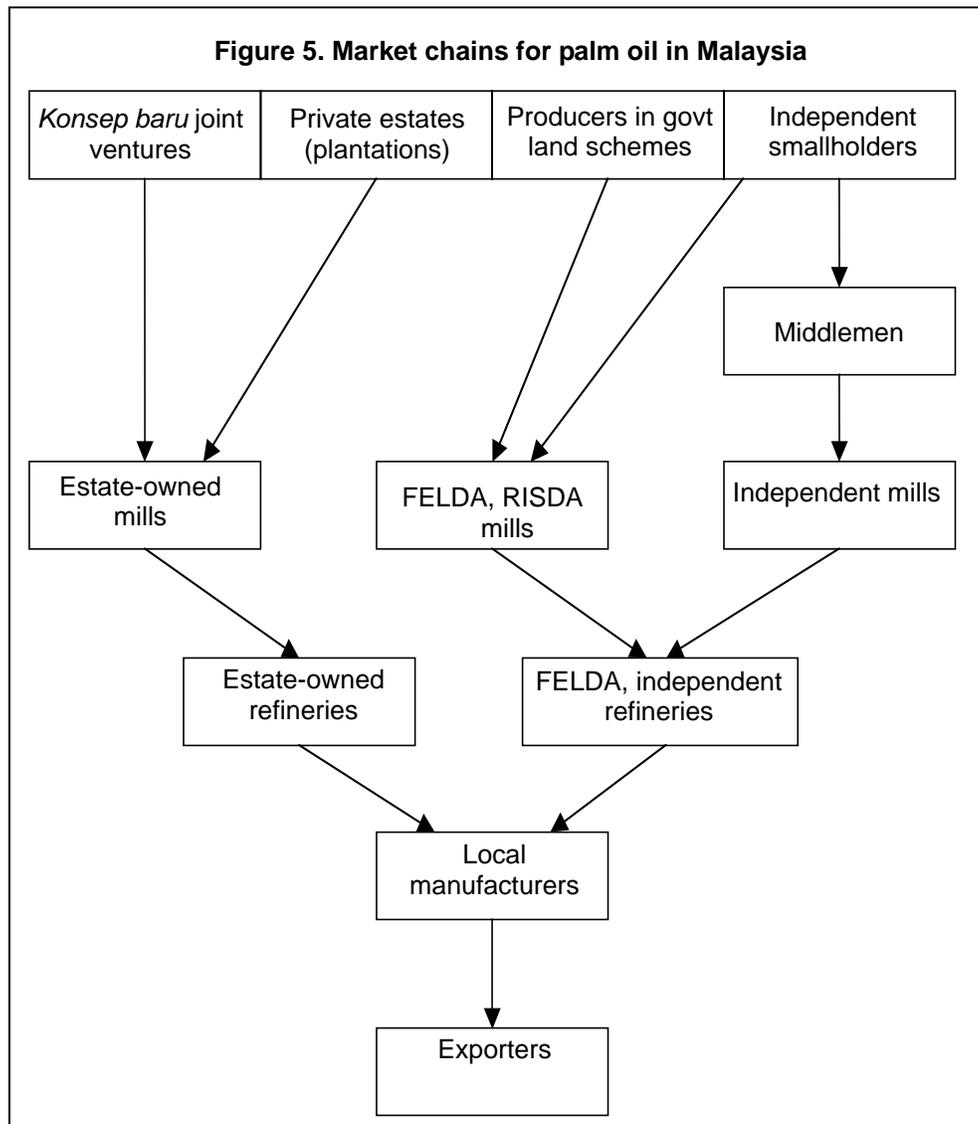
Risk is a major factor for independent smallholders in deciding whether or not to embark on palm oil cultivation (Section 2.5; Papenfus 2000). Supported smallholders may be able to share at least part of that risk with the company or government. A major motivation for smallholders in Malaysia to enter into or remain part of supported schemes is guaranteed sales into international markets, which have greater price stability than local markets (IDEAL 2001). However, there is much less difference between supported smallholders and independent smallholders than in other sectors such as timber production, where supported producers are often protected from market risk in the terms of their contracts.

The recent rapid proliferation of palm oil processing facilities in Malaysia and, particularly, Indonesia (IIED and Proforest, 2004) has created a much more open market for fresh fruit bunches, allowing considerable growth in the

independent smallholder sector in both countries (Fairhurst 2003). In Malaysia, independent smallholders are free to sell either to independent dealers (middlemen) or directly to mills owned by government land development schemes (Figure 5; Table 5) – though in many or most cases only one mill will be sited in close enough proximity to the smallholding to allow rapid delivery of fresh fruit bunches. Arrangements in Indonesia are similar. However, the functioning of market chains (value sharing, market power) for independent producers remains poorly understood.

Independent growers have the potential to gain a greater share of the value chain of palm oil, especially the milling stage, if they are able to come together to invest in facilities. But lack of capital and collateral can be a serious impediment. For example, Potter and Badcock (2004) found that plans to establish a mini-factory in Riau Province, Indonesia, to process smallholder production, were yet to get off the ground because smallholders were reluctant to give up their land certificates as surety.

An open market may create opportunities, but also brings additional risks. For example, independent smallholders are particularly vulnerable to theft of fresh fruit bunches. The rise in prices in the late 1990s was accompanied in Malaysia by an expansion in the number of dealers (middlemen) licensed to buy directly from producers. Unfortunately, they could also buy from palm kernel thieves able to undercut the price demanded by growers (Chong 2000).



Source: Adapted from PORIM and UPM 1988

Independent smallholders may also bear a greater part of the risk associated with the need for fresh fruit bunches to be delivered within 24 hours of harvest, associated with daily changes in:

- Distance and weather (can they get the fresh fruit bunches to the mill in time)
- Transport (is there a reliable source of transport)
- Mill procurement policy (will the mill be under or over capacity; what level of quality standards will be applied; what price will be set that day)
- These factors may be less problematic for supported smallholders who have company-run transport schemes and possibly better access to demand and price information from the mill.

3. Ways forward for smallholder palm oil

3.1 Overcoming major constraints for smallholders

Making progress towards more viable, more sustainable palm oil production for smallholders and their wider communities is largely a matter of overcoming current constraints. The key areas of concern for smallholder farmers include ownership status, cash requirements for meeting upfront expenses to grow palm oil, access to reliable information and the need to balance subsistence security with cash crop production. Additional problems, such as the risk associated with global price fluctuations, are noted in Table 6.

The most tenacious constraint is perhaps land disputes. Disagreements and uncertainty over land tenure are widespread. In 2000, all 81 oil palm plantation companies in Sumatra, Indonesia, reported land disputes with local communities (Kartohardjo and Supriono 2000). In Malaysia, NCR landowners have been reluctant to invest in joint ventures by handing over land, which they see as a right of inheritance rather than of exchange (Sarawak Penan Association 2005). Similarly, holders of customary land rights in Indonesia are challenging the lack of recognition of the rights of indigenous people in the allocation of land for oil palm plantations, and unfair practices in allocating plots to smallholders from the larger plantation area (Serikat Petani Kelapa Sawit 2006). Land tenure insecurity on smallholdings limits people's investment in palm oil (Papenfus 2000).

In terms of access to capital, perhaps the next most important problem, international and domestic banks provide large loans to estates (Casson 2000), but do not target smallholders, for the following reasons (IIED and Proforest 2004):

- Lack of creditworthiness
- Limited deal sizes
- Hence applicable risk premiums are too high for smallholders

In the absence of external sources of credit, a few companies provide favourable loan terms to supported smallholders (see Appendix 2), but in other cases onerous repayment terms are imposed. Communities in West Kalimantan, Indonesia, report that one company has expected credit repayments of 30% crude palm oil production per month on a credit of IDR 11.4 million (EUR1,045; DTE 2005).

Information – on prices and pricing policies, market opportunities, technical aspects of production and site management, and more fundamentally on rights and options under national law or formal agreements – is also a major difficulty for many smallholders. The issue here is not only access to information, but trusting the information that comes in, given that independent sources are rare.

The other key constraint, food security, may provide opportunities as well as difficulties. An attractive feature of tree crops is that they can be established, managed and harvested using family labour, though the labour is onerous and select use of hired labourers is increasingly common (NRI 2003). Palm oil smallholders have been successful in balancing food and cash crop production if allowed by governments and companies within supported smallholder schemes (see Section 2.3). Government and donor development programmes have often favoured export tree crops over domestic food crops, but for many smallholders this has meant better than average governmental investments in local infrastructure (NRI 2003).

Smallholders, governments, companies and NGOs are coming up with solutions – partial or complete – to specific constraints in smallholder palm oil production. Solutions are situation-specific, arising out of particular biophysical, tenurial, market and policy conditions. This will limit the transferability of tools and innovations from one successful context to another untried context. In particular, the prevailing conditions in the two major producer countries, Malaysia and Indonesia, are very different, and differ further among provinces, states or districts (Appendix 1). But contextual differences do not mean lessons cannot be transferred – practitioners can use their own best judgement to pick up and apply what might work from another context, and discard what is irrelevant.

Table 6 gives a summary of solutions and innovations that are emerging in response to constraints in smallholder palm oil production as experienced by smallholders, their wider communities, companies (plantations and mills) and land development agencies. The information in the table comes from the sources used in this review, individually cited in Section 2, and is supplemented by similar experiences from other tree crops, particularly timber (drawn largely from Mayers and Vermeulen 2002).

Table 6. Emerging solutions and innovations to key constraints for oil palm smallholders

1. Constraints for both smallholders and companies (or land development agencies)		
Constraint	Solutions and innovations within the palm oil sector	Solutions and innovations from timber and other tree crops
Land disputes and tenurial uncertainty	<ul style="list-style-type: none"> • Leading companies go beyond legislation in settling land disputes (Indonesia) • Share-based systems can replace individual land holdings, if smallholders agree (PNG, Malaysia, Indonesia) 	<ul style="list-style-type: none"> • Strong public policy is essential for resolving long-standing conflicts over land (Canada, South Africa)
Low productivity and quality from smallholders	<ul style="list-style-type: none"> • Emerging government-supported nurseries for high quality seed stock (Indonesia) • Upfront cash incentives to encourage use of inputs and overcome cashflow problems (PNG) • Acceptance that smallholders have rational priorities other than yield maximisation (PNG) 	<ul style="list-style-type: none"> • Timber companies diversify into commercial nurseries for high quality seed stock (India) • Smallholders empowered to selectively hire services of government extension agencies (India, Vietnam, Canada)
More difficult for smallholders to comply with standards, particularly RSPO principles and criteria	<ul style="list-style-type: none"> • Dedicated Smallholder Task Force of the RSPO exploring options 	<ul style="list-style-type: none"> • Group certification in forestry, to lower costs of compliance for smallholders and community groups (Honduras) • Possibility of stepwise or differential standards (Indonesia)
Lack of clear and reliable mechanisms for dispute resolution	<ul style="list-style-type: none"> • RSPO principles and criteria require companies to set up workable mechanisms 	<ul style="list-style-type: none"> • Government provides both policy context and actual mediation services (China, South Africa)
2. Constraints for smallholders and their communities		
Constraint	Solutions and innovations within the palm oil sector	Solutions and innovations from timber and other tree crops
Lack of access to capital for investment (and reluctance of smallholders to use land as collateral)	<ul style="list-style-type: none"> • Cross-sectoral government-subsidised credit schemes for individuals and cooperatives (Indonesia) • Company provides interest- 	<ul style="list-style-type: none"> • Small-scale local banks and micro-credit to provide flexible loans (Bangladesh, India) • Credit based on

	<ul style="list-style-type: none"> free credit for selected inputs (NBPOL, PNG) Equity through Land Bank mechanism (Konsep Baru, Malaysia) 	<ul style="list-style-type: none"> government land guarantee rather than actual market value of smallholdings (Vietnam; similar to Land Bank mechanism)
Low access to reliable information	<ul style="list-style-type: none"> NGOs provide additional information and help to find and interpret formal documents (Sawitwatch, Indonesia) International agencies write and share practical guidance on palm oil for smallholders (FAO) 	<ul style="list-style-type: none"> Exchange of information through producer groups and associations (commodity groups in India)
Trade-offs between cash crop production and food crop production	<ul style="list-style-type: none"> Allow intercropping of young oil palms (PNG, Indonesia) Allow land to be set aside for food production (PNG, Malaysia, Indonesia) Flexible labour schemes (mobile card, PNG) 	<ul style="list-style-type: none"> Intercropping of young trees, or mixed 'forest gardens' (Indonesia)
Long-term crop with volatile world price, hence high risk compared to other land uses	<ul style="list-style-type: none"> Intercropping and mixed land use to provide more diverse sources of income and food security, especially in early years (PNG, Indonesia) Income diversification schemes such as livestock (Indonesia) 	<ul style="list-style-type: none"> Government provision of business services such as predictive market information (Thailand) Small-scale insurance badly needed (though few examples) Stepped harvesting to provide early income from small timber (Indonesia)
Monopsony purchase by mills (due to geographic dispersion)	<ul style="list-style-type: none"> Standardised fair and transparent pricing systems (e.g. FELDA, Malaysia; recently improved formula, Indonesia; minimum price linked to Rotterdam price, Brazil) Government support of expansion of processing facilities causes proliferation of mills (Malaysia, Indonesia) 	<ul style="list-style-type: none"> Competitive, economically efficient chain of buyer intermediaries in the rubber sector (Malaysia)
Low bargaining power: difficult to negotiate terms and prices	<ul style="list-style-type: none"> Self-organisation into local associations and cooperatives (Brazil) Links with national and 	<ul style="list-style-type: none"> Grower contracts with built-in timeframes for renegotiation (Indonesia, South Africa)

	<ul style="list-style-type: none"> international NGOs and trade unions (Indonesia) Schemes to transfer control over at least some decisions (e.g. labour) to smallholders (mobile card scheme, PNG) 	<ul style="list-style-type: none"> Support from third parties such as government agencies and NGOs (Guatemala, Australia)
No share in post-harvest added value	<ul style="list-style-type: none"> Emerging cooperative mills (Malaysia, Indonesia) Government job creation policies a useful lever (Indonesia and others) 	<ul style="list-style-type: none"> Associations of growers in wattle tannin industry invest collectively in downstream processing (South Africa)
Lack of broader social development	<ul style="list-style-type: none"> Company uses tax-breaks to fund local infrastructure (NBPOL, PNG) Free public transport scheme (Agropalma, Brazil) 	<ul style="list-style-type: none"> Land allocation to plantations contingent on social responsibility agreements with communities (Ghana)
Adverse environmental impacts	<ul style="list-style-type: none"> Mandatory for new plantings to occur on degraded areas only (Agropalma, Brazil) Civil society court cases to tackle illegal burning (Indonesia) 	<ul style="list-style-type: none"> Water-using companies exploring use of tax breaks to fund direct payments to farmers for upstream environmental protection (Indonesia)
3. Constraints for companies and land development agencies		
Constraint	Solutions and innovations within the palm oil sector	Solutions and innovations from timber and other tree crops
Transaction costs of dealing with large number of individual smallholders	<ul style="list-style-type: none"> Smallholders organised into legally recognised local cooperatives (Indonesia) Contracts are with associations and cooperatives of smallholders rather than individuals (Brazil) Companies fund shared, centralised rather than individual extension service (PNG) Tax incentives to purchase from smallholders (Brazil social seal system) 	<ul style="list-style-type: none"> Cooperatives and associations to lower costs and improve marketing (Brazil, Guyana) Company contracts neutral go-between (South Africa)
Unreliable rates of supply from smallholders, from inaccessible plots	<ul style="list-style-type: none"> Company takes full responsibility for collection of fresh fruit bunches, with dispersed collection points (NBPOL, PNG; GOPDC, Ghana; Côte d'Ivoire) Incentive schemes for flexible and efficient labour 	<ul style="list-style-type: none"> NGOs provide assistance to small-scale business planning and projections (Brazil)

	<p>movement among smallholders' plots (PNG)</p> <ul style="list-style-type: none"> Outstanding need for regulation of independent buyers, to control theft of fresh fruit bunches (Malaysia) 	
Smallholders default on loan repayments	<ul style="list-style-type: none"> Repayment of loans as a proportion of crop rather than in cash (Nigeria, PNG) Provision of loans and inputs determined by past performance (GOPDC, Ghana) Upfront capital is co-financed by smallholder, rather than from company alone (GOPDC, Ghana) 	<ul style="list-style-type: none"> Shift in forestry away from supported growing to independent growing (India, South Africa) More flexible and renegotiable loan terms (Indonesia) External sources of insurance for smallholders (though few examples)

3.2 Maximising benefits from current trends in the palm oil industry

This section outlines six key trends in which palm oil smallholders could see increasing opportunities to improve market opportunities for sustainable production, but also face many uncertainties: the RSPO, emerging biofuel markets, access to technology, associations and alliances, and consumer-based initiatives.

RSPO: The Roundtable on Sustainable Palm Oil (RSPO) is a global association of organisations throughout the palm oil supply chain to promote sustainable palm oil through open dialogue. The focal activity of the RSPO has been development of practicable principles and criteria (P&C) for production of sustainable palm oil. So far, the P&C have been developed primarily for the plantation rather than smallholder context, though the P&C do refer directly to smallholders and have two specific criteria relevant to smallholders (criterion 4.8 on training of workers, smallholders and contractors and criterion 6.10 that requires growers and millers to deal fairly and transparently with smallholders and other local businesses).

Strengths of the RSPO process have included its transparent, inclusive, consensus-based process, and its rapid progress, first towards a set of practical P&C and now in field-testing of those P&C. The main shortcomings of the P&C process have been (Colchester and Lumuru 2005):

- Draft texts have been slow to be translated into Spanish, French and Bahasa (the national languages of Malaysia and Indonesia), limiting accessibility, especially among smallholders and local NGOs
- Representatives of indigenous peoples, farmers, smallholders and plantation workers have not been directly involved

In response to these shortcomings, the RSPO General Assembly elected in November 2005 to form a Smallholder Task Force to 'encourage the maximum possible engagement of smallholders, smallholders' organisations, non-company extension services and growers' associations. The first meeting of the Smallholder Task Force in February 2006 agreed the following sequential goals (RSPO Secretariat 2006):

- Ensure that RSPO materials are translated into the major national languages of the main countries with smallholders engaged in oil palm cultivation
- Carry out diagnostic surveys of smallholder situations and their views
- Carry out and document trials of the application of the RSPO principles and criteria with smallholders
- Hold open consultations
- Propose revised principles and criteria and / or guidance to RSPO

The critical point of control for implementing the RSPO P&C is the mill (Segers and de Man 2006). Only the mill is able to verify oil palm supplied by all growers, including plantations owned by the mill-owning company, other plantations and smallholders. There is an obvious risk that demanding the same standards from smallholders as from plantation companies will be too costly for smallholders and put them out of business. But there is an obverse risk for mills that meet the criteria for production from their own plantations but purchase a sizeable quantity of fresh fruit bunches from smallholders that do not meet the criteria. Possible means of applying the P&C to smallholders are:

- Requiring smallholders to fulfil the P&C in full (with the option that the mill partially or fully funds the verification process and necessary improvements in the management system)
- Requiring smallholders to fulfil a sub-set of the P&C, or the full set at lower standards
- Requiring the mill to procure a certain percentage of its throughput from sources that meet the P&C
- Requiring different standards for different sets of smallholders, e.g. supported and independent smallholders

These are among the choices that will be considered by the RSPO via the Smallholder Task Force's wide consultations and trials.

Of course there are risks associated with multi-stakeholder roundtable processes such as the RSPO. These include getting enough participants on board to enable broad and meaningful change, and maintaining participation and transparency among all groups to counter criticisms that roundtables are nothing more than "unholy alliances" that seek good publicity but shirk real change.

Emerging biofuel markets: Many countries now have targets for converting to biomass-based fuels, including China, the EU, USA and Malaysia. To meet

this demand, global production of biodiesel is expected to quadruple by 2020. This should create a massive increase in demand for palm oil, with expansion in the area under the crop, particularly in Indonesia (Monbiot 2005). The governments of Malaysia and Indonesia have issued a joint statement setting aside 40 % of palm oil output in the two countries to biodiesel manufacture. Malaysia has approved 32 licences for manufacture licences, with a total capacity of around 3 million tonnes of biodiesel per year (Thukral 2006). The largest of these factories, with a capacity of 150,000 t / yr and owned by Golden Hope, will be operational by 2007 (AFP 2005).

In the short-term, this is a great opportunity for oil palm smallholders. The effects of this new and rapidly growing market might be to drive up the price of palm oil, which could be good for producers in general and smallholders in particular. There may also be potential for development of small-scale storage and conversion technologies for fuel end uses. In the longer-term, the environmentalist agenda behind the switch to biofuels means the energy industry will need to give watertight proof of the environmental sustainability of biofuels. Issues around land use changes in particular, and competition between soy and palm oil, may mean the biofuel industry has complex effects on oil palm production. Smallholders may be able to gain advantage by demonstrating more favourable environmental impacts than large-scale plantations or alternative crops.

Appropriate technology and information networks: Using higher quality planting stock should provide a smallholder with more or less double yield over 25 years (Zen et al 2005). Therefore providing emerging smallholders with access to good planting stock is one of the most cost-effective technical interventions available to governments and large-scale companies. It is not just technology that counts, but the surrounding system of support, including technical advice and back-ups, training, and better loan terms. The other major issue, as highlighted in the previous section, is access to reliable information. Guidance for smallholders does exist (e.g. the technical manual by Diemer et al 2004) but is not widely available. There is a major role here for modern information technologies and networking.

The authors Zen et al (2005) note that micro-interventions (e.g. nurseries and income-diversification schemes) have a much better history than macro-interventions (e.g. price and trade controls) of bringing returns to palm oil smallholders. From their field research in Indonesia, they recommend the following ways forward:

- Allow intercropping around immature oil palm, supported by advice on cash cropping, cattle and marketing
- Provide training for nucleus plantation staff on technology transfer, effective land transfer and sustaining good community relations
- Provide oil palm cooperatives with greater guidance and monitoring
- Increase flexibility in interest and loan repayments by plasma

- smallholders to nucleus companies
- Set up a government-run loan fund for independent growers
- At district level focus on effective micro-interventions such as nurseries of subsidised high-yield planting materials, backed by a technical advisory service

Associations and alliances: Local and national level membership organisations for small producers have several important functions: to reduce production costs, coordinate marketing, access information, allow labour specialisation, maximise best-fit research and development, increase bargaining power and influence policy (Macqueen et al 2005). Organisations for oil palm smallholders already exist at both local levels (e.g. cooperatives in Indonesia) and national levels (e.g. APKASINDO, the Indonesian Association of Palm Oil Farmers, and NASH, the National Association of Smallholders in Malaysia).

To date, producer associations and alliances have had mixed success. Rare examples of direct action by smallholders suggest that smallholders and their communities are fairly isolated, and organise around specific conflicts with specific companies, rather than at a broader, more unified, policy-oriented level. For example, in Cote d'Ivoire, Palm-Ehania Agricultural Cooperative organised an 'unlimited strike action' among outgrowers in 2001, refusing to sell fresh fruit bunches to three company-owned mills/factories (outcome unknown; WRM 2001). In the forestry sector, even fairly powerful associations of small producers have not been able to negotiate better price or contract terms with companies, though successes have come elsewhere, such as in buying shares in processing companies (Mayers and Vermeulen 2002). NASH in Malaysia, which represents mostly small farmers with over 10 ha of land, does not negotiate on pricing, but generally only for grants from the government (Achuthan Navamukundan, personal communication, 2006).

The RSPO recognises a critical need to engage with legitimate representative smallholders' organisations (RSPO Secretariat 2006). This engagement may in many cases need to be bolstered by building organisational capacity. There may also be space, within the RSPO or in broader policy processes, for political alliances between smallholders and larger producers. For example, the recent proposal by the Indonesian government to raise export duties on crude palm oil was quickly condemned by representative organisations of both large producers and smallholders – emphasising the particular threat to smallholders who are less able to absorb additional costs (Wulandari 2005).

Consumer-based initiatives: To date there is little perceived demand for Fair Trade or environmentally friendly palm oil products. The crop is perhaps under less surveillance and consumer pressure than soy because genetically modified cultivars are not yet in commercial production. To retailers there are few advantages in buying palm oil from specific smallholders who meet social

or environmental standards. For example, the Body Shop reports: “We do not believe that sourcing from niche provider of organic or fair-trade palm oil would help the hundreds of thousands of people in Southeast Asia, South America and West Africa whose livelihoods depend on palm oil. Likewise, we would not be helping these communities by switching to a different type of oil” (Netterstrom, 2005).

Small-scale consumer initiatives do exist in both the EU and the USA (Table 7). Little Satsuma’s “palm-oil-free soap” do not specify which oil is used in its manufacture, so dodges the issue of whether or not this is more sustainable than palm oil. It justifies avoidance of palm oil on the basis of conserving habitat for orang utans in Borneo, ignoring broader concerns such as smallholder or other human welfare issues. While some retailers use a Fair Trade label, Fairtrade Labelling Organisations International (FLO) has not in fact designated palm oil as a Fair Trade product.

On the environmental side, while there is a great deal of publicity and lobbying around the negative impacts of oil palm, neither plantations nor smallholders are singled out for special consideration. A recent anti-palm oil advocacy report aimed at consumers in the USA did not distinguish the environmental impacts of large-scale plantations from those of smallholders (Brown and Jacobson 2005). While the evidence is weak so far, there is may be future potential for smallholders to defend and differentially market their product on social and environmental grounds (see Table 3). However, there are several limitations to consumer-based initiatives and niche marketing for palm oil, particularly the misleading narrowness of a single-commodity focus, which fails to understand agriculture in its global context (Basiron 2006).

Table 7. Examples of consumer initiatives for palm oil

Company	Product	Selling point / justification
Little Satsuma, UK Patersons, UK	Palm-oil-free soap Palm-oil-free oatcakes	Avoiding palm oil conserves habitat for orang utans in Borneo
Akamuti, UK	Fair trade ‘wildcrafted’ red palm oil (for skincare), sourced from Togo	Organic ‘fair trade’ (not FLO) product that maximises benefits to both consumers and producers
Tropical Traditions, USA	Virgin red palm oil (for cooking), sourced from West Africa	Organic (USDA certified)

Public policy incentives: Globally, governments are recognising that systems of market regulations and incentives are critical to shaping rural landscapes and livelihoods. Most seek to maintain mixed landscapes that cater for conservation, subsistence and leisure as well as for efficient cash crop production, and real choices for rural residents in their lifestyles and economies. Smallholdings are a vital component of this vision, and hence governments are in some cases trying out new policies to support smallholders without creating perverse incentives within the broader market.

A recent example is the “Social Fuel” seal in Brazil, which seeks to promote social inclusion throughout the production and value chain of biofuels. Companies that purchase crops for manufacture into biodiesel are eligible for a tax reduction if they purchase 10-50 % (differs among Brazilian states) of their total input from smallholders. The seal is awarded by the Ministry of Agrarian Development. Companies must have legally binding agreements with the smallholders from whom they purchase, guaranteeing a specific income level and access to technical assistance and training. So far the scheme includes about 2,500 smallholder families, producing mainly castor beans, but is projected to grow to include 360,000 producing a range of biofuel crops (National Biodiesel Production and Use Programme 2006; Dickerson 2006). This concept might well be applicable to non-biofuel crops and in other countries.

4. Towards multi-stakeholder action: what next for research

Real progress in improving sustainability and equity in smallholder palm oil production will require action from a range of stakeholders, including smallholders, smallholders' associations, government agencies, plantation and milling companies, traders and retailers, and key third parties (e.g. people's organisations, NGOs, banks, insurance agencies). Moving forward requires engagement with all groups, as in the current RSPO approach.

The aim of this diagnostic report has been to provide research in support of improving smallholder palm oil production for the benefit of smallholders and others. The immediate objective has been to scope out existing information on smallholder palm oil production and to identify gaps where further information may be needed. The main gaps identified fall under the four headings below.

Particular success factors in contracts and arrangements for supported smallholders: In the two largest palm oil producing countries, supported smallholder have fairly standardised mechanisms for interaction with companies (Indonesia) and land development agencies (Malaysia). But there is scope for greater diversity, as seen in countries such as Papua New Guinea. The next stage is to deepen and broaden the documentation of examples of successes and failures in management mechanisms (e.g. types of contracts, negotiation and arbitration processes, marketing arrangements, credit schemes, grades and standards, sharing of benefits and responsibilities, organisational structures).

Smallholder organisations at local and national levels. Smallholders are only going to make headway locally and in national and international policy processes through grouping together around issues of common concern, such as costs, prices, risk mitigation, improving government policy, and capturing new markets. Practical research could help current organisations to assess their own strengths and weaknesses and to make the changes they need to become more effective, legitimate and resilient in their aims.

Market chains for independent smallholders: An increasing proportion of smallholders in Malaysia and Indonesia are independent – but their independence means that relatively little is known about them, and they have fewer means of policy support and extension services from government. One important area for independent smallholders is market opportunities: how to achieve reliable sales at competitive prices. Research in this area would need to consider distribution of value and of power among the various middlemen and millers to whom smallholders sell their fresh fruit bunches.

Relative environmental impacts of plantations and smallholders: These have potential implications for international markets and policy directions. For example, market signals from environmentally friendly consumers could

develop in response to smallholder production that takes place in a mosaic landscape and is shown to be more likely to support wildlife. Similarly, there might be potential for plantation-smallholder collaboration on locally appropriate integrated pest management. But so far very little is known about the relative impacts of smallholders compared to plantations in areas of environmental concern such as fire or biodiversity.

The next stage of research should be to build on the findings so far to fill in some of the information gaps and then to move on to provide practical guidance for the range of stakeholders linked to smallholder palm oil production. This diagnostic report is a starting point for collaborative research among interested parties, to make specific progress on immediate challenges and to draw out practical lessons for wider application.

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Appendix 1. Differences between Malaysian and Indonesian oil palm sectors

MALAYSIA	INDONESIA
Biophysical and political conditions	
Palm oil production across peninsular Malaysia, Sabah and Sarawak, with relatively consistent conditions	Palm oil production spread over disconnected islands with divergent climatic and topographic conditions
Strong centralised government that allows successful nation-wide schemes (notably FELDA)	Decentralised government with high degree of power vested in district (<i>kabupaten</i>) governments allows local flexibility
Status and trends in palm oil	
Land and labour costs prohibitive to high rates of further expansion of the area under oil palm	Land and labour costs a fraction of those in Malaysia, with considerable expansion of the area under oil palm expected
Refining sector of 16 million MT per year in 2002	Refining sector of 10 million MT per year in 2001; much in-country consumption as cooking oil
Large-scale plantation and smallholder arrangements	
Large-scale plantation companies can obtain land on a freehold basis (peninsular Malaysia) or long-term lease (60-99 years in Sabah)	Land available to large-scale plantation companies on 25-35 year concessions, or 90 years in West Papua
Main models for company-community deals are government-support smallholder schemes (e.g. FELDA) and <i>Konsep Baru</i> , joint ventures with company 60%, community 30% and govt 10% over 60 yrs	Main model for company-community deals is variations on <i>Nucleus-Plasma</i> , where smallholders are allocated individual plots (approx 2 ha) around a central plantation
Relatively large independent smallholder sector as FELDA scheme has matured	Independent smallholders remain a minority

Appendix 2. Examples of individual companies' arrangements with smallholders

<p>Benso Oil Palm Plantation (BOPP), Ghana <i>(Owned: Unilever 58.45 %, Ghanaian Government 40%, Barclays Bank Ghana Pension Funds 1.55 %)</i></p>	
Size of operation	Roughly 6,800 ha of plantations on company-owned land. Turnover of 5.1 billion cedis (EUR 483,000) after tax in 2004.
Smallholders profile	436 tenant smallholders account for 14.5% throughput and 6,000 independent smallholders 33%. Tenants are under written contract and have holdings of 3.75 ha each. Government provides loans to tenants repayable at 16% per annum. Tenants yield on average 12 t/ha (100% tenera variety), while independent growers yield 3-8 t/ha (about 70% dura variety). Dura fruits are bought at 71% the price of tenera (in terms of relative oil content, this figure should be 59%). The company prefers contract arrangements to buying from independent smallholders, because risks are minimised for both sides.
Further information	Smallholders are expected to dominate the future of palm oil production in Ghana. Democratic organisation among smallholders would better enable flows of information (e.g. an understanding of how fluctuations in commodity prices will affect their potential earnings) and access to services. Another possible benefit would a fund to offset smallholders' earnings in years where international prices are low against years of higher earnings.
Source	Personal communication from Billy Ghansah June 2006
<p>Twifo Oil Palm Plantation (TOPP), Ghana <i>(Previously a government-owned company but Unilever now has shares and takes management responsibility)</i></p>	
Size of operation	4,234 ha of plantations on government-owned land in the Twifo-Hemang-Lower-Denkyira District of Central Region.
Smallholders profile	226 tenant smallholders account for 11% throughput and 10,000 independent smallholders 36%. TOPP provides management services to tenant smallholders payable at 30% deduction of the mill value of their crop. Tenants have average yields of 10 t/ha (compared to 16 t/ha in the main plantation) on holdings of 4 ha.
Further information	In 2006, the Agence Française de Développement (AFD) extended EUR 11 million to TOPP to provide loans to new outgrowers at Buabin in the Upper-Denkyira District (goal of 3,000 ha).
Source	Personal communication from Billy Ghansah June 2006 http://www.ghana.gov.gh/news/

<p>Ghana Oil Palm Development Company (GOPDC), Kwaie, Ghana <i>(Owned: Siat (Ghana) Ltd. 80%, Government of Ghana 20%. Siat (Ghana) Ltd., is a joint venture between Siat nv, Belgium (51%), the Social Security and National Insurance Trust (30%) and the African Mutual Fund Ltd. (19%)</i></p>	
Size of operation	19,500 ha of oil palm plantations at Kwaie (Eastern Region). The nucleus estate comprises 5,340 ha of industrial plantation, as well as a processing facility of 150,000 t / yr of fresh fruit bunches (FFB), 30,000 tonnes crude palm oil, 3,000 tonnes crude palm kernel oil.
Smallholders profile	13,137 ha outgrower and 1,023 ha independent smallholder farms, located within a radius of 30 km around the nucleus estate. Performing GOPDC farmers are given the possibility to purchase high-yielding planting stock at a subsidised rate. The contract between GOPDC and the farmer stipulates that GOPDC provides inputs on credit to the farmer (at cost), and the farmer in return supplies 100% of production from the GOPDC planting material to the company. A percentage of the value of the supplied crop is used for loan servicing. The contract is on a co-financing basis: the farmers put up a portion of the investment cost at planting time. The remaining part of the investment is on a loan basis. Farmers have a seven-year grace period on their loan, and start repayment when the trees are in full production. The inputs provided to the farmer comprise palm seedlings, organic fertiliser, technical assistance, and organic pest management. Currently about 7,000 farmers produce on contract for GOPDC. GOPDC operates 33 harvest collection centres, each servicing around 160 farmers with tractors for rapid harvest.
Further information	Since 1999 GOPDC has specialised in organic oil palm, in conjunction with Ecocert (auditor) and Cirad-CP (integrated pest control and soil fertility management). Since 2002 GOPDC plantations have been fully certified as producing organic palm oil. In 2002 GOPDC received a World Summit Business Award for Sustainable Development Partnerships, organised by UNEP and ICC to recognise 'effective multi-stakeholder partnerships designed to pursue and achieve sustainable development'.
Source	http://www.gopdc-ltd.com/main.html
<p>Presco, Nigeria <i>(Subsidiary of Siat, Belgium)</i></p>	
Size of operation	8,100 ha plantations, of which 7,000 are mature; mill with a capacity of 24 t FFB / hr; refinery and fractionation plant with a capacity of 75 t / day; palm kernel crushing plant with a capacity of 40 t / day; 400 permanent staff and 1,000 contract workers.
Smallholders profile	Outgrower scheme started in 2003 and is not yet mature. Involves 64 farmers on 92 ha. Presco provides seedlings and inputs. Hoping to include another 125 farmers in 2006. Independent growers supplied 13,667 t FFB in 2004 (16% of

	mill throughput) and 11,378 t in 2005 (14%). There are about 50 independent growers with 20 delivering at any one time.
Further information	Support to community projects, such as scholarships, boreholes, road maintenance and electricity provision.
Source	www.presco-plc.com ; personal communication from Mr V. McAleer (Director of Operations) January 2006
Agropalma, Brazil (Owned: AlfaBank. The Agropalma Group constitutes 6 companies which control the entire production chain: Agroindustrial CRAI S/A, Agropalma S/A, Agropar, Amapalma S/A, Companhia Refinadora da Amazônia and Companhia Palmarens da Amazônia)	
Size of operation	Agropalma accounts for 80% of Brazil's production and controls a total area of 82,000 ha, of which 50,000 ha are environmental preservation areas and 32,000 ha are plantation. Staff of 2,800 people.
Smallholders profile	In 2006, smallholders will supply a forecasted 31,500 t FFB (3.5% total throughput). Smallholders are organised into associations and cooperatives that have contracts with the company. 190 households on farms from 10-100 ha are involved. The small number means that extension is effective and smallholders match plantations in yields. A minimum price is set at 10% of the CPO price in Rotterdam (16% was paid in 2005). Individual smallholders are paid according to both yield and quality and the company guarantees purchase of the full output. The company provides technical assistance, oversight and loans. Returns are potentially good: the Project of the Colonists do Arauaí (600 ha of palm oil under 50 families) is expected to provide a net income of BRL24,000 / hh / yr (EUR9,480) after 7 years. Expansion over a further 15,000 ha anticipated by 2012.
Further information	It is mandatory for new plantings to occur on degraded areas only, and to avoid riparian forests in particular. The company provides additional benefits to smallholders such as a free public transport scheme.
Source	http://www.agropalma.com.br/en/ ; personal communication from Marcelo S. do Amaral Brita (Director Comercial) January 2006
Kuala Lumpur Kepong Berhad (KLK), Malaysia (Owner of Crabtree and Evelyn)	
Size of operation	145,700 ha, located in Peninsular Malaysia (160,000 ha), Sabah (100,000 ha) and Indonesia (100,000 ha). 1.9 million t / yr FFB.
Smallholders profile	No information on website
Further information	Environmental policy 'to promote environmental awareness' in the company.
Source	http://www.klk.com.my/main.htm

Golden Hope, Malaysia	
Size of operation	190,000 ha of plantations in Malaysia
Smallholders profile	No information on website
Further information	Received the Global 500 Award by the United Nations Environment Programme (UNEP) for its 'zero burning' practices Founder member of the Roundtable on Sustainable Palm Oil Forest Stewardship Council Certification (FSC), ISO 14001, ISO 9000, ISO 9001 and COC.
Source	http://www.goldenhope.com/
London Sumatra (LONSUM), Indonesia (Majority owned by CS Singapore TR AC Clients)	
Size of operation	296,000 tonnes crude palm oil per annum from 37,000 ha (+ 5,000 ha immature) and 31,000 ha mature plasma area (2004).
Smallholders profile	No information on website
Further information	Community schemes include football teams and sponsorship of attendance at Quranic reading events
Source	www.londonsumatra.com
Asian Agri, Indonesia	
Size of operation	Asian Agri owns 26 palm oil plantations and operates 16 palm oil mills in Sumatra. It holds land rights to 170,000 ha, of which 150,000 ha are under cultivation (mostly mature). Capacity to produce around 1,000,000 t of crude palm oil per year.
Smallholders profile	Classic nucleus-plasma scheme: Transmigratory families are allotted 2 ha oil palm estate, a house and land. By the time the family arrives, the plot of land has already been planted with oil palms, which are entering their productive life cycle. The family is fully trained in the care of the plantation, and will, after a designated period of time, be given title to that land. As the plot develops, they sell the increasing quantities of fresh fruit bunches to Asian Agri mills at prices determined using Indonesian government pricing formulae based on prevailing market prices. Size unknown.
Source	www.asainagri.com
PT Musim Mas, Indonesia	
Size of operation	World's largest palm oil refinery. Five palm oil refineries with a combined capacity of 8,000 tonnes crude palm oil per day, or 2.8 million t / yr. Four cooking oil factories in Medan, Bekasi and Sidoarjo, with a production capacity of 877,000 t / yr.
Smallholders profile	1,574 smallholders in 5 locations with a planted area of 3,150 ha. Each smallholder has 2 ha oil palm. The scheme will expand as willing farmers come forward with suitable land.

Source	www.musimmas.com ; personal communication from Mr Tan Tian Sang (Director of Estates) January 2006; Wakker 2005.
<i>New Britain Palm Oil Limited (NBPOL), New Britain, Papua Ne v Guinea (80% owned by Malaysia's Kulim Group)</i>	
Size of operation	836,000 tonnes per year fresh fruit bunches processed (estate of 21,000 ha planted). PNG's largest palm oil plantation and milling operation.
Smallholders profile	Over 7,000 smallholders on customary land and 1,500 tenants on 6ha 'blocks' within the estate, providing 276,000 tonnes per year (33 % of NBPOL's fresh fruit bunches). In addition, there are 12 'mini-estates' leased from customary landowners with a total of 7,524 ha (June 2004 data).
Further information	Company provides interest free credit facilities for seedlings, tools and fertiliser inputs; collects all fresh fruit bunches from the smallholders' block on a fortnightly basis; funds 50% of the Oil Palm Industry Corporation (OPIC), a government body providing extension services to smallholders. Company uses 0.75% tax break to fund local infrastructure such as roads and classrooms.
Source	http://nbpol.ssw.com.au

Towards better practice in smallholder palm oil production

Demand for palm oil is growing fast. Global production has doubled over the past ten years and is expected to double again in the next decade. A major opportunity exists to meet the rising demand in an environmentally and socially sustainable manner through expansion and improvement of smallholder production.

The aim of this report is to provide a systematic overview of the main types of arrangements for smallholder palm oil production, and to identify the most promising current options for improving practice, particularly in arrangements of smallholders with plantation companies and government agencies.

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