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Krismon, farmers and forests:

the effects of the economic crisis on farmers' livelihoods and forest use in the outer islands of Indonesia

By

Arild Angelsen and Daju Pradnja Resosudarmo

Center for International Forestry Research (CIFOR)
P.O. Box 6596, JKPWB, Jakarta 10065, Indonesia.
Tel. +62-251 622 622; Fax. +62 251 622 100;
Email: a.angelsen@cgiar.org or d.pradnja@cgiar.org,

Abstract:

This report presents some preliminary results on the impact of the economic crisis on farmers' livelihood and forest use, based on fieldwork in four provinces in Indonesia (Riau, West and East Kalimantan, Central Sulawesi). We stress the great variation throughout the country, and the volatility of the situation. Price data reveal that some groups of export crops-oriented farmers enjoyed a short-term gain during the first 2-3 quarters of 1998. Soaring food prices and a stronger rupiah since October 1998 have, however, gradually made real prices move towards their pre-crisis levels. Indeed, we found that the crisis has had a larger negative impact on farmers than initially hypothesised, whereas the short-term impact on forest might have been smaller than some feared. Most poor farmers lack the means to take advantage of higher crop prices. Better-off farmers, immigrants and urban dwellers with capital are more likely to utilise the opportunities created by the crisis and convert forests to high profitability crops. We found limited evidence in the survey area of return migration from the cities. An underestimated effect of the present situation might be the lack of law enforcement and a power vacuum, which have made illegal logging and encroachment of protected areas more likely.

1. Introduction[1]

This report presents some preliminary research results on the impact of the economic crisis (*krisis moneter* or *krismon*) on rural livelihood and forest use in the outer islands of Indonesia. There is great uncertainty about the impact of the crisis, due to lack of reliable information, the volatility of the situation, and the variation throughout the archipelago. Furthermore, resource mining and booms in forest products' extraction and forest conversion are not new phenomena. On the contrary, the history of many villages and districts is one of boom and bust periods and unsustainable use of forest resources. This, together with the strong impact of the 1997-98 drought and forest fires (and subsequent harvest failure), also makes it difficult to isolate the effects of *krismon.*

At the same time, there is a great need for policy makers and the general public to get information on the impacts of *krismon*. The present report provides some new data and insights we believe are important, and also challenges some of the views put forward in the debate.

The report is based on three sources of information: (i) Field visits by the authors to four provinces (Riau, West Kalimantan, East Kalimantan, and Central Sulawesi) during the second half of 1998. These visits were the first phase of a larger ongoing CIFOR project on the impact of *krismon*, where the hypotheses put forward here will be tested more rigorously. (ii) Data from two household surveys in selected villages in Riau and East Kalimantan (surveys completed in December 1998 - February 1999). (iii) Official monthly data on commodity prices.

Section 2 puts forward some hypotheses on the effects of the economic crisis. Section 3 describes the development in major agricultural commodity prices during in the period from January 1997 to December 1998. The following section provides field data and observations from the four provinces. The concluding section 5 highlights the following points:

(i) The volatility of the situation, although the period after October 1998 has been a more stable one. (ii) The great variation throughout the country. (iii) *Krismon* has generally had a larger negative impact on farmers' livelihood than initially hypothesised. (iv) The short-term impact on forests by smallholders may, on the other hand, have been smaller than hypothesised. (v) Poor farmers often lack the means to take advantage of the economic opportunities created. (vi) Better-off farmers, immigrants and urban dwellers with capital are the ones most likely to utilise these opportunities and convert forests to high profitability crops. (vii) Limited return migration from the cities has been seen. (viii) The lack of law enforcement and a power vacuum have made illegal logging and encroachment of protected areas more likely.

2. Working hypotheses

General background information on the economic crisis and its effects on the forest sector is found in Sunderlin (1998).[2] The present paper focuses on the smallholder sector; the effect on significant actors such as commercial farmers and timber and oil palm companies is only superficially dealt with.

At the theoretical and 'common sense' levels, one might hypothesise that *krismon* affects smallholders, both their income and forest use, in the following ways:

1. *Changes in prices of agricultural products and consumption commodities.* Generally, one can expect prices of export crops to increase more than crops for the local (domestic) market, while the percentage increase in prices of consumption goods should be somewhere in between. Thus, based on changes in relative prices, export oriented farmers can be expected to gain, whereas farmers producing for local markets may be worse off. Subsistence oriented farmers are likely to be less affected by the crisis. The effect of price changes on forest use is ambiguous: one may argue that higher output prices make forest clearing more profitable and therefore encourage forest clearing. But for poor farmers aiming at a subsistence level of consumption, the reverse may be true: lower real prices of

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[1] With the usual disclaimer, we thank William Sunderlin, Brian Belcher and David Kaimowitz for comments on this paper. We are also grateful to Jusup Tarigan and Narve Rio for providing data from household surveys in Riau and East Kalimantan. The views and conclusions are the authors', and not necessarily those of CIFOR.

[2] The paper is available at: http://www.cgiar.org/cifor/research/projects/project1/crisis1.html

the produce may force them to clear new land and exploit forest products more intensively to compensate for the increased costs of basic commodities.

2. *Urban to rural migration* as a result of increased unemployment in the urban areas. This may lead to greater pressure on forests, either by migrants directly becoming involved in forest related activities, or indirectly by competing with villagers in the local labour market.

3. Reduced investments by timber plantation and oil palm companies. Although still among the most significant actors in the forestry sector, the economic crisis has limited the funds available – both domestic and foreign - for the expansion of oil palm. As the process of forest conversion in Indonesia to a large extent has been capital-driven, one may expect some of these trends to be reversed due to the crisis. While some farmers may benefit from their participation in oil palm schemes, there is a large number of reports about conflicts related to traditional farmers losing their land. One might therefore hypothesise that this development benefits traditional farmers.

4. The economic and political crisis may have undermined the authority of the state, made enforcement of 'law and order' more difficult, and created a 'power vacuum'. This may exacerbate or lead to encroachment in protected forest areas and illegal logging. But it might also create increased local opposition against state-sponsored projects such as oil palm and timber plantations, which should be beneficial from a forest conservation view.

The rest of the report provides some preliminary evidence from the field as to what extent the above hypotheses are valid.

3. Changes in relative prices during krismon

There have been dramatic changes in commodity prices in Indonesia since mid-1997. Figure 1 illustrates these changes, based mainly on wholesale prices in regional capitals. It would have been desirable to use farm gate prices, and some are reported below in the provincial studies. Our experience suggests that farm gate prices for the major agricultural commodities can be expected to follow regional market prices closely. The figure should therefore give the main pattern for some key agricultural commodity prices over the past two years.

Some major conclusions emerge from Figure 1. The prices of some commodities, notably coffee, pepper and cocoa, increased sharply following the depreciation of rupiah. By mid-1998 the price of these crops had increased more than six times compared to the January 1997 level. Since then, prices have dropped and were by the end of 1998 about 3-4 times pre-krismon levels. The strong impact of the exchange rate on these prices is readily seen from the figure, as these graphs follow each other closely.

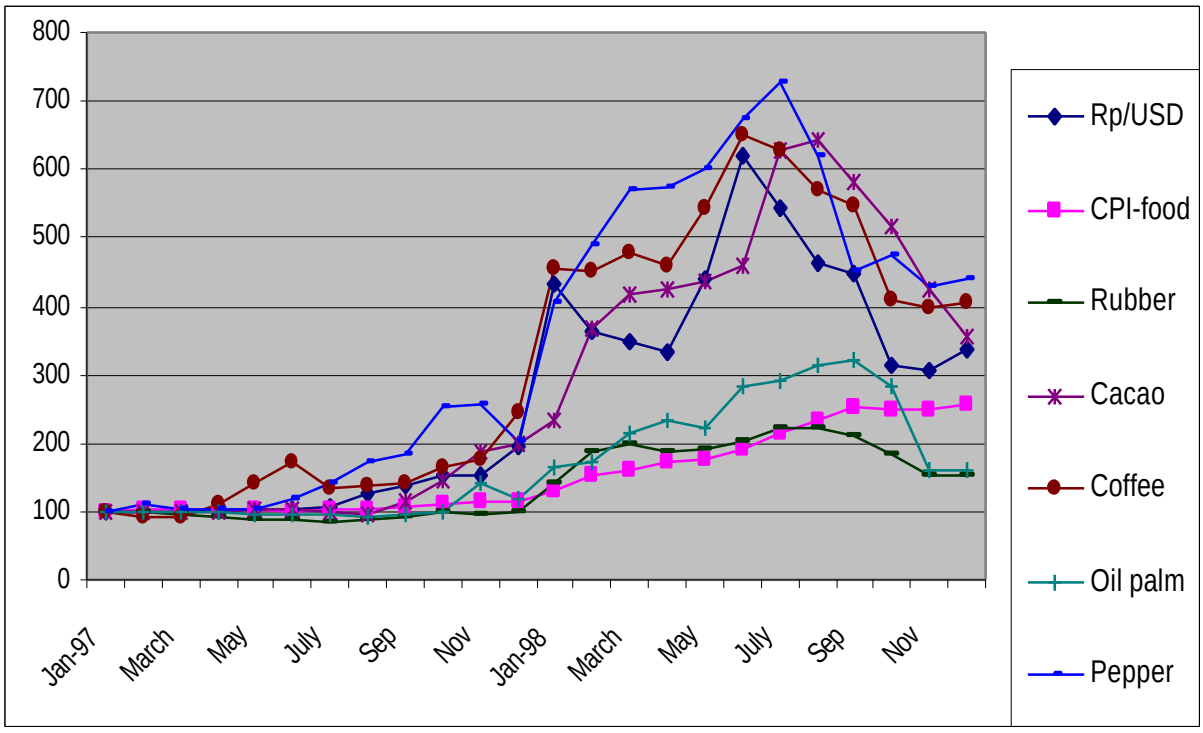

Figure 1. Price index (January 1997 =100) for key agricultural commodities, January 1997 – December 1998.[3]

The prices of palm oil and rubber have experienced less dramatic increases (and decreases). Both reached an apex of 2-3 times pre-krismon levels during the third quarter of 1998. The small increase in the price of rubber, the largest smallholder cash crop, is explained by the declining world market prices in the period.[4] The development of the palm oil price has a

[3] The data are based on a variety of sources: Central Bureau of Statistics, Gapkindo (rubber), DITJENBUN (cocoa, oil palm), and AEKI (coffee). For most commodities we have price data for several provinces, and are using simple averages.

[4] The price of Indonesian natural rubber was US$ 0.58 per kg in December 1998. The world market price has declined significantly over the past two years due to slow growth in Asia and low oil prices (which impacts the

different explanation. The export of crude palm oil (CPO) was banned from November 1997 to April 1998, after which an export tax of 60 pct. was introduced (from January 1999: 40 pct.). Due to this and other government regulations the domestic price is more insulated from exchange rate (and world market price) fluctuations.

While real prices of some export commodities went up drastically during the first half of 1998, they are now approaching pre-krismon levels. Using consumer price index for food (CPI-food) as the deflator, the real prices of pepper, cocoa and coffee were in December 1998 about 1.5 times the pre-krismon level. The real prices of oil palm and rubber were only about 60 pct. of the level two years ago. In other words, the strengthening of the rupiah in the last 3-4 months of 1998 and inflation have wiped out most of the increase in relative prices some groups of export oriented farmers enjoyed during the first half of 1998.

4. Provincial studies

The following provides summary reports from field work in four provinces. In addition to field visits by the authors, in two cases (Riau and East Kalimantan) we also have information from household surveys conducted in recent months as part of other CIFOR research activities.

4.1 Riau

A household survey in seven villages was undertaken in October 1998 - February 1999 in *Kec.* Seberida, *Kab.* INHU, on the border to Jambi, as part of a research project with a more general focus. The villages surround the Tigapuluh Hills, and the area includes a national park. Transmigrants from Java – the first villages were established in 1980 - constitute more than half of the population. Most of the land in the 16 transmigration villages are presently being planted with oil palm, after more intensive food crop cultivation failed after only a couple of years. Malays are by far the largest group among the original people, whereas Talang Mamaks are found in three villages. Among the Malay and Talang Mamak, shifting cultivation (slash and burn) with rain-fed rice fields is still important, but is practised by fewer households than 5-10 years ago. Most households now have mature rubber gardens, and rubber is the main cash income source for these households. Logging has been present since the 1970s, but has

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price of synthetic rubber). Indonesia is the second largest natural rubber producer (1,6 million tons per annum) after Thailand. (Source: Bisnis Indonesia, 9. December 1998)

been substantially reduced in recent years. Illegal sawmills (25-30) have, however, emerged the last 2-3 years. About 10 pct. of the households in the area are directly involved in timber harvesting, and the timber-sawmill business has created a boom economy. About 14 000 ha, mainly former village land (fallows and rubber gardens), have been assigned to two oil palm projects.

A key to understand the local economy is how the prices of rubber and rice have changed during the course of the crisis, as shown in Table 1 below.[5] In the pre-krismon period, one kg of rubber could be traded for slightly less than one kg rice. Until early 1998 the rubber farmers enjoyed a higher relative price of rubber, but this situation changed dramatically as food prices increased 2-3 fold during the second quarter of 1998.[6] Since October the strengthening of the rupiah has implied that local rubber prices declined by about 60 pct., whereas the price reduction in rice and other commodities has been much smaller. In effect, farmers by the end of 1998 needed about 2.5 kg rubber to buy one kg rice.

	June-July 97	*Jan-Feb 98*	*June-July 98*	*Oct-Nov 98*
Rubber (kg)	900	1 400	2 800 - 3 000	1 000 – 1 200
Rice (kg)	1 000	1 200	3 500 - 4 000	2 800 - 3 000

Table 1. Rubber and rice prices in Kec. Seberida, Riau.

Household income

Many farmers enjoyed a temporary increase in real income following the increase in rubber price, but after the price declined during second half of 1998, most farmers are worse off than before the crisis. Rice self-sufficiency is low (on average only about 10-15 pct. of rice consumption in Malay villages is produced locally), and the cost of living has increased more than residents' income. The main response to the crisis appears to have been a reduction in consumption, rather than compensating for the food price increase by enlarging existing agricultural areas or engaging in new activities (although there are some indications of intensification).

[5] Prices vary within the area and within the time period referred to; these are approximate average figures intended to give the overall picture of price fluctuations.

[6] Field data suggest that the price increase for rice and other basic commodities was much higher than suggested by the consumer price index (CPI).

Opening of swidden fields (ladang)

In 1991 about 53 pct. of the households in the sample opened a swidden field (*ladang*), mainly in secondary forest (old fallows). Since then there has been a significant decline to about 20 pct. in 1996. This is mainly a reflection of increased income from rubber and scarcity of forest land suitable for shifting cultivation (i.e., close to village, roads and rivers). Interestingly, there is a marked increase in the share of households opening *ladang* from 1997 to 1998, reaching about 34 pct. in 1998. Behind this average figure hides some marked differences among the villages, as illustrated in Figure 2. In both the remote (Sipang, Cinaku Kecil) and central (Kuala Kilan, Pangkalan Kasai, Seberida) Malay villages there is a sharp increase in the share of households opening *ladang*, while the frequency declines in the two (remote) Talang Mamak dominated villages (Siambul and Rantau Langsat).

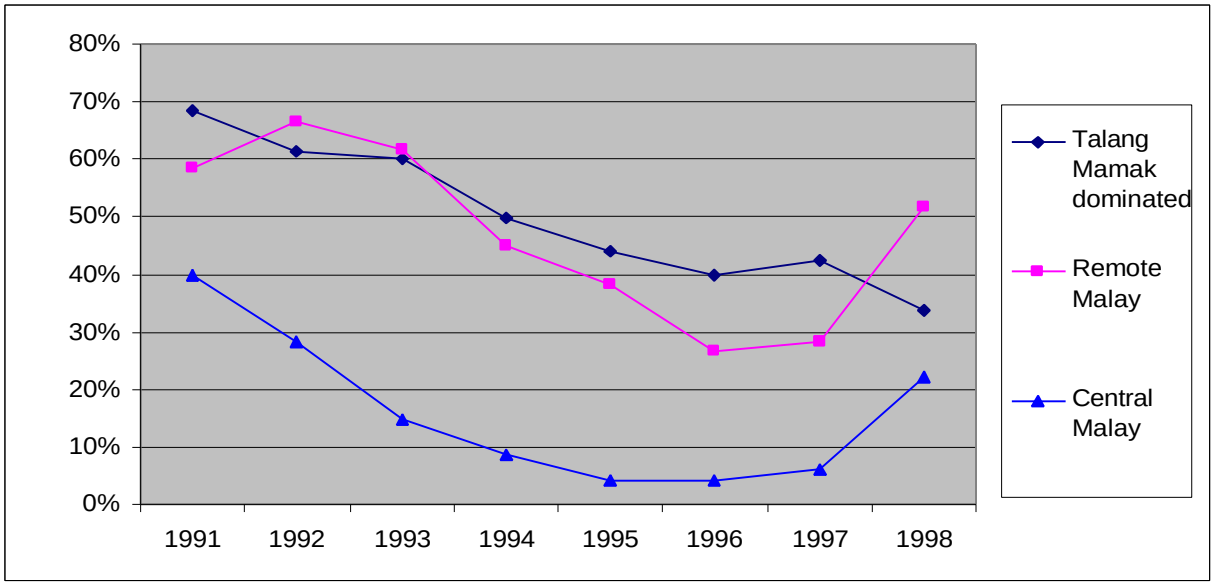

Figure 2. Pct. of households opening swidden fields in Kec. Seberida, Riau.

What explains the different responses? The Talang Mamak villages are generally poorer, and depend more on shifting cultivation. Some households reported that they could not afford to open *ladang* in 1998 as the harvest failure for the 1997-98 season meant they had to buy rice seeds. The Malay villages in the survey are generally better off, and the observed increase supports our general hypothesis about better-off farmers being more able to take advantage of the opportunities created at the time of the crisis. Note that the rubber planting in this area probably remains the main reason for opening *ladang*, rather than rice production (as is more

the case in the Talang Mamak villages). At the time of land clearing (June-July 1998) the price of rubber reached its apex.

Forest products

Among the Talang Mamaks, there has been increased collection of forest products in 1998, mainly large-cane rattan (*manau*) and beginning in 1998, turtles. The reason, however, is last year's crop failure rather than *krismon.* In the Cinaku valley, extensive logging – mainly for local sawmills – is having a significant impact on the forest.[7] Although timber prices have increased 2-3 fold during the crisis, less timber is reportedly being harvested now compared to a year ago because the valuable species are only found further away.[8] There is little evidence that the logging has increased due to *krismon*, although the loggers and sawmills owners have benefited. A few new sawmills were established in 1998, possibly taking advantage of the 'freer' political environment. But one should keep in mind that most sawmills were established before the economic crisis and the political changes in May 1998, and is representative for the boom-bust cycles found in forest exploitation.

Migration

In the household survey we asked whether any household members have returned from work in the cities in the last year due to the crisis. Five out of the 210 households included in the survey reported such return migration within the family, indicating that return migration has not been a widespread phenomenon in the district. One explanation may be that the economy in Riau is natural resources and export based (forest and oil), and these sectors are less affected by the economic crisis.

Conclusion

The area is facing significant pressure on its remaining forests, mainly from oil palm and illegal logging, but the evidence so far suggests that neither of these activities have increased due to the economic crisis. As regards forest clearing for shifting cultivation (mainly secondary forest), we observe a marked increase in the better-off Malay villages. Collection of certain

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[7] One rough estimate is that between 1-2 000 m^3 is leaving the area every night.

[8] One small observation to illustrate how lucrative the timber-sawmill business is: the buffaloes being used to pull the timber out of the forest are fed on duck eggs mixed with *jamu.*

forest products has increased in some remote areas, but probably more as a reflection of the drought and harvest failure than *krismon*.

In comparing the pressure from different actors the following illustrates the proportional importance. Based on available data on the number of households, the share of households engaged in shifting cultivation, the share of fields opened in primary forest, and field size, a maximum 200 ha of primary forest (and approx. 1 400 ha of all types of forest) was cleared by shifting cultivators in 1998. This compares with the two oil palm projects presently converting approximately 14 000 ha.

4.2 East Kalimantan[9]

As part of the same project that did the survey in Riau, a socio-economic household survey was conducted in three villages in *Kab.* Pasir, East Kalimantan in the period November 1998 – January 1999 (Modang, *Kec*. Kuaro, and Kasungai and Rantau Layung, *Kec*. Batu Sopang). Field visits were also made to the *Kab.* Kutai in 1998. The characteristics of these three villages vary greatly, from the quite isolated Rantau Layung[10] to Modang which is located along the main road from Balikpapan to Banjarmasin. Farming systems span from traditional slash and burn systems to 'modern' oil palm plantations. Some households have maintained a high income from forest products, including timber.

Traditionally, the most important cash income is from honey and coffee, and historically rattan has been of some importance. In Kasungai bananas and also birds' nests and gold panning are currently important cash-generating activities, in addition to dryland rice production. In Modang the palm oil industry is slowly gaining more and more influence, and more than half of the households in the survey depend mostly on this sector. Oil palm has led to a reduction in shifting cultivation, either because land was converted to oil palm or because farmers found oil palm more attractive.

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[9] We are thankful to Narve Rio, Chr. Michelsen Institute, Norway, for providing most of the quantitative information which this section is based on.

[10] Note that although Rantau Layung is quite isolated, the villagers are economically far better off compared to, for example, the villages of similar remoteness in the Riau survey. Many families own a chainsaw and outboard engine for their riverboats.

Livelihoods

The drought and the subsequent forest fires have had substantial impacts on smallholders' livelihoods, and probably more so than in any other province in Indonesia. These events generally had more dramatic impacts on the households' livelihood than the economic crisis, although it is difficult to separate the effects of the drought and fires from those of *krismon.* Throughout the area of Kutai and Pasir the harvest from the dryland rice fields (*ladang*) failed in 1997-98. Most families that rely on *ladang* said that 1998 was the first year ever in which they had had to buy rice. The yield of other agricultural products, such as corn and coffee, also was affected by the drought. Forest product harvesting was also seriously affected (fruit, honey, rattan etc.). Thus, the *krismon* should be seen in the light of the already very severe situation created by the 1997-98 drought and forest fires.

Even though the combined impact of the drought, fires, harvest failure and *krismon* may have been more severe than in many other areas, people in the villages surveyed also had a number of coping strategies to deal with the crisis. There has been increased collection of some forest products (including timber), many have been searching for gold when its price multiplied, and the price of some cash crops such as coffee and oil palm has been favourable.

Shifting cultivation

In Kasungai and Rantau Layung about 4 out of 5 the households plant dryland rice (*ladang*) every year, while in Modang only about 1/3 of the households are involved in this activity. In Rantau Layung and Kasungai the involvement in shifting cultivation shows an amazing stability throughout the 1990s, and does not appear to be affected by the crisis. In Modang, however, the share of households planting rice on a *ladang* dropped from 37 to 20 pct. from 1997 to 1998.

Most households grow rice twice on the swidden before the plot is planted with cash crops (or, although increasingly rare, simply left for natural re-growth and fallow).[11] Figure 3 shows the percentage of households opening a *new* field in the forest for *ladang.*[12] We observe a

[11] Also this contrasts the situation in Riau where rice is normally only grown once before cash crops (mainly rubber) are planted.

[12] In other words, the figures do *not* include those who used last year's field. The share of households cultivating dryland rice is more stable over time than the share clearing forest for *ladang*.

decline in all villages, although it appears to be within the natural fluctuations in Rantau Layung and Kasungai. In Modang, however, only 7 pct. of the households opened a new swidden field in 1998.

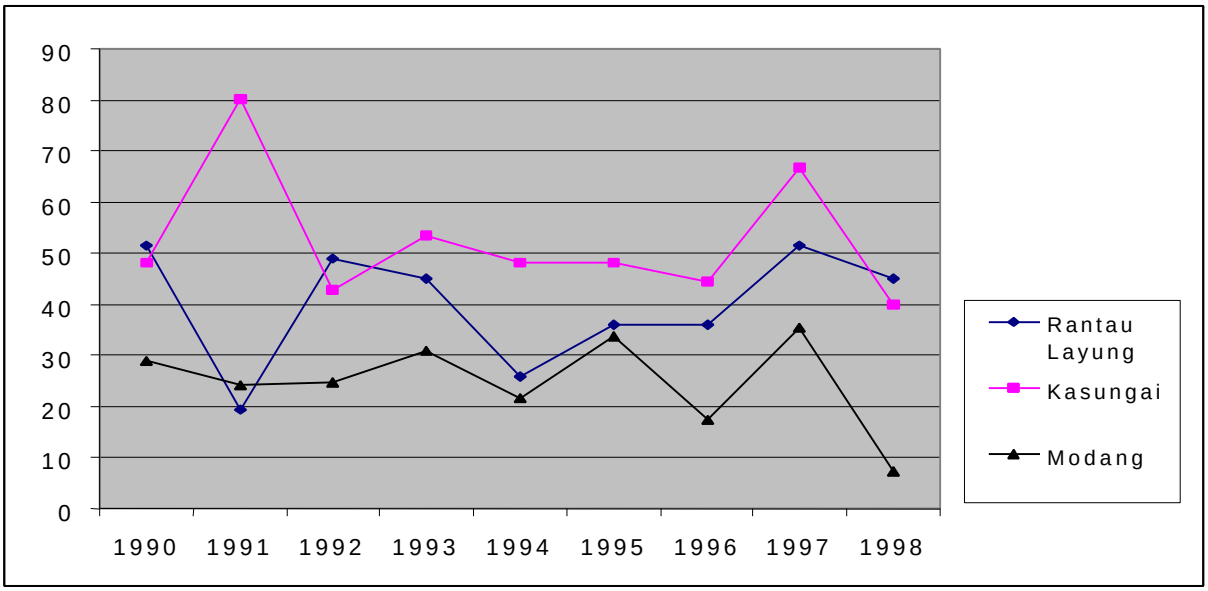

Figure 3. Pct. of households opening forest for ladang *in the three villages, 1990-98.*

The reduced forest clearing is both explained by few households planting dryland rice, and more households than normal reusing the old swidden rather than open a new one. The 1997-98 crop failure meant that most households had to buy rice for seed. The survey also shows a significant decline in seed inputs per swidden, particularly in Modang.

Compared to the results from Riau, the trend is the opposite in the East Kalimantan villages in the survey: while the more central villages in the Riau survey increased their forest clearing for *ladang*, the households in the most central village in the East Kalimantan survey decreased their *ladang* involvement. One should be careful about not to put too much weight on the result as it is based on only one central village, and not to speculate on the reasons for the difference observed. One observation, however, is that remoteness seems more linked to poverty in the Riau case than in the East Kalimantan one. Further, *ladang* in Riau is primarily opened in order to plant rubber, while in East Kalimantan *ladang* is more motivated by the intention to produce rice.

Forest products

Illegal logging activities appear to have increased in 1998, although it is hard – for obvious reasons – to get accurate information about its extent. But anecdotal evidence and informal field observations suggest a significant increase during *krismon*. For parts of the area illegal logging has become an important income source. Many households in remote villages own chainsaws and participate directly in timber harvesting. Other villages are located strategically with respect to the transport of the logs, and many people find work as day-labourers in timber related activities.

Rattan harvesting, mainly from rattan gardens rather than wild rattan, also increased, but possibly less that one might have expected. Many of the rattan gardens were affected by the fires. And although rattan prices have increased (up to three-fold by September 1998), they remain low in remote areas. Finally, the combination of low water levels in the rivers (due to the drought) and high gold prices (due to *krismon*) led to a 'gold rush' in early to mid 1998.

Migration

Both Kasungai and Modang have recently experienced some in- and out-migration, but we were told that there has not been any extraordinary in-migration due to the economic crisis. This could partly be explained by the fact that East Kalimantan (together with Riau) are considered the most resource rich and export oriented province in Indonesia, and the urban areas are less hit by the economic crisis than most other provinces.[13]

Conclusion

The response to the joint hardship caused by the drought and the crisis depends on the opportunities presented by available natural resources and the market economy. In the remote areas the households have responded to the drought (and *krismon*) by taking up new activities such as gold panning, intensifying hunting and collection and trading of forest products such as rattan and timber. In more centrally located villages it is harder to see what options there have been, except to take up day labour at nearby plantations, and to reduce household consumption.

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[13] This is an argument for less urban - rural migration within the province, but could also be an argument for more migration to the province.

4.3 West Kalimantan

The areas visited in West Kalimantan include villages in *Kec.* Toho and Pahauman in *Kab.* Pontianak and villages in *Kec.* Pusat Damai, Noyan, and Bonti in *Kab.* Sanggau. The livelihood of most farmers is based on wet rice fields (*sawah*), dryland fields (*ladang*), rubber gardens, and fruit gardens (*tembawang*). Where suitable land for *sawah* exists, farmers usually rely more on *sawah* than *ladang* as the yield is higher and more predictable. The villages are located near or adjacent to young secondary forest remnants (*belukar*). In Pahauman district some villagers are involved in small scale timber activities. In Pahauman and Bonti districts oil palm plantation activities are found.

In general life has become more difficult as a result of the crisis. This is true primarily because most farmers cannot meet their needs for rice from their *ladang* and/or *sawah* alone, and must purchase rice from the proceeds of their rubber sheets. The price increase of rubber compared to that of rice was, as in Riau, only favourable for a short period. By the end of 1998 the real rubber price was lower than before *krismon,* i.e., more rubber was needed to buy a kg of rice.

Whenever *sawah* is available, the primary strategy to cope with the difficulties created by *krismon* appears to be to intensify available *sawah* land, by tending more carefully to existing fields and to start cultivating previously idle land. The opportunities for *sawah* extensification is, nevertheless, limited, because the land is not suitable.

Expansion of *ladang* through forest clearing (extensification) seems to have been given lower priority. *Ladang* extensification is not the first choice to cope with the crisis for several reasons. First, clearing more lands for *ladang* is quite labour intensive, and family labour might not be available. Second, *ladang*-based income has a high degree of uncertainty, as the yield may be severely reduced by natural hazards, primarily too little rain (and at times too much) and pests.

Establishment of more rubber gardens to cope with the crisis is not taking place, even in villages nearby forested areas, primarily because rubber is not an immediate solution to the crisis due to its long gestation period.

Timber related activities provide, where possible, additional and sometimes even the main source of cash income. Despite the hard work it involves, small-scale timber harvesting is

attractive because it provides an immediate cash income and has a high degree of certainty. In areas where non-timber forest products (NTFP) are available, such as rattan and *damar*, collection was not particularly attractive because of lack of interested buyers. This might be explained by poor infrastructure (roads) in some of the areas.

Overall, it appears that livelihood strategies in resolving difficulties due to the crisis were not primarily to earn more income, but rather to lower overall consumption and place priorities on expenditures. We found no tendency to clear more forests (where they are available) by opening *ladang* fields and/or to establish new rubber gardens.

The crisis appears to have some but limited effect on migration tendencies in areas where seasonal migration to Sarawak (Malaysia) was common. The crisis also affected Malaysia and resulted in the 'forced' return of Indonesian illegal migrants. It was acknowledged, however, that there are ways to get around expulsion from Malaysia. Finding a job in Malaysia is still relatively easy once a migrant crosses the border, and the higher ringgit-rupiah exchange rate benefited Indonesian workers. Migration to Sarawak has therefore remained a good alternative during the crisis. It might also be combined with *ladang* cultivation: once the *ladang* was established (mainly men's work) and planted, the men went and left the tending to the female members of the family.

Oil palm establishments in the areas are only recently developed and are now mostly in the planting stage, implying substantial labour requirements. Both forests and rubber gardens have been surrendered to the oil palm companies for this purpose. Although conflicts occurred, and only a portion of the farmers chose to be involved in the projects, those who got involved appear to have enjoyed a steady flow of a fairly certain cash income from labour work, which was felt to be particularly useful in the time of crisis.

4.4 Central Sulawesi

Field work was conducted in the area of Lore Lindu National Park and the Ampibabo and Taweli districts in Central Sulawesi. The 229,000 ha of the Lore Lindu National Park is surrounded by 60 villages, located in a buffer zone adjacent to or inside the park. The park is bounded by four valleys: the Kulawi valley to the West, the Palolo valley to the north, the Napu valley to the east, and the Bada valley to the south. The most widespread forest types (80 pct.) are lowland and hill forests, with the remainder lower and upper montane forests.

The villages visited are located in Sigi BiroMaru and Kulawi districts (west side of the park), Palolo district (north of the park), and Lore Utara district (east side of the park). The population of the villages visited consists of both indigenous locals as well as in-migrants from other areas of Sulawesi.

The households of the villages visited depend primarily on cocoa, coffee, annual crops such as corn and peanuts, rice cultivated in *sawah*, collection of the sugar palm sap, and collection of rattan canes.

The crisis was found to have had affected farmers' livelihoods differently, depending on three factors: (i) types of commodities planted; (ii) areas of holdings, and (iii) available alternative sources of income.

In all areas, cocoa farmers appear to have benefited from the crisis compared to other farmers planting other types of crops. Farmers enjoyed short periods of higher relative prices of cocoa versus prices of rice during early 1998. The cocoa - rice price ratio was by the end of 1998 about the same as before the crisis. The price increase of annual crops, notably corn and vegetables, has been lower than the increase of basic commodities such as rice and sugar.

	July 97	*Feb 98*	*Jul 98*	*Nov 98*
Cocoa (kg)	3,000	14,000	15,500	9,000
Rice (kg)	1,200	1,200	3,500	3,000

Table 2. Cocoa and rice prices in Palolo district, Central Sulawesi.

The area of landholdings determines the degree of resilience to the hardships posed by the crisis. Farmers with larger holdings of producing cocoa gardens can survive the period without much difficulty. Farmers with smaller holdings see *krismon* as a crisis. Tales of farmers buying flashy new cars were not found in the areas, as told by some (newspaper) stories. Even farmers with 2-4 ha of gardens could only enjoy a limited profit from the temporary increase in real price.

The farmers who have been involved in cocoa production the longest are mostly migrants from other parts of Sulawesi. A majority of the locals have only planted annual crops such as corn, although some have begun to convert to cocoa recently. Consequently, the indigenous people are those who tend to have been affected adversely by the crisis.

Other income sources, which in some cases may in fact be the major ones, have helped villagers cope with the crisis. These include forest products such as rattan and sugar palm saps. The price of rattan has generally increased two-fold since the pre-crisis period, but this increase varies according to the type, size, and quality of the poles. The price of palm (brown) sugar has increased four-fold.

Possible threats to forests can be traced to increasing demand for land from those with capital. Although the demand for land existed prior to the crisis, the recent attractiveness of cocoa has made demand for land even higher. This is reflected in increased land prices and land transactions. Demand from in-migrants, mainly farmers from other parts of Sulawesi, and city dwellers put an upward pressure on land prices. Indigenous locals are tempted to sell their land, and in the end are forced to clear forests for new land or end up as labourers on what previously were their lands. Poorer farmers normally lack the necessary capital (in this case labour and time) to clear forests and thereby may be less of a threat to forests. In the case of protection or conservation forests, poorer farmers may be those who are least bold in encroaching and breaking the regulations. Some expansion into the Taman Nasional Lore Lindu has occurred, but to what extent this trend has increased since *krismon* is not known.

Land prices have also increased in other areas of Central Sulawesi outside the areas of Lore Lindu National Park. Despite the higher price of land, new spontaneous migrants from Bali, for instance, are still periodically coming into areas where their predecessors, who came in 1970s, have been successful. In these areas, in recent years, migrants prefer to acquire already cleared lands from the locals, instead of buying forested land and clearing the lands themselves. The latter option is perceived to have less certainty with regard to the status of the land and is therefore more prone to potential future conflicts.

5. Summary and conclusions

Our main findings for the four provinces are summarized in Table 3.

	Riau	*West Kalimantan*	*East Kalimantan*	*Central Sulawesi*
Livelihood	Generally worse off	Generally worse off	Significant impact of drought & fires, uncertain effect of *krismon*	Varies, depending on area of holdings and type of commodities

Shifting cultivation (smallholders)	Greater in central villages, lesser in remote	No change in frequency observed	No effect or reduced	Probably increased
Commercial clearing	In some areas for oil palm by in-migrants and plantation companies	No information available	Might be some, but limited information available	Not observed in the areas visited, reports of more cocoa clearing in other areas
Logging	Ongoing, probably limited effect of economic crisis	Some small scale logging, uncertain effect of *krismon*	Increased	No logging in the areas visited
Non-Timber Forest Products (NTFP)	Increased rattan and turtle collection in some villages	Where available not too attractive (lack of transport and buyers)	Increased for some products, but availability affected by drought & fires	Increased rattan collection (favourable prices)

Table 3. Summary of findings on impact of economic crisis on livelihood and forests.

The variation between districts and villages, and even between farmers within the villages, is large, and serves as a caution for drawing general conclusions about the impact of *krismon* on farmers' livelihood and forest use. Nevertheless, from the surveys and fieldwork in the four provinces some preliminary conclusions and patterns have emerged:

- The situation is volatile, due mainly to large fluctuations in the exchange rate. Throughout 1998 exchange rate movements caused farm gate commodity prices to change quickly, in some cases almost on a daily basis. The period after October 1998 has been more stable, and relative prices are gradually moving in the direction of the *pre-krismon* levels.

- There is great variation in the effects throughout the country. The impact on people and forest varies considerably, depending on a number of factors: initial income and asset levels, impact of the drought and forest fires in 1997-98, degree of (rice) self-sufficiency, degree of export orientation of agricultural production, type of crops exported, etc.

- The impact on farmers' livelihoods is variable. There are stories about export-oriented farmers benefiting substantially from the crisis, particularly cocoa farmers in Sulawesi. The general view has been that farmers in the outer islands are less hit by the crisis than their Javanese counterparts and urban dwellers. While this to a certain extent is true, we found that the crisis has had a larger negative impact on livelihoods than initially hypothesised. Furthermore, many export oriented farmers enjoyed a short-term windfall gain during the

first 2-3 quarters of 1998, when the rupiah value was very low, and before domestic prices increased. During the second half of 1998, with food prices soaring and the rupiah getting stronger, the competitive advantage has eroded. Most farmers in the areas visited and included in the surveys appear to be worse-off by the end of 1998 than before the crisis.

- The overall short-term impact on forests by the smallholders, in terms of clearing of land for agriculture and exploitation of forest products, might have been smaller than originally predicted, but the picture is complex. We found that many poor farmers did not have the means to take advantage of the economic opportunities created, or even maintain their previous standard of living. For example, poor farmers often lack the limited capital necessary to open a new swidden field, and might not have enough labour within the family.

- The groups most likely to take advantage of the new economic opportunities are the better-off local farmers, immigrants with capital, and urban entrepreneurs who can buy land and hire labour to convert forests to export crops. We found examples of these groups increasing their forest conversion in three of the four provinces included in the survey.

- The issue of return migration from cities is not as important as one would expect. We found, maybe surprisingly, limited evidence of people losing their jobs in urban areas, returning to the villages and engaging in forest-based activities. This might be due to the fact that the urban areas in the provinces are less hit by the crisis than those on Java, forest conversion or forest product collection may not be the most profitable rural employment option, or the urban workers lacks the skills and experience required to engage in such activities.

- Besides the impact of *krismon* in terms of changing relative prices, a significant factor of the present economic and political situation influencing forest condition is the power vacuum created after the fall of Suharto in May 1998. There are reports of increased encroachment into national parks, and of increased illegal logging. While these are not new phenomena, the scale may have increased over the last year due to a lack of law enforcement.