

3 Livelihood Dynamics, the Economic Crisis, and Coping Mechanisms in Kerinci District, Sumatra

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In spite of episodes of severe stress, rural areas in Indonesia have always shown resilience by absorbing redundant labor, as well as new entrants to the labor force. Processes of shared poverty and specific redistributive mechanisms levelled out shortages and surpluses in times of severe livelihood stress (Geertz 1963; O'Malley 1977; Lont & White 2002; Touwen 2000). There is much evidence, however, that decades of agricultural commercialization have altered these functions of rural areas, as notions of shared poverty and other safety net functions appear to have gradually fallen into disuse (Missen 1970; Kahn 1980; Hinderink & Sterkenburg 1987). The mainly redistributive mechanisms underlying or dominating livelihoods based on a subsistence-oriented system of wet rice cultivation have been transformed into more individualized and adapted forms of resilience. The Green Revolution in food cropping is increasingly combined with cash crop agriculture and off-farm employment. A crucial reality check of such resilience in rural areas under "normal" conditions occurred when the economic crisis hit the country in 1997, when large numbers of displaced workers from the urban sector had to return to their rural homes, especially on Java. As most studies were carried out at the macro level, and mainly focused on Java, declines in the absorption capacity of what was considered an already overburdened agricultural sector could indeed be observed. This was aggravated by mounting pressures of rising prices for agricultural inputs and crop failures caused by the prolonged drought induced by El Niño. However, an increasing number of studies have revealed the limitations of such macro-economic studies which produced an aggregate picture inconsistent with realities on the ground. It became increasingly evident that the crisis had taken different shapes, and had varied and often highly contradictory impacts on different rural regions, economic sectors and among different social groups. The studies failed to recognize the considerable diversity in people's ability to cope and adapt to a crisis by tapping into various markets and still existing (adapted forms of) off-market opportunities, which did not always bring a deterioration of livelihoods. Where commercial agriculture formed the major type of

livelihood, especially in the outer islands, farmers who planted export crops, were getting windfall profits from the depreciation of the rupiah against the US dollar. Usually, such increases in cash flows will allow for a reinforcement of community reciprocity. These adapted forms of redistributive arrangements through cash transactions may mitigate the impacts of skewed entitlement and access to resources in general, and to natural resources in particular, and therefore may offer important ways to survive during an economic crisis. This is especially the case for the poor and (near) landless, who are particularly vulnerable to drops in income, increasing food prices, and rising unemployment and underemployment brought about by crisis-induced events (Stringer 1999). Consequently, this may have bearings on both resource allocation and natural resource management. In order to fully understand the impact of the entire process of social change and the creation of new stability domains in livelihood resilience on natural resources, the aftermath of the crisis needs to be taken into account as well.

The mechanisms through which such global and national economic or political shocks and severe stresses are translated into local impacts and responses at the community and household levels are investigated in relation to their resource management strategies in three villages in Kerinci District, Sumatra, during the crisis and its aftermath (1997-2003). A cross-system analysis has been made in three selected villages, based on a number of similar and dissimilar characteristics. Similarities concern biophysical conditions, predominant types of land use, and indigenous knowledge systems. In order to understand the interactions between the national park and the village conditions, both research sites are located in the buffer zone of the Kerinci Seblat National Park. Dissimilar characteristics refer to different choices in upland crops, variations in land tenure systems, and different historical and contemporary contexts at the regional, the community, and the household level; these are crucial for understanding the variations in social organization and different livelihood strategies, as well as for understanding the differential resilience of rural areas.

The setting and the study sites

Kerinci has always been known for its favorable conditions which support a livelihood around agriculture. Specialized rice farming has been the major type of livelihood in the Kerinci Valley after Minangkabau migrants from West Sumatra began clearing forest land for rice cultivation several hundred years ago. Nowadays, specialized rice farming continues to be a major type of livelihood on the flat valley bottoms of the district. However, in most parts of the district access to upland areas

can be secured, whereby livelihoods are increasingly constructed around the cultivation of commercial annual and perennial cash crops. Depending on the local biophysical conditions and preferences of individual families, chilli has become the most important annual crop. It is cultivated during the establishment phase of both intercropped stands and single stands of cinnamon trees (*cinnamomum burmannii*) or coffee trees (*coffee robusta*). Rice cultivation remains however, an important fallback mechanism to secure food needs. The existing specific sociocultural arrangements in rice cultivation ensure access to rice cropping land beyond the limits of one's own farm on a long-term basis, as well as on a temporal basis in times of severe livelihood stress.

The three research villages are located in different parts of Kerinci District (see fig. 1). At an altitude of about 500 meters, the rather iso-

Figure 3.1 Kerinci district and its position in Sumatra



lated villages of Selampaung and Masgo are situated in the Gunung Raya Subdistrict in the southern part of the district. The third village, Pelompek, is situated close to Gunung Kerinci, the 4000-meter high volcano in the northern end of the district, at an altitude of about 800 meters along the main road to Padang. The dilemma faced by all households involves a trade-off between immediate subsistence needs and the long-term aim of resilience in their livelihood. Livelihood resilience in all villages can be achieved by combining rice cultivation with upland field cultivation, where crop diversity contributes to a further increase in livelihood resilience. In contrast to Selampaung and Masgo, where forest-like structures or so-called agroforests combine annual crop cultivation with coffee and cinnamon trees on a rotational basis, Pelompek's elevation and cool winds descending from Gunung Kerinci temper the average temperatures, especially at night, and therefore reduce crop choices. Here, dispersed tree systems include various types of commercial annual crops, while scattered cinnamon trees can be found in the field and along field boundaries to improve microclimatic conditions. Whereas most of the upland fields are under private ownership, rice cultivation in Selampaung and Masgo is largely dominated by kinship organizations, based on local regulations under the *adat* system of the mainly ethnic descendants of the early settled Minangkabau. Hence, the specific matrilineal organization of regulations determining natural resource use in these communities. Instead of private ownership, yearly access rights to rice-cropping land may be obtained by the female members of the family on a rotational basis (known as *gilir ganti*). A rice field managed under these arrangements is known as a *sawah giliran*. In Selampaung, 61 percent of the survey households, compared to 41 percent of the households in Masgo, indicated that they have access to a *sawah giliran*. The lower figure in Masgo can be explained by the fact that most households in this village concentrate on cash crop cultivation, as suitable areas for rice cultivation are severely limited. However, many survey households continue to have access to a *sawah giliran* in their home villages, usually on the flat valley bottom. Within the boundaries set by *adat* regulations, people can manoeuvre between the exploitation rights and the allocation of plots, not only directly under the *giliran* system, but also on land belonging to others through sharecropping (the share stipulated by *adat* is fifty-fifty). Additional food security can be obtained by opting between local and high-yielding varieties, the latter enabling two harvests a year but requiring much more inputs. This flexibility is crucial for mitigating the skewness in the distribution of means and needs between the different heirs and co-villagers, and hence livelihood resilience, as it may help an individual to overcome temporal vulnerability in food security. Similar sharing mechanisms are also in practice in the upland fields, where share-

cropping deals are similar to those for rice cultivation (i.e., on a fifty-fifty basis for all annual and perennial crops). The original system provided sharecroppers with basic food items for survival during a period of two to three years. Especially in the case of cinnamon trees, sharecroppers were able to build up savings in the form of standing stocks of cinnamon trees by engaging in these deals. Pelompek holds a somewhat different position, in that this village was established by converting forestland into rice fields for the purpose of acquiring individually owned *sawahs*. Here, 43 percent of the survey households indicated that they hold their rice field in private ownership. This relatively low figure is due to by a continuous influx of people focusing solely on upland crop cultivation for their livelihood survival. However, even though strong *adat* regulations are absent in this recent frontier settlement area, this did not prevent the development of certain solidarity mechanisms among the relatively poor and homogeneous village population. The concept of *pinjam*, or borrowing, of land for cultivating both the rice fields and upland fields was developed here as a safety net mechanism for those in search of livelihood security. The various market and non-market safety net functions to increase resilience, and possibly also the sustainability of the livelihoods described here benefited both local residents and migrants. The true nature of livelihood resilience in the research villages was put to the test at the height of the economic crisis and exacted its worst toll.

Differential impacts of the crisis and its aftermath (1997-2003)

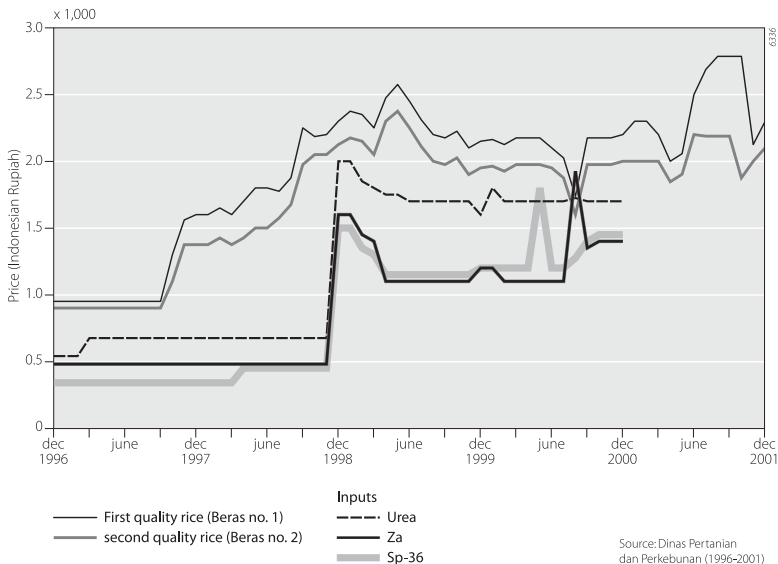
The apparent role of rural safety net functions together with the windfall profits from agro-export commodities during the initial period of the monetary crisis, or *krismon*, supported the idea that the agricultural (export) sector could become the engine to lift Indonesia out of the crisis (Daryanto 1999). However, Sunderlin et al. (2000) and Penot (2001) have rightfully pointed out that such an aggregate picture is too simplistic, as not all cash crops were benefiting from a depreciation of the rupiah against the US dollar. In addition, where livelihoods largely depended on food crop cultivation, in particular rice, rising food prices and remaining subsidies for rice initially brought increasing profits. Especially in villages where respondents were getting windfall profits from both rice cultivation and cash crop cultivation, the crisis was called the *krismon Jawa*, or the Javanese monetary crisis. However, this all changed after a few years, when cheap rice imports and non-subsidized inputs for rice replaced the original context of rice cultivation, and when prices of cash crops began to collapse as well. This underlines the important role of the rising rupiah prices for certain agricultural crops and

inputs and their impact on livelihood resilience in the research villages and therefore requires special attention.

The impacts of price developments in rice cultivation

In 1997, El Niño caused a severe drought and subsequent crop failures at the national level, which made rice prices increase steeply. This was aggravated by soaring prices of external inputs, as subsidies had to be removed as part of the SAP programs initiated by the IMF. Macro-level studies rightfully showed that this would cause serious constraints in food security. In the research villages in Kerinci District, however, local rather than the high-yielding rice varieties were most commonly planted. In contrast to high yielding varieties, local varieties could be grown without the use of external inputs and were much less affected by the drought. In addition, local rice producers could still benefit, as remaining stocks of subsidized inputs were sold at old prices (figure 3.2), enabling rice producers to benefit from the sale of rice; even when rice stocks were released onto the market in Sungai Penuh by the local BULOG agency to suppress the slowly rising prices. During the course of 1998, expensive non-subsidized, imported inputs replaced the depleted stocks. This marked a steep increase in costs for external inputs and severely limited the benefits from rice cultivation, especially on the

Figure 3.2 Price developments of rice and most important external inputs (1996-2001)



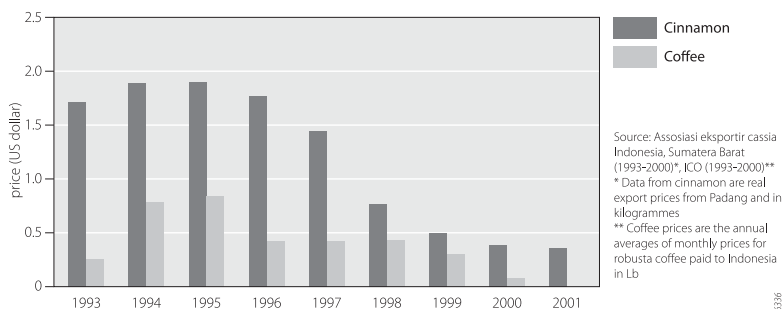
valley bottoms where high-yielding varieties were most commonly planted, and access to upland fields was limited. Many farmers were no longer able to cover input costs, and yields in these areas therefore began to decline. In the market, prices for rice were driven up even further, as an ever-increasing number of consumers now depended on the purchase of rice for their subsistence. Instead of market penetration, the local BULOG agency began to distribute rice to poor villagers in the valleys, who were among the first to be targeted for food assistance.

The influx of additional family members displaced from work in the urban sector, aggravated conditions in the overburdened food-crop sector in areas where the main type of livelihood was dependant on specialized rice farming and made it increasingly difficult for the rural economy to provide sought-after relief. The combination of these factors largely caused people to move towards areas and villages where access to cash crop cultivation could be secured, and where windfall profits from cash crops could easily cover subsistence needs and enable capital accumulation. The prevailing flexibility of the upland farming system, and in particular the underlying supportive social networks and the type of social organization, allowed for rather easy access to cash crop farming activities beyond the limits of one's own farm.

Price developments in cash crop cultivation

During the *krismon*, the rupiah prices for all cash crops increased spectacularly, although the magnitude of the profits was closely connected with the value of the American currency. Figure 3.3 shows that prices for cinnamon bark remained relatively modest, as increased production from Vietnam and favorable trade deals between Vietnam and the US depressed the prices for cinnamon from the mid-1990s onwards, which

Figure 3.3 *Price developments in US dollars for exports of cinnamon (per kg) and coffee (Lb)*

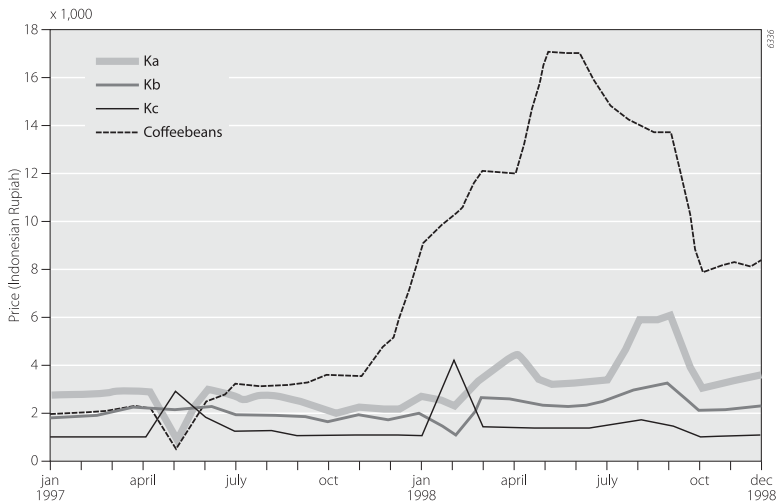


however in Indonesia were paid in rupiahs. In addition, the cinnamon trade operates in a highly oligopsonistic market. This means that there are only few, but major buyers available, which therefore are able to negotiate the price at a certain level, often related to a request for a certain amount.

The depreciation of the rupiah against the US dollar allowed importing countries to get good deals as they had ample bargaining power to set the prices. By paying in rupiahs rather than in US dollars during the *krismon*, favorable exchange rates for importing countries caused further losses through continuing rupiah depreciations. These losses were then trickled down to the local traders, finally ending up at rather low price levels at the farm-gate level. Figure 3.4 shows that the outcome of the various constraints in price setting for cinnamon were translated into a relatively low price paid in rupiahs at the farm-gate level.

The rather simple distinction into three different qualities for cinnamon bark (ka, kb, kc) in figure 3.4 is the same as that employed at the farm-gate level by small-scale producers and middlemen, when cinnamon bark is sold and traded at the local market. Exporters usually distinguish at least six different grades of quality, mostly depending on thickness, oil content, and cleanliness of the bark. The figure shows that those who were able to sell the best quality cinnamon bark (ka) were benefiting the most from the depreciation of the rupiah as the

Figure 3.4 Price developments in Indonesian Rupiah for most common cinnamon qualities (ka, kb, kc) and coffee in the Kerinci District per month (1997-1998)



Source: Dinas Pertanian dan Perkebunan, Kabupaten Daerah tingkat II, Kerinci (1997-1998)

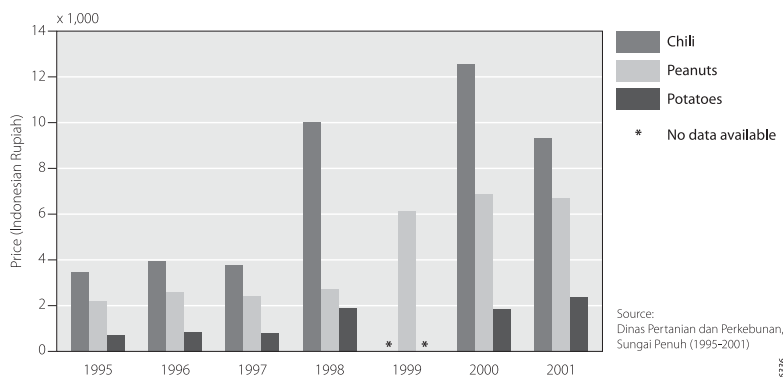
price increased from about Rp 2000 in January 1998 to around Rp 6000 in July 1998. The other grades did not go beyond the Rp 4000 mark, but the advantages of multi-cropping began to show. As the peak price for the best quality cinnamon bark occurred in August-September 1998, it could partly compensate for falling coffee prices during this time, which reached its peak of Rp 17,500 per kilogram in the second week of June 1998, after which prices fell sharply (Dinas Perkebunan Kerinci, 1998). These variations in peak periods of prices in rupiahs for the various perennial cash crops allowed for high cash generating opportunities among the households for a substantial period of time, which sustained livelihood resilience. This was further strengthened and extended when windfall profits for the annual crops began to materialize as well.

Price developments for annual crops: chilli, potatoes, groundnuts, and rice

The cultivation of commercial annual crops constituted a third option for income during the *krismon*. Although chilli is the most important crop, groundnuts are a second common crop in the research villages. In Pelompek, the cultivation of potatoes further augments profits at the farm level (figure 3.5). However, according to respondents, potatoes can only be planted once a year because of the crop's high demands on soil nutrients.

The local varieties of chilli that were planted in either Selampaung or Masgo, required no or hardly any external inputs. However, in Pelompek good yields on fields that were cultivated permanently with annual crops, and especially with potatoes, could no longer be obtained without the use of external inputs. But with subsidies still intact for external in-

Figure 3.5 *Trend in Rupiah prices for the major commercial annual crops planted (1995-2001)*



puts during the *krismon* period, considerable profits could be made, thereby strengthening the resilience of the livelihoods in the research villages. Similar to rice cultivation, especially the price of chilli started to fall from early 2000 onwards, while the depletion of cheap stocks of subsidized inputs gave way to unsubsidized, highly expensive imported external inputs, leading to significant decreases in the profit margins. This especially affected Pelompek, where the profitability of annual crop cultivation highly depended on the use of external inputs.

This analysis shows that farming households initially were able to benefit tremendously from a combination of factors, of which the high rupiah prices for various cash crops at different intervals in combination with lasting subsidies for inputs were most important. The sudden reversal of this situation in the aftermath of the *krismon*, however, caused a large-scale deterioration in livelihood conditions, as profit margins severely declined due to falling crop prices and sharply rising input costs. These contrasting periods allow for an evaluation of the dynamics in livelihood resilience and sustainability caused by increasing pressures on the national, regional and local institutional settings and the community support mechanisms (such as sharecropping and land borrowing concepts of reciprocal help) in the aftermath of the crisis. Various types of community support mechanisms define access to and conditions of support. They play a crucial role in our full understanding of the various responses and livelihood strategies developed by the individual households beyond the realm of purely economic explanations such as the changing profitability regimes of various crops.

Livelihood dynamics during the windfall period (krismon 1997-1998)

Changes in the price for the various commodity crops and the rather favorable conditions for rice cultivation during the period known as *krismon* are paralleled by a remarkable and rather large scale movement of people from both within and outside the district to particularly the upland areas in Kerinci. This can be explained by the continuing integration of people from Kerinci into wider multi-local and supra-local social networks. News about how community support mechanisms and inter-household transfers offered new opportunities to generate earnings in the villages spread over vast areas. Under these favorable conditions, landowners of both ricefields and upland fields tended to direct scarce family resources towards the upland fields. Knowing the conditions in areas where households manage both rice fields and upland fields, migrants could see how landowners sought ways to rent out their rice fields. In particular sharecropping deals were struck as a means of escape from deteriorating livelihoods in their areas of origin. These often were areas where specialized rice farming could not sustain a livelihood

above the level of survival. Direct access to livelihood survival was made possible through increasing employment opportunities for paid farm laborers, because of the large flows of cash in the villages, while sharecroppers with upland fields could receive a two-year bonus in kind. Paid labor opportunities were especially important for those in search of daily survival, as it enabled them to bridge the time between planting and harvesting of crops such as rice and vegetables. However, in-migration also appeared to be a matter of reaping as many benefits as possible from finding access to agricultural land beyond the limits of one's own farm. Where vegetable cultivation allows for the accumulation of cash in the short term, the accumulation of (sellable) assets in the form of possible rice surpluses or cinnamon bark was also made possible by the supportive arrangements of temporary access to cultivation areas of other households, through *pinjam* or *sharecropping* arrangements. However, as *Minangkabau adat* prevails in two of the three research villages, access to rice fields is first of all meant as a social security and sharing mechanism among relatives or co-villagers. Access under these arrangements may not be open to everyone. Our data support this, as most migrants who became sharecroppers on a *sawah giliran* during the *krismon* had at least similar sociocultural backgrounds with similar institutional settings in relation to rice cultivation, and came mainly from the flat valley bottom areas where *Minangkabau adat* still largely defines rice cultivation (50 percent). Hence, the inclusion in wider social networks in general, and kinship relations in particular, are most important for rice cultivation in these two villages. In Pelompek, with private ownership of rice fields, access under *pinjam* arrangements or renting is open to anyone. A large majority of newly settled migrants (78 percent) indicated that they came to Pelompek to cultivate rice. Those who were able to get access to rice fields hoped to secure their food needs and to be able to sell a certain surplus to obtain additional cash. To benefit as much as possible from the favorable conditions, many of them fell into or engaged in debts for planting high-yielding varieties (60 percent) and accumulating as much rice as possible. These practices constitute the middle path between a survival and an accumulation strategy, but most households considered this simply as accumulating for the purpose of survival only, as the rice would mainly be stored for home consumption. The majority of settlers in the 1997-1998 period also participated in paid labor activities for their daily survival. Once survival was secured, most of them would also try to find temporary access to upland fields, usually through sharecropping arrangements or *pinjam*, in the case of Pelompek. These support mechanisms were said to be quite easily accessible as well. Finding access to upland fields was much more common, as only one fifth of all migrants coming into the research villages during the *krismon* were searching for rice fields. This

means that an overwhelming majority of 80 percent came to Kerinci to find access to upland fields where windfall profits could be made from the cultivation of annual and perennial cash crops. Higher mobility into the uplands, however, may also have exerted increasing pressures on natural resources in the upland areas.

The upland fields and associated tree cover

In the literature on the effects of the crisis and its aftermath, forest areas have been identified as a main target for income generation or conversion into agricultural land (Sunderlin et al. 2000; Casson and Obidzinski 2002). The widespread influx of poor migrants into the upland areas of the research villages might similarly have induced forest conversion and the loss of tree cover through large-scale harvesting of cinnamon trees for at least two reasons. Firstly, because of the significance cinnamon trees have in stabilizing livelihoods as a savings bank that might be used for large-scale harvesting to cash in on their savings. Secondly, in areas where coffee trees constitute the under storey, the harvesting of cinnamon trees would generate a large cash income, due to high rupiah prices while the penetration of sunlight on the coffee trees allows them to bear coffee berries within one year. However, our fieldwork during this period showed the contrary. The tree cover of cinnamon trees remained largely intact. In-depth interviews revealed some very rational behavior with respect to these dynamics. The main reason was the fact that livelihoods were kept well above the level of survival through these windfall profits obtained from almost every crop they had planted, while daily and weekly cash could easily be obtained through selling cinnamon bark from branches only or through wage work. In Pelompek, where cinnamon trees are part of dispersed trees systems, the cinnamon bark only serves the purpose of bridging the gap between earnings from the sale of vegetables and costs of investing in a new cycle of vegetable cultivation, when the income from vegetables is insufficient to cover these costs. With increasing prices for vegetables, however, this was not a problem. Without a real need for a large sum of cash, the necessity to withdraw large savings for survival by cutting down the cinnamon trees was absent. If large-scale harvesting did occur, it was done to raise money for durable consumer goods, housing, a pilgrimage to Mecca, or a journey to Malaysia in search of employment opportunities. In some cases, farmers would also sell their land as well to cover these costs, but it was not very common during those times. Another important reason was that most landowners owned more than one plot. The most common practice was to work on a harvested cinnamon plot, either one of their own plots or as a sharecropper. The income from chilli cultivation on these plots easily allowed

them to survive, especially in combination with fields where coffee and/or branches from cinnamon trees could still be harvested as well. A group of 67 percent of the cultivators indicated that the land they were cultivating belonged to others, and that they were either a sharecropper or involved in *pinjam* arrangements during the year 1997-1998. This turned out to constitute an effective accumulation strategy for those who did not own land or landowners without enough land to survive. When in 1997-1998 a growing number of sharecroppers specifically wanted to combine survival strategies with a short-term accumulation of cash, especially through vegetable cultivation, sharecroppers themselves began initiating changes in the original sharing deals in order to benefit from sharecropping as much as possible. There appeared to be consensus among the landowners as well as sharecroppers that the sharing arrangements should reflect the degree to which one of the two parties invests in certain resources. Increasingly, sharecroppers wanted to bring in all necessary inputs for vegetable cultivation and forego the bonus, as long as they were allowed to keep the entire earnings from the vegetable harvest. The input costs that were now being borne by the sharecroppers were either covered by savings they had raised from off-farm employment or by loans from friends or relatives. Once the vegetable production started, the high earnings would enable loans to be paid back easily. With most landowners mainly interested in accumulating cash from harvesting cinnamon trees, they usually agreed, providing that the cinnamon harvest would be split according to the *bagi tigo* principle, or one-third for the sharecropper and two-thirds for the landowner. The data for Selampaung support this change in arrangements, as in 1997-1998 a large majority of the sharecroppers (69 percent) in Selampaung cultivated vegetables without any bonus or inputs from the landowner, receiving the full profit of the harvest instead. In more remote Masgo, only 27 percent indicated to have pushed forward these changes, which were limited to respondents staying close to the road and the market. Physical distance to the market and difficult terrain would still favor the receipt of a bonus for remote fields, as usually the landowner would bring these items to them using a four-wheel-drive car, or by renting a motorcycle (*ojek*). With respect to the impact on forest cover, such high in-migration, however, may have increased pressure on forest areas. There is a slightly steeper curve in forest conversion during the years 1997-1998, rising from 13,707 hectares in 1997 to 14,170 hectares in 1998, after which it levelled off. Households may indeed have invested in converting forest areas into cinnamon plantations. In-depth interviews revealed that these households usually belonged to the richer segments, quite often returning migrants from Malaysia with large amounts of savings, or local rich farmers. Being well connected to local authorities, they could benefit from the

chaotic situation in forestry management during this period, caused by a vacuum in the enforcement of regulations which in turn was due to the necessity to increase regional income under conditions of regional autonomy.

The aftermath of the crisis (late 1998-2003)

After about one year of windfall profits for almost every agricultural commodity planted in the upland areas, the situation began to change from late 1998 onwards. The booming times reverted into a situation where it became increasingly difficult to construct a livelihood above the level of survival as prices of almost every crop started to fall. Declining prices were moreover caused by overproduction resulting from the opportunistic planting and rehabilitation of previously abandoned perennial cash crop gardens, mainly coffee, during the price windfall. With chilli and coffee now flooding the markets, prices remained at a historical low for several years in the aftermath of the crisis. This period coincided with the exhaustion of the stock of subsidized external inputs in Kerinci, which were replaced by expensive imported external inputs so that households increasingly faced constraints in adapting or switching to other products and practices. With price adjustments for basic foodstuffs lagging behind the rising costs of production, the falling profits for their agricultural products drove home the harsh realities of the crisis for both producing and consuming households in Kerinci.

Because in the initial phase prices for vegetables remained quite high, especially survey households in Pelompek expressed satisfaction about their situation. Potato prices were on the rise, while the local chilli variety still brought some profit. In Selampaung and Masgo where most rejuvenated fields were now entering the phase of coffee cultivation, the sharp drops in coffee prices made it hard to survive, especially for the many sharecroppers who had to split in half their already small profits! The deterioration of cash flows further caused community support mechanisms such as paid labor and loans to vanish, thereby severely limiting short-term survival. The only way out for many of them was to abandon the land, and migrate out for reasons of mere survival. During one of our fieldtrips in June 2001, in-depth interviews with several key informants revealed that about 60 percent of the survey households working in the upland areas had left. This was confirmed by the formerly very crowded market day on Saturdays, which was now completely deserted. Those traders remaining were either cultivating vegetables, which still continued to provide some income as well as meet the demand for essential food crops, or were just waiting for the end of the coffee harvest. Coping responses mainly consisted of out-migration, initially to their home village to (re) turn to food production by planting

local rice varieties with low external input. Here they either tried to get their exploitation rights on a *sawah giliran*, or worked as a sharecropper on other people's rice field to supplement their subsistence needs. In Pelompek, an increase in renting rice fields for cash could be observed (usually the rent could be paid after the harvest). Shortages of cash to keep their livelihood above survival level were accompanied by increasing prices for rice caused by the decreasing supplies entering the market, as villagers who did not want to sell their small food crop surpluses had switched to local varieties, which require far less external inputs, but can only be harvested once a year, reducing rice production by half. The local BULOG office started interfering by bringing more rice into the market, and consequently kept the price within affordable levels. The OPK (Operasi Pasar Khusus), or special market operation, only came into being from late September 1998 onwards, when the unfavorable conditions persisted and had used up all possible alternatives for most households, including the use of various types of community reciprocity. The survival of each individual household member was increasingly at stake, and there was severe competition among the heirs to obtain exploitation rights for the *sawah giliran*, which can only be secured theoretically once in every four to five years. Under these conditions, it does not seem surprising that many local residents and a substantial number of migrants from outside the district began to move into the upland areas of Selampaung and Masgo in search of sharecropping deals for their survival. With good social networks extending into Kerinci, substantial numbers of people coming from the Pesisir area in West Sumatra and other areas where specialized rice farming was no longer feasible, were mainly attracted to the research area to work as a sharecropper because of the original bonus system. In contrast to what survey households perceived as handworks during 1997-1998, these newcomers would only work as sharecroppers where the landowner provided them with a bonus of basic food items for at least two years. During in-depth interviews with these newly arrived migrants, they explained to us, that if after two years prices of cash crops would not improve, they would also simply abandon the land and seek other sharecropping arrangements where they could get a similar bonus in kind for their survival. Those remaining in the villages would continue to find access to rice fields in one way or the other (e.g., through private ownership), or belonged to the richer segments of the village population, which had enough alternative, non-farm employment opportunities to survive. For the majority however, the continuing "crisis situation" meant that survival increasingly depended on remittances from migrated family members, mostly men, who had found access to off-farm employment options outside the district. Out-migration as a survival strategy became very common, and tended to become supra-regional

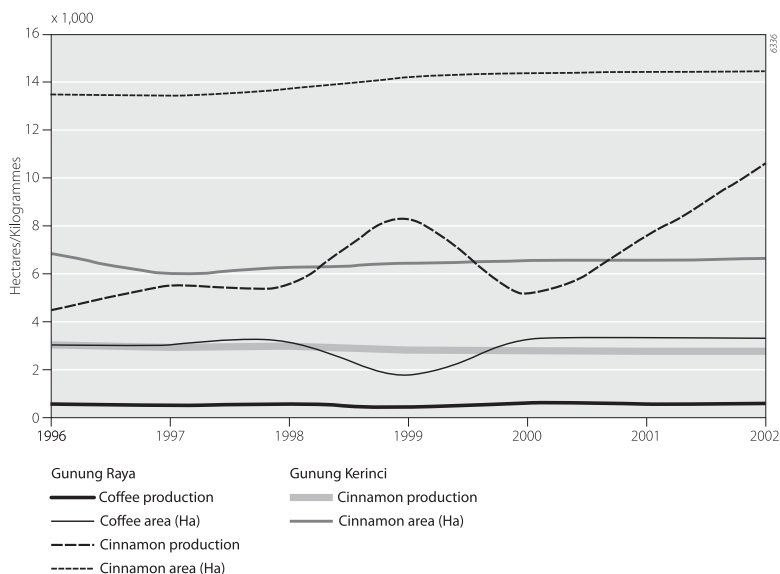
and eventually even transnational in nature, particularly to Malaysia. Under these hard conditions, it comes as no surprise that the way in which natural resources and tree crops were being perceived and managed, was quite contradictory as compared to the dynamics and conditions during the windfall period.

Dynamics in tree cover and forests during the aftermath of the crisis

In sharp contrast to the windfall period, the negative impact of falling prices for tree crops forced many households who had planted these crops to cut down both their coffee trees and cinnamon trees. On rejuvenated plots, vegetable cultivation would provide both food and cash, as vegetables were still making some profits. The most common practice however, was the large-scale harvesting of cinnamon trees in order to provide as much cash as possible for their own survival, but increasingly also to finance trips out of the district in search of employment, especially to Malaysia. Where the income from harvested cinnamon bark was not sufficient to cover the necessary expenses, the land would be sold as well. For a trip to Malaysia during 2000-2001, at least Rp 5 million, or about US \$ 500, was needed. This amount included the costs to get a one-month visa, travel and subsistence costs for one month and payments to "job brokers" in Malaysia. Any additional cash from the large cinnamon bark sales would allow the purchase of food items and cover investment costs for a new agricultural cycle of commercial annual crops to support the family members staying behind. The persistent low prices for coffee resulted in the uprooting of coffee trees, and the plots were often not replanted after rejuvenation. Figure 3.6 graphically illustrates these dynamics. In 1998-1999, cinnamon production increased while coffee production decreased. The first wave in large-scale out-migration and hence the decrease in tree cover provided by cinnamon trees stopped in 2000 when the market was flooded with cinnamon bark, which could no longer be sold. Later that year, cinnamon exporters slowly opened their doors again to this commodity, and cinnamon export came again into full swing from 2001 onwards (explaining the increase in cinnamon production since that year).

Moreover, it was hardly surprising that households whose livelihoods largely depended on their upland fields were also causing a continuous decline of the tree cover in the buffer zones of the national park, as forest conversion for agricultural purposes here remained at a stable 3 per cent per annum, according to WWF officials in Sungai Penuh. This may partly be explained by the fact that only the better-off households are able to cover the costs of forest conversion. During our last field visit, these costs would amount to Rp 5-10 million for 2 hectares, money that was mostly needed for other purposes, such as going to Malaysia.

Figure 3.6 *Movements in production and planted area for cinnamon and coffee in Gunung Raya and Gunung Kerinci subdistricts*



What changed dramatically, however, was the rate of illegal logging. During these hard times in Kerinci, businessmen from Padang in particular had no problem in hiring people who were living at the edge of survival, and were willing to deliver hardwood from the national park to them. Especially in Pelompek, where mechanisms such as sharecropping did not exist and the forest is relatively easily to access from the road, illegal logging was an attractive option for many of the poorest farmers.

Discussion and conclusion

The economic crisis and its aftermath seem to have severely tested the diversified pattern of livelihood sustainability and its resilience at both the household and communal levels. Furthermore, the crisis seems to have blurred the distinction between market and subsistence types of production, and between city and countryside. Our analysis has brought to the fore some unexpected dynamics and patterns in livelihood response mechanisms which can cope with and adapt to the effects of the economic crisis at the local level, which were neglected by macro-economic studies. During the windfall period, many families aimed at strengthening their socioeconomic position by raising or mobilizing re-

sources in a number of ways, ranging from strategies of mere survival to accumulation strategies. The favorable conditions, mainly brought about by the windfall profits, strengthened both the community relations of reciprocity and inter-household transfers. Increasing flows of cash among large numbers of households enabled the poorer segments of the population in particular to tap into widely available opportunities of paid labor, and it also induced an increase in risk-taking behavior by engaging in debts for investments in crop cultivation beyond the limits of their own farm. Where rice cultivation was concerned, high-yielding varieties were often planted to produce surpluses for home consumption and possibly also for cash accumulation. Seeking options for rice cultivation was a major pull factor for migration into Pelompek. In contrast to Pelompek, where access was open to anyone willing to pay rent, access to rice cultivation in Selampaung and Masgo was largely structured according to kinship relations. Here, access was mainly limited to farmers from within the district, and from areas with similar sociocultural conditions in relation to rice cultivation. As for upland fields, more risk-taking, commercial types of land management developed as well. Sharecropping deals were based on negotiations, on who brings in what types of inputs. By foregoing their bonus in kind, and in addition covering the costs for vegetable cultivation themselves (often through loans), sharecroppers wanted to reap the benefits from the entire yield of annual crops in order to accumulate cash.

Accumulation of assets could be observed especially among the richer segment of the farmers in the form of buying cinnamon trees with or without the land for speculative purposes, based on the assumption that in the near future the cinnamon bark would yield even higher profits. Several households were even willing to sell their cinnamon trees to get fast cash instantly for certain purposes, when the prices were high. However, the large majority would not sell and the tree cover therefore could largely remain intact, as all livelihood needs could easily be satisfied by cutting a few trees or reaping perennial crops, such as coffee or annual cash crops.

The aftermath of the crisis, however, initiated a dramatic reversal of the favorable conditions. Initially people could still rely on community support mechanisms as a coping strategy and invest in the fallback mechanism of rice cultivation to secure food needs. With the harsh conditions, community reciprocity and inter-household transfers eroded quickly, as the survival of individual households was directly at stake. Because of the growing demand, access to rice fields became severely limited and for co-villagers only, especially in Selampaung and Masgo. This further reduced survival opportunities for outsiders, like the Javanese immigrants, who had settled during the windfall period, and especially sharecroppers in the upland fields. These settlers now were not

only faced with dwindling meager profits from their cash crops, but also had to split their harvests into two. These developments caused a dramatic increase in out-migration from the district in search of employment elsewhere, not only by the temporary migrants, but also by the local residents who followed soon after. Depletion of assets in the form of selling stands of cinnamon trees or large-scale harvesting of cinnamon bark provided cash to finance the job-finding trips and the expenditures for the survival of the remaining family members. With the persistingly harrowing situation, livelihood survival increasingly depended on supra-local and transnational networks, particularly offering opportunities in Malaysia (which were often illegal). Under these conditions, a revival of immigration towards the uplands from 2001 onwards appears highly contradictory, but this was attributable to a further worsening of the economic conditions, bringing forth the revival of old support mechanisms for upland cultivation. Newly arrived migrants explained that they were attracted to the upland areas to take advantage of the original two- to three-year bonus system which covers basic needs as a means of aid during the initial years of sharecropping. Better-off farmers, who often had access to off-farm activities and owned large tracts of land, were able to survive the slump in commodity prices and remain in their villages. Moreover, they were usually willing to support these new types of sharecroppers to rejuvenate their land with more lucrative crops. Rich landowners again were able to capitalize on the specific conditions during the aftermath of the crisis, by further accumulating land which was now being offered at relatively low prices, or by buying off their sharecroppers at bargain prices. Interesting enough, this preempted large-scale encroachment into the forest, as rich landowners could re-open recently acquired land for cultivation purposes. However, the reopening of land or large-scale harvesting of cinnamon bark by the poorer farmers in the aftermath of the crisis, entailed large-scale loss of tree cover in the buffer zones. These developments made clear that community support mechanisms in agrarian communities, such as those existing in Kerinci, do not necessarily disappear with advancing commercialization. They only tend to fade into the background, and seemingly obsolete mechanisms of community support can spring back into use, adapting to the specific circumstances of that time. Moreover, the economic crisis showed that an exclusive focus on economic and material aspects of cultivation practices does not exactly reflect the real conditions of food security and livelihood sustainability in rural areas. Households make use of complex combinations of various strategies, including the tapping into off-market, community, and kinship-based institutions to achieve and maintain livelihood sustainability.

Our analysis of the various response mechanisms, which, unlike the vast majority of crisis studies, goes beyond the phase of *krismon* as

such, has shown that the effects of external shocks and stresses may move the sustainability of people's livelihoods in rather unexpected directions. The assumption that growing poverty automatically leads to environmental degradation is open to debate, partly due to the degree to which people are able to tap into various kinds of community support mechanisms, which persist in its original or adapted forms.