



## PROPERTY RIGHTS, ENVIRONMENTAL SERVICES AND POVERTY ALLEVIATION IN INDONESIA

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### Rewards for the poor and the environment

IN 1999, A VILLAGE LEADER in Sumberjaya, a subdistrict of Lampung province in Sumatra, Indonesia, heard about a new program of community forestry, or *Hutan Kamasyarakatan* (HKm), that provides farmers with long-term licenses to use degraded state forest land for coffee production. In exchange, the farmers protect the remaining forest, plant environmentally beneficial trees on their coffee plantations, and use appropriate soil and water conservation practices. By rewarding farmers with increased tenure security in exchange for their cooperation in managing the land more sustainably, the goal is to both reduce poverty and restore forests ravaged by fires and illegal encroachments. The village leader organized a group of nearly 500 farmers to apply to the HKm program, and in 2000 this group of farmers obtained a license and began its forest management activities.

Hopes for benefits to poor people are balanced by fears that programs like HKm might bypass poor land users or make them worse off. For example, where land rights are unclear, powerful people might usurp otherwise marginal lands and evict poor land users. In 2001, the Rewarding Upland Poor for Environmental Services (RUPES) project was established to conduct action research across Asia on programs such as HKm. Taking an inclusive view on what constitutes payment, RUPES calls these programs *rewards* for environmental services (RES), and RUPES sought to determine who benefits, who pays, and the institutional

and policy environment that enables fair and equitable distribution of opportunities and benefits.

Focused on HKm in Sumberjaya, researchers with a BASIS-funded project surveyed communities, HKm groups, and households to analyze program impacts. This assessment included understanding factors associated with where the program is located, if people comprehend program requirements, and what benefits they expect. The survey covered three land tenure categories found in Sumberjaya: private land, national park land, and protection forest land. The latter is state forest land designated to protect watershed functions, and this land is eligible for HKm licenses. Another category of state forest land is conservation forest, which has a main function of preserving biodiversity and its ecosystem; this land is not eligible for HKm licenses.

### Participation

Early evidence appears to show that local communities have rehabilitated degraded land by establishing coffee-based agroforestry. The main incentive to apply to join the program was the expectation of more secure land rights in protection forest land, indicating that land rights can be used as a reward for maintaining the environmental quality of forest land.

Overall, HKm participants (including both those with a permit and those who have applied for one) are poorer than private landowners in assets, but their

asset base is growing faster. They generally use fewer hectares of land and have poorer housing quality and less access to bank credit than private landowners. Usually, they are long-term residents, with more education and social capital than users of protection forest land who haven't applied for HKm. They also have better access to roads and technical assistance from the Forest Department.

*Access and requirements.* Access to the program appears to have been influenced by human and social capital, and access to markets and technical assistance. Nearly all farmers in Sumberjaya's protection forest area organized into groups to pursue HKm agreements. The key factor associated with early entry into the program was personal relationships with people in important positions, including forest officials helping to promote the program or the person helping the group prepare the application.

Another factor associated with entering the program was experience of a past eviction. Between 1991 and 1996, government troops evicted many farmers from protection forest. Apparently, the experience of a past eviction encouraged people to apply to the program earlier than other land users.

Currently, HKm contracts are for a five-year probationary period followed by a 25-year extension. The contract requires that participants grow at least 400 timber trees per hectare, with at least 30% being non-coffee shade trees. Participants do not have the right to sell timber except for occasional noncommercial use. We found that farmers would strongly prefer to have a longer contract period, which would mean more secure tenure, and a smaller required number of timber trees. They would like to be able to cut trees for use or sale, and they strongly desire extension services and roads.

Tradeoffs among these attributes could be assessed, for example the extent to which farmers would accept having to pay an annual fee (currently not required in Sumberjaya) in exchange for being able to cut timber trees. The percentage of shade trees, tree composition, and the requirement of a labor contribution appear to be less important (or subject to greater variation across households) in determining farmers' preferences for how HKm contracts are written.

*Understanding and awareness.* In general, people understand that the program comes with the benefit of secure tenure, but many also expect it to bring other kinds of benefits such as increased access to govern-

ment services. Additionally, the idea that farmers must provide something in return is somewhat elusive. For example, farmers question that program participants should ever be required to pay an annual fee, given that the program is supposed to help them.

Nearly all participants understand that they are supposed to plant trees as part of the HKm group, but there was little awareness of the number and type of trees. There was also little understanding of the requirement to invest in soil conservation. Nor are contracts entirely clear as written. For example, the contracts are unclear about whether farmers must contribute unpaid labor and whether they have access to government extension services.

Awareness of the program could be better, as many respondents had not heard of the program even though they were members of HKm groups. In groups with a HKm permit, about 20% of respondents were not even aware that they were members; in groups that had applied but not yet received a permit, about half the respondents did not know that they were group members.

This raises obvious questions about program effectiveness. Yet, the group-based nature of the program and the reward of secure tenure mean that even participants who don't understand the program can benefit from it. This would not be the case in an individual program or one with cash rewards that would be easy to embezzle.

## Impacts

*Tenure security and land values.* Large impacts on tenure security and land values were expected by permit holders and applicants, especially those evicted in the past. The promise of 25-year contracts increased the expectation of these benefits, though no groups had received such long-term contracts at the time of the survey.

The expected impacts on land values are not supported by data on land purchase prices. There has been no trend in increased value of protection forest plots since HKm was established, and these are worth much less than private plots. Analysis of purchase data confirms the lower value of protection forest plots, even when controlling for plot quality, trees on a plot, and year of purchase, and there is no significant impact of a HKm permit relative to protection forest plots without a permit. However, the stock of coffee

trees on plots at the time of purchase has a large and significant positive impact on land values, so avoiding future evictions in which trees are uprooted has a strong positive impact on farmers' wealth.

*Tree planting.* The program appears to promote investments in tree planting, especially by households that were evicted in the past. Accordingly, HKm may have greater impacts where more evictions occurred. Planting of timber trees and multi-purpose trees between 2000 and 2005 was greatest on plots with a HKm permit or application pending. There was no statistically significant difference in tree planting between plots with a HKm permit and plots with an application in process, yet significantly more trees, both timber and multi-purpose, were planted on plots with a HKm permit than on plots where no application for a permit had been made.

Since only the planting of trees prescribed by the program increased (timber and multi-purpose trees but not coffee trees), the impact of the program on tree planting may be due to program requirements rather than to increased tenure security. This inference is consistent with the limited impact found on actual land values.

*Land investments and soil fertility management practices.* The most common land investment on coffee and agroforestry plots in Sumberjaya is sediment pits. Such investments were most common on private plots, followed by plots with a HKm permit or application pending where an eviction had occurred in the past. Investments such as land clearing, terracing, and use of inorganic fertilizer were most common on plots with a HKm permit or application pending. By contrast, use of compost was most common on private plots. Land clearing is greater on protection forest plots with a HKm application pending than without HKm, but differences in other land investments are insignificant.

*Income and profits.* Participants expect HKm to increase their income, some by a substantial amount. Group discussions indicated that this was due to the belief that the greater tenure security would allow farmers to work their land more intensively.

Analysis revealed statistically insignificant differences in profits per hectare across HKm and tenure categories, though protection forest plots where a HKm application was pending did show somewhat higher profits than those without a HKm application. Overall, the results do not provide much support for the positive impacts of HKm permits on income

and profits. However, the types of trees planted makes a difference.

Timber trees were found to reduce profits while multi-purpose trees increase profits. The negative impact of timber trees on income and profits could change if cutting and replanting of such trees were permitted in the future; otherwise, there may be a tradeoff between environmental and poverty objectives, or non-compliance with program requirements.

The overall benefit of the HKm program on income and profits appears to be limited at present. Over time, investments in tree planting may increase participants' income and provide environmental benefits, though these impacts have yet to be assessed. Other ICRAF



**Awarding HKm permits**

research shows the environmental benefits of multi-strata agroforestry investments, yet further research is needed in Sumberjaya to assess economic impacts that may take time to materialize.

*Secure tenure and reducing deforestation.* Drawing on satellite imagery of Sumberjaya from 1973 to 2005 we examined deforestation rates in different tenure systems that the surveys covered: private land, national park, and protection forest, including HKm sites. This helps assess impact and provide a critical piece of evidence on one aspect of the HKm program, namely the requirement that local people help protect against further deforestation of the natural forest.



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Results showed that farmers do commit to HKm conditions. Under HKm, the areas of forest loss decrease and agroforest areas increase. Deforestation is not completely eliminated, but after 2000 deforestation reached the lowest level since 1973. Within the protection forest area, deforestation remains high in areas where farmers are waiting to get their HKm permit, which should encourage the government to rapidly process applications.

HKm could also effectively function as a buffer zone to reduce deforestation in the surrounding protected area. The forested area of Bukit Rigis, which is classified as protection zone, is surrounded by land managed under HKm. This area experienced the lowest deforestation rate compared to any other tenure systems in Sumberjaya. This supports the hypothesis that increasing land tenure security helps reduce deforestation and increase tree cover, and therefore promotes conservation.

### Shaping policy

In 2004 when RUPES started its work in Sumberjaya, only five farmer groups had been awarded permits. Covering only 7% of the protection forest, the area was too small to bring measurable improvements to watershed functions.

RUPES was successful in helping several additional HKm groups establish, but the government was slow to embrace the program, apparently due to concerns about whether farmers could be trusted to fulfill their part of the agreement. BASIS research played an important role in helping the government understand program impacts on both livelihoods and natural resource conservation. A series of workshops were held with district, provincial, and national level officials, which helped ease officials' skepticism that farmers could be trusted to manage land in an environmentally-friendly way.

In July 2006, an award ceremony was held in Sumberjaya in which all 18 farmer

groups received community forestry permits under the HKm program. This increased the area covered by HKm permits from 1,367 to 11,633 hectares. Nearly 6,400 farmers now have permits. With 70% of the protection forest now covered by conditional land use permits, Sumberjaya should start to see measurable improvements in watershed functions.



### Related reading

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