INSTITUTIONAL ASPECTS OF UPLAND AGRICULTURE IN EAST JAVA

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This study examines the institutional aspects of upland agriculture in four villages in the Brantas watershed of East Java that were the target of the Upland Agriculture and Conservation Project (UACP), a project financed by the Government of Indonesia supported by loan funds from the IBRD and grant funds from USAID. The project, which was implemented from 1984/85 to 1993/94, was designed to increase household income and minimize land degradation on upland farms.

The UACP has improved farmers incomes and, to some extent, improved the land condition by supporting conservation farming systems. The project has involved considerable institution building to assist upland farmers. However, because the project institutions were designed specifically for implementing the project, the existence of such institutions in managing upland development after project termination has become an important issue.

The results of the study indicate that it is difficult for farmers to improve their farm land without support from related institutions. The incentive of increased production and the improved conservation farming systems that farmers had through joining the project, could be threatened without improving the role of these supporting institutions.

Background to The Project

The condition of upland agriculture in the Brantas watershed of East Java was characterized by poor farmers, small land holdings, low productivity and degraded land. The Government of Indonesia has sought to improve this area. A recent major effort was the Upland Agriculture and Conservation Project (UACP), for which financial assistance provided by loan from IBRD and a grant from USAID. The project, which was implemented between 1984/85 to 1993/94, was designed to increase farm production, increase household income and minimize land degradation of upland farms by introducing conservation farming systems.

Project institutions were designed and established by involving various levels of existing development institutions concerned with upland agricultural development. The project created the conditions where by related supporting institutions in rural areas could participate, directly or indirectly, in project activities. A number of people from different institutions in rural areas were coordinated to achieve the objectives of the project. Access roads were constructed, demonstration plots were established, bench terraces were constructed, village crop nurseries were established. As a result, farming systems were improved, farm production and farmers' incomes were increased, and soil erosion was reduced. However, the existence and role of such institutions after project terminations has become an important issue. After the termination of the project, there was no more project support to these institutions, although their services and functions are still needed by farmers to continue practising farm conservation techniques developed by the project.

The purpose of this study is to examine the institutional aspects of upland agriculture in areas of East Java that used to be the targets of the project. The analysis, however, focuses on the institutions that have a direct relationship with farmers, especially extension, rural credit, marketing, input supplies and the elite group in the village) Within this analysis the effects of UACP on conservation farming systems and institution building in the study villages was examined. The performance of related institutions during and after the project were also examined. As a conclusion, this study argue that sustainablity of farming conservation needs certain conditions as during the project implementation to enable collective action from different rural institutions. Further actions should consider the important of sustainability of rural institutions.

Study Locations

The location of the study was limited to four villages in four districts of East Java that were the target of the project. Field work for collecting data was carried out from June to October 1994 in four villages in four districts of East Java. The four study villages were (1) Srimulyo village in the Sub-District of Dampit, Malang District, (2) Dawuhan village in the Sub-District of Kademangan, Blitar District, (3) Kates village in the Sub-District of Kauman, Tulungagung District, and (4) Mlinjon village in the Sub-District of Karangan, Trenggalek District. The map of location is presented in figure 1. Data were obtained through field observation, discussion with related government officials, and interviewing 143 project farmers and non-project farmers, as well as a number of key persons in the villages.

The Effects of Project to Upland Agriculture

The primary objectives of the project were to increase farm production and incomes, and reduce soil erosion by introducing farm conservation techniques, improving farming systems and better farm management (USAID, 1984). The project was located in Jratunseluna watershed of Central Java and Brantas waterheds in East Java. The major component of the project was the Sustainable Upland Farming Systems which provided subsidies to farmers to construct bench terraces and water channels, to adopt improved seeds, to diversify crops, to apply improved chemical fertlizer and pesticides (Huszar, et al., 1993). Through this project, access roads have been constructed, project institutions have been established and personnel from related institutions in the region were coordinated to support the achievement of the objectives of the project. Foreign consultants were appointed. These consultants were mainly for the project components of Sustainable Upland Farming Systems, Human Resources Development, and Management Information Systems. Their main tasks were to help in project planning and implementation, improve the knowledge of staff of the related government institutions, and technical matters of upland management and conservation. The consultants were also involved in budget planning and other financial procedures of the project.

The project changed farmers' attitudes toward better farming systems, and led to improved farm production and income (Bangda and PT Exa, 1992). However, these

achievements were challenged after the completion of the project. Recent studies argued that although farm production and income were improved as a result of the project, the increase rate was reduced after the project terminated (Huszar et al., 1994 and Saragih et al., 1992). The reasons behind this, according to Saragih et al (1992) were that farmers could not apply the recommended level of inputs due to lack of capital, and the required inputs could not be obtained as easily as when the project was going on. Saragih et al (1992) also mention that most farmers modified their technologies in accordance with their budget limitation by using only the available seeds and reducing the use of chemical fertilizers and pesticides. Hence, the sustainability of the benefits of the project for future upland soil conservation is still questionable (Huszar et al., 1994).

Despite some problems and limitations, the project developed an institutional model that enabled various institutions to be integrated in managing upland developments (Bangda and PT Exa, 1992). The governor and heads of districts where the project was located have established project implementation guidelines for the institutions or offices under their jurisdiction. In East Java, the head of *Bappeda* (the Regional Development Planning Board) has developed detail project implementation guidelines for every project component that could be used in the provincial to village levels. Coordinating meetings were held at village, sub-district, district and provincial levels. For regional development, the roject has improved linkages among government offices in the region, horizontally as well as vertically, through the existing project institutions.

At the provincial level, during project implementation, two important project institutions were established directly for the implementation of the Project, the Project Coordinating Office (PCO) and the Project Guideline Team. The PCO was responsible for planning project activities and budgeting. The PCO developed planning systems for managing dryland and soil conservation that could be implemented by various government institutions in the provinces concerned with upland development. These provincial government institutions have their sub-offices in district level. At district level, Project Management Units (PMU) were established. The PCO support PMU on matters related to project implementation, monitoring, evaluation and reporting all project activities. Together with provincial government institutions, the PCO ensured that project activities in the field could be implemented in an integrated fashion. Another important function of PCO has been to coordinate all training and courses of soil conservation carried out by the regional government of East Java. The PCO has also accommodated upland development policy set by regional and central government and translated into action plans that could be used by heads of sub-districts and project managers.

Because the tasks of the PCO involved various institutions, the decision makers or heads of those institutions have major role for the success and failure of project implementation in the region. Hence the tasks of PCO needed to be supported by all the heads of related institutions who were in the Project Guideline Team. The existence of the PCO and the Project Guideline Team enabled various institution to be coordinated to achieve the objectives of the project. At the district level, there

was anther project institution, the Project Management Unit (PMU), that has performed similar functions as PCO in the provincial level. The PMU was also supported by the Project Guideline Team II consists of heads of sub-offices or sub institutions at district level that have been concerned with upland development.

The involvement of heads of government institutions in the region and the financial support for the project enabled the project to mobilise rural human resources and other resources to improve agricultural land condition, increase farm production and increase farmers' incomes.

Farming Systems Condition of the Study Villages

In the study villages the typical farmer lives with his wife and on average 3-4 children on approximately 0.7 to 1.8 hectare of land. The land is scattered into 2 to 3 plots (Table1). Farmers give priority to their food supply. Off-farm cash income derived is mainly from casual labouring works. Less than 10% of farmers have a semipermanent non-farm jobs, such as *pamong desa* (village staff) or small traders in the local market.

The land type is dominated by dryland which consist of houseyard and *tegalan*, the later being dryland locate separately from houseyard. The area devoted for ricefield is very small. Table 1 shows the land use in the four study locations.

Table 1. Land Use Condition in Study Areas of Upland East Java

Description	Malang Srimulyo	Blitar Dawuhan	Tagung Kates	Tgalek Mlinjon
Tot land (ha)	2047	1431	1671	1077
Houseyard (ha)	255	145	109	261
Rice field (ha)	10	38	53	114
Tegalan (ha)	1782*	1248*	1509*	702

* include idle land, cemetery, roads and buildings

Sources: Monograph Desa Srimulyo (1994), Monograph Desa Dawuhan (1994), , Monograph Desa Kates (1994), and Monograph Desa Mlinjon (1994)

Food production is still a priority for most farmers, eventhough harvests are always uncertain because of the relatively poor land condition, lack of water, and the danger of land degradation. The common food crops are soybean, peanut, maize, rice, banana and cassava. These food crops, except rice, are interplanted with a few dispersed or peripheral perennial trees. Such perennial trees are not necesarily planted on purpose. Most farmers interviewed explained that many established perennial crops in their fields had grown accidently, in fact they did not know who planted the crops and when. The established tree crops were there even before they owned the land. Many of tree crops grown by themselves naturally. Although the crops produce nothing but wood, they let them grow so long as their food production was not affected.

The trees in the houseyard provide villagers with some fuel wood and fruit. In addition to staple food crops, the houseyard is usualy planted by crops that can provide fruit or additional food such as coconut, *petai* (legume), and bananas. The houseyard were enclose by a bamboo hedge or legume hedge. No clear cropping plan or schedule can be distinguished. All types of crops are grown together in mixed stands. The food crop products from the houseyard are largerly consumed by farm household themselves, the surplus, if any, being sold.

The UACP had developed better farming systems that focused not only on food crops production but also tree crops. The significant production increase, however, was mainly for food crops.

The Role of Rural Institutions on Upland Agricultural Development

In general, the number and type of institutions concerned with upland developmenta and operating in each study area were similar. For the purpose of this analysis, the institutions that affect farm conservation activities have been grouped into (1) those located within the village, (2) those located within the sub-district boundary, and (3) those located within the district boundary and outside of district. **Figure 2** presents a simplification the institutions that have direct access to farmers in the study areas, whether as a farmer groups or as an individual farmers. The institutions within dotted-boxes were the institutions that established and developed specifically for the implementation of the project, and hence these project institutions are no longer exist. The farming systems reasearch and the field laboratory, were financially under the responsiblity of provincial governement. The rest the instituions (continuous lined boxes) already existed before the project commenced, involved in the implementation of the project and remain existance after the completion of the project. The village crop nursery was established during project implementation and is the property of the village.

Sustainability of upland farming systems requires support from both formal and non-formal rural institutions. This means the sustainability of improved farming systems after the completion of the project would depend on the involvement of those institutions. The location of these institutions could be within the village boundary or sub-district boundary.

The project institutions were designed specificaly for the implementation of the project by involving the existing rural institutions. During the project, those rural institutions were directly or indirectly supported by the project. After the project termination, the questions related to rural institutions are

1. What can farmers do to sustain the improved conservation farming systems?

2. How can existing institutions be mobilised to provide on going support to farmers?

How to Reactivate Farmer Groups

Farmers groups comprise 20 to 40 farmers with adjacent plots. During the project period, cooperation among members of farmers groups was strengthened and guided intensively by extension workers appointed especially for project implementation. During the project, farmers worked as a group to construct better bench terraces and adopt improved cropping systems in their own plots of land, located to a demplot or extended area. Financially, individual farmers included in the project received direct support from the project. Subsidy was given for constructing bench terraces and other conservation structures. Production inputs were also subsidised in the second year of the project to ensure that farmers could apply farm technologies developed and recommended by the project. The availability of required seeds and fertilizers was ensured by the project.

The existence of farmer groups in the study villages became a key factor in improving land condition. During the project period, especially in the early phase of the project, individual farmers could be mobilized to work as a group under the guidance of extension workers. They could be mobilized to be actively participated in group actions for farm conservation because:

1. Farmers had a sense of obligation to the project that assisted them in constructing bench terraces and obtaining the required production inputs. Farmers, whether as individuals or as a group, had a direct incentive from the project.

2. They had the same project activities, i.e. constructing bench terraces and other recommended structures on their plots of land.

When the project was terminated, there were no more group activities for terrace construction. Farmers conservation activities were limited to the maintenace of the existing terraces on individual plots of land by individual farmers. Degraded land in one plot of land may affect the other plots, hence, conservation effort requires cooperation among group members. The question is whether farmer group can be reactivated as during the project.

The Performance of Extension Workers

Technologies developed by the research institution need to be disseminated to farmers effectively. The institution responsible to do this was the Rural Agricultural Extension Institute located in the boundary of each Sub-district. This institution, which is technically supported by the Offices of Food Crops, Estate Crops, Livestock and Fishery and the Sub-Institute for Land Rehabilitation and Conservation, according to some ex project staff, was involved actively in extension activities during the first two years of project implementation. Their intensive activities, however, were limited to farmers involved in the project, i.e. farmers in demplot areas and farmers in impacted areas. There is evidence that technical guidance to farmers in the study areas given by this institution was less intensive (Unibraw and Bappeda, 1992). This evidence has become more obvious during field observation of this study where

conservation construction such as terraces, water channel and drops were poorly maintained by farmers due in parts to less intensive extension activities. The low level of education of farmers requires continuously guidelines of how to improve their land.

Professionally, all extension workers from Offices of Food Crops, Estate Crops, and Livestock as well as from Office of Land Rehabilitation and Conservation were assigned by their bosses to be involved in project activities. In addition to basic salary from their offices or institutions, conservation workers have financial incentive from the project in the form of honoraria. Motorbikes were provided by the project, one for each extension worker.

When the project was completed, all extension workers back to their bosses in the institutions where the extension workers work. Hence, extension tasks for extension workers now assigned by their institutions to cover broader working areas. No more extension workers assigned specifically for ex- project villages. Subject matterial in accordance to the tasks of of their institutions which are mainly focused on production issues, such as food crops, estate crops, and livestock production. Because farm conservation needs interdiciplinary approach, who should deliver extension for conservation?

The Need for Input Supplier, Product Marketing and Credit Facilities

Improvement of farm production need the improvement of marketing facilities to enable farmers to sell their surplus farm production and at the same time to buy other farm products not being produced on their land. The location of traditional markets in all study villages except Dawuhan village, were outside village boundary. Farm production inputs such as fertilizers, pesticides and tools were also obtain from traditional markets. Farmers sell farm production to middlemen who come to the field and collect farm product directly from some farmers' fields and make payment in cash. Under this arrangement, farmers do not have to pay transportation costs, however, the price is lower than could be obtained if farmers took their produces to traditional markets.

This marketing aspect have not been affected by project implementation. At hat time, farm conservation inputs were ensured and supplied by the project. However, after the project was terminated, farmers have had to obtain production inputs from suppliers that located in sub-district markets with a price that farmers could not afford.

Ideally, the function of product marketing and input supply could be been performed by village unit cooperatives. However, the village unit cooperative in all study villages have not develop to the same extence as those in rice producing areas of Eas Java. These village unit cooperatives were still an ideal conceptual institution that did not revolved and play a role as input supplier or product marketing.

Most respondents said that activities of maintaining the existing conservation construction was not as intensive compare to when the project was going on. From

the discussion, there was an impression that no efforts by farmers to improve conservation structures. Farm resources were limited, hence, they concentrated their struggle to meet household basic need by growing food crops, looking after the existing established tree crops, doing back yard activities not directly related to farm production, and searching other additional non-farm cash income rather, than doing conservation

The existing formal credit institution operating in rural areas is the Indonesia Rural Bank (BRI). However, farmers must have recognized security to be entitled to a loan which usually they do not have. When farmers require immediate cash for any purposes, their first alternative is to ask relatives or friends who usually give a loan with a flexible time of repayment without interest. Their second alternative is to sell their crops before harvest to a buyer who pays in advance. Their third alternative is to borrow money from private credit institutions (*bank cuil rentenir*) that operate in rural areas more actively with high interest rate but do not need formal procedures like the BRI

Understanding the importance of credit facilities for marginal farmers in the study areas, the interfention of government is needed to ensure the existing rural bank is involved in rural development. Several factors can be considered (1) low interest rates, (2) removing the requirement for security, perhap by using group liability, (3) simple administration procedures, and (4) periods of repayment that suitable for the types of investment upland farmers need to make.

Problems of Village Crop Nurseries

In each study village there is one village crop nursery managed by the farmer group. This village nursery was established during the implementation of UACP with the objective of supplying the required seedling for conservation purposes. In the long term this village nursery needs support not only by the community within the village but also by a research institution to enable it to provide seedling of the right varieties on the right time. Crops varieties should be selected by considering physical and socioeconomic conditions of each area. Result of this study show that more than 75% of fruit trees distributed by the project and grown in farm location have dead. The most common fruit crops provided by project have been mango, rambutan, jackfruit and coconut, other tree crops include legumes, albacia and acacia. The surviving fruit crops (less than 25%), have not been produced anything though performing a conservation function, although the age of those crops at the time of survey was 8-9 years. Most farmers interviewed said that the main reasons for the failure is due to the dry land condition and lack of water. However, from a development point of view, this failure whatever the reasons, shows that the recommended tree crops were not suited to local conditions. The survival and improvement of the village crop nursery needs continuous commitment from farmers as a group, and from the head of village and staff who legitimate the existence of the crop nursery.

Further research is needed to develop the most suitable crops for the study villages and ensure that farmers can obtain the required planting materials on the right time.

The Potential of Rural Leaderships

There is a similarity about organisation and farmer group system among the villages. The village is the smallest unit of development agent that operates on the grass roots level. The administrative unit of the village may be interpreted as one of the officially established institutions, because collective actions for public works are undertaken by the members of the unit, i e the village members. Each village is headed by a Head of Village, who is elected by the community through a village general election. The heads of village are responsible for every development activity in their territory and report regularly to their higher official (heads of subdistrict).

To mobilize farmers or rural community to be involved in land improvement activities, both the formal and the non formal leaders play a key role. In many cases, the influence of this elite group has been dominant in various decision making related to rural development activities that mobilize people. The elite formal group (i e head of village and member staff), not only legitimise development activities but also acts as influential persons in the rural community.

Other influential leader in the rural community is a key farmer who was elected by group members based on his knowledge, leadership and mobility. In all study areas, a formal education seems not to be an important criteria in selecting the key farmer. A key farmer is not the person who has highest formal education background among farmer members. The farm knowledge, leadership and acceptability by the members has been dominant criterias of a key farmer. Together with other rural leaders key farmers could motivate and encourage rural people to improve land condition. However, the question is how to fully utilize this leadership potential.

Concluding Remarks

This study examined institutional aspects of upland agricultural development in four villages of East Java that were the target of the implementation of the Upland Agriculture and Conservation Project (UACP). The main objectives of UACP were to increase farm production and income, and reduce soil erosion by introducing the improved conservation farming systems to upland farmers.

The results of the study shows that the UACP had played an important role in upland agricultural development. Farmers attitudes in all study villages have changed toward the improvement of their farm land, enabling them to increase farm productivity and income while minimizing land degradation. The project also importantly contributed to coordinating and developing institutions concerned with soil conservation and upland agricultural development. Village community and rural institutions have learned much from the implementation of the project. The project activities have established a working environment that enables related persons from different rural institutions (i e the institutions that directly have contacts with farmers in rural areas, especially extension, rural credit, marketing, input supplies and the elite group in the village) to perform collective action to achieve the objectives of the project.

However, in 1993/94 the project was terminated. This project termination has major implication for existing rural institutions. The project termination means no more project support to these institutions. The sustainability of farming conservation efforts by individual farmers is clearly influenced by the performance of these supporting institutions.

The reduced soil erosion and increased farm production and income as an effect of UACP could be threated by the lack involvement of institutions in the rural areas. The challenge in the future would be how far they could play the role in developing poor farmers in the region. This study suggests that because sustainability of farming conservation needs continuous collective action from various people from different institutions, the rural institutional conditions during the project need to be maintained. Further actions or projects should consider the importance of sustainability of rural institutions to support sustain ability of upland agricultural development.

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FIGURE 1. MAP OF STUDY LOCATION IN EAST JAVA

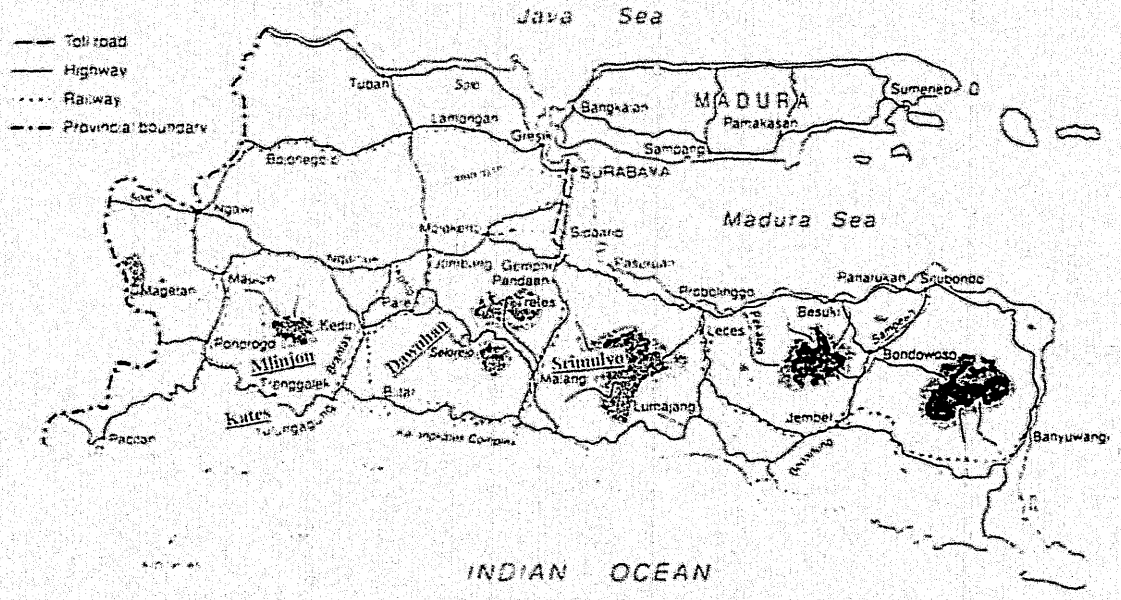

FIGURE. 2. INSTITUTIONS THAT INFLUENCE UPLAND AGRICULTURE IN EAST JAVA

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