Saebah Communal Irrigation System

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1 Static Analysis - Collective action

This case was part of the original CPR database developed in the 1980s by Edella Schlager and Shui Yan Tang at Indiana University. The resource appropriated from Saebah Communal System is water for irrigation in West Java Province and the Takkapala communal irrigation system in South Sulawesi province. These two cases were located in different provinces in different islands. Both are the system of canals that deliver water from a river. The study examines the impact of national subsidies on the rehabilitation of two small-scale river-diversion irrigation systems in Indonesia. Subsidies were substantial incentives to mobilize local resources with high rates of return on the rehabilitation projects.

1.1 The Commons Dilemma

The supply of water, more than any other resource, controls the production of field crops in the tropics. There is more than a single water user that uses the Saebah Communal System and Takkapala irrigation system. The limited financial resource through national subsidies to create incentives for the rehabilitation of two river-diversion irrigation systems is perhaps a secondary commons to that of water.In this context, it seemed that the Indonesian government chose to intervene in this dilemma. The central government imposed regulations in managing the water resource for irrigation.

1.2 Biophysical Context (IAD)

The Saebah Communal Irrigation in West Java and the Takkapala Communal Irrigation System in Malino village, South Sulawesi, are a part of a larger ecosystem within the natural environment with numerous programs ranging from village to national human-made infrastructure. The Saebah system rehabilitated under the Subsidi Desa program with USD 250 (U.S. dollars) subsidies in both 1971 and 1972. During 1971, its rock-and-gravel diversion dam was renovated and heightened. In 1972, the lining of critical canal reaches with concrete improved the water distribution system. The rehabilitation was undertaken during the slack agricultural season (June to August) by mobilizing 30 villagers each for 45 effective working days in the first year, and each for 30 effective working days in the second year.

1.3 The Natural Infrastructure

The social-ecological system (SES) of the *desa* (village) of Cemplang, West Java is primarily towering forests, deep valleys and high waterfalls and numerous lakes surrounded by forest. Cemplang is on a highway about 30 km west of Bogor, the center of agricultural education and research in Indonesia. The village is made up of 53 neighborhood organizations of *rukun tetangga* and 8 unions of *rukun tetangga* called *rukun kampung*. At the time of the survey in 1975, the village had 750 households with 5,048 inhabitants, many of whom were employed in construction and other trades in Bogor and Jakarta. The total agricultural land area at the time was 415 ha, of which 360 ha are lowland rice fields. Rainfall is high and relatively evenly distributed throughout the year.

Malino is situated about 64 kilometers south of Ujung Pandang, now known as Makassar, the provincial capital of South Sulawesi. At the time of the study in1975, Malino was relatively isolated with no improved roads connecting it to any urban center, and consists of 71 *rukun tetangga* and 11 *rukun kampung* with 1,781 households and 9,828 inhabitants. Of the total 10,000 ha area, 610 ha are lowland rice fields, 2,645 ha are upland rice fields, and 6,845 ha are forest lands. Rainfall in Malino is also high and relatively evenly distributed.

1.4 The Human-Made Infrastructures

The natural infrastructure in both West Java and South Sulawesi at the time of survey was relatively similar. Rural areas in Indonesia, in spite of different provinces and islands, were generally characterized by forests and productive agricultural lands. At the time of survey, these two locations in Java and Sulawesi island were similar in that they had vast areas of rice paddy fields that needed constant water through irrigation systems. In addition, the central government has an almost absolute authority to manage and control irrigation systems, its maintenance and funding through provincial government, regency, and subdistrict (*kecamatan*) governments respectively.

In the context of irrigation system management, the central government provided findings to help the maintenance and operation of irrigation in smaller scale contexts, such as communal irrigation systems. The creation of an economic evaluation of the projects set up by the central government was devised to determine communal labor, locally mobilized resources, for the irrigation projects. For example, Communal labor contributions were imputed using the local farm wage rates of USD 0.62/man per day for Saebah and USD 0.56/man per day for Takkapala.

The estimated capital costs required for the rehabilitation was computed from material contribution valued at market price such as government subsidy, administrative cost, construction materials, and hired labor or communal labor.

1.5 Attributes of the Community (IAD)

The village leadership and community organization is one of the primary determinants of the success in mobilizing communal labor. Under the *Subsidi Desa* (village subsidy) program, requests for proposals were initiated with the village heads in both Cemplang and Malino. The village heads first consulted with the heads of their *rukun kampung* and

rukun tetangga and then assembled larger village meetings. The proper project proposals that were developed from such meetings were then submitted to and approved by their respective *kecamatan* (subdistrict), *kabupaten* (regency), and later to the provincial offices. Upon approval, executing the projects was through the village heads, in consultation with heads of *rukun kampung* and *rukun tetangga*, who prepared schedules to mobilize villagers for the work.

The major difference between Cemplang and Malino was the relationship between the official village administration and the unofficial community organizations such as the *rukun kampung* and *rukun tetangga*. For example, in Cemplang, the village head was the main person taking the initiative in planning and organizing the projects. In this case, trusts were given primarily to official, elected leaders of the village who held higher authority than heads of *rukun tetangga* and *rukun kampung*. On the other hand, the village head of Malino left the main decisions to the heads of the *rukun kampung* and *rukun tetangga*, who were, in practice, farmers relying heavily on the communal irrigation system. The leaders of the smaller community units were able to take greater responsibilities for scheduling and supervising work.

1.6 Rules in Use (IAD)

1. Position Rules

   At Cemplang the village heads originated request to confer with *kecamatan* (subdistrict government). At Malino, major decisions were left to leaders of smaller communities.

2. Boundary Rules

   Locally elected village tenders (called *ulu-ulu*) manage the systems for operations and maintenance. The appropriation resource present in this location consists of canals that deliver water from a river.

3. Choice Rules

   Relationship exists between the official village administration and the unofficial community organizations, i.e. *rukun kampung* and *rukun tetangga*.

4. Aggregation Rules

   In Cemplang village, the *rukun kampungs* set the rules, while in Malino the strong neighborhood community ties set planning and labor rules.

5. Payoff Rules

   Primarily mobilized labor in proportion to family members of working age (Saebah 1.2 of 4.1 while in Takkapala 2.3 of 3.8). Specifically, rates: USD 0.62/man-day for Saebah and USD 0.56/man-day for Takkapala.

6. Scope Rules

   Localized communal labor and carabaos (water buffalo)

7. Information Rules

Education level, proximity and exposure to infrastructure and economic opportunities of nearby urban areas, and land-ownership. Also, access to governmental regulations documents, from in the provincial level to the subdistrict (*kecamatan*)

1.7 Summary

The profitability and economic efficiencies of the Saebah and Takkapala rehabilitation projects was analyzed through benefit-cost ratio and internal rates of return analyses. Benefits from the projects consist of increases in irrigated areas and in yields per hectare. This analysis is however conservative, because it includes only those benefits stemming from increased area of irrigation. From the standpoint of village societies, perhaps the most relevant standard for evaluating the value of work programs is the return to village labor contributed to the rehabilitation. A shadow price of communal labor was computed in this study to reflect the value of labor. For example, the shadow price was estimated as an average return per man/per day of labor for initial capital construction, and for initial construction combined with operation and management. The average return was calculated to measure the success of the national subsidies to create incentives for the rehabilitation of two river-diversion irrigation systems.

Meanwhile, it seems that these two communal irrigation systems were robust in that they are self organized with a heavy emphasis on the roles of central government and its authority exercised through the lines of bureaucracy of the provincial government to village government. Historically, following the radical change of centralized government into a more decentralized structure in the late 1990s, local government (provincial and regency government) holds responsibility in managing water resources, and more voice is given to farmers in pursuing a more sustainable irrigation system.

2 Case Contributors

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