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REPORT ON THE RAIN WATER COLLECTION
AND STORAGE (TUNGNAM) PROJECT OF THE
POPULATION AND COMMUNITY DEVELOPMENT ASSOCIATION

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I. INTRODUCTION

The Population and Community Development Association (PDA) is committed to bringing safe drinking water supplies to the people of rural Thailand as its contribution to the United Nations International Water Decade. The current focus of these efforts is the Rain Water Collection and Storage Project, commonly referred to as the "Tungnam" project, a direct translation of the Thai word for "water tank".

Under the Tungnam project, PDA provides technical and financial assistance to enable villagers in Thailand's arid Northeast to build bamboo-reinforced concrete rain water catchment tanks. The tanks measure 3.6 meters in height and 2.0 meters in diameter. The storage capacity is 11,300 liters, enough to provide a family with year round access to clean water for drinking and cooking purposes. In only one and a half years, over 2,000 of the Tungnam water tanks have been built. Demand for the tanks is extremely high, and PDA hopes to secure funds to build as many as 100,000 tanks in the years to come. Repayments by recipients of these tanks should finance up to 600,000 additional tanks.

The following pages give background details and describe the implementation strategy for PDA's Tungnam project. Further information can be obtained by writing directly to

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II. BACKGROUND

The Tungnam project is located in Khon Kaen, Mahasarakham and Buriram provinces of Northeastern Thailand, the poorest, and driest, region of the country. Over 90% of the region's average annual rainfall of 1.25 meters falls between May and September. Small creeks abound, but only have water in them for at most eight months each year. During the other four months, villagers must find other sources for their daily water needs. Most are forced to push handcarts up to 5 kilometers each way to the nearest water source - water which even then is generally contaminated with bacteria and parasitic larvae. Few villagers can afford the US\$ 2 per cubic meter cost of purchasing water from other sources.

In 1980, PDA sensing the critical need to develop alternative drinking water sources for the villagers of Northeastern Thailand, undertook a pilot project in rain water collection and storage tank construction in Khon Kaen and Mahasarakham. A total of fifty-one tanks were built of varying sizes and using different construction materials.

The pilot project was extremely successful. First, it showed that villagers were highly receptive to the concept of rain water storage, and were willing to invest their own labor and financial resources. Second, PDA was able to determine that the most appropriate tank model for Northeastern Thailand is the 11.3m³ bamboo-reinforced concrete tank in terms of cost, construction efficiency, villagers aesthetic preferences and capacity to meet an average family's drinking water needs throughout the dry season. Finally, the expertise PDA acquired enabled it to seek additional funding to expand the scope of its rain water catchment tank program. With the support of German Agro Action, the Tungnam project thus officially began in April of 1981.

The PDA approach to development, as exemplified by the Tungnam project, stresses self-help and attempts to maximize local participation at all levels of project design and implementation. In this way, villagers become aware of their innate ability to provide for their own betterment. PDA does not believe in making "gifts" of water tanks as is the case in certain government and private agency programs in the developing world. Instead, the project is designed so that villagers work together building their tanks in groups of 10-15 families, with one worker contributed by each family. Recipients are required to pay back only the raw materials cost of the tanks, with repayments spread over two years at no interest.

Payments do not begin until after construction is completed, another way in which PDA creates trust among the local villagers. These funds are being collected by local village committees which will continually rollover the funds to finance additional tanks in the village in the years to come - capital formation at the village level. PDA believes that its philosophy of implementation teaches villagers to recognize their direct role in the development process, increases their self-esteem, and thus creates conditions for development to be self-sustaining in the long run - spillover effects that no "gift" could produce.

Implementation of the Tungnam project in a new area begins with PDA staff holding orientation meetings for provincial and district-level government officials to acquaint them with the project and ensure their cooperation. Similar meetings are then held with groups of village headmen and PDA family planning volunteers, at which time PDA schedules its implementation timetable for entry into each individual village. These people then return to their villages to inform residents of the existence of the Tungnam project and announce the time and date for PDA's upcoming village orientation meeting.

Orientation meetings for residents of each participating village are held 1-2 weeks prior to the beginning of construction in the village. Topics covered at each meeting are as follows:

- a. Project Overview
- b. Water and Health
- c. Tank Construction Technique
- d. PDA's Responsibilities
(materials supply, construction oversight, maintenance and follow-up)
- e. Villager's Responsibilities
(provision of labor, materials cost repayment, role of village committees).

The meetings conclude with villagers willing and able to participate in the program being assigned to construction groups.

III. CONSTRUCTION AND FOLLOW-UP

Approximately four days prior to construction, villagers collect and dry bamboo to be used to reinforce the tanks structure. PDA then brings materials and equipment into the village (such as metal forms, cement, stone, sand, etc.) all of which have been purchased previously in bulk and stored at one of the project's field offices. One or two staff technicians remain on site in each village at all times to ensure adherence to the construction technique. (For example, the villagers tend to add too much water when making the concrete mixture - that makes the work easier but the quality of the concrete suffers). Construction rotates from house to house, with 2-3 tanks generally being worked on at any given time.

PDA places strong emphasis on training and education activities for local villagers in all of its development programs so that knowledge remains in the village once PDA has gone. Under the Tunghnam project, over 100 villagers to date have been given special training on tank construction, maintenance and repair plus the relationship between water and health. The trainees chosen are those members of the tank construction crews that show particular potential and enthusiasm for tank construction. In the years to come, these volunteers will assist PDA in its follow-up and maintenance of previously constructed tanks in addition to supervising the construction of new tanks financed by repayments into the Tunghnam revolving fund.

Upon completion of construction, an official contract signing ceremony is held in each village with project staff and each household head in attendance. The ceremony is a unique combination of formality and celebration. It begins with the PDA leader congratulating the villagers on the success of their cooperation and then reviewing the terms of the contract. Each household head then signs his contract and makes the initial down payment of 500 Baht (US\$ 22). The villager is required to make additional monthly payments of 150-200 Baht to the village committee until the raw materials cost has been repaid. The contract signing ceremony typically ends with the household heads preparing a traditional Northeastern feast to be shared together with the Tunghnam project staff.

PDA's responsibilities do not end with the completion of construction in the village. Technicians periodically return to the villages to inspect all previously constructed tanks. Strict adherence to the construction technique developed by PDA has resulted in less than ten tanks having even minor defects

to date. Staff technicians repaired those tanks at no cost to the tank owners. On return visits to the villages, the staff also reviews the repayment collection and record-keeping of the village committees.

One strong measure of the success of the Tungnam project has been the exceptional repayment record established by tank recipients. Repayments are near or above 100% of target in all operational districts, due to the fact that many families have made accelerated repayments. Approximately 5.4% of families are one or two months behind in their payments at any given time, however there has not been one bad debt to date. This performance proves that villagers are willing to change their traditional spending patterns away from current consumption goods toward capital investments in water for a better life.