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*Evaluation Report:*

TUNG NAM KORAT  
(USAID) PROJECT

Submitted To  
USAID / THAILAND



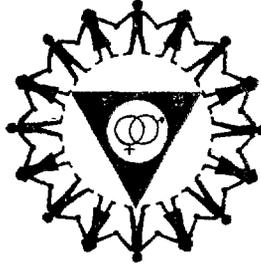
By..  
The Population and Community Development  
Association.

GRANT: 493-0296-G-SS-4055-00

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O/HRT

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24 MAR 1986



สมาคมพัฒนาประชากรและชุมชน  
POPULATION & COMMUNITY DEVELOPMENT ASSOCIATION

PDA 582/1986

March 21, 1986

Mr. Thomas O'Connor  
Director, Office of Human  
Resources and Training  
USAID  
Soi Somprasong 3  
Petchburi Road  
BANGKOK 10400

ACTION TO: \_\_\_\_\_  
DUE DATE: MAR 31 1986  
ACTION TAKEN: NAN - Noted  
INITIAL: PC  
DATE: 3/26/86

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O/RHUD	<input type="checkbox"/>
DTEC	<input type="checkbox"/>
C&R	<input checked="" type="checkbox"/>

Dear Mr. O'Connor:

Re: Evaluation Report for Rainwater Collection  
and Storage Project (AID 493-0296-G-SS-4055-00)

Please find the enclosed Evaluation Report of the above-mentioned Tunngnam-Korat project implemented by the Population and Community Development Association (PDA) with generous financial support from the United States Agency for International Development (USAID). As you will find, the report provides interesting and most useful information concerning the participants of the Tunngnam-Korat project. This survey analysis and evaluation aspect of the Tunngnam-Korat project is most important for our own knowledge about the effectiveness of our project implementation.

PDA shares your interest in a financial audit of this project, and would be pleased to honor your request. However, the project budget does not provide for the hiring of an auditing firm and thus, PDA will require additional funds to facilitate a financial audit of the Tunngnam-Korat project.

Mr. Thomas O'Connor

- 2 -

March 21, 1986

I would like to take his opportunity to thank USAID, on behalf of PDA and the tungnam owners of Korat, for your generous support and cooperation in this effort to provide clean drinking water to those who otherwise would never have it. If you have any questions or require any further information, please do not hesitate to contact me.

Yours sincerely,

*T. Traittongyoo*

Tavatchai Traittongyoo  
Deputy Executive Director  
Acting Executive Director

Encl. - *o/HRT*  
*S.*

*C*

PROJECT TITLE : RAIN WATER COLLECTION AND STORAGE  
PROJECT (TUNGNAM-KORAT)

PROJECT NUMBER : AID 493-0296-G-SS-4055-00

ACTIVITY LOCATION : NAKHON RATCHASIMA PROVINCE  
(NORTHEAST THAILAND)

COUNTRY : THAILAND

PROJECT DURATION : AUGUST 1984 - JULY 1985

IMPLEMENTING AGENCY : POPULATION AND COMMUNITY DEVELOPMENT  
ASSOCIATION (PDA)  
8 SUKHUMVIT, SOI 12  
BANGKOK 1011  
THAILAND

CONTACT PERSON : MR.MECHAI VIRAVAIIDYA,  
SECRETARY GENERAL

TOTAL PROJECT AMOUNT : 4,889,148.13 ฿

FUNDS RECEIVED : 3,333,175.13 ฿ (USAID)

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## TUNGNAM KORAT (USAID) PROJECT

### EVALUATION REPORT

#### Introduction

The shortage of domestic and drinking water in the rural areas in Northeast Thailand is one of the major problems that has always existed for the villagers in the area. The Population and Community Development Association (PDA) acknowledged the problem and in response created projects that will as a result provide the villagers with domestic and drinking water. The projects objectives are as follows:

- 1) To provide sufficient sources of drinking water that is safe to the villagers in the Northeast.
- 2) To create projects that is in essence self-help projects in which villagers, by unity and cooperation, help each other to complete the projects.
- 3) To develop and promote cooperative work between villagers so that they can by themselves secure water for their uses.
- 4) To aid the villagers on village-level fund management which will benefit them in that
  - a) They will have future funds to develop their own self-inspired "development" projects for their families and neighbors.
  - b) They will not have to look to "outside" sources for funds or loans to implement their future projects.

The Tunnam, (rainwater catchment and storage), projects were started by PDA in 1981 with Mahasarakham, Buriram and Khon Kaen as initial implementing provinces. The Tunnam Korat (USAID) project in Nakhon Ratchasima province was started in August 1984 and ended in July 1985, making it the fourth province in the series of Tunnam projects.

The Research and Evaluation Division of PDA has obtained various information from the owners of their Tunnam constructed in Nakhon Ratchasima for evaluation in search for attitudes, knowledge, and maintenance toward the Tunnam. The findings will guide PDA to plan and implement better Tunnam projects in the future.

#### Objectives in Evaluation

- 1) To study the effects of the Tunnam manuals on the changes in attitudes, habits, and health of the villagers in the implemented areas.
- 2) To study the relationship between the set objectives and the achievements.
- 3) To compare the evaluation results with the results evaluated in general villages.

#### Data Collection Method and Random Sampling

Tools in data collection Questionnaires were distributed on the household-level. The questionnaires had 3 sections to be completed, they are as follows:

- 1) General household information
- 2) Information on previous water sources, present Tunngam usage, and health status of the owner and their family
- 3) Information on knowledge and health practices gained through the manual

Random Sampling From previous surveys it was established that 3 districts had completed their targeted numbers of Tunngams, they are as follows:

- |              |   |           |
|--------------|---|-----------|
| 1) Muang     | = | 53 tanks  |
| 2) Chakkarat | = | 75 tanks  |
| 3) Chok Chai | = | 110 tanks |

Because each district has different numbers of Tunngams, the number of random samples taken from each sub-district differed. The over-all targeted number of random samples is 25% of the total Tunngam constructed. In all, 461 Tunngams were constructed and approximately 100 samples will be taken at random.

#### Findings

Project staff interviewed a total of 102 households who own water tanks in the 3 districts, they are as follows:

- |              |   |                       |
|--------------|---|-----------------------|
| 1) Muang     | = | 18 households         |
| 2) Chakkarat | = | 46 households         |
| 3) Chok Chai | = | <u>32</u> households  |
| Total        | = | <u>102</u> households |

The evaluated results are as follows:

1) General Household information

- 1.1 Average family size of 5.9 per households
- 1.2 Majority of the tank owners are heads of households and 85.3% are males.
- 1.3 Average age of owners is 44.8 years old with 79.8% of the owners having primary education and 10.1% having associate degrees or higher.
- 1.4 Majority of the tank owners, 59.8%, are farmers, other professions include offering their services for general employment (13.7%), government teachers (12.7%), merchants (8.8%), and others (4.9%).
- 1.5 Average income for the households owning water tanks is Baht 30,000 per household per year.
- 1.6 Family planning in term of contraceptive prevalence rate (CPR) is practiced by 55% of the total members of tank owners.

Note:  $CPR = \frac{\# \text{ of women of reproductive age (15-44) who are married and practice family planning} \times 100}{\# \text{ of all women of reproductive who are married}}$

2) Information on previous water sources, present Tunnam usage, and health status of the owners and their families

2.1 The average age of the Tunnam is 3 months old, using June 1985 as a baseline for the construction completion date.

2.2 Water from the tanks are used in different ways, 53% use the water for domestic purpose only, 46% use the water for both domestic and drinking purposes and the remaining 1% use the water only for drinking.

2.3 \* The previous sources of drinking water were, 87% using rainwater, 44% from canals, lagoons, and swamps. The remaining 31% use water from ponds dug in their villages.

2.4 The average distance travelled to obtain water from previous sources other than rainwater was 530 meters.

2.5 Drinking water obtained from previously mentioned sources was consumed as it was, without any treatments by heat or other means, by 94% of the total.

\* Note: Because the villagers may use more than 1 sources for drinking water the percentages indicated above total more than 100%.

2.6 Of the total number of tank owners, 13.7% had to pay for water from their previous sources averaging Baht 558/year.

2.7 Of the total number of tank owners, 2.8% had fallen ill to gastrointestinal disorders the month before the survey and 11.1% contracted common colds.

2.8 Of the total number of tank owners, 93% agreed that Baht 4,400 per water tank and the monthly installment of Baht 200 is reasonable. There are some who suggested that the cost should be reduced to Baht 3,100 per tank, and 2 cases suggested that monthly installment should be reduced to Baht 125.

3) Information on knowledge and health practices gained through the manual

3.1 Of the total number of tank owners, 88.3% received the manuals while the remaining 11.7% did not.

3.2 Of the total number of tank owners who received the manuals 87.7% have kept their manuals, 4.4% shared their manuals with neighbors, 37.7% finished reading the manuals, 25.5% have read parts of the manuals, 33.83% have not read the manuals, and the remainder have no interest in the manuals. Those that have either completed reading the manuals or parts, 76.8 stated that the manual was easy to read and understand.

3.3 On the understanding and how to properly use the water tanks by reading the manuals 9 questions were asked (questions 1-9, section 3). It was found that the average score out of possible 9 was 6.5, with the standard deviation of 1.21. Out of the 9 questions, 6 questions have an Index of Difficulty\* = 0.75, meaning that the 6 questions are easy to answer. The results of the test showed that 79% of the tank owners answered 6 or more questions correctly. Those who answered correctly less than 6 questions were found to be the ones that have not either read the manual or did not receive the manual (38% and 19% respectively).

3.4 On the comments by the tank owners on the manual, 97% stated that the size of the manual is good, 78% the colors used on the covers were easy to notice, 97% liked the pictures and illustrations which helped them to understand the text better, and 75% said that the manual helped them to increase their knowledge.

\* Note: Values from the Index of Difficulty indicates the degree of ease to which questions can be answered, the value of 1.00 indicates absolute ease, with decreasing values of less than 1 indicating the decrease in ease.

### Analysis

- 1) The measurement of the effects of the Tungnam manual on knowledge and understanding of the tank owners was measured by scores obtained through questions 1-9 in section 3 of the questionnaires. Two groups were compared as follows:

Group 1 Tank owners who have received and completed the reading of the manual.

Group 2 Tank owners who have not received the manual.

The group of tank owners who have received the manual but have not completed the reading was not included in the analysis.

### Hypothesis

If the manual did not affect the knowledge and understanding of the tank owners then the scores from the 2 groups will not differ significantly.

### Result

	<u>Group 1</u>	<u>Group 2</u>
number of tank owners (N)	34	43
average score ( $\mu$ )	6.67	6.30
Standard deviation ( $\sigma$ )	1.15	1.35

The average scores from the 2 groups were statistically compared using the significant level ( $\alpha$ ) = 0.05. The result showed that the average scores from the 2 groups did not differ significantly ( $P=0.18$ ), and that according to the hypothesis set it can be concluded that the manual did not help in altering the knowledge and understanding of the tank owners.

- 2) In the area of usage it was found that over half of the tank owners (53%) used the water for domestic use only and not for drinking; only 1% of the owners used the water purely for drinking. Considerations must be taken when interpreting these findings, in that:
  1. The age of the tanks are only 3 months old, therefore the owners may be reluctant to drink the water until it has been proven safe. The villagers are often reluctant to accept any new practice until they have gotten used to the idea.
  2. The new tanks may give little odor of cement to the water which may cause them to resent the water at first, the odor problem will disappear by itself in a short time.
  3. There was no water shortage problem as it was the rainy season and the villagers have an abundance of drinking water, stored in water jars. During the dry season the water in the tanks will be needed as the rain water supplies diminish.

On the overall size of the tanks it was found that the capacity of 11,300 liters was more than sufficient for a household. It was estimated that 11,300 liters will be sufficient for a family of 6 members, but as the average household number is 5.9, the volume of water stored will not be short in supply unless misused.

- 3) The general comparison between the tank owners and the other villagers it was found that
  1. The main profession is farming, of which 59.8% of the tank owner is engaged in, which is a typical profession in the Northeast region.
  2. The average income of the owners is Baht 30,000/household/year, which is not much less than the general villagers average income of Baht 34,255/household/year<sup>1</sup>, for the families of the same numbers. The average income of 30,000/household/year of the tank owners is an indication that they will not have problems in paying the small monthly installments.

Footnote: <sup>1</sup> Document on Population and Development, Population Institute, Mahidol University, volume 6, August-September 1983, p.6, (in Thai)

3. The health status between the tank owners and the general villagers population showed that the tank owners have better health status as can be concluded from.

	<u>Tanks owners</u>	<u>General Population<sup>2</sup> in the Northeast</u>
1. Common colds fever	11.1%	15.2 %
2. Gastrointestinal Disorders	2.8%	6.22%

It can be concluded that people with sanitary drinking water supplies and with the knowledge of proper water use have less illnesses than those who do not.

#### Summary

The information gathered through the questionnaires confirmed that the Tunngam Korat (USAID) project has met all of the objectives set, except for the lower than expected level of acceptance as use for drinking water as explained that a new concept will take time for the villagers to accept. The construction plan was a little behind schedule as the starting period for the construction was coincided with busy farming time and therefore it was relatively difficult to find volunteers to

Foodnote: <sup>2</sup> Conference Report on Health Services Research, Ministry of Public Health and Mahidol University, 1981, p 119., (in Thai).

help construction. The manual did not significantly increase the knowledge and understand of tanks or safe water supply, however, this project did manage to stir an awareness for safe water supplies and usage which now interests more and more villagers. The health status was another significant prove that better health can be obtained by using safe and clean water to drink, and knowledge of basic health care and habits.

Remarks

At this point the average age of the tanks is only 3 months old which is not sufficient time to get the full responses. Therefore in reviewing this report considerations to the mentioned factors must be taken. The Research and Evaluation Division of PDA will again evaluate the Tungnams after a period of time, as by then the Tungnams would be incorporated into the villagers daily lives and the results then will be on a more compact basis.

Questionnaire number :

Evaluation Questionnaire  
Tungnam Korat (USAID) Project

Interview by \_\_\_\_\_

Date \_\_\_\_\_

Review by \_\_\_\_\_

Date \_\_\_\_\_

Research and Evaluation Division

Section 1  
General and Social

Address \_\_\_\_\_

Interview with \_\_\_\_\_

Relation with household head \_\_\_\_\_

Number of family members \_\_\_\_\_

Male \_\_\_\_\_

Female \_\_\_\_\_





- Section 2  
Tank Usage, Previous Water Sources,  
Health Status

1. Length of Tunngam usage \_\_\_\_\_ months
2. Usage :
  - Drinking only
  - Drinking and others \_\_\_\_\_
  - Domestic only \_\_\_\_\_
3. Family member (s) that use the Tunngam \_\_\_\_\_ person (s)  
Non-family member (s) that use the Tunngam \_\_\_\_\_ person (s)
4. Tunngam sharing system
  - No
  - Yes (number of person (s) sharing \_\_\_\_\_ /person)
5. Previous sources of water before obtaining Tunngam
  - Rainwater
  - Dug wells
  - Pump wells
  - Lagoons and swamps
  - Rivers and canals
  - Others \_\_\_\_\_
6. Distance travelled to obtain water \_\_\_\_\_ kilometer
7. Water treatment
  - None
  - Boiling
  - Filter
  - Alum glass treatment
  - Others \_\_\_\_\_
8. Costs
  - None
  - Water cost (cost \_\_\_\_\_ Baht/Unit)
  - Transportation cost (cost \_\_\_\_\_ Baht per \_\_\_\_\_ day/month)
  - Delivery cost (cost \_\_\_\_\_ Baht per \_\_\_\_\_ day/month)
  - Other \_\_\_\_\_

9. Number of trips to obtain water \_\_\_\_\_/month
10. Still using previous sources?
- No Reason \_\_\_\_\_
- Yes Reason \_\_\_\_\_
11. Gastrointestinal illnesses in family within the past month
- None
- Yes
1. \_\_\_\_\_ duration \_\_\_\_\_
2. \_\_\_\_\_ duration \_\_\_\_\_
3. \_\_\_\_\_ duration \_\_\_\_\_
4. \_\_\_\_\_ duration \_\_\_\_\_
12. Common colds and fever in family within the past month
- None
- Yes
1. \_\_\_\_\_ duration \_\_\_\_\_
2. \_\_\_\_\_ duration \_\_\_\_\_
3. \_\_\_\_\_ duration \_\_\_\_\_
4. \_\_\_\_\_ duration \_\_\_\_\_
13. Tungnam price
- Reasonable
- Adjustments (\_\_\_\_\_ Baht)
14. Monthly installment
- Reasonable
- Adjustments (\_\_\_\_\_ Baht/month)
15. What other projects using this same system of self-help and payments would you like to see
- 
- 
16. Have you heard of Population and Community Development (PDA) before ?
- No
- Yes
17. Does PDA projects help improvements ?
- No ( Reason \_\_\_\_\_ )
- Yes ( Reason \_\_\_\_\_ )

Section 3  
Tungnam Manual

1. Collection of water should be done through
  - Manhole
  - By-Pass
  - Don't know
2. Purpose of manhole
  - To clean tank
  - To collect more water
  - Don't know
3. Tank cleaning is
  - Not important
  - Important
  - Don't know
4. Tanks should be clean
  - Once a year
  - Twice a year
  - No need (Reason \_\_\_\_\_ )
  - Don't know
5. Importance of water storage
  - Not important (Reason \_\_\_\_\_ )
  - Important (Reason \_\_\_\_\_ )
  - Don't know
6. During the cement setting period water should be filled
  - To full capacity
  - Only 60 cm.
  - Add a little water every 5 days or fill the tank after 28 days
  - Don't know
7. The eliminate cement odor
  - Fill the capacity and empty after 10 days
  - Empty the tank and clean with detergent
  - Don't know

8. Before filling with rainwater
- Let the water wash the pipe before filling
  - Use cloths to filter water before running into tank
  - Open the faucet for a short while and close
  - Don't know
9. Exposing the inside of the tank to the sun
- Yes because it rids bacteria
  - No because it causes fungus growth
  - Don't know
10. Manual size
- Too big
  - Too small
  - Just right
  - Don't know
11. Place where the manual kept
- Home
  - Lent out
  - Lost or disposed
  - Don't know
12. Have you read the manual ?
- Completed
  - No (go to question 15)
  - Parts
  - Don't know
13. The content of the manual is
- Difficult to understand
  - Only understand parts
  - Easy to understand
  - Don't know
14. Print easy to read ?
- Too big
  - Too small
  - Just right
  - Don't know
15. What colors should the covers have ?
- Colors that are easy to notice (Reason \_\_\_\_\_)
  - Light colors (Reason \_\_\_\_\_)
  - Any colors
  - Don't know
16. The pictures in the manual is
- Clean and help in understand text
  - Not clear and causes confusion
  - Don't know

17. Do you think you will gain additional knowledge after reading the manual?

A lot

A little

No

Other

(Reason \_\_\_\_\_ )

Research and Evaluation Division

4 June 1985