Jars and tanks for rainwater storage in rural Thailand

by Prakob Wirojanagud and Vason Vanvarothorn

Thailand's small jar programme has been a conspicuous success, and one many other countries would like to emulate. Through its efforts, nearly six million rainwater catchment jars have been constructed and the Decade goal of safe water for all in Thailand has become a reality.

IN 1985, The Royal Thai government initiated a project to provide villagers in rural areas throughout the country with containers for storing rainwater. By the end of 1987, the project goal of producing 5.9 million jars of 2,000-litre capacity was achieved. This has enabled villagers to store enough rainwater for drinking purposes, to last throughout the dry season at an average consumption of two litres per person per day. If required, villagers can purchase additional jars for their households from factories for less than US$25 per jar.

Water quality and quantity

Water requirements of village households for drinking are different from their requirements for domestic use, both in terms of volume and quality. For drinking, one person needs approximately five litres of water per day. For domestic use, it is generally accepted that, in rural areas, each person requires about 50 litres per day of moderately high-quality water. The separation of drinking-water from domestic water was an important starting point in enabling Thailand to establish a plan for providing water supply projects in rural areas that could be effectively and economically implemented.

Storing rainwater run-off from roofs is an easy and economical method for providing clean drinking-water and has already been in use for a long time in Thailand. Before 1985, however, the majority of village households did not have sufficient water storage to last the whole of the dry season. A few government agencies had begun programmes on jar and tank construction for rural households but there was no clear-cut government policy of how to solve the drinking-water problem within reasonable time and budget limits.

Acting on advice from researchers at the Water Resources and Environment Institute at Khon Kaen University, the Ministry of the Interior has promoted the Jar Construction Programme since 1985 with two objectives.

- To provide one 2,000-litre jar to each of three million households still lacking adequate drinking-water storage by the end of 1987, enough water for two litres per

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For domestic use it is estimated that each villager needs 50 litres per day.

Dr Prakob Wirojanagud is an Associate Professor, Water Resources and Environment Institute, Faculty of Engineering, Khon Kaen University, Thailand. He is also Project Director of a number of development projects such as People's Volunteer Weir Project, Self-Help Groundwater Development Project, and the Thai-New Zealand Small Watershed Development Project. Vason Vanvarothorn is Head of Rural Development Section, Provincial Administration Division, Department of Local Administration, Ministry of the Interior.

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Each villager requires five litres of drinking-water per day.

person per day.

To campaign for each household to acquire two additional jars (or a total of three jars), enough for five litres per person per day, by 1990.

Promoting the programme

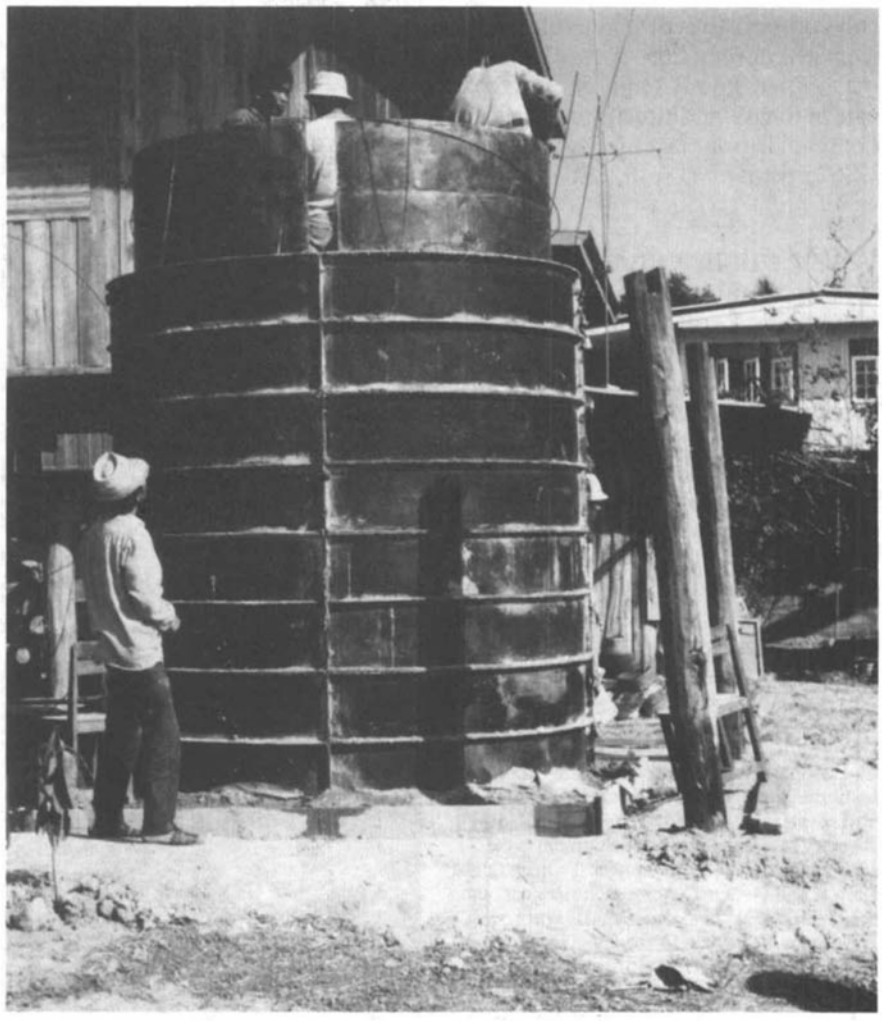
In early 1985, the Ministry of Interior stated clearly its policy of promoting the Jar Construction Programme in north-east Thailand, with the objectives as already mentioned, at a meeting of governors and heads of provincial offices of government agencies from every north-eastern province. A National Administration Committee responsible for the administration of the programme throughout the country was established in November 1985, with the Permanent Secretary of the Interior serving as its chairman. Three other sub-committees were established to look after each component of the programme; these were: public relations, technical matters and follow-up and evaluation.

Programme implementation

The strategy used in the implementation of the programme was considered critically important to successfully achieving its objectives. The approach determined at the inception of the programme was as follows:

- Villagers should be involved in the project from its establishment, both in the management of finances, and all phases of construction.
- The project should begin with a revolving fund provided by a group of people who have money to invest and are eager to participate. This fund could be quickly established and its investors could serve as models for others to follow.
- The government would be responsible for supplying tools and materials for jar construction, and for supporting the revolving fund. Villagers would provide free labour and the cost of materials used in constructing the jars.
- The government would be responsible for arranging and supporting the training of villagers in jar construction and for establishing the revolving fund in each village.

Actual implementation of the programme did not, however, follow exactly the suggested procedures, especially the revolving fund concept. In most places the project was



Villagers were deeply involved in the programme from its establishment.

Villagers provide the building materials and labour.

accomplished without employing revolving funds. This by no means reflected any deficiency or lack of management skill by the officials. On the contrary, it was the flexibility of the implementation methods allowing responsible officials to take into account different local circumstances, which contributed to the success of the programme. Reviewing past programme activities shows that the concept of promoting roof run-off harvesting which is the most cost-effective way to solve the drinking-water problem and the determination of the Ministry of Interior are two key factors; these have made the Jar Construction Programme one of the most successful small-scale water resource development programmes in Thailand.

The districts are the basic units for implementation, with district officers serving as programme managers. The governors, being the programme directors in each province, bear the responsibility for fulfilling the objectives. Each district has its own ways to get money, but the major part of budget for the programme so far has come from the well-established Rural Job Creation Project. Other financial sources include members of parliament, the Provincial Administrative Organization, as well as private sector and non-profit organizations.

Finance problems

The revolving fund concept was initially planned to be used as a means for villagers to participate and bear some responsibilities both in terms of labour and construction cost. It would have significantly reduced the project cost from approximately 3,300 million baht for six million jars, as estimated by Khon Kaen University, to about 500 million baht. However, because of the programme's ambitious goal of constructing six million jars before the end of 1987, the districts did not have the time and energy required to set up a fund in each village. A well set-up fund would still take a long time to create because of the reluctance of the villagers to join the programme and the inability of some villagers to pay into the fund according to schedule. Besides, it is the objective of the Rural Job Creation Project to provide jobs for rural people. Because of these factors, the implementation of the jar programme happened in different ways.

In most cases, the district provided construction materials, tools and training, while the people contributed the labour to construct their own jars under the careful supervision of experienced technicians. A jar construction centre was established and located either in the village or in a village that served the whole sub-

Project implementation took place on the basis of individual districts.

Table 1 .
Jar distribution by region, 1987

Region	*Number of provinces*	*Number of jars*
North	17 provinces	1,265,000
North-east	17 provinces	2,708,000
Central	24 provinces	1,518,000
South	14 provinces	442,000

district. The jars were then taken from the construction centre to the individual household by trucks after about seven days of curing.

In some districts, groups of villagers were paid to construct the jars and distribute them to village households. Some other districts subcontracted jars from jar-making factories which had become a small business enterprise in many provinces.

Technical assistance was provided by Khon Kaen University and other government agencies in the form of standard designs for low-cost jars and tanks, the dissemination of construction manuals, and the training of technicians.

The objectives of the project were achieved in a short time as a result of the efforts of the National Administration Committee and especially the chairman, the Permanent Secretary of the Interior. Also, the provinces worked closely together by organizing meetings of the governors, who were kept informed of progress. These proved successful and stressed the firm support of the government. Campaigns were held to advise villagers about rainwater storage and water quality, using posters. Additional funds were sought from the private sector to supplement the government contribution, and about 2,500 tonnes of cement was donated. Incentives were given to provinces and districts which succeeded in providing each and every household with a jar of 2,000-litre capacity by presenting them with the 'Golden Jar' award.

Achievements

The Ministry of Interior estimates that, under the Jar Construction Programme, about 5.9 million jars of 2,000-litre capacity have been provided by the provinces. Table 1 shows their distribution by region.

By calculating the cost at 5.9 million jars using a selling price at 550 baht per jar, it can be seen that the programme mobilized resources, from a variety of sources, amounting to a total value of 3,250 million baht. The actual cost involved for the jar construction was about 1,600 million baht with the majority of those funds provided by the Rural Job Creation Programme.

Tanks for schools

Another important achievement was that villagers were encouraged to become more self-reliant in resolving the problem of the shortage of drinking-water. In the future, they can build or buy additional jars or tanks when needed. In addition, many new jar-making enterprises were created. Jar-making factories are now up and running in many different places.

Now that each village household has at least one jar for storing its drinking-water, it can simply build or purchase more jars should the demand increase. The government should now focus on drinking-water for public places such as schools. The six to 12-cubic-metre rainwater tank is suitable for schools in rural areas. If a project to provide rainwater tanks at rural schools is initiated, it would greatly complement the efforts of providing clean drinking-water at home using jars; young people in rural areas will have access to clean drinking-water both at home and at school. There only remains a little more work to make school administrators more aware of the importance of providing clean drinking-water at school. ■