

## The Principles of Participation for Sustainable Irrigation Management\*

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The Thai government has invested substantially in the irrigation sector and irrigation areas under national projects increased to 5.12 million hectares at the end 2006. The rate of irrigation area increase reached a peak of 53% in the Third Plan before diminishing to less than 2% under the Ninth Plan. Rather than the increase in the area, emphasis is now placed on the increase in productivity through sustainable irrigation management. Along this line, the 8-10<sup>th</sup> Plans



Photo taken after interviewing the manager of the Pongsak muang fai irrigation system at his house in Mae Hong Son Province in 2005. From left are grandchildren of the muang fai manager, Mr. Muen Kaewdaeng and his wife, Ronpaku fellow Tassanee Ounvichit and her academic advisor Prof. Dr. Masayoshi Satoh.

and the on-going administrative reform recognized farmers' participation in irrigation management as indispensable because irrigation by open channel method to serve a large number of small farms is hard to operate solely by bureaucrats. Without their participation, reliable water supply cannot be provided to all farms, leading to inability to realize the expected project returns, and early deterioration or damage of irrigation facilities that the government has invested. Efforts have been made to promote participation in national irrigation management but they seem to have been running into perpetual problems. Thailand is not the only country that is facing these problems and there have been searches for ways across the world to promote participation for sustainable irrigation management.



Photo taken during a focus group interview of downstream farmers who voluntarily constructed additional farm ditch on their own in the Khlong Thadi weir irrigation system in Nakhon Si Thammarat Province in 2005. In photo are the farmers, their community leaders, with Ronpaku fellow speaking to her academic advisor.

The purposes of the study were (1) to analyze the situations of farmers' participation in national irrigation management in Thailand and clarify practical problems from the project initiation stage down to the on-farm management stage; (2) to identify the fundamental problem of participation, and scope for solutions; and (3) to generalize the principles of participation



Photo taken during the survey of yachida paddy field in Asou Town, Ibaraki Prefecture in 2005. In photos are students and instructors of the University of Tsukuba, with Ronpaku fellow standing far right.

for sustainable irrigation management. The methodology of the study relied mainly on empirical data but also made use of background knowledge in irrigation management applied science and five major groups of theories including the Social and Cultural Changes Theories, the Multi-Disciplinary Approach, the Institutionalisms, the Social Organization Theories and the Development Program Management Theories. The empirical data were juxtaposed from five study cases. Two of these cases were the Mae Kuang and Thadi national irrigation projects and the others were the Pongsak and Soprong self-reliant Muang Fai irrigation systems and the autonomous Manno-ike Japanese land improvement district. The methods used in the obtaining the data included documentary reviews, field surveys and observations, questionnaires, farmers' meetings, focus group interviews, and participatory action research.

The results of the study revealed that national irrigation project processes from the initiation stage, to planning, designing, construction, operation, maintenance, repair and improvement stages were heavily centralized. In the planning and designing stages, the newly introduced large scale irrigation systems did not physically and socially integrate well with the local conditions and existing irrigation systems. Construction was then implemented with no commitment on users and bureaucrats to maximize returns of the public investment. Without adequate social integration in the previous stages, operation was largely decided and implemented by state bureaucrats whose attempts to organize the irrigation water users to follow their operation plans engaged a slow and digressive progress. Maintenance and repair depended largely on the state budget allocation which was not enough to keep the system well-maintained. Bureaucrats and upstream farmers preferred adding or modifying physical irrigation facilities whenever public funds were available while downstream farmers saw the necessity of improving irrigation management. When the main system was being developed, on-farm irrigation development and management was left to the farmers unknowingly and the belated



Photo taken during the measurement of drainage water for the University of Tsukuba's paddy plot water balance study in the Fukuokazeki Irrigation Project in the Kokai River Basin in 2006. Sitting on the concrete paddy plot bund, the Ronpaku fellow is recording the drainage data set.



Photo taken at the University of Tokyo, host campus of the 2006 inter-campus softball game of irrigation engineering faculties. In photos are some of the instructors and students in the Tsukubadai team. Ronpaku fellow, standing second from left, was forced by the circumstance to play the game, the first time in her life.

attempt to organize them to extend the system down to the on-farm level was confronted with the problems of the in-place hydraulic bias, gap of agricultural development in irrigation area, and agricultural land management. Attempts to support them with scattered on-farm facilities by using limited public funds were but to enlarge the bias and gap.

In contrast, Muang Fai members were involved in all irrigation management processes. Despite their

lower technology when compared with that of the national irrigation systems, they could sustainably serve all their members who were willing to accept higher costs than beneficiaries of the national irrigation systems. All decisions on what and how to do things together were clearly laid out through exchange of local information and were strictly followed. The management structure of the small scale system was straightforward, using farm intake sizes as the priority criteria for all joint management matters. That of the larger scale system was in-laid with extended mechanisms for joint planning and operation, accountability check and balance, and social sanction instruments through association with local administrators. The commonality of the small and large scale systems is the observance of the equality of their members and their management agreements, and the emphasis on efforts to make all the irrigation management processes transparent to all members. Their management terminologies were simple and well-understood by members. The Japanese land improvement district case drew parallels in these aspects even though their autonomous management was partially supported by the public investment and technical assistance.

The fundamental problem in sustaining participation for irrigation management was the improper approach in identifying the beneficiaries of national projects. The top-down approach assumed that all farmers in the project plan were beneficiaries but the bureaucratically decided water management plans could not bring water to all of them. As a result,



Photo taken during the measurement of the flow in the Nakadoori River, a tributary of the Kokai River, as part of the study on the feasibility of using paddy field for flood management, in 2007. Ronpaku fellow is at left, controlling the cross movement of the flow sensor.



Photo taken with the dissertation evaluation committee after the public presentation of draft dissertation at the University of Tsukuba in 2007. From left are Prof. Dr. Kuniaki Miyamoto, Prof. Dr. Masashi Shimada, Ronpaku fellow and Ph.D. candidate Tassanee Ounvichit, Prof. Dr. Masayoshi Satoh, and Prof. Dr. Masakazu Nagaki. Prof. Dr. Tomohiro Takigawa is not in the photo.

the public investment could not fully generate the targeted benefits. A participation framework is urgently needed for the proper identification of beneficiaries of public projects as well as for joint irrigation management. Despite its civil and hydraulic engineering expertise, the state irrigation agency which is far removed from the local life could not perform the role as the sole core in every aspect. The social dimensions begged for an increased role of the farmers, and local organizations, such as villages or *tambon* administration organizations, despite their presently limited cognitive capacity, so that diverse sociological attributes of small farmers for irrigation management are synergized to embrace effective irrigation management and to integrate the irrigation sector with agricultural production and natural resources management for their livelihood. The oversight role of the state irrigation agency should be to confirm the technical soundness of public projects and to ensure that truly effective joint operational mechanisms are in place before public investment is made. The mechanisms should comprise those for consolidating field information for system-level operation planning, and those for obtaining the farmers' agreement on the plan and sanctioning.

Based on the fundamental problem of project beneficiary identification, the principles of equality and transparency are generalized as the foundation of participation for sustainable irrigation management. Equality in distributing benefits and costs of irrigation management will make farmers confident in increasing their formal participation.

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Photo of academic advisor Prof. Dr. Masayoshi Satoh and Ronpaku fellow Dr. Tassanee Ounvichit, taken on the Commencement Day at the University Hall of the University of Tsukuba in 2007.

The bases of equality of benefits can take various forms depending on geographical and social conditions, the technologies in use and project scales, such as farm intake size, water volume, farm acreage, and household. The forms of costs can also be various such as fee, local tax, labor, equipment, and construction materials. These bases are subject to the agreements among the farmers who make joint decisions on irrigation management. The principle of equality needs the principle of transparency to assure the farmers that the equality principle is being really applied. Transparency of information on water demand and supply and organizational management will maintain participation for sustainable irrigation management.

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