

The Amphoe Choke Chai Water User Association, Isan region, northeastern Thailand

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1 Part I: Static Analysis - Collective action

The Amphoe Choke Chai Water User Association (WUA) is one of the farmer organizations included in the Lam Pra Plerng Irrigation Project. This case is regarded as a failed institutional arrangement compared to other WUAs in the Lam Pra Plerng Irrigation Project. The project was constructed by Thailand's Royal Irrigation Department (RID), which organized four Water User Associations within the project area (Kaset Samakee, Wan Waree Wong, Amphoe Choke Chai, and Amphoe Muang). The irrigation system was constructed in 1963 in northeastern Thailand. The original case spans the years 1961 to 1973 and documents the action situation involving approximately 5,532 farm households. The four WUAs in the Lam Pra Plerng system face different commons dilemmas depending on their distinct biophysical contexts and community attributes. This institutional analysis specifically focuses on the Amphoe Choke Chai WUA. This case was part of the original CPR database developed in the 1980s by Edella Schlager and Shui-Yan Tang at Indiana University. The original CPR report can be found under the CPR tab in the Institutional Analysis section.

The key resources (natural infrastructure) in the system are agricultural land (private) and the Lam Pra Plerng River watershed (shared). The primary resource relevant to the commons dilemma faced by the community is irrigation water (common-pool).

1.1 The Commons Dilemma

- **Potential over appropriation / poor coordination of appropriation**
 - **Irrigation water over appropriation:** expected to take water according to these schedules. However, in Amphoe Choke Chai, actual water distribution depended on informal agreements among farmers. These agreements generally concerned getting water through farmers' fields rather than sharing it sequentially among groups of fields along a ditch or canal. At Lam Pra Plerng, WUAs attempted to attract as many members as possible by offering member farmers preferential access to water. However, farmers were skeptical of this promise, since there was no practical way for the WUA or RID to prevent a non-member from breaching an earthen farm ditch and diverting water to his field before it reached a member's field further downstream. Although RID employees, such as the zoneman and common irrigators, supervised water distribution, their monitoring was ineffective because common irrigators had no legal authority.
- **Potential under-provisioning of public infrastructure**
 - **Farm ditch construction:** RID preferred that farmers build their own farm

ditches, as farmers could improve access to irrigation water by adding additional ditches to the network. However, in most zones, few ditches were constructed or maintained because farmers were not motivated to contribute, especially in Amphoe Choke Chai, where irrigation water was not the dominant water source for farming.

- **Farm ditch maintenance:** Farmers were expected to cooperate in cleaning and maintaining farm ditches, as rotational irrigation requires farmers to be organized and to continually maintain the system. However, many farmers did not participate because they didn't have incentive to do so because irrigation water was not the dominant water source for farmers in this region. Cooperative ditch maintenance requires dynamic and active leadership. Yet no farmer indicated having received supervision from the president or any other WUA official regarding ditch maintenance. For farmers at Lam Pra Plerng, leadership in water management and farm ditch maintenance did not emanate from the WUA leader, regardless of his administrative or farming background. If leadership emerged at all, it came from the common irrigator, who had no official connection with the WUA. RID and the WUAs relied on voluntary cooperation rather than enforceable rules, which contributed to under-provisioning of basic infrastructure.

1.2 Biophysical Context (IAD)

- **Natural Infrastructure:** The inadequacy and seasonal distribution of rainfall created major problems in northeastern Thailand. Rainfall is highly seasonal; the monsoon climate brings a distinct wet season from late May to late October. However, much of the rainfall is lost to farmers because it quickly percolates through the region's sandy soils. In addition, during the dry season, water for both agricultural and domestic use is scarce due to intense evapotranspiration.
- **Hard human-made infrastructure:**
 - **The Lam Pra Plerng Irrigation Project:** The Lam Pra Plerng Irrigation Project is an open-channel, gravity-flow irrigation system constructed by the Royal Irrigation Department (RID). It was built to address severe seasonal water shortages caused by erratic rainfall and permeable sandy soils. The project covers a total of 12,000 hectares, divided into Zones 1 through 7. Each zone consists of areal subunits called *chaeks*, which are served by a farm-turn-out and a main farm ditch. Water availability decreases with distance from the dam due to evaporation, seepage, and misuse; consequently, farmers closer to the water source receive more reliable supplies, while those farther away receive less or more erratic water.
 - The Amphoe Choke Chai WUA manages Zones 4 and 5, covering approximately 3,470 hectares and serving about 1,533 households. The infrastructure includes the dam, main canals, and laterals managed by RID, as well as farm-turn-outs and farm ditches, which are the responsibility of farmers. Farmers in downstream zones—particularly Zones 5, 6, and 7—tend to have low levels of participation in the association and maintenance activities because they often rely on natural flooding from rivers and are therefore less dependent on irrigation water supplied by the project.

1.3 Attributes of the Community (IAD)

- **Social Infrastructure:**

- **Royal Irrigation Department (RID), zoneman, and common irrigator:** The Royal Irrigation Department (RID) is the government agency that constructed the Lam Pra Plerng Irrigation Project in northeastern Thailand. At Lam Pra Plerng, RID distributes water to the primary water delivery units, called water zones, on a rotational basis. RID is responsible for ensuring that water is delivered to the farm-turn-outs in each water zone. In practice, water distribution within the zones is subject to RID approval, and when water is scarce, RID can impose schedules. RID employs a zoneman, a full-time RID employee responsible for maintaining canals and laterals, helping farmers solve water-related problems, and assisting with cropping pattern decisions for better water management. RID also established the Rules and Regulations of Water User Associations. RID employs common irrigators, who supervise water distribution within each *chaek*, arrange water and maintenance schedules, and relay RID instructions to farmers. Common irrigators receive a stipend from RID, and although they perform key field-level functions, they have no legal authority.
- **The Amphoe Choke Chai water user association (WAU):** The Amphoe Choke Chai WUA is one of the Water User Associations organized and legally controlled by the Royal Irrigation Department. Leadership positions in Amphoe Choke Chai were held primarily by retired school teachers, retired government workers, and village headmen, rather than active farmers. The WUA held two types of meetings: Administrative Committee Meetings, which were closed to the general membership, and General Meetings, which were held only once a year. This limited farmers' opportunities for communication, participation, and collective decision-making.

- **Human Infrastructure**

- **Experience/skills:** The general human infrastructure within the Amphoe Choke Chai WUA was characterized by leaders who had administrative experience, retired school teachers, retired government workers, and village headmen, rather than full-time farmers. Although the WUA organized a water management training program, their agricultural and water management skills were limited, and they were unable to provide technical guidance or mobilize farmers effectively.
- **Knowledge:** Traditionally, groups of two or three farmers built small diversion dams in the river to increase the likelihood that the stream would overflow its banks and deliver floodwater to their fields before the wet season. Farmers possessed intimate knowledge of farming practices and local problems, which could ideally help them support and coordinate with other farmers. RID officials, agricultural extension agents, and agricultural credit officials also held knowledge about water management, cropping techniques, and agricultural credit, but this information did not effectively translate into

farmer-level action due to limited interaction and weak institutional linkages.

1.4 Rules in Use (IAD)

- **Position Rules:** 1) WUA member farmers, 2) non-member farmers, 3) WUA officers; president, vice president, secretary, greeter, registrar, and committee members 4) RID officers 5) zonemen 6) common irrigators
- **Boundary Rules:** Regular membership in the WUA was limited to persons whose main occupation was farming within the irrigation project area and who paid the entrance fee. Zonemen were full-time employees of RID. Common irrigators were required to be farmers with fields within the *chaek*; they were selected by farmers but ultimately employed and paid by RID. Administrative committee members were elected by regular and ex-officio members. The president was elected by the WUA membership; the runner-up automatically became the vice president, while the remaining officers were appointed by the president.
- **Choice Rules:** RID must ensure that irrigation water reaches the farm-turn-outs and for employing zonemen and common irrigators. The WUA must provide opportunities for farmer members to learn yield-increasing techniques, water conservation practices, and system maintenance methods, and to serve as a forum for exchanging agricultural and irrigation information. Farmers must distribute water within the *chaek* and take water according to a rotational schedule. They also must behave cooperatively by constructing and cleaning farm ditches and implementing the techniques necessary to use and maintain the modern irrigation system. Farmers and zonemen must interact periodically regarding canal maintenance and cropping plans. Common irrigators must supervise water distribution within each *chaek*, arrange water and maintenance schedules, and relay RID instructions to farmers. The WUA must hold Administrative Committee Meetings and General Meetings as sources of information on agricultural and water management practices.
- **Aggregation Rules:** RID diverted water from the river into the irrigation system, enabling farmers to distribute water within their *chaeks*. Farmers elected the WUA president, who then appointed the remaining officers, giving the president considerable authority over the administrative structure.
- **Scope rules:** Farmers must not take irrigation water outside of the prescribed schedule, as proper scheduling conserved water and maximized the total irrigated area.
- **Information Rules:** The WUA served as a forum for exchanging information on irrigation and agricultural practices. However, Administrative Committee Meetings were closed to the general membership, limiting farmers' access to information. Farmers frequently received information second-hand, since committee members were unable to adapt the information to each farmer's specific needs. The WUA attempted to disseminate information on irrigation practices by organizing a water management training program and through informal communication channels, but these efforts had limited reach.
- **Payoff Rules:** According to the WUA regulations, farmers who did not cooperate were subject to legally enforceable punishments. However, the only area where such penalties were actually imposed was Kaset Samakee, where farmers who failed to

maintain farm ditches temporarily lost access to irrigation water. In contrast, Amphoe Choke Chai had no functioning system of rewards or punishments, and therefore no effective enforcement mechanism existed to address free-riding or violations of appropriation rules.

1.5 Summary

The case of the Amphoe Choke Chai Water User Association in northeastern Thailand is widely regarded as a failed institutional arrangement compared to other WUAs in the Lam Pra Plerng Irrigation Project. Because irrigation water was not the dominant water source for farmers in this region, they had little incentive to collectively maintain the irrigation infrastructure. Moreover, the absence of effective payoff rules such as legally enforceable rewards or sanctions meant that farmers faced no real consequences for free-riding or violating appropriation rules. Ultimately, this case highlights the structural difficulty of institutionalizing collective irrigation management within a newly introduced, government-led system that lacked strong preexisting norms of cooperation. It demonstrates how formal rules, when unsupported by social incentives and local collective-action capacity, remain largely symbolic rather than operational.

2 Part II: Dynamic Analysis - Robustness

No documents or data are available to support the dynamic analysis of this case beyond the original reference on the Amphoe Choke Chai Water User Association.

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