

Watershed Management in Ban Pae, Northern Thailand (2)

July 21, 2015

1 Part I: Static Analysis - Collective action

Ban Pae is located in Chiang Mai province in northern Thailand. Ban Pae is a small wet-rice-growing village on the outskirts of the fast-growing district of San Khampaeng, Chiang Mai province, and is only some 25 km from Chiang Mai itself and 15 km from Bo Sang, one of the most prosperous tourist villages in the north.

The key resource is water from the forest. Watershed forest is protected entirely to sustain water yields. Any kind of tree cutting is strictly prohibited (p. 683). Since the time of inception of the village in 1933, the villagers have paid homage to the spirit that caused springs to flow in the area. Every August, the villagers hold a ceremony to pay tribute to the spirit of the headwaters (p. 682). Ban Pae is seen as a robust community because it substantially meets all the seven design principles, and the community members themselves are also confident about the future of their institutions (p. 688). And relative resource scarcity, which reflects the subjective opinions of the villagers and the field experiences of the researchers, is very high in Ban Pae (p. 678).

The original CPR report may be found at <https://seslibrary.asu.edu/seslibrary/case/156/cpr>. Coupled Infrastructure Systems framework is explained in more detail in Anderies (2014) <http://link.springer.com/article/10.1007/s11538-014-0030-z>

1.1 The Commons Dilemma

- The potential appropriation problem / poor coordination of appropriation

The potential over appropriation problem was overcome in Ban Pae so that it has now become very well known as a symbol of community-based watershed management (p. 682). There are no written laws or guidelines because all households are sufficiently familiar with the operational rules as to make such formal notification redundant. There are strong kinship ties within the village, with the same families since initiation of the settlement. These strong relationships have established norms and traditions of community control that obviate the need for formal expression of those regulations (p. 682). The watershed is totally closed to appropriation to allow replenishment to take place. Timber extraction is forbidden from Ban Pae (p. 685). Ban

Pae used to operate a two-man patrol at night, but this has now been discontinued (p. 686).

- The potential under provision of public infrastructure

The potential under provision problem was overcome in Ban Pae. According to Anderson et al. (2004), public infrastructure combines two forms of human-made capital: physical capital including any engineered works, such as dikes, irrigation canals, etc; and social capital including the rules actually used by those governing, managing, and using the system and those factors that reduce the transaction costs associated with the monitoring and enforcement of these rules. Villagers have built a canal from the spring in their watershed to irrigate their paddy fields and also provide water for domestic use (p. 682). With regard to social capital, there are many opportunities for direct participation due to the small size of community. Important issues about the watershed forest are usually brought up in village meetings to let villagers express their opinions (p. 686). The village Committee is the organization responsible for rule enforcement and decision making (p. 683).

1.2 Biophysical Context (IAD)

- **Natural infrastructure**

Northern Thailand is an area of steep, north-south-running mountain ranges up to 2500 m in altitude, separated by often fairly broad alluvial valleys (p. 676). Watershed forest in Ban Pae is 71.36 ha, and the proximity of villages to watershed is 0.5 km. The scarcity of forest resources is recognized as very high by villagers (p. 678). In Ban Pae, the boundaries of the community forest is topographic and clear to local villagers, but somewhat less clear to outsiders. The watershed forest is easier to distinguish from the surrounding forest due to the size of the trees to be found there (p. 685).

- **Hard human-made infrastructure**

Villagers have built a canal from the spring in their watershed to irrigate their paddy fields and also provide water for domestic use (p. 682).

1.3 Attributes of the Community (IAD)

- **Social Infrastructure**

Ban Pae has only one village comprised of 86 households and 264 people (p. 678). Although water-user groups may have been important catalysts, activities have usually been shifted to local administrative body, the Village Committee (p. 683). The committee, which is comprised of the headman, his deputies, and 5-9 elder elected to 5-year terms, is charged with enforcing all village regulation (p. 683). One advantage to using such existing structure is that it is already recognized as part of the governing body by higher levels of government and thus is seen as less threatening and may also be eligible for rural development funds (p. 683).

- **Human Infrastructure**

Most respondents (79.1 percent) consider the watersheds as community property resources in which all members of the community share equal rights and duties, rather

than the legally correct answer of state property. Almost all households knew about the existence of the watershed operational rule results (p. 683). 95.8 percent of respondents in Ban Pae accepted their rules-in-use (p. 684).

1.4 Rules in Use (IAD)

Position Rules

- Village Committee: The Village Committee, which is comprised of the headman, his deputies, and 5-9 elder elected to 5-year terms, is charged with enforcing all village regulation (p. 683).
- Monitors: Ban Pae used to operate a two-man patrol at night, but this has now been discontinued (p. 686). All villagers are responsible for monitoring any kind of wrong doing in the watershed forest (p. 683).

Boundary Rules

- Resource boundary: The boundaries of the community forest is topographic and clear to local villagers, but somewhat less clear to outsiders. In Ban Pae, the watershed forest is easier to distinguish from the surrounding forest due to the size of the trees to be found there. The villagers also mark the boundary through the clearing of a fire break in the dry season (p. 685).
- Resource users boundary: All households are accorded membership (p. 685).

Choice Rules

- Village Committee: The village Committee is the organization responsible for rule enforcement and decision making (p. 683). Revenue from the fines and fuelwood auctions are kept by the chairman of the Village Committee for public spending in the village. Spending must be approved by the Village Committee (p. 683). Each member of the Village Committee is responsible for coordination of 10 households to provide a two-man shift for foot patrol at night (p. 683).
- Resource users: Resource users can participate in auction to extract fuelwood from the watershed forest (p. 683).
- Monitors: All villagers are responsible for monitoring any kind of wrong doing in the watershed forest (p. 683).

Aggregation Rules

There are many opportunities for direct participation due to the small size of community. Important issues about the watershed forest are usually brought up in village meetings to let villagers express their opinions (p. 686).

Scope rules

- There are no mentions about scope rules.

Information Rules

- Anyone who gives information which leads to the arrest of the violators will be awarded 300 baht per case (p. 683).

Payoff Rules

- Benefits: Revenue from the fines and fuelwood auctions are kept by the chairman of the

Village Committee for public spending in the village. Spending must be approved by the Village Committee (p. 683). Anyone who gives information which leads to the arrest of the violators will be awarded 300 baht per case (p. 683).

- Costs: Ones who violate the rules (cutting the trees) will be fined at the rate of 100 baht for every inch of the length of the confiscated wood (p. 683).

1.5 Summary

Resource

The key resource is water from the forest. Watershed forest is protected entirely to sustain water yields. Any kind of tree cutting is strictly prohibited (p. 683). Since the time of inception of the village in 1933, the villagers have paid homage to the spirit that caused springs to flow in the area (p. 682). Ban Pae is seen as a robust community because it substantially meets all the seven design principles, and the community members themselves are also confident about the future of their institutions (p. 688). And relative resource scarcity, which reflects the subjective opinions of the villagers and the field experiences of the researchers, is very high in Ban Pae (p. 678). The boundaries of the community forest is topographic and clear to local villagers, but somewhat less clear to outsiders (p. 685).

Resource users

All households are accorded membership (p. 685). The watershed is totally closed to appropriation to allow replenishment to take place. Timber extraction is forbidden from Ban Pae (p. 685). Resource users can participate in auction to extract fuelwood from the watershed forest (p. 683). All villagers are responsible for monitoring any kind of wrong doing in the watershed forest (p. 683).

Public infrastructure providers

1) Village Committee: The Village Committee, which is comprised of the headman, his deputies, and 5-9 elder elected to 5-year terms, is charged with enforcing all village regulation (p. 683). The village Committee is the organization responsible for rule enforcement and decision making (p. 683). Revenue from the fines and fuelwood auctions are kept by the chairman of the Village Committee for public spending in the village. Spending must be approved by the Village Committee (p. 683). Each member of the Village Committee is responsible for coordination of 10 households to provide a two-man shift for foot patrol at night (p. 683). Revenue from the fines and fuelwood auctions are kept by the chairman of the Village Committee for public spending in the village. Spending must be approved by the Village Committee (p. 683).

2) Monitors: All villagers are responsible for monitoring any kind of wrong doing in the watershed forest (p. 683).

Public infrastructure

1) Natural infrastructure: Watershed forest in Ban Pae is 71.36 ha, and the proximity of villages to watershed is 0.5 km. The scarcity of forest resources is recognized as very high (p. 678). In Ban Pae, the boundaries of the community forest is topographic and clear to local villagers, but somewhat less clear to outsiders. The watershed forest is easier to distinguish from the surrounding forest due to the size of the trees to be found there (p. 685).

- 2) Hard human-made public infrastructure: Villagers have built a canal from the spring in their watershed to irrigate their paddy fields and also provide water for domestic use (p. 682).
- 3) Soft human-made public infrastructure: See 1.4 Rules in use (IAD)

2 Part II. Dynamic Analysis - Robustness

This update to Watershed Management in Ban Pae case was made in 2015 by Hoon C. Shin at Arizona State University. In-text parenthesis indicate corresponding links in the system representation (Robustness diagram) on the SES library.

2.1 Update on the Commons Dilemma

2.2 Shocks, Capacities, Vulnerabilities

The authors do not provide enough information for dynamic analysis. But they introduce an important legislation that can affect social-ecological system in the near future as follows: A robust institution can soon be weakened in the face of users discarding their obligations for reciprocity. Similarly, institutions that may now be considered fragile can become more robust if they strengthen their weaknesses. The new draft bill on the establishment of legal forest communities that is now under consideration would, if adopted, require forest community committees, forest community officials, and provincial forest inspection committees chaired by the provincial governor. While in some cases this may lead to the strengthening of some weaker local institutions, stronger ones, such as Ban Pae and Silalaeng, may in fact be weakened by this regimentation and apparent greater degree of reliance on outside authorities. Sensitivities to the local situation will be required to maximize the benefits brought about by the legislation without detracting from the benefits that can be gained through local self-determination (p. 689).