Sabangan Bato Irrigation System

Last updated: December 2022

1 Part I: Static Analysis - Collective action

This case covers farms served by the Sabangan Bato Irrigation System are located in the adjoining Barrios of Panangpan, Sabangan Bato, and Bidbiday of the town of Galimuyod in the Ilocos Sur Province in the Philippines. The characteristic of the region comprises of mainly rice cultivation with traditional framing techniques and majority of the farming taking place during the wet season. The irrigation serves 94 hectares among 97 farmers with the smallest land area cultivated being 2,500 square meters which the largest being about 2 hectares. During dry seasons, farmers rely on the tube wells in their fields. The system is managed by irrigation association, which is composed of all 97 farmers who utilize the system's water. Necessity dictates the rule of use of water in this system.

1.1 The Commons Dilemma

- **Coordination of Water Rights:** The system does not have water allocation mechanism and schedule to follow hence, farmer take turn based on their needs. The system lacks responsibility from the irrigation association in regard to water allocation. So, farmers have to hire a person to oversee the flow of water in their field. But the flow is subjected to water availability issues and cannot meet the demand of the region. So the farmers take turn in getting the water despite having the rice fields connected to the main canals directly. Therefore, the farmers face lack of water even during the wet seasons due to incapability of the association.

1.2 Biophysical Context (IAD)

- **Natural infrastructure:** The system derives its water from the Candon river. The irrigation serves 94 hectares among 97 farmers with the smallest land area cultivated being 2,500 square meters which the largest being about 2 hectares. Farmers in this system also have private wells which they use to supplement the water needs in dry season and also in wet season. The region mostly associates with the cultivation of traditional varieties such as rice, virgies, bulastog, santal, dinominga and purpuraw in the wet season. The planting is carried out in the month of July or August and the harvesting is carried out in October, November or December.
- **Hard-human-made infrastructure:** The system derives its water from the Candon river. There are other irrigation systems which obtain water from the Candon river; the Aloy irrigation system, above Sabangan ABto, serve less than 20 farmers; and the NIA constructed Legaspi irrigation system, below Sabangan Bato, serve more or less 100 farmers. The dam of the Sabangan Bato system is made of stone riprap with tree trunks and branches piled on top of it. From this dam originates a 3.45km main canal. There are five sub canals which branch out of this main canal. The subanal situated most upstream is about 190 meters in length; the next is 250 meters; the third is 480meters; the fourth is 220 meters; and the fifth is 1.45km. the main canal as well as the sub canals are all earthen, except for a small portion of the first sub canal which is lined with cement. All farmers have their own take-off point along

the canal. The take-off points in this system are all of temporary materials, bamboo tubes or just cuts on the canal embankments.

1.3 Attributes of the Community (IAD)

- **Social Infrastructure**: The farmers of the Sabangan Bato system can get water from the river only during the rainy months (June to December). During the dry month (January to May), there is no flowing water in the river. Therefore, the farmers obtaining water from the Sabangan Bato dam plant rice only during the wet season; during the dry season, the farmers plant totacco. In irrigation their tobacco crop, farmers use pumps to draw water from the open wells located all over the fields. The irrigation system is managed by the irrigation association; president is called cabecilla, a secretary treasurer, an auditor, and a business manager. The president and the auditor hold other positions in the community. The president is the treasurer of the barrio council while the auditor is a barrio captain. The association official is supposed to be elected yearly but do not receive any salary or compensation for their role. The irrigation lacks responsibility from the irrigation association in regard to water allocation, so the responsibility falls in the hands of the farmers. So, the farmers are responsible to see if their land is irrigated or not and at time, they hire a person to keep watch over the glow of water into their fields. In April 1978, about 10 farmers hired a person to ensure that irrigation water get into their fields. The person was paid 5 peso a day.
- **Human Infrastructure**: The system contains 97 farmers. The irrigated area in each of the three barrios and the number of farmers who till the fields located in a barrio are these: Bidbidy, 15 hecters and the 15 farmer-users; Pagangpang, 20 hectares and 35 farmer-users; and Sabangan Bato, 65 hectares and 47 farmer-users. The farmers struggle to irrigate their fields due to shortage in water available and lack of responsibility of the association officials.

1.4 Rules in Use (IAD)

1. **Position Rules:**
   - President of the irrigation association (*Cabecilla*) : Holds other position in the community; treasurer of the barrio council, supposed to be elected by the 97 farmers yearly.
   - Auditor: Holds other position in the community; barrio captain, supposed to be elected by the 97 farmers yearly.
2. **Boundary Rules:**
   - The association members should be a member of the community and serve for one year in their role. However, some continue to work in the same role for many years.
3. **Choice Rules:**
   - Farmer hire a patrol for 5 peso per day to oversee the flow of water in their field.
   - President and Auditor schedule and follow the maintenance schedule which is twice a week.
4. **Aggregation Rules:**
   - When maintenance work is to done, the cebecilla informs the farmers for the collective work of cleaning or maintaining the canals.
5. **Payoffs Rules:**

- Absence of the maintenance work is sanctioned by ordering the nonparticipant to work in the system apart from the group (for example, clean the canals) or fin of 5 peso per workday.

6. **Scope Rules:**
    - Irrigation association oversees maintenance of the irrigation system.
    - Absence of the maintenance work is sanctioned by ordering the nonparticipant to work in the system apart from the group (for example, clean the canals) or fin of 5 peso per workday.
7. **Information Rules:**
    - Cabecilla informs about the completion of maintenance work at least one farmer in each of the three barrios covered by the system.

1.5 Summary

The Sabangan Bato irrigation system faces various issues with water allocation from the irrigation association. The lack of water in wet season is an example of lack of intervention from the irrigation association. Farmers each privately own tube wells which they use to meet their water need in both dry and wet season.

2 Part II. Dynamic Analysis - Robustness

Given the source document, there is insufficient data to make any assessment on the temporal dynamics (resource and social conditions, etc.) of this particular common-pool resource. The contributors thus far have been unable to locate any specific updates for this case study.

3 Part III. Case Contributors

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