

# Cadchog Irrigation System, Bontoc municipality, Philippines

Last Updated: December 2022

## 1 Part I: Static Analysis - Collective Action

### 1.1 Introduction

The Cadchog irrigation system irrigates about 3-hectare ricefields, which are tilled by 200 farmers. It comprises canals that deliver water from the nearby Sang-ngan creek. 2 1/4 hectares of the ricefields are irrigated by the upstream dam and canal, and the remaining 3/4 is irrigated by the lower dam and canal. The size of rice paddies ranges from 10 to 300 square meters. The farmers grow only three local rice varieties. The lad-ucan and walay varieties thrive in both the dry and wet seasons, while the burik variety thrives only in the wet season. The wet-season rice crop is planted in August and harvested in December or January, while the dry-season crop is planted in February or March and harvested in June or July.

### 1.2 Commons Dilemma

The commons' resource is water from Sang-ngan creek, which serves four other irrigation systems. They are the Sang-ngan system (with 100 farmers), the Lepchan system (with 18 farmers), the Kangaw system (with 20 farmers), and the Potot system (with 20 farmers). Although the study did not explicitly state any provisioning, appropriation, production, or distribution problem or dilemma, the source document noted that in the Cadchog system, farmers perceive water stealing as illegal and as a sanction against such an offense is water deprivation. Additionally, farmers also explained that despite being downstream of the four other systems whose water source is the Sang-ngan creek, the upstream dams do not divert all of the creek's water.

### 1.3 Biophysical Context (IAD)

- Natural infrastructure
  - Sang-ngan creek.
- Hard human-made infrastructure
  - Two temporary boulder dams
  - Stone riprap

## 1.4 Attributes of the Community

- Social Infrastructure
  - No formal organization specified.
  - The system relied on two women who were also farmers in the system for conflict resolution.
  - Regular obla (group work) is organized yearly for cleaning and repair of the system. It is done for 2 days in January and another 2 days in August or just before the onset of the cropping season.
  - Special obla (group work) is organized for cleaning and repair of damaged parts of the system. It is only convened when there is a need for it.
- **Human infrastructure**
  - 200 farmers

## 1.5 Rules in Use

- Position Rules
  - Two women leaders
- **Boundary Rules**
  - The boundary of the resource(Sang-ngan creek) is not limited to Cadchog; it serves four other irrigation systems upstream.
  - Two women leaders were unanimously nominated by farmers during a meeting.
  - Leaders are selected based on the following qualifications: honesty and trustworthiness, industriousness, leadership, knowledge of farming techniques, and capability to present the system's problems before the local government agencies, especially the NIA.
  - The barrio captain of Chak-chakan (the barrio nearest the system) mediates in settling disputes occasionally.
- **Choice Rules**
  - The two women leaders can present the system's problems before the local government agencies, especially the NIA.
  - Farmers resolve water stealing conflicts among themselves however, occasionally, the two women leaders also mediate disputes.
- **Aggregation Rules**
  - In the dry season, when water is scarce, water is distributed through some kind of rotation.

- **Scope Rules**

- Not specified in the source document

- **Information Rules**

- It can be inferred from the source document that appropriators hold meetings.
- It can be inferred from the source document that the two leaders communicate with the NIA.

- **Payoff Rules**

- Absentees from the group work are fined 8 Philippine Peso for every day of absence.

## 1.6 Summary

Although there was a sanction for stealing water, the documented source stated that this sanction had not been used. Based on this information, we can infer that no appropriators were consistently disadvantaged during this study.

## 2 Part II. Dynamic Analysis - Robustness

Not enough information to determine the robustness of the system.

## 3 Case Contributors

- R Nana Sakyiwa Brown- Wood, School of Sustainability, Arizona State University.