



Social Analysis Systems²

Concepts and Tools for
Collaborative Research and Social Action

<http://www.sas2.net>

Title	A history of events and actions that have harmed or protected Rupa Lake in the Pokhara Valley of Nepal
Key Words	Timeline, Nepal, Rupa Lake, Watershed Management
Reference and Acknowledgement	Poudel, D. and D. Buckles. 2006. A History of Events and Actions that have Harmed or Protected Rupa Lake in the Pokhara Valley of Nepal. Social Analysis Systems ² Technique Report #5, 5 pp. Retrieved from: http://idl-bnc.idrc.ca/dspace/handle/123456789/106
Context	Rupa Lake is one of eight lakes in the Pokhara valley of western Nepal. It is located about 15 kilometres east of the city of Pokhara and covers some 115 hectares, making it the third largest among these eight lakes, after Phewa and Begnas Lakes. Rupa Lake is fed by streams and rivers that descend from the mountain regions of the Himalaya's Annapurna Range. The lake, its wetlands, and a lower watershed are rich in flora and fauna due to the many micro-climates they create. More than 150 species of birds visit the lake and nearby forests. Fishers living around the lake depend on its aquatic resources for their livelihood, while other residents benefit from water and other resources that form part of the lake's wetlands. All are concerned about steady declines in the health of the lake and wetlands, and the threat of flooding and landslides near their settlements. The Nepali non-governmental organization LI-BIRD has worked for many years with residents surrounding the lake.
Purpose	To identify the events and actions that have harmed or protected the lake and its nearby wetlands.
Process Summary	The non-governmental organization LIBIRD held a one-day meeting in a local hall, at the request of local authorities concerned



about this problem. Some 21 people (12 men and 9 women) attended from communities on the shores of the lake. Participants included representatives of local fishing cooperatives, local self-help groups (Community Based Organizations), schools, and local authorities. They were asked to describe past events or actions that had a major impact on the health of the lake and its wetlands. These were noted on cards and ordered chronologically on a line traced in lime on the floor. Discussion was encouraged throughout the process. Participants know that notes taken during the event would be used to prepare a report, and agreed to share their information. The lead authors of this report facilitated the process.

Analysis

Participants identified 23 major events and actions affecting the health of the Rupa Lake and its wetlands between 1952 and 2005 (Table 1). In 1952, a major flood and series of landslides changed the watershed when large amounts of sediment entered the lake and surrounding wetlands. Participants said the landslides happened because of forest clearing in the lower watershed, which had been ongoing for a decade. Forest clearing became more intense after 1957 when local ownership and control of the forests was replaced by the Forest Nationalization Act. Slash and burn agriculture on national forest land became common, and was not controlled by government agencies. Major floods and landslides occurred again in 1962, 1972 and 1976. This created new agricultural areas in the wetlands and along the lake shore. Government land surveys in 1962 and 1976 endorsed private claims to these new lands. Some local people diverted streams and rivers to cause new landslides and sedimentation so that they could claim new lands.

Permanent settlements began appearing in the lower watershed in 1979, increasing the amount of forest clearing. A major flood and landslide occurred in 1981, leading to more private claims to new land by local elites. The Begnas High School claimed a large piece of new land in a sensitive area near the shore of the lake.

In 1983 fish farms were set up. The waste from these farms, along with lake sedimentation, promoted the growth of harmful water plants (Water Chestnut and Water Hyacinth). The native species of Lotus were displaced. In 1984 gravel and sand were removed from the wetlands around the lake's main outlet, causing a drop in lake

water levels.

In 1986 government officials and outside non-governmental organizations launched the first big effort to control flooding and landslides by building check dams in various places and by planting trees. They also set up a Community Forestry Program to support local ownership and control of forests. During this same time, new settlements in the watershed were set up or expanded and large pieces of forest were cleared. Non-government and poorly-planned roads were built to link these settlements, causing soil erosion, landslides and more sedimentation of the lake and wetlands.

In 1992 a landslide that would have happened near Bandre was prevented through the efforts of an outside agency. Several years later, check dams and tree planting at the place where the *Kalyangdi* and *Thulo Khola* rivers meet helped reduce the threat of flooding and landslides. This action was led by the same outside agency. Meanwhile, the growth of harmful water plants continued in the lake. The use of agricultural fertilizers on lands draining into the lake made the problem worse. Fishing with electric currents began in 1997, causing direct damage to aquatic life.

Major landslides occurred again in 2001. For the first time, these were a direct threat to settlements. Landslides in 2004 caused a lot of damage in many places and added more and more sediment to the lake and its nearby wetlands. In 2005 the Rupa Lake Fisheries Cooperative launched a major plan to clear the lake of harmful water plants.

Table 1: The sequence of events and actions that have harmed or protected Rupa Lake

Before 1952 Forest clearing in the lower watershed.

- shore.
- 1972 Flooding and landslides in three areas (*Rupakot, Betayani* and *Hangshapur* wards) deposited sediment in the lake and its nearby wetlands.
 - 1976 Flooding and landslides near *Hangshapur* ward added sediment to the lake and nearby wetlands. A Government land survey upheld private claims to new lands, mainly by local elites.
 - 1979 Various permanent settlements were set up in the nearby watershed, and forest clearing became more intense.
 - 1981 Flooding and landslides added sediment to many parts of the wetlands and lakeshore. This land was then claimed by individuals. The Begnas High School claimed a large area near the lake shore.
 - 1983 Fish farms were set up. Waste from the farms, along with more sediment in the lake, displaced the lotus plant and promoted the growth of harmful water plants (Water Chestnut and Water Hyacinth).
 - 1984 Gravel and sand extracted from the outlet increased water flow and reduced the depth of the lake.
 - 1986 Check dams and community forestry programs were started by outside agencies and the Government.
 - 1988 New settlements were established or expanded.
 - 1989 Forest clearing of 300 hectares and 54 hectares at *Lekhnath-11* and *Hangshapur-9* wards, respectively, provoked a major landslide. New lands were claimed by local elites.
 - 1991 Construction of the *Begnas- Bhorletar* road eroded soils and caused sediment to enter the lake and wetlands.
 - 1992 A potential landslide at *Bandre* was controlled with the help of an outside agency.
 - 1994 Use of chemical fertilizers in agriculture increased, promoting the growth of harmful water plants in the lake.
 - 1995 Check dams and reforestation programs were established by outside agencies at the place where the *Kalyangdi* and *Thulo Khola* rivers meet.
 - 1997 Fishing with electric currents began.
 - 2001 Flooding and landslides from the *Devasthan* river affected lower settlements.
 - 2003 Road building at *Talbesi-Lipyani, Sourbas-Ramkot* and *Bhanjhyang-Begnas* eroded soil and allowed sediment to settle in the lake.
 - 2004 Landslides in many areas (*Khada gaindo, Banskot, Hangshapur, Archalthar, Satdobato, Majhthana, Tallo Kahere, Lekhnath-10*) caused more sediment to enter the lake and wetlands.
 - 2005 Harmful water plants were removed by the Rupa Fisheries Cooperative.
 - 2005 Hailstorm damaged lake biodiversity.

Interpretation

Forest clearing in the lower and upper watershed has caused many floods and landslides over the past 50 years. As a result, the topography and ecosystem of the lake and its wetlands have changed a lot. Government policies that affect forest ownership and

government endorsement of private claims to new lands added force to these events. Unplanned human settlements in the watershed increased the rate at which forest cover was lost. Non-government road building added more sediment to the lake and wetlands. More recently, uncontrolled dredging and pollution from land and fish farming caused more direct harm to the lake. Participants reflected that these events happened because neither they nor government officials had used foresight, planning and regulation. They also noted that local elites have mostly benefited from government land policies that upheld private claims to new lands created by landslides and sedimentation. Only in recent years have local residents begun to see the direct threat to their settlements and the need to conserve livelihoods such as the lake fishery. Most efforts to protect the lake were started by outside groups.

Action

The participants decided to make a formal petition to government to order a halt to cutting of those forests that remain in the lower and upper watershed. They also resolved to oppose government land surveys that endorse private claims to new lands created by landslides. At the end of the meeting the local authorities decided to develop a local action plan that would regulate and manage activities that might further harm the health of the lake and its wetlands.

Observations on the Process

The exercise used the Nepali calendar, which starts 56 years before the Western calendar. The dates were changed to the Western calendar for this report. Use of points of reference to major political events made it easy for participants to organize local events chronologically. The physical layout of the events on the floor also enhanced participation and allowed different people to work on the timeline simultaneously. The accuracy of the final result was confirmed by the participants, who noted that it was useful to their own thinking about the importance of different events in determining the current situation.