GUATEMALA: TOWARDS IWRM IN THE BASIN OF LAKE ATITLÁN CASE #9

Efforts to move towards IWRM approaches in the Lake basin are hampered by poor coordination, weak investment funds and little public participation. The case illustrates that without a properly established enabling environment, IWRM is hard to achieve.

ABSTRACT

Description

The Lake Atitlán basin is a closed watershed located in the volcanic highlands of Guatemala, Central America. Of the basin population of 180,000, over 90% are of indigenous Mayan origins. Poverty and illiteracy rates are high. Agriculture and tourism are the main economic activities in the basin. Its main environmental problems in the basin are water pollution, soil erosion and forest and biodiversity losses.

In 1996 the Authority for the Sustainable Management of the Atitlán Basin (AMSCLAE) was established; it produced a Master Plan in 2000. However, the plan is still under revision; in the meantime some activities are occurring, albeit in isolated manner and without integrated direction.

The legislation establishing AMSCLAE was flawed, as it omitted to specify a source for funding its operations. Instead, funding depends on the political will of the current authorities, and to date has proved quite inadequate. Meantime, the major beneficiaries of the lake (e.g. hotels and wealthy homeowners) are contributing nothing to lake conservation costs. The Master Plan also appears to be flawed, or is at least controversial, which had delayed approval. Current review by government agencies has suggested that some projects have been inappropriately assigned to agencies without the proper implementation mandate.

There is no overall coordination among several agencies. Several agencies – each with some coordinating elements – operate independently in the basin. All find their financial resources considerably lower than their needs. These agencies are largely staffed with technical people, rather than decision-makers. This hampers and delays overall basin coordination.

So far the impact of any water resources management measures taken in the Lake Atitlán basin has been limited. The main barriers to success are the lack of public participation, institutional coordination, investment funds and funding for AMSVLAE.

Lessons Learned

The main barriers to an integrated management of the water resources in the basin are strongly interlinked. Low public awareness means that democratically elected decision-makers do not make it a priority. Water resources management is not a prime election issue; none of the candidates for mayors in recent elections campaigned on environmental issues. Lack of political will results in low investments. Lack of coordination makes public awareness campaigns harder to implement. Lack of investments makes institutions and coordination mechanisms weak.

Importance of the case to IWRM

Despite various measures including legislation, water resources studies, a basin Master Plan and the set up of a Basin Commission, the water resources management situation has not improved. The basin is still handicapped by a lack of public participation, institutional coordination, and investment. Even if the Master Plan is approved by the National Council of Protected Areas, it will be difficult to get the various local and national organizations to accept, internalize and then implement its activities. This acceptance, and subsequent coordination among the parties will be essential if an IWRM approach is properly applied to the basin. It will also be important to put into place appropriate economic incentives to encourage environmental conservation, and contributions to the funding of ecosystem preservation by the major beneficiaries.

Tools used

The case shows that these tools need to be used effectively for IWRM outcomes.
B1.4 River Basin Organisations
B2.1 Participatory capacity and empowerment in civil society
C2.1 Basin management plans
C4.2 Communication with stakeholders

MAIN TEXT

1. Background and Problems

Introduction

Lake Atitlán is located in the volcanic highlands of Guatemala, Central America. The basin is a closed watershed, all water flows to the lake, the lowest point of the basin. The main rivers flow into the lake in the Northern side, more to the South a number of seasonal streams flow into the lake in the wet season. The lake basin is mountainous, with altitude varying from 1562 meters to 3340 meters. The climate is variable; the average temperature is 18.6°C and the average annual rainfall is 1277 mm in 105 days. The surface are of the basin of Lake Atitlán is 625 km2, of which the lake covers 130 km2. Maximum depth of the lake is 324 m. The lake is classified warm monomictic and is oligotrophic. The basin covers about 50% of the Sololá department and encompasses 17 municipalities.

The population in the basin is 180,000 inhabitants; 91% are of indigenous Mayan origin; 60% of the people live less than 3 kilometres of the lake. The illiteracy rate in the basin is 46%; 9 of the 16 counties have a poverty index above 50%; PEA (Población Económicamente Activa) covers 27% of the population.

Soils are heterogeneous. The alluvial soils in the higher and middle parts of the basin are intensively used for agriculture, crops include beans, horticulture, coffee and fruits. The lower part is used for similar crops, but agriculture is less intensive on these younger soils. Approximately 35% of the surface area of the basin is used for agriculture. The natural vegetation of mixed woods covers 25% of the basin and 15% of the surface are is used for production woods. Agriculture is the main activity in the basin and offers employment to 70% of the population. The rivers flowing into Lake Atitlán are mainly used for irrigation of horticulture, efficiency of use is high due to good organisation amongst users and adequate technology. The lake basin has as touristic value; already some 50% of the tourists to Guatemala visit Lake Atitlán. Commerce and services (20%) and industry (10%) offer other employment in the basin.

Lake Atitlán and its basin: conflicts and problems

The main environmental problems in the basin are (a) water contamination due to untreated municipal wastewater and coffee benefice, agrochemical runoff, and soils erosion, (b) soil losses due to inadequate agricultural practices, and (c) forest and biodiversity losses due to land use changes for agriculture and cutting of fire wood. Contamination by domestic wastewater is high in the lake, as most of the population (60%) lives on the lakeshores.

However, these environmental problems are not a priority for local municipalities and other funding agencies, whose highest priorities are poverty alleviation, provision of water and sanitation, education, health and transportation.

Nonetheless, there are plenty of conflicts about water use between upstream and downstream user communities. No water use allocation system exists, and regulation that exists is not enforced. The department of regulation of the Ministry of Agriculture (MAGA) has done six studies relating to conflict resolution and water allocation in the basin.

Public and private investments in the basin: a number of individual projects

The Rural and Urban Development Council (CODEDUR) of Solola state, is responsible for the coordination of state public and private investments. CODEDUR receives mainly solidarity funds for itself, but has the role of coordinating all investments in the basin. Public investments in the basin have been mainly through solidarity funds, and have been used for basic services such as water supply, schools, health centres, roads, community centres etc. These projects are clearly important, but do not directly address the sustainable management of the basin.

Private investment has focused mainly on tourism, agriculture and forestry.

A number of NGOs operate in the basin and some international cooperation projects have been implemented:

- A project of the NGO Vivamos Mejor ("Let´s have a better life") focuses on organic coffee growing, and has introduced measures to treat wastewater treatment of coffee plantations.
- ALA (Autoridad del Lago Atitlán), a project financed by the European Union, is one of the biggest investments in the basin, involving the construction of three wastewater treatment plants, and associated reforestation, and soil and water conservation projects. ALA also proposed a number of regulations regarding fishing, shipping and construction of new structures on the lakeshores.
- A technical support project is planned by the National Peace Fund (Fondo Nacional para la Paz, -FONAPAZ-) to focus on sanitation and solid waste management. The project will be financed through a loan of $6 million from the Central American Bank for Economic Integration (BCIE).
- USAID is starting up a project in two municipalities aimed at urban environmental management.

The investments that have been made in construction of treatment plants have been of limited use, as many are functioning improperly due to O&M problems. Since most recipients are unwilling to pay for water supply and sanitation, the operation of wastewater treatment plants quickly become unsustainable. Many people have opted not to connect to water supply and sanitary services.

Political and legal environment

The importance of national parks was first recognised in the Forestry law of 1945 (decreto 170), and in 1955 the first ten nation parks were established, including the national park of Atitlán encompassing the complete lake basin.

The constitution of Guatemala (1986) incorporates the notion of sustainability balancing economic, social, and environmental considerations. The constitution defines water as a public good, and states that there should be a special water law. The peace accords also state that Guatemala will work towards economic growth, social equity, and environmental sustainability. However, Guatemala does not have a special regime for water resources management. The States keeps opting for a rudimentary system of water management that ignores the natural, social and economic limits. This approach leads to scarcity, deterioration, insecurity, inequality and social tension. (Novib y Fundación Solar, 2001).

The environmental law (Decreto 68-86) of 1986 states that the State, the municipalities and the inhabitants of the national territory will work towards a social, economic, scientific and technical development that prevents environmental contamination and maintains the ecological balance. To obtain this the fauna, flora, soil, and water need to be used rationally. The environmental law established a National Commission for the Environment (CONAMA). The law on protected areas of 1989 (decreto 4-89) established a number or protected areas and special protected areas, and again recognises Atitlan as a national park. Also in 1989 the National Commission for Protected Areas (CONAP) was established. In 2001 the Ministry of Environment and Natural Resources (MARN) was established, absorbing both CONAMA and CONAP.

2 Actions taken

Setting up a basin organisation

In 1988 a committee for the conservation of the Atitlán basin was established. The Committee is chaired by the governor of Solola department, and further consists of a military commander, two representatives of the National Environment Committee, the mayors of the municipalities in the basin and representatives of civil society and environmental groups. The Committee has the mandate to co-ordinate the implementation of all public and private institution activities related to the rehabilitation of the ecosystem of the lake. The decree establishing the Committee required all state, autonomous, semi-autonomous, and decentralised entities and municipalities in the basin to cooperate with the Atitlán Committee. Landowners bordering the lake were also required to take any sanitary, environmental or other action requested by the Atitlán Committee (CEE 1988, taken from AMSCLAE 2001).

In 1996 (Decreto 133-96) the Authority for the Sustainable Management of the Atitlán Basin (Autoridad para el Manejo Sustentable de la Cuenca del Lago de Atitlán y su Entorno, - AMSCLAE) was established to plan, co-ordinate and implement measures and actions of the public and private sector that are deemed necessary to conserve the ecosystem of Lake Atitlán and its Basin. AMSCLAE is governed by a Commission that included the Vice President of the Republic, the Governor of the Sololá department, representative of the Ministry of Agriculture, the Ministry of Environment, the Ministry of Public Works, the Chamber of Tourism, and the National Institute for Tourism, two representatives of the Municipalities, and one person representing NGOs.

In 1997 the Basin was once again declared a protected area, and in 1999 a Technical Unit of CONAP was created to manage the area.

The Master Plan as a framework for integrated basin management

In 2000 a Master Plan for the basin was prepared, based on a technical study prepared by CONAP in 1994. The Plan divided the basin into zones, and provided an integrated framework for investments and projects to be carried out by a number of actors. It was based on the principles of Integrated Water Resources Management (IWRM). The Plan includes the following measures:

- Establishment of municipal Natural Resources Committees to support priority actions. Each Committee would be represented in AMSCLAE, giving a broad based mechanism for working with other governmental agencies.
- Treatment of wastewater from domestic sources and coffee production, and measures to collect and treat solid waste.
- Scale up of soil conservation and organic agriculture measures, and regulation of the use of chemicals.
- Development of tourism, especially ecotourism. The Plan proposes that local groups become main partners – these groups have till now benefited little from tourism.
- Reforestation with native and mixed forests.
- Soil productivity projects involving local land users.
- Consolidation of protected areas managed by local groups, in association with government agencies, NGOs and the private sector.
- Conservation of aquatic species.
- Better regulation and more effective enforcement for construction and contamination.

Stakeholder participation

A number of local organizations and stakeholders participated in the elaboration of the Master Plan through a series of meetings – more than fifteen in one year. The organizations are listed at the end of this document.

CODEDUR convenes regular monthly meetings on the development of the entire department of which Atitlan is just a part. These meetings are attended by delages from the municipalities,

MARN, CONAP, INAB, INGUAT, the Ministries of Public Health, Education, Agriculture, the private sector and NGOs.

3. Outcomes

The impact of the various water resources management measures in the Lake Atitlán has been limited. There is a reinforcing spiral since water resources management is a low priority of voters, politicians and civil servants do not value such projects. Raising the awareness of the population, so that they pressure decision makers to allocate funds to basin conservation and integrated development is key. But this needs resources and commitment as well. A recent project financed by GTZ, and implemented by the Ministry of Economic Planning, to help municipalities develop environmental plans may help sensitize the basin population to their role in the protection and management of the lake basin.

Legislation

The legislation did an adequate job of creating the institutional framework for the establishment of the the basin organizations and stakeholder participation, but was flawed by the omission of legislated plans for funding. Financing of AMSCLAE remains at the whim of whoever are the current authorities, who, as noted above, have little voter pressure to make funding a priority.

Stakeholder participation

Despite a number of meetings involving local organisations and stakeholders in the preparation of the Master Plan, there has been no real experience of involving and motivating local communities in the decision-making process in the Atitlan basin. The Municipal Development Council was an opportunity to promote local participation, but was declared unconstitutional a few years after its creation in 1986. More recently the Secretary of Economic Planning, financed by GTZ, has started a project that gives technical support to the basin municipalities to develop their own environmental agenda. It is hoped that this participatory project will sensitize the inhabitants of the basin to the importance of their role in the protection and management of the lake basin.

Institutional setup

There are many coordination groups operating in the basin. One is CODEDUR that integrates public and private institutions for the development of the department of Sololá. Because the area is protected, the National Council for Protected Areas has a presence in the basin. Recently another coordination mechanism was created as a pilot project, under the national process of decentralization (Grupo Gestor). AMSCLAE, the basin authority, is another coordination agency. All find their financial resources considerably lower than their needs. Even the municipalities, that receive 10% of the national budgets, do not have the capacity to make the needed investments in water management and conservations.

Because of poor financing and the low level of political support from national, departmental and municipal authorities, AMSCLAE has never functioned as envisaged in the legislation that created it. As much as two-thirds of the funds it has received have gone on investment for projects outside its mandate. Specifically, AMSCLAE received around $35,000 in 1998 (of which 57% went for project investments); $150,000 in 1999 (66% for investments), and some $350,000 in 2000 (75% for investments). This was a small fraction of the overall national investment in the water sector.

The Master Plan has not yet been approved, and therefore cannot be implemented in a co-ordinated manner. It is at present being reviewed by CONAP, which has taken issues with selection of some agencies as appropriate to implement specific Plan elements, seeing these projects as outside the agency mandates. The projects slated for implementation by AMSCLAE, for instance, should, according to CONAP, be implemented by other entities. Although the Master Plan has not yet been disseminated to other agencies, various authorities and interest groups have already started some specific activities. However, because the Plan is

still under revision those actions take place in an isolated manner without an integrated direction.

An example of such an isolated activity is the construction of a public laundry facility in the municipality of Santa Lucía Utatlán, financed by FONAPAZ. No wastewater treatment was planned and the drainage water of this new facility contaminated the well that serves as a source of drinking water in a lower village. Similar problems occurred after the construction of a sewage system in Santa Clara La Laguna. If the environmental impact assessments that are obligatory under the Master Plan had been carried out, these problems could have been avoided.

Barriers to implementation of the Master Plan

One key barrier to implementation of the Master Plan is the low awareness among the basin population of the importance of environmental management, and the role of the people in implementing and financing such projects.

Another main barrier is lack of funds. Most municipal investment plans do not include financial allocations for the water resources management. Similarly, the national social funds and other public sector budgets have only small allocation for financing of environmental projects in the basin.

A third barrier is the lack of coordination among AMSCLAE, CONAP, CODEUR, and other institutions in designing projects to improve basin conditions.

Regulations and economic instruments

Existing control and command mechanisms are not sufficiently strong to apply current regulations. Nor are the agencies tasked with applying penalties for infringements of environmental regulations.

There is few if any economic and market oriented incentives promoting environmental quality. Lake Atitlán is one of the three most visited sites in the country, and the tourism is one of the three major sources of national incomes. However, the tourism sector does not provide any revenues for basin conservation. Nor do the major hotels, which are earning well from both national and international tourist. Similarly, wealthy people from Guatemala City with summerhouses around the lake avoid paying anything for lake conservation.

4. Lessons learned and replicability

The difficulty experienced in the Lake Atitlan Basin in achieving a sustainable IWRM approach to lake basin management provides a number of lessons.

- Without effective public participation and proper coordination among various public and private sector entities, IWRM cannot be achieved.
- Development and management of water resources can only be achieved if local authorities, social funds, and other funding mechanism are willing to make the necessary investments.
- It is important to build consensus among various institutions, water users and the general public about shared objectives before implementing water resources projects.
- Public awareness needs to be raised at the local level.
- A basin committee or organisation should be recognised as the highest coordinating body by the various actors involved in water resources management.
- The redefinition of the protected area to include the whole basin will permit control of conservation areas, logging, land use changes, and water pollution.
- Legislation should not only specify institutional set up conditions, but also specify the source of funds to fully operate the institutions.
- Even when there are existing environmental laws, local authorities will not necessarily enforce them.
- The participatory process should be used for preparing basin development master plans.
- Coordinating agencies need to have decision-making powers if they are to function effectively.

The experience in Lake Atitlán offers a number of lessons on how measures can be implemented in other basins. The experience is especially relevant for basins with similar physical, social, and economic characteristics that exist in Central America.

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6 Organisations and people

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National Council of Protected Areas (CONAP), tel. (502) 230-4234, 238-0000, 230-0870 y 5579, Fax 253-4141
Grupo Gestor: Pilot project of decentralization program
Environmental and Natural Resources Ministry (MARN), tel.(502)220-2460/3793/2460, Fax 220-2460

Main private groups and NGOs

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