Case Study

A Public Participatory Approach to Improve Water Quality in the Yuqiao Reservoir of Tianjin

Summary

In China, local municipal authorities are seeing the value and effectiveness of involving communities in their efforts to improve water quality. A case in point is the Yuqiao Reservoir, the main source of drinking water for the citizens of Tianjin. Recently, the reservoir experienced a marked decline in water quality resulting from human land use activities. Traditional policy directives and massive technical interventions had not been particularly effective in reducing this type of pollution. The Federation of Canadian Municipalities' International Centre for Municipal Development undertook a model-project initiative to improve the water quality of the Yuqiao Reservoir through a participatory approach that involved the public in non-point source pollution control programs. The Yuqiao project is one of nine model-projects of the China Integrated Municipal Development Project (CIMDP), which is managed by the Federation of Canadian Municipalities (FCM) and funded by the Canadian International Development Agency (CIDA).

As a result of this initiative, the local Environmental Protection Bureaus developed their capacity to manage and deliver participatory remedial projects to villagers and farmers. Local village participants now have a significantly better understanding of how their actions can improve water quality, and how they can actively participate in programs that will improve their own standard of living as well as the water quality for the region.

Introduction

The China Integrated Municipal Development Project (CIMDP) works with municipal departments in selected Chinese municipalities to improve management, public participation and legislative development processes. It is a bilateral initiative of the International Centre for Municipal Development (ICMD) of the Federation of Canadian Municipalities (FCM), and their partner in China, the State Council Office for Restructuring the Economic Systems (SCORES). CIMDP is funded by the Canadian International Development Agency (CIDA).

The Yuqiao Reservoir is the main drinking water supply for the City of Tianjin. It is located north of Tianjin, in a once fertile valley that supported numerous villages and towns. As a result of severe water quality problems, the city was investing significant resources in water treatment to ensure the safety of the water supply. Investigations carried out by the city and county showed that human activities within the drainage basin were responsible for the increased pollution. Specific sources of pollution included: tributary rivers, agricultural activities, fish farming, human waste from villages, and soil erosion. The government initiated several efforts to reduce pollution at its source, with mixed success. For example, regulations prohibiting new development around the Yuqiao Reservoir curtailed new sources of pollution, but did little to reduce existing sources. A promotional campaign designed to solicit public support was not as successful as originally planned.

The Yuqiao Reservoir Model Project is one of nine model-projects undertaken within CIMDP. The goal of the project was to improve water quality through local community action. The Model-Project Team included representatives from the State Council Office for Restructuring the Economic Systems (SCORES), the Federation of Canadian Municipalities (FCM), Tianjin Environmental Protection Bureau, Tianjin Academy of Science, Ji County Environmental Protection Bureau, and the Lake Simcoe Region Conservation Authority (LSRCA) in Ontario, Canada. The LSRCA, which has extensive experience in watershed management and participatory programs to reduce pollution, provided Canadian leadership and technical support throughout the project.

Local Chuanfangyu farm involved in the model project.

The Model-Project Team realized that government-controlled initiatives to reduce water pollution were not enough, and that a new approach was necessary – one that would foster collaboration between the local government and the community stakeholders such as village organizations and farmers.

The Participatory Approach to Reducing Pollution

The Yuqiao Reservoir Model-Project Team used a project methodology developed within CIMDP that concentrates on developing focused initiatives that produce results in 18 months. It includes four distinct project phases: project definition, knowledge building, capacity building; and application, testing and dissemination.

Project Definition: Building Understanding and Consensus

The Yuqiao project began in September 1999 with a Canadian mission to Tianjin, the Yuqiao Reservoir and the pilot area of Chuangfanyu Township. During the mission, representatives of FCM, SCORES, and LSRCA, as well as 26 members of lead environmental agencies came together in a workshop to assess the issues and define the project. All agreed that improving the water quality of the Yuqiao Reservoir meant reducing pollution at the source. But, more importantly, they determined that any sustainable solution would require the participation of the citizens living within the reservoir area. As a result of the workshop, the Model-Project Team agreed on two major objectives:

- To develop the management skills of the Model-Project Team to manage a participatory rural remediation program.
- To build the capacity of the Model-Project Team to develop partnerships with various levels of government and stakeholders.

Knowledge Building: Developing Conceptual Skills

The Model-Project Team began by helping municipal leaders from key agencies develop the conceptual skills they would need to lead a participatory process. In November 1999, six government officials participated in a focused learning workshop in the Lake Simcoe Region of Ontario, Canada. The participants represented Tianjin and Ji County Environmental Protection Bureaus, Tianjin Academy of Environmental Sciences, Water Resource Bureau, the Ji County People's Government, and SCORES. The Canadian hosts and facilitators included representatives from the LSRCA; Regional Municipalities of York Durham and Simcoe County; Provincial Ministries of the Environment, Natural Resources and Agriculture, Food and Rural Affairs; and farm organizations. They provided hands-on learning activities on the principles and procedures for planning and managing community-based pollution prevention programs. The Tianjin officials gained conceptual and practical knowledge about managing volunteer committees, developing stakeholder partnerships, conducting public meetings, developing an overall public participatory plan, and designing educational and promotional materials for remedial programs.

Following the workshop, the Model-Project Team decided to develop an overall public participatory plan and five demonstration projects that would involve the public and farming community of the Yuqiao region. The team believed that the demonstration projects would serve three purposes:

- they would present visible, practical solutions to community stakeholders,
- they would illustrate the benefits of using a public participatory approach to resource management, and
- they would help build the skills of local team members to manage rural pollution remediation programs.

Each of the five demonstration projects focused on a specific pollution control method: constructing control structures and reforesting mountain areas to resist erosion, containing human and agricultural waste from villages, or changing land use and farming practices that were contributing to pollution of the reservoir.

Capacity Building: Developing Skills, Tools and Techniques

In March 2000, the LSRCA conducted an intensive on-site capacity building workshop in participatory management and public facilitation skills for representatives of Tianjin and Ji County Environmental Protection Bureaus, Tianjin Academy of Environmental Sciences, and the People's Government. The workshop participants would ultimately form a core consultative unit that would disseminate the participatory management approach to other staff within the various levels of government in Tianjin.

The Model-Project Team focused on building the participants' management and operational skills. These included:

- Collecting information from the public about their concerns regarding proposed changes in land management, farming practices and erosion control techniques. This was achieved through developing effective interview techniques and interview tools such as farmers' surveys and general public questionnaires.
- Developing skills in communication with local farmers through surveys, interviews, community meetings to assess farmer's environmental needs and develop appropriate program actions.

- Producing promotional and educational materials – these included newsletters that were strategically disseminated to promote the program, and fact-sheets and technical sheets to assist farmers in new farming practices.
- Ensuring that program participants received technical support and coaching on an ongoing basis.
- Developing recognition programs to recognize good stewardship.
- Developing monitoring programs to assess the effectiveness of the program and track overall improvements to water quality.

The Head of Ji County Environment Protection Bureau meets with village leaders to plan demonstration projects.

Application, Testing, and Dissemination: Building Local Ownership

The Model-Project Team knew that most successful participatory programs are implemented by local organizations working directly with local stakeholders. To get the public actively involved in the Yuqiao project, the team established working groups of stakeholders for each demonstration project. The working groups included representatives of the local government authorities and local public interest groups, such as the Women's Association, Youth League, Village Committee and local farming groups. This early involvement of local stakeholders helped them to develop a sense of ownership and commitment to the project.

In a series of consultations all working group members were encouraged to participate and provide sug-gestions on how to solve the pollution problems that had been identified. The stakeholders provided a unique perspective regarding the feasibility of projects – particularly the farmers, who could advise the group on the types of pollution control projects that would be readily accepted within the farming community. This communication between the government agencies and local community ensured that the people who were directly affected by the demonstration projects were consulted and that their voices were heard.

As the demonstration projects developed, the Model-Project Team shifted its focus to sustainability and monitoring. A regional seminar was delivered jointly by the government agencies administering the program and the local participants and farmers. The seminar helped to publicize the program, extend partnerships, and reinforce management skills. It also gave the demonstration project participants an opportunity to showcase their accomplishments, and become part of an educational program to instruct other farmers in beneficial farming practices. The Model-Project Team established a technical monitoring process to assess actual reduction of pollutants, as well as a self-monitoring process to assess their own progress in managing a participatory program.

Results – Putting the Plans into Action

The Yuqiao Reservoir Model Project achieved more than its planned results. Local farmers, villagers, and government agencies came together and built a cooperative relationship based on trust and local ownership. The successful implementation of the demonstration projects yielded many examples of the effectiveness and benefits of the public participatory approach:

- Remedial projects and proposed changes to farming practices are made more practical by in-volving the public and farm community.
- Programs to reduce pollution gain credibility from community involvement, as participants promote the benefits of the projects to other communities within their region.
- Trust increases between the community and government agencies as a result of their mutual involvement in the projects.
- Community involvement improves awareness of environmental issues and the benefits associated with good stewardship practices.
- Improving environmental health and opportunities for economic development enhances the quality of community life.

A villager shares the benefits of the new bio-gas system with officials.

Analysis – Time to Build Upon the Success

Given the increasing challenge of water pollution and the mounting costs associated with water treatment, the only sustainable solution is to address pollution problems at their source through a public participatory approach. The success of the Yuqiao model-project was the result of the dedication and commitment of all the partners. While this project achieved its goals in the five demonstration projects, the stakeholders must now continue to put their experience to work to significantly improve water quality in the Yuqiao Reservoir.

Creating a cooperative environment to transfer skills and knowledge was important in this project, and will be necessary to replicate the participatory approach in other jurisdictions. The Yuqiao model-project gave a core group of municipal staff the skills to manage, design and deliver community based participatory management programs. It also formed a "special consultation and assessment unit" with the skills necessary to transfer their pubic participatory management approach to other initiatives where public representation is needed.

Construction of erosion control structure by villagers, farmers, and local authorities.

The partners in the Yuqiao Model-Project identified the following factors that they believe contributed to the success of the project:

- The project evolved into a true partnership between all levels of government (Provincial/City, County, Township and Village). Under the leadership of all the government agencies involved, the project brought together organizations and people with a wide range of experience and expertise and broke down the barriers between the government agencies and the community.
- The community gained an understanding of pollution issues and took responsibility for the water quality problems originating in their communities.
- The project operated on the principle of mutual benefit for all partners. Local communities were often asked to make changes for the betterment of everyone using the water resource, and in some cases were compensated for the risks that they took.
- The project received the necessary resources, both personnel and financial.

Lessons Learned and Replicability

The Yuqiao Reservoir Model Project provides some important lessons, both in improving water quality in China's waterways and in improving public management approaches in municipal service delivery.

Local stakeholders are more committed to programs that are built around existing local networks, that are delivered by local organizations, and that involve local stakeholders from the very beginning. In developing new environmental programs at the local level, it is important to work within existing social and political networks. Township and village leaders, local party secretaries, and citizen representatives are vital players in building community commitment to the program, and in disseminating information at the village level. In the Yuqiao demonstration projects, the local village leaders and farmers participated in identifying the problems and in developing the solutions, and the local Environmental Protection Bureaus were involved in program delivery in their own jurisdictions. All the participants developed a sense of ownership for their own programs and are committed to continuing them over the long term.

Partnerships can help a program benefit from a wide range of experience and knowledge. In this project, the collaborative relationships that developed between government and community organizations meant that everyone involved had better access to information, experiences, perspectives, and skills that improved program decision-making.

Educational approaches and materials should be appropriate to the audience. Developing environmental awareness around the Yuqiao Reservoir depended on educating a diverse group of stakeholders that ranged from farmers and village dwellers to political leaders and industry executives. This required the development of educational approaches and tools that were effective and suitable to the needs of each group.

Demonstration projects help develop best practices. Seeing actual results was a powerful motivator for change. Farmers who implemented new farming practices, and who saw the successful results, were not only more committed, but are more likely to promote the new practices.

Participants make effective educators. At the beginning of the participatory process, municipal staff were the primary educators. However, once community members gain experience they can and will be encouraged to share their learning with others, to become community educators.

Continuous monitoring provides a track record of success. Measuring performance is an important activity, not only for managers but also for all stakeholders who have an interest in the project's success in achieving social and environmental targets.

Participatory programs require adequate technical and financial support. Technical support during and after implementation is critical for success and maintaining the involvement of the community. Financial support may be required to offset losses in productivity and revenue associated with changing land use practices, or as an incentive to participants to adopt remedial measures.

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