

Evaluation of river basin management: the Mexican case

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Summary

Institutional arrangements for water resources management at river basin level were first introduced in Mexico as early as the 1940s, with the main objective of fostering water-based socio-economic development. Institutions were again established at river basin level in the 1990s to improve water management practices. Despite these efforts, results have been very limited with respect to efficient and equitable management. Today Mexico's regions are asking for a larger role in planning, managing and decision-making. There are signs that some states have made progress in planning and managing their water resources.

Résumé

Des dispositions institutionnelles pour gérer les ressources en eau au niveau des bassins hydrographiques ont été adoptées pour la première fois au Mexique dès les années 1940, avec pour principal objectif d'encourager le développement socio-économique fondé sur l'eau. Des institutions ont de nouveau été mises en place au niveau des bassins dans les années 1990 pour améliorer les méthodes de gestion de l'eau. Mais ces efforts pour instaurer une gestion efficace et équitable de l'eau ont donné des résultats très limités. Aujourd'hui, les régions mexicaines demandent à jouer un rôle plus important dans la planification, la gestion et le processus décisionnel. Il semblerait que certains Etats aient fait des progrès en matière de planification et de gestion de leurs ressources en eau.

Resumen

México cuenta con disposiciones institucionales para la gestión de recursos hídricos en cuencas hidrográficas desde la década de 1940, orientadas principalmente a promover el desarrollo socioeconómico con base en el agua. En la década de 1990 se volvió a llevar el tema de las cuencas hidrográficas a las instituciones a fin de mejorar las prácticas de gestión de recursos hídricos. A pesar de estos esfuerzos, los resultados han sido insuficientes en lo que respecta a la gestión efectiva y equitativa. Actualmente, las regiones del país demandan una mayor participación en la planificación, la gestión y el proceso de toma de decisiones. Hay indicios de que algunos estados han mejorado la planificación y la gestión de sus recursos hídricos.

Developing countries all over the world have instituted a wide range of environmental and social reforms in the last decades, often in response to international pressures from donor governments, multilateral and bilateral aid agencies and activist NGOs. During the early 1990s, the focus of the portfolio of World Bank loans shifted from infrastructural development, which was prevalent in the 1980s, to anti-poverty and environmental projects. At present, the Bank continues with its agenda on poverty alleviation, stressing the roles of markets, institutions and societies.

The shift in the policies of the World Bank and the regional development banks in the water sector were to some extent a reflection of the popularity of concepts like sustainable development, integrated water resources management and integrated river basin management. Even though these concepts have become popular globally, their operationalization has been very difficult.

Integrated management of water resources has included the formulation of river basin management units as a means to decentralization. River

basin authorities have been expected to plan and act in response to specific regional needs, promote the formulation of specific strategies and actions for efficient use of water resources to improve the lifestyles of the local population, and simultaneously protect the environment. River basin authorities have also been expected to consider regional, political, economic, social and environmental issues within the overall context of integrated water resources management (Dourojeanni, 2005).

During the 1950s and 1960s, national policies in some Latin American countries favoured a regional planning approach, with the objective of creating development poles that would ease the pressure on the highly centralized urban and industrial centres. Some countries focused their attention on the river basins as possible management units for water resources development, trying to imitate the achievements of the Tennessee Valley Authority (TVA) in the United States. Later, in the 1990s, the general concept re-emerged, with wider acceptance than before, when the interest in river basin organizations became widespread not only in Latin America but

also in many other parts of the world. French and British experience was noted, and authorities at river basin level were established in most Latin American countries.

Several Latin American countries have developed institutional frameworks to manage water resources at the regional level. Bilateral and multilateral commissions have been established in the region, as well as networks such as the Latin American Technical Cooperation Network on Watershed Management, the Latin American Network for Basin Organizations and the Caribbean Network on Upper Watershed Management. In terms of legislation, only Brazil and Mexico have water laws that promote river basins as units for water resources management.

While integrated river basin management has become a popular paradigm in Latin America, an objective analysis will indicate that countries have generally failed to use this concept to increase the efficiency of water management in the region on a sustained basis. Analysis of the Mexican experience will show that implementation of this concept has also not been successful.

River basin commissions

In Mexico in the 20th century, economic and social goals at the national level predetermined what were expected to be the most appropriate policies and institutions to cover the needs of the population and encourage national and local economic growth, taking into consideration the environmental capacities of the country's several regions.

It was towards the end of the 1940s that Mexico embarked on large-scale, water-based integrated development programmes for the arid plains of the north and the tropical areas in the east and southeast. The then administration (1946-1952) focused on water use for areas' integrated development, with the main emphasis on tropical areas. It was felt that the tropics were backward areas where "everything had to be done". There was enormous optimism, in the sense that development of these regions was a real possibility because of the availability of untapped natural resources, mainly water. Water was recognized as an engine to trigger integrated development of different regions, through which the quality of life of the local populations would be improved over both the short and long terms and the economic growth of the country would accelerate.

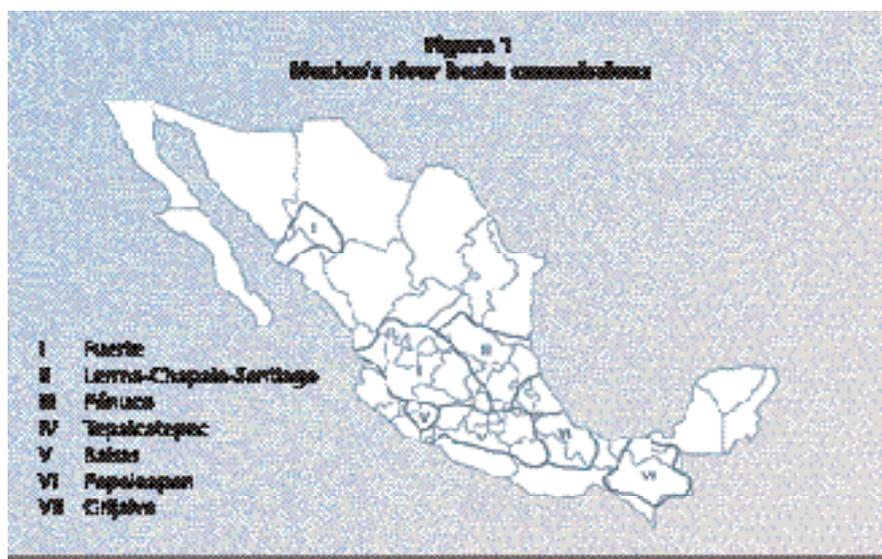
Specific river basins were selected where agricultural (including agro-industries at the com-

mercial level), forestry and industrial development related activities could be encouraged. A main objective was also to settle the different regions with populations from the central part of the country, where not enough agricultural land was available. People were encouraged to migrate to tropical areas, thus providing the labour necessary for the development of the regions. The river basins selected had plentiful natural resources, but the people lived in extreme poverty, with acute health problems and with inadequate social and support services in the sectors of health, education, communication or transportation.

To implement the water-based development plans, a strong institution responsible for water management at the central level was established, the Ministry of Water Resources. To coordinate the activities that would be carried out in the several basins, the river basin commissions were created as the country's first semi-autonomous, multi-purpose implementing agencies. Both implementing and planning agencies were created at the river basin level. The executing agencies included the Papaloapan and the Tepalcatepec River Basin Commissions (1947), the Fuerte River Basin Commission (1951) and the Grijalva River Basin Commission (1952). To include larger areas within the integrated development programmes, the Tepalcatepec Commission was wound up in 1960 and the Balsas River Basin Commission, which covered a much larger area, was created the same year. Under the leadership of the Ministry of Water Resources, the following ministries participated in the development of the river basins: Ministry of the Interior, Ministry of Finance and Public Credit, Naval Ministry, Ministry of Economic Issues, Ministry of Agriculture and Livestock, Ministry of Communications and Public Works, Ministry of Health, and Ministry of National Properties and Administrative Control.

In general, the tasks of the implementing commissions included, but were not limited to, planning, design, coordination and construction of irrigation projects, flood control programmes and hydropower generation. The commissions were also responsible for expenditure on urban and rural development and health and communication services (including navigation, ports, roads, trains, telegraph, telephone services, etc.). Planning agencies included the Lerma-Chapala-Santiago and the Pánuco Commissions (Figure 1).

When the river basin commissions were established, the prevailing policy emphasized the importance of integrated social and economic development of the regions based on the natural resources available, water being the main resource. The commissions had full authority to plan and execute programmes for integrated development under their direct supervision. They were also responsible for coordinating the activities of the several ministries within the river basin, for which they had limited authority but on which they were able to make inputs. Because the river basins included more than one state, the commissions were more powerful than the states and municipalities. Thus, even though the river basin commissions had the authority to plan and implement



the different tasks in coordination with the specific ministries, the fact that the commissions were above the states created tensions among the institutions over the years.

When the commissions were first established, they had full support from the Mexican president and were practically autonomous, with almost no budgetary limitations. However, this situation changed with time. Subsequent administrations had their own views as to what should be the roles, if any, of the river basin commissions within the overall economic development strategy of the country.

It should be noted that the performance of the different river basin commissions varied according to the socio-economic and political conditions of Mexico at specific times. These conditions depended, and still depend, on each six-year presidential mandate, and hence on the priorities and budgetary allocations of each administration. For example, in 1947 the central government considered that water resources in the several geographical areas could act as "engines" for development of the poorest regions of the country. Accordingly, it provided very significant financial support to the Ministry of Water Resources for the implementation of projects. However, subsequent administrations had different approaches, which were reflected in the activities authorized for the commissions and the budgets allocated. The achievements of the commissions were not always of their own making, since they depended mostly on decisions at the federal level on which they had limited or no control.

Performance of the river basin commissions

To understand the water-based integrated and regional development programmes and institutional arrangements, it is necessary to analyze the forces that provided the context for these programmes and institutions. It is important to note that water and agricultural policies have been intertwined for decades as part of the country's economic development strategies. Hence, any change in the water policies affected agricultural policies and vice versa.

In 1947, when the river basin commissions were

established, the economic policies of the country focused primarily upon large-scale agricultural and industrial development projects. Numerous large projects were constructed for different purposes, the most important of which were for irrigation and hydropower generation. Investment in irrigated agriculture was extensive. From 1947 to 1967, irrigated area increased by more than 1.2 million hectares. The expectation was that expansion of irrigated agriculture would bring agro-industrial development, increase exports and generate new employment opportunities.

However, a major constraint on policy implementation for all sectors, including those in water and agriculture, was that programmes and projects at both national and local levels had to be planned and implemented only within the six-year presidential administrations, which was not possible. Historically, with the election of a new president, even though he was from the same political party as his predecessors, the new administration invariably made radical changes in national priorities, policies and programmes. This has meant that the continuity of major development programmes and projects could seldom be assured beyond the six-year presidential term.

For example, the national policies during the 1946-52 presidential term were to invest heavily in the different regions, more with economic than social objectives. The administration that followed in 1952-58 faced high inflation rates and currency devaluations. Consequently, the total budgets of the different ministries, including the river basin commissions, were reduced in real terms. However, since there were large development projects under construction (mainly for irrigation and hydropower generation), the Ministry of Water Resources was still given some priority. Afterwards, support to the river basin commissions continued but the projects implemented became fewer. More importantly, the power and authority of the commissions were steadily reduced. The political perception was that the commissions clashed with the other ministries and with the state governments.

At the beginning of the 1960s, national exports declined, investment plans for the public sector

were changed, and the budget allocated to the agricultural sector was drastically reduced, impacting negatively on the performance of the river basin commissions. From 1964, the water policies of the country emphasized not so much the construction of water projects but the improvement and development of small irrigation projects, primarily because the objective was to increase social benefits. For water resources planning, several regions were established and water plans were formulated for the northwest, central and central-Gulf regions.

Later, in 1976, due to the importance of irrigation at the national level, the Ministry of Agriculture and Livestock and the Ministry of Water Resources were combined to form the Ministry of Agriculture and Water Resources. This new institutional arrangement, under which water planning, management and development activities were placed under different ministries, made coordination and execution of any water policy very difficult.

By 1982, water scarcity and water pollution had become serious problems at the national level. The new administration (1982-1988) prepared a new water policy by considering these constraints. Among the other problems it addressed were flood control, conflicts between water uses and users, and low efficiency of water use in all the sectors. While the need for construction of infrastructure was acknowledged, the main objectives were appropriate use of water, maintenance of all types of infrastructure, water pollution abatement through better administration of water resources, improved social and economic efficiency, technological improvements, and human resources development.

In an effort to decentralize, the Ministry of Agriculture and Water Resources delegated activities to its offices in the states and established regional coordinating agencies to improve the integrated management of water at the river basin level. Since the new water policy emphasized the management of water resources at the regional level, it was decided that the offices of the Ministry at the state level would take over the responsibilities of the river basin commissions, including further planning, management and development of water resources, and that the river basin commissions should disappear. It was decided that plans for the use of water resources, developed by the authorities at the municipal, state and federal levels, would be based on the hydrologic basin, but taking into consideration the development trends in each region.

During the years the commissions acted as executing agencies, they made determined attempts to develop the several basins and regions. However, while the activities carried out by the river basin commissions had beneficial impacts on the overall development of the country, their programmes and projects did not achieve their objectives at the regional levels. This is because an increase in irrigated area did not necessarily increase agricultural production and thus improve the quality of life of the local populations. Investment in social issues, and provision of credit and technical assistance, are equally important factors to ensure the long-term success of any agricultural development project.

An important issue during the period in which the commissions were functional, as well as at present, is that the river basin commissions, being semi-autonomous institutions, were coordinating entities for the national funds at the regional level. The commissions were active in several states, where they were able to coordinate the efforts of the several ministries to improve the social conditions of the regions. This task was especially challenging since it depended on the political will of the parties and required considerable commitments from all the parties, which was, and continues to be, a most difficult task.

Concluding remarks

The overall objective of the river basin commissions was to promote economic and social growth in the appropriate regions, which was expected to reduce prevailing inequalities among and within the regions. Initially, this was expected to be achieved through infrastructural development and settlement programmes, which in turn were supposed to trigger agricultural development, hydropower generation, industrial investment, employment generation and higher incomes for the local populations.

Establishment of the river basin commissions was a national effort to use water to develop the regions. While the programmes implemented by the commissions may have had some beneficial impacts on the country's overall development, they basically seem to have failed to reduce regional inequalities and alleviate poverty. Decision-making failed to realize that an increase in irrigated area *per se* was not sufficient to alleviate poverty and improve the quality of life of the local people. Important issues like investments in social services, provision of credit, technical assistance, participation of stakeholders and capacity building were not adequately considered, even though they are absolutely essential to ensure the long-term success of any development project.

In terms of the performance of the existing institutions for river basin management so far, it has to be concluded that they have basically not achieved efficient management of water resources at the basin level. At best, they have had minor impacts in improving water management practices, which means that fundamental institutional realignments are necessary if the present basin councils are to become successful organizations to manage water regionally.

Regrettably, no comprehensive and objective evaluations have been made of the viability of such institutions, the extent to which they have fulfilled their objectives and their overall societal impacts, both positive and negative. The absence of such assessments has meant that appropriate lessons have not been learned from their failures, and/or sub-optimal performance, and hence practices have not improved.

While demand for water for various uses has increased significantly in Mexico in recent decades, management practices and capacities have improved only slowly and incrementally. Consequently, the country's water problems, in terms of quantity, quality and management, have

become more serious and complex than ever before in history. Demand from different uses and users is increasing rapidly, but the technical and managerial expertise and financial resources of the concerned institutions are growing only incrementally. Unless these trends are reversed, the water situation of the country is unlikely to get better in the foreseeable future. Not surprisingly, the OECD (2004) has concluded that "water use in Mexico is on an unsustainable path."

Furthermore, in spite of efforts at decentralization, the real authority to plan and manage water resources continues to be vested in one single institution at the central level, which has been unable thus far to respond successfully and sensitively to the escalating needs of the sector and of the different regions of the country. For all practical purposes, it has been unwilling to decentralize appropriate decision-making powers, investment funds and technical and managerial resources.

Fortunately, however, the country as a whole is changing. The regions are asking for a greater role in planning, managing and decision-making, not only in the area of water but in other sectors as well. There are positive and encouraging indications that some states are making good and commendable progress in planning and managing their water resources. States are realizing that water is an important resource, and that its timely and proper development and management would affect the lives of the people and their quality of life in various ways.

References

- Barkin, D. and T. King (1986) *Economic regional development. Approach by river basins in Mexico*. Siglo XXI editors, 5th edition, Mexico.
- Biswas, A.K., O. Varis and C. Tortajada (eds.) (2005) *Integrated Water Resources Management in South and South/East Asia*, Oxford University Press, Delhi.
- Biswas, A. K., O. Unver and C. Tortajada (eds.) (2004) *Water as a Focus for Regional Development*, Oxford University Press, Delhi.
- Dourojeanni, A. (2005) River basin management as a way to sustainable development in Latin America. In: A.K. Biswas and C. Tortajada (eds.), *Appraising Sustainable Development. Water Management and Environmental Challenges*, Oxford University Press, Delhi.
- Estrada, V. (2003) Management of river basins in Mexico. The Papaloapan Commission, 1947-1985. In: Tortajada, C., and N. Contreras-Moreno, 2005, *Institutions for Water Management in Mexico*.
- OECD (2004) *Economic Surveys 2002-2003 on Mexico*, Organisation for Economic Co-operation and Development, Paris.
- Tortajada, C., V. Guerrero and R. Sandoval (eds.) (2004) *Towards a New Water Management in Mexico: Challenges and Alternatives*, Porrúa, Mexico (in Spanish).