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Water Governance with Equity: Is Decentralisation the Answer? Decentralisation of the Water Sector in Mexico and Intercomparison with Practices from Turkey and Brazil

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**WATER GOVERNANCE WITH EQUITY –
IS DECENTRALISATION THE ANSWER?**

**Decentralisation of the Water Sector in Mexico and
Intercomparison with Practices from Turkey and Brazil**

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I. INTRODUCTION

The concept of governance has permeated the national and international development discourses from the early 1980s. Its emergence can be traced at the country level to a disgruntlement with the state-dominated models for economic and social development that were prevalent throughout the socialist bloc and most of the Third World countries in the 1950s, 1960s, and 1970s (Weiss, 2000).

With the increasing complexity of the current political, economic, social, environmental and institutional issues which affect all societies, governance is often regarded as an umbrella concept that considers multifaceted processes where the societal goals are pursued with the interactions of all the interested actors, in all specific fields of development through the promotion of dialogues in terms of decision-making and participation of multiple actors. A fundamental issue that is still to be resolved, however, is how this multi-stakeholder participation in all decision-making processes can be carried out cost-effectively and in a timely manner so that the results are not only near optimal but also socially acceptable.

It is important to note that governance is not synonymous with government. It is instead a complex process that considers, *inter alia*, multi-level participation, beyond the state, where decision-making does not only include public institutions, but also private sector, non-governmental organisations, and the society in general. Good governance requires the presence of transparency and accountability from all the concerned parties.

Because of its complexity, good governance does not just appear. It is the culmination of a multifaceted long-term process that has to be carefully planned and nurtured. For good governance to develop, overall conditions and general environment must be appropriate, parties concerned should be amenable to collective decision-making, effective and functional institutions need to be developed, and policy, legal and political frameworks should be suitable to the goals that are being pursued.

Governance within the context of water resources management has not been an exception to the overall above global trend in the sense that it has to be a culmination of a multi-stakeholder work and participation processes. While as a concept an operational and implementable definition still has to be agreed upon, what is a fact is that there is an increasing recognition of the importance of adding more voices, responsibilities, transparency and accountability to the formal and informal organisations associated with water management as a whole. These requirements pertain not only to the governments, but also to the private sector, non-governmental organisations, and all other civil society-related groups.

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In general, it is accepted that ethical issues such as responsibility, accountability, transparency, equity and fairness are fundamental requirements for good governance. However, these issues add to the complexity of the existing unresolved discussions of non-functional water institutions and laws, lack of proper public participation and overall inefficiency in the water sectors of most developing countries. Thus, for water governance to be a long-lasting strategy or paradigm, not only it needs to be defined specifically in the context of the water sector, but also it is essential that strategies are formulated and practical steps are taken to operationalise its definition, which can then be demonstrated as having perceptibly improved existing water management practices and processes.

This paper analyses the results of the main attempts to decentralise the water sector in Mexico as part of the governance system of the country. It discusses if decentralisation in the water sector, as it has been carried out, has produced convergence between the demands of the users and/or citizens, and the allocation of the resources available; or if it has widened the gap, reduced the accountability of the stakeholders, and increased tensions between uses and users of water.

The case studies include the transfer of irrigation districts and the management of water resources at the river basin level. The impacts of these two efforts in terms of improvement of existing water management practices and processes will be addressed, as well as what have been the results in terms of participation of the interested parties.

Finally, since Mexico is only one of the several countries which have undergone decentralisation programmes in the water sector, such as transfer of irrigation districts and water management at the river basin level, a comparative analysis is being provided with Turkey in terms of transfer of irrigation districts and with Brazil in the case of water management at the river basin level.

II. DECENTRALISATION OF THE WATER SECTOR IN MEXICO

Throughout its history, the political system in Mexico has always been highly centralised. From the 1980s, however, a series of economic crises and internal politics have resulted in an increasing pressure to shift the balance of power from the federal government to the state and municipal governments.

As a result of the long-lasting economic crises, the federal administration has not been able to fund all its programmes, passing some of them to the governments at the state and the municipal levels. This approach solved mainly the problems related to diminishing budgetary resources and reducing the burden on the national budget. The reactions of the governments at the subnational levels have not always been encouraging, since many of these entities have been to take over the responsibilities, often because of lack of resources. This development has meant that much of the control is still retained by the central government.

Mexico is not the only country where decentralisation is being promoted for different reasons. In recent years, many developing countries have been attempting to combat problems of poor public sector efficiency by decentralising functions and responsibilities from the central governments to lower levels of the public sector. Hutchinson and LaFond (2004) note a survey conducted in 1994, which found that 67 of 75 developing countries with populations higher than 5 million had embarked upon some form of decentralisation.

In Mexico, some of the attempts to decentralise the different sectors have included the overhaul of the sales tax and the introduction of the National Value Added Tax in 1980, and the National Agreement to Modernise Basic Education in 1992. This last reform was not a decentralisation process but more of a deconcentration process⁴, since the states received most of the education transfer fully earmarked including the detailed payroll. The deconcentration movement for the education sector set the precedent for the model that followed for other sectors such as health and water (Díaz-Cayeros et al., 2002; Hutchinson and La Fond, 2004).

Progress in the decentralisation of water and sanitation services has included the transfer of responsibilities from the federal government to the municipalities. At present, 118 out of 135 cities with populations of over 50,000 have autonomous water utilities. For a third of them, municipal governments set water tariffs, and for the rest, the state congress does so (OECD, 1998). However, so far, even though the services have been decentralised, the water utilities are neither self-sufficient, nor efficient, and neither are the services management properly. The reasons do not always depend on the water utilities themselves, but on the fact that many of them are often an important source of income

⁴ Decentralisation involves the transfer of responsibilities from a central government to lower levels of government or autonomous or semi-autonomous organisations. It can take many forms, depending upon the nature of the functions that are decentralised, extent of control over those functions by local governments, and type of institution to which responsibilities are transferred (Rondinelli et al., 1983, in Hutchinson and LaFond, 2004). Decentralisation can be carried out in different forms. Under deconcentration, the weakest form of decentralisation, it involves the transfer of authority and responsibility from the central government to agencies at the state and local levels, but still maintaining the responsibility for the policies. The central government thus provides services and carries out activities in different parts of the country by means of bodies that are hierarchically depend on it. Devolution, on the other hand, can be considered as a more authentic form of decentralisation since the authority on administrative issues is transferred to the subnational governments. Devolution is more likely to result into accountability and decision-making being closer to the affected constituencies, to provide more efficient intergovernmental checks and balances, and to encourage the proliferation of innovative policies on several levels. Finally, delegation involves the transfer of responsibilities from the central government to semi-autonomous entities operating independently or semi-independently from the government (Rondinelli et al., 1983; Rondinelli 1999; and Brinkerhoff and Leighton, 2002, in Hutchinson and LaFond, 2004).

for municipal governments (Rodríguez and Gallagher, 2006; Rodríguez-Briceño 2005; Díaz-Cayeros et al., 2002).

Fiscally speaking, it seems that the country still does not have the necessary institutional developments for a well-designed transfer system, or even redistribution of revenue sources which can ensure an efficient and equitable decentralised allocation of resources. Díaz-Cayeros et al. (2002) note that one the main problem has been that the state and municipal governments do not have clear jurisdictions over virtually any policy area, and that the mechanisms to hold either the federal government or the state and municipal governments accountable are very weak. This means that decentralisation processes have lacked a cohesive design and have not been able to implement a reliable strategy or produce credible results. In fact, the country still expects to see the benefits of decentralised administration of social services, since there has been little or no relation between decentralisation and higher coverage or quality of services.

The on-going decentralisation process in the agricultural sector, apart from the devolution of irrigation districts to users associations, the level of devolution to civil society organisations has been low. Rural development planning and design of strategic programmes basically remain the same after decentralisation at least, in the sense that the authority is in the hands of the federal government, with only coordination at the state level. The public sector also remains the main actor in irrigation-support services such as training, extension, research, credit and irrigation. The producer organisations or NGOs do not seem to play an important role at this level.

In terms of water resources, the apparent abundance of financial resources in the country during the late 1970s and early 1980s reinforced the notion that water could be supplied at any cost, even if the cost was not covered by the consumers who benefited from increasingly subsidised water services in the cities as well as in irrigated areas. However, the economic and financial crisis of the 1980s had a definite impact on water development. As the federal government faced serious budget constraints, most water investment programmes were reduced to a minimum, certainly far below of what was needed to meet increasing demands, not to mention the increasing shortfalls in the quality of the water services. Available financial resources for investment programmes were further reduced by increased federal subsidies for operating and maintaining water services in cities and irrigated areas. In addition, these subsidies were insufficient, which further contributed to the progressive deterioration of water infrastructure (Tortajada, 2001).

By 1982, water scarcity and water pollution had become serious problems at the national level, as a result of which, the then administration prepared a new water policy by considering these constraints. Among the several 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 (Tortajada and Contreras-Moreno, 2005).

In an effort to promote overall decentralisation in the water sector, 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. It was decided that “plans for the use of water resources, developed by the authorities at the municipal, state and federal levels, will be based on the hydrologic basin, but taking into consideration the development trends in each region.” (PRI/IEPES 1982, p 152).

The institutional and legal frameworks were also modified according to the new objectives of the administration. In 1989, the National Water Commission of Mexico (Originally CNA and now CONAGUA by its acronyms in Spanish) was created by a Presidential Decree as the sole Federal authority to deal with water management as an autonomous agency. Initially it was part of the Ministry of Agriculture and Water Resources. However, after the Earth Summit at Rio de Janeiro in

June 1992, CNA was moved from the earlier Agriculture and Water Resources Ministry to the Ministry of Environment, Natural Resources and Fisheries (SEMARNAP, 1997), now known as Ministry of Environment and Natural Resources (SEMARNAT). Even though institutionally CNA is part of SEMARNAT, for all practical purposes, it has continued to function as an independent agency.

The policy framework for water resources management in Mexico is defined by several laws. The main one is the Mexican Constitution (1917), which states that water resources of the country are national property. It stipulates that they are under the control of the Federal government. The Law on National Waters (1992), which was further modified in 2004, and the Federal Law on Water Excise Taxes set the regulatory, economic and social frameworks for water management. The Law of National Waters establishes the broad objectives for the development and implementation of the plans and the policies for water resources management. The responsibility for implementing the law has been assigned to CNA as the single federal authority responsible for water planning and management in the country. Furthermore, the Law for Ecological Balance and Environmental Protection (LGEEPA) defines the environmental regulations, and the General Health Act establishes the standards for drinking water.

The rapid transfer of large irrigation districts (3.2 million hectares in total) from the CNA to the users was initiated in 1990, and was largely completed, at least on paper, by 1994. Given that the irrigation sector is the main user of water, this process was of great significance and was keenly observed from within and outside Mexico. Water users were organised at the secondary canal level and in some cases federated at the primary canal level. However, with very few exceptions, they were not permitted to legally organise at the water resource level, i.e., the reservoir or basin level. This left operation and maintenance tasks the responsibility of the users, while the essential water allocation functions remained intact the responsibility of CNA (Rap *et al*, 2003 in Scott, 2006). Small surface water irrigation systems and some collective groundwater systems known as irrigation units continued under the management of the users but posed few issues for allocation at the water resource level (Scott, 2006; Silva-Ochoa, 2000; and Scott and Silva-Ochoa, 2001).

It was also during the 1990s that the groundwater overexploitation reached its maximum peak due to demands from the agricultural, urban, and industrial sectors. It is important to note that Mexico is the largest user of groundwater in Latin America having more than 100,000 large capacity pumps for agricultural use alone. As a response to the evident challenge to manage groundwater at the local level, the dual competing models of technical committees for groundwater and technical water committees (COTAS) were established and promoted by the CNA and the renegade Guanajuato state water commission, respectively. Neither model has seriously taken off as a sustainable, user-driven water resources management initiative. Yet, to the credit of the seriousness of Mexican river basin management efforts, COTAS do play a nascent role in the basin councils. A parallel development, invariably overlooked by water sector analysts, has been the adoption of the Energy Law for Agricultural Uses, which fixes energy pricing for the agricultural sector and which is already having a major impact on groundwater pumping (Scott *et al*, 2004; Scott and Shah, 2004).

In terms of urban water and wastewater management, another significant decentralisation process occurred with the transfer of potable water and sewerage management to municipal governments. This was unique in Mexico federal, state and municipal governmental structure, given that the states were largely bypassed. Water use fees that fell short of formal water rights were expected to be paid by municipalities to the federal government, but local water utilities were so much in debt that paying direct costs for staff salaries, equipment, etc., had proved difficult, a situation that continues to plague municipal water management up to now (Scott, 2006). In fact, even at present, one of the main problems of the water utilities has been that billing and collection efficiency rates are so low that utilities do not collect even half of the revenue due to them, and the rates charged to users do not cover routine maintenance, not to mention capital costs.

The above has been further complicated by political realities. In Mexico, as in most developing nations, appointment of utility managers is tied to local politics, meaning that management of the

utilities turns over every two years on an average, hardly time for anyone to undertake any long-term projects (Rodriguez and Gallager, 2006). Clearly, decentralising water and wastewater management to the municipalities has not solved main problems related to lack of efficiency in the water and wastewater supply subsector. In essence, decentralisation has proved to be only one part of a much bigger problem related to overall management, political will and lack of financial, human and technical resources.

III. DECENTRALISATION EFFORTS IN THE AGRICULTURAL SECTOR

The transfer of irrigation districts, also known as participatory irrigation management, has been implemented in many countries. The first examples of programmes to promote participatory irrigation management were observed in the United States in 1950s, France in the 1960s, and, during the 1980s and the 1990s, in many other countries such as Chile, Peru, Mexico, Brazil, Senegal, Sudan, Somali, Pakistan, India and Turkey.

In this section, both the experiences of Mexico and Turkey will be analysed in terms of what have been the impacts of the transfer of irrigation districts, as it is known in Mexico, and participatory irrigation management, as it is known in Turkey.

I) Mexican Experience: Transfer of Irrigation Districts

In Mexico, the federal government launched a decentralisation programme as part of its 1988-1994 National Development Plan and the 1990-1994 National Programme for the Modernization of the Agricultural Sector. In accordance with these two developments, especially the latter, a decision was taken to transfer responsibility for the operation, conservation and management of the irrigation districts to their agricultural users⁵. The aim was to increase the participation of the farmers in the management of the water infrastructure in order to ensure that it was put to good use, since deterioration of the infrastructure and deficiencies in the management of the districts had been identified as the main reasons behind existing deficiencies in the production of food and raw materials (Poder Ejecutivo Federal, 1991; León Duarte, 1995). With this as the background, the National Programme for the Decentralisation of Irrigation Districts was launched, with the National Water Commission (CNA) in charge of implementation. The programme was designed to make the CNA and the users share responsibilities, and achieve financial self-sufficiency in all of the 80 public irrigation systems (Espinosa de León and Trava Manzanilla, in Johnson, 1997).

When the programme was launched in 1990, the objective was to transfer responsibility for 20 districts covering a total area of 1.9 million hectares. On the basis of the results that were achieved, first a new group of six districts, then another 10, were added to make a total of 36 that covered 2.3 million hectares serving 307,979 users. This area accounted for 71 percent of the 3.3 million hectares of all the irrigation districts of the country (Ramírez Robles, 1995). The districts were chosen by means of an overall diagnostic of their characteristics, state of operation and conservation, as well as social, economic and technical factors. In general, the districts chosen were those where the conditions were most favourable for the success of the programme. This was not done by chance: the aim was to use the success of the early transfers as a means of convincing users from other districts of the benefits of the programme.

The legal framework for the decentralisation is the National Water Law whose provisions empower the federal authority not only to grant concessions to the nation's waters but also allows the transfer of the operation, conservation and management of the water infrastructure and, as a consequence, irrigation. It is important, however, to point out that the transfer of the irrigation districts began in 1990, two years before the National Water Law came into force. For the 1990-92 period, the transfers were carried out under the Federal Water Law. While the federal law did not explicitly provide for the transfer of irrigation districts (it dated from a time when the State was responsible for their management), the following articles were referred to in making the transfers:

- Article 73, which established the small-scale Irrigation Units for Rural Development that were granted water concessions for the provision of, among others, rural communities;

⁵ For a recent analysis of the socio-economic conditions prevailing in the agricultural sector in Mexico which resulted in the transfer of irrigation districts, see Garces-Restrepo and Silva-Ochoa, 2004.

- Article 77, which stated that each of the irrigation units should have a users' association that would take charge of management, operation and conservation; and,
- Article 81, which established that the Ministry for Water Resources (later the Ministry for Agriculture and Water Resources) should supervise the operation of the irrigation units.

Although an irrigation district is different from an irrigation unit⁶, legal analogy used was that the two are very closely related. Under Article 78, the federal authority was empowered to merge two or more irrigation units into a single irrigation district whenever it was considered necessary. Article 79, meanwhile, established that rules for the irrigation districts could be applied to the irrigation units (Ramírez-Robles, 1995). Given that it was all but impossible for users to acquire property rights to the infrastructure built by the government in the districts, the users, constituted as civil associations⁷, were granted analogous rights under the concepts of water concessions and permits.

Results of Transfer of Irrigation Districts

The transfer programme was formulated to encourage institutional changes, with the objective of converting public irrigation systems managed by the government into self-sufficient systems managed by the local users associations (Trava, in Johnson, 1997). Because the irrigation districts contained some of the country's most productive agricultural districts, the overall aim was to ensure that outputs were maintained by conserving the irrigation systems in good working order.

It was hoped that agricultural production would continue to increase over time, but it was not the main objective. Rather, the Mexican transfer system was designed to:

- ensure that the irrigation districts were sustainable,
- reduce the financial burden on the federal government,
- put the users in charge of operation and management,
- reduce the number of public-sector workers in the irrigation districts.

At first sight, the transfer of the irrigation districts would appear to have been a success. By the end of February 2000, the programme had transferred irrigation infrastructure covering 3.236 million hectares to 474,000 users, organised into 427 modules or civil associations. The area represents 95 percent of the intended target. Out of the current 82 irrigation districts in the country, 72 have been transferred completely to the users, 7 have been transferred partially, and 3 irrigation districts are still waiting to be transferred⁸ (Garcés-Restrepo and Silva-Ochoa, 2004).

The initial focus of the transfer of irrigation districts was on financial management, accounting, general administration, organisational issues and cost recovery. Additionally, irrigation planning and methods, improvement of efficiency and operation and maintenance of the districts were also covered. The need for training was considered by the government as an important component of the programme, since in most cases, the emerging water associations had almost no experience in the operation and maintenance of the districts.

The main impacts and constraints of the programme are reviewed next.

Financial aspects of funded-operation and maintenance

⁶ Irrigation unit is a small surface water irrigation systems and some collective groundwater irrigation systems.

⁷ In order to create the civil associations, irrigation districts are divided into irrigation units, or modules, in which the users become responsible of the operation, maintenance and administration of the secondary canals and drains, roads, and overall infrastructure within the module, as well as machinery.

⁸ In all cases, the partial transfers have been associated with specific organisational and administrative problems in the modules.

The programme was funded by the Project on Irrigation and Drainage Sector, with the support of the World Bank. The total project cost was \$1.245 billion, of which \$600 million were financed externally and \$645 internally.

The transfer programme was designed to ensure that the water users associations had sufficient financial resources to achieve self-sufficiency. This implied that water or irrigation tariffs had to be set at a level that would cover the costs of the operation, management and maintenance of each module. In addition, water tariffs had to be sufficient to meet the operation, management and maintenance costs of the main canals and sources. As modules became self-sufficient, the level of federal government subsidy was to be scaled down to zero. This requirement is clearly stipulated in the concession agreement signed by each association and the CNA.

All the modules that were transferred had a basic budget that aimed to achieve financial self-sufficiency. The budgets were agreed to over a long period of negotiations during which the amount proposed by the CNA was frequently cut back by the associations. For example, in the case of the 235,914-hectares Río Fuerte Irrigation District in Sinaloa, the CNA proposed a budget of around \$11.9 million, but the users agreed on only \$9.4 million. Table 1 shows examples of the basic budgets that were agreed to between the CNA and the modules in three irrigation districts. These budgets clearly specify the percentage of the irrigation tariffs that had to be paid to the CAN, and the proportion that could be retained by the module. The wide variations in water tariffs reflected differences in water availability, intensity of irrigation and the operating costs of individual irrigation districts.

Tabla 1. Basic budget for three irrigation modules (in dollars, at 1993 exchange rate)¹ for operation and maintenance expenses

| Name of the module and irrigation district | Surface (ha) | Secondary Canals | | Main Canals | | Headworks | | Expenses | Total Budget (1993 exchange rate) | | |
|--|--------------|------------------|---------|-------------|--------|-----------|--------|----------|-----------------------------------|---------|---------|
| | | Oper. | Main. | Oper. | Main. | Oper. | Main. | | AUA | CNA | Total |
| II-1 Module ² La Antigua Irrigation district | 10,000 | 54,677 | 118,132 | 23,433 | 44,323 | 18,519 | 15,379 | 114,319 | 287,127 | 101,655 | 388,782 |
| Module ³ Alto Río Lerma Irrigation district | 18,448 | 82,625 | 363,093 | 23,875 | 76,312 | 4,062 | 29,594 | 39,026 | 452,799 | 165,788 | 618,587 |
| V Module ⁴ Región Lagunera Irrigation district | 4,391 | 89,250 | 42,812 | 13,050 | 37,369 | 666 | 2,825 | 24,912 | 153,187 | 57,697 | 210,884 |

¹Exchange rate in 1993 was 3.2 "new" pesos per dollar.

²Calculated on an expected annual net volume of 162,825,000 m³, \$2.34/1,000 m³.

³Calculated on an expected annual net volume of 63,510,000 m³, \$9.74/1,000 m³.

⁴Calculated on an expected net volume of 46,200,000 m³, \$4.29/1,000 m³.

Source: Johnson, 1997.

On the basis of the basic budgets contained in the concession agreements of the transferred districts and necessary spending on the non-transferred system, Johnson (1997) estimated a total 1993 budget of \$190 million (609 million pesos) for the operation and maintenance of all of Mexico's irrigation districts. Given a total area of 3.2 million hectares, thus works out at approximately \$60 per hectare for the year. As can be seen from Table 3.3, some \$149 million (78 percent of the total) was paid by users in water tariffs. The transfer programme and subsequent tariff increases helped the irrigation districts to increase self-sufficiency from 37 percent in 1991 to 80 percent in 1994.

Studies of irrigation districts 017 Región Lagunera (Ramírez Robles, 1995), 011 Alto Río Lerma (Kloezen, 2000) and 075 Río Fuerte (Ramírez García, 2000) have shown that generally, the new arrangements have been effective in improving management and maintenance, covering fully costs of operation and maintenance from users' contributions (see Table 2). This has freed the CNA of a huge economic burden, providing it with sufficient resources to maintain and operate the major headworks and primary networks for which it remains responsible. In this sense, it can be concluded that the transfer of the irrigation districts has produced positive results.

Table 2. Financial self-sufficiency¹ of irrigation districts according to their geographical location (1993 dollars²)

| Region | Surface (ha) | Normal Budget (thousand dollars) | For CNA | Charges to the Users of the Irrigation Districts (thousand dollars) | Deficit | Self-sufficiency (%) |
|---------------------------------|--------------|----------------------------------|---------|---|---------|----------------------|
| Northwest, transferred | 988,248 | 44,868 | 9,801 | 35,067 | 0 | 100.0 |
| Northwest | 501,670 | 75,618 | 8,842 | 46,811 | 19,965 | 73.6 |
| North, transferred | 87,158 | 3,819 | 1,453 | 2,366 | 0 | 100.0 |
| North | 229,944 | 9,450 | 3,183 | 3,045 | 3,221 | 65.9 |
| Northeast, transferred | 128,668 | 5,110 | 1,743 | 3,367 | 0 | 100.0 |
| Noreasth | 435,955 | 16,038 | 6,672 | 1,932 | 7,435 | 53.6 |
| Lerma-Balsas, transferred | 144,370 | 5,345 | 1,345 | 4,000 | 0 | 100.0 |
| Lerma-Balsas | 395,006 | 48,701 | 4,792 | 3,332 | 9,327 | 46.6 |
| Valle de México, transferred | 25,018 | 457 | 125 | 323 | 0 | 100.0 |
| Valle de México | 160,599 | 6,246 | 1,496 | 609 | 4,141 | 33.7 |
| Southeast, transferred | 16,028 | 1,303 | 242 | 1,124 | 0 | 100.0 |
| Southeast | 79,176 | 4,775 | 406 | 777 | 3,592 | 24.7 |
| Total, transferred | 1,260,822 | 60,965 | 14,709 | 46,256 | 0 | 100 |
| Total, non-transferred | 1,931,218 | 129,516 | 25,269 | 88,010 | 41,506 | 32 |
| Total considering all districts | 3,192,040 | 190,481 | 39,978 | 148,975 | 41,506 | 78.2 |

¹ Financial self-sufficiency is defined as the percentage of total annual cost of irrigation O&M and administration that is financed locally by water users.

² Exchange rate in 1993 was 3.2 “new” pesos per dollar.

Source: Johnson (1997)

Impact on number of personnel working in irrigation districts

The transfer of the irrigation districts to the users had a major impact on the personnel who used to work in them. The CNA employees were re-hired if the modules considered them to be necessary and competent: otherwise, they were dismissed. In a majority of the irrigation districts, the new management decided that not all of those involved in the transfer could be re-hired. In other cases, workers were dismissed because they were considered to be incompetent or dishonest. The result was a reduction in the numbers of employees in the irrigation districts.

The case of the workers who belonged to strong trade unions was of particular interest. The modules had no wish to contract unionised workers because union activity had been one of the main problems that the irrigation systems faced when the CNA operated them. The end result of the process was a sharp reduction in the number of employees who had worked for the CNA in operation and maintenance. Between 1990 and mid-1994, some 42 percent of such workers were either pensioned off or dismissed. The cuts were particularly severe in the case of CNA blue-collar personnel, though the number of office workers was also reduced in the districts.

Table 3. CNA staff before and after the transfer

| Region | No. of staff before the transfer | No. of staff after the transfer | No. of staff retired or who was fired |
|------------------|----------------------------------|---------------------------------|---------------------------------------|
| Northwest | 3,467 | 1,023 | 2,440 |
| North-Centre | 1,881 | 525 | 1,356 |
| Northeast | 423 | 137 | 286 |
| Lerma-Balsas | 1,587 | 363 | 1,224 |
| Valley of Mexico | 313 | 80 | 233 |

| | | | |
|-----------|-------|-------|-------|
| Southeast | 137 | 16 | 121 |
| Total | 7,808 | 2,134 | 5,660 |

Source: Adapted from Johnson, 1997.

In many cases, the modules contracted qualified personnel at the level of irrigation sections, so that the channel-man or section chief had sufficient training not only to service the requirements assigned to each user but also to fulfil other objectives such as applying cutting-edge irrigation technology, and recording hydrometric and statistical information on computers that automatically provide the module's central offices with information on the termination of irrigation flows and when they should commence. At the same time, satellite technology has been used to update studies on salinity, water tables, and the productivity of the irrigation districts. (Ramírez García, 2000).

Impacts on water charges

In accordance with the policy of making the irrigation districts financially viable, there was a recognition that the users would have to pay the real costs of operation and maintenance. This implied much higher water charges for the farmers. Before the transfer, in 1990 farmers paid only between 10 and 37 percent of the real costs of operation and maintenance (Johnson, 1997; Ramírez García, 2000). Since transfer, irrigation tariffs have increased.

In the case of the Alto Rio Lerma irrigation district, two years before the transfer was implemented and in preparation for any eventuality, the agency raised the fees almost 400 percent, from \$5.90/ha to \$20.64/ha). However, after the transfer the modules could not keep up with inflation and the fees fell from \$17/ha in 1993 to \$8/ha in 1996 (Kloenzen et al., 1997). However, total income depends as much on the percentage of users who pay, as on the tariff itself. Because most modules insist on users paying before they receive only the water, collection rates of 100 percent have been achieved in many irrigation districts. Most of the transferred irrigation districts insist that users have to pay for the water they use before programming their next delivery with the channel-man or section chief. As a result, collection rates are about 100 percent in many modules. In a few modules, users pay a fixed tariff per season or per hectare. Where this formula is used, collection rates sometimes fall below 100 percent, though users usually have to pay outstanding debts before obtaining water for the next season or year.

In terms of tariff collection, the programme of transfers of irrigation districts has produced positive results. Thanks to the collection mechanisms established by the modules, tariff evasion has fallen practically to zero. The irrigation districts have reaped major benefits as a result: because of their ability to charge the tariffs they set, they are able to make adequate provision for operation and maintenance, for which they now are solely responsible.

Maintenance of infrastructure for irrigation

The transfer programme in Mexico had its origin because of the concern over the long-term ability to sustain the irrigation systems. The concern was sparked by the 1982 financial crisis of the country, as a result of which the government was forced to postpone a major part of necessary maintenance due to financial concerns.

Early in 1990, because the transfer programme had been launched, the irrigation budget was set at \$109 million (225.6 million pesos at the then year rate of exchange). Users' contributions amounted to \$40.4 million, while the government provided \$31 million for operation and maintenance and \$37.3 million for the wages and salaries of personnel. This amounted to \$42 million less than the approximately \$150 million needed for the operation and maintenance of the 3.2 million hectares irrigated by the public sector. About \$35 million of the \$42 million was added to the maintenance backlog (World Bank, in Johnson, 1997). In 1991, the maintenance budget was estimated at \$158 million (402 million pesos), while \$90 million more was needed. In 1991, the budget was set at \$158

million, and \$90 million was needed for maintenance. As noted earlier, the budget was set at \$190 million.

In contrast with 1990, the irrigation tariffs paid by the users in 1993 totalled \$163 million, and then \$170 million the following year. Funds supplied by the users have been used to operate the systems and, in particular, to help clear the maintenance backlog. The district administrations have cleared up part of the backlog in canals and drainage where, in many cases, no maintenance had been carried out for more than 10 years (Ramos Valdés, 1996).

The irrigation tariffs are sufficient to cover the costs of operation and maintenance and, in some cases, clear a small percentage of the maintenance backlog. Including the entire maintenance backlog and other necessary rehabilitation, the required investment was estimated at some \$559 million, the equivalent of \$186 per hectare. Assuming an average tariff of \$40/hectare and spreading the \$186 over five years (neglecting any interest payments), the irrigation tariffs would have almost doubled to \$78/hectare, a fairly high rate that could prove uneconomical for some farmers, especially those who grew beans and other grains (Johnson, 1997).

The actual cost of O&M and administration of the transferred districts in 2000 were reported to be approximately \$134 million. With an average of \$43/ha, the farmers contribute with 72% of the cost and the federal government with the balance of 28% (CNA, 2000 in Garcés-Restrepo and Silva-Ochoa, 2004). Before the transfer, the contribution of the federal government was 85% and that of the users was 15%.

Concentration of productive resources

Accumulation of land and water has been made possible by the changes in the Constitution that allowed small landholders under the *ejido* system of common ownership to sell their land or rent it out, and by the National Water Law, which permits the sale of water rights. After the reform, some researchers expressed concern that it would lead to a concentration of landholding that could have a negative social impact on small farmers (Torregrossa, 1994). In 1991, structural heterogeneity was clearly identifiable in the irrigation districts, as was a tendency towards the concentration of productive resources.

A poll carried out in 1992 to estimate the capacity of a district's farmers to take part in the Programme for Development of Smallholdings, the process of concentration of productive land was evident. The highest stratum of farmers was beginning to control 51.1 percent of the total area, while the lowest stratum tended to disappear.

The results of the poll carried out in July 1999 showed a reduction in the number of production units of two hectares or less and those that were more than 20 hectares. Meanwhile, the middle strata held their own, though it can be inferred that they have added to their land under production through a series of strategies (Vargas-Velásquez y Romero-Pérez, 2001). In the La Laguna region of the northern state of Coahuila, more than 30 percent of smallholders under the *ejido* system had leased their water rights to others during 1995 (Johnson, 1997).

In addition, the expansion of agro-industries over the last decade has imposed a tendency towards contract farming. This process has changed the production strategies of the users, to the apparent benefit of the middle stratum of farmers. The contracts they sign with the agro-industrial transnational companies stipulate the technological package that has to be used for production (seed type, irrigation cycles, water quality, type of fertilisers and herbicides, among others). The lowest stratum of farmers are unable to participate because of the lack of technical capacity to meet the conditions of the contracts. As a result, they frequently have given up farming.

A series of strategies have been devised through which parcels of land are aggregated for agro-industrial production, but without any change in land ownership. Since purchasing land would tie up

capital, the accumulation of land for agro-industrial purposes has been achieved by such indirect means as leasing or the development of control over the farmers through the marketing of their products, or by contract farming (Vargas-Velásquez, 2000). While this can be of benefit to small farmers as they are introduced to profitable economic activity, the danger lies in the absence of any interest in conservation of land and water, since these elements are not considered to be a part of agro-industry's assets.

Not only has there been concentration of productive resources, but in a parallel fashion of information. According to Vargas-Velásquez and Romero-Pérez (2001), farmers with less than 10 hectares are least likely to know the representatives of their modules or how their leaders are chosen. They are also less likely to vote in elections of leaders. The larger the landholding, the greater the information-base of the farmers, and the more they know about the election process.

This leads to the hypothesis that farmers who are wealthier and have access to information and agro-industrial markets are more involved in the management of the irrigation modules, as part of a strategy to increase control over production inputs. These are the types of farmer who are taking on leadership posts in the users' associations of the irrigation module (Marañón and Wester, 2000; Vargas-Velásquez and Romero-Pérez, 2001).

Final Thoughts

Overall, the transfer programme has led to a sizeable increase in real terms in the funds available for operation and maintenance. In most cases, the funds have been raised by means of a change in the volumetric prices of water, as recommended by the CNA. The system works well because the users pay their water tariffs, then present their receipt to the channel-man who, in turn, schedules the water supply. Because users pay before receiving the water, the system reduces to a minimum the problems associated with trying to charge the farmers after delivery or at the end of the harvest.

However, the existing gap in the required cost-recovery through water charges prevents the users association from performing better in their maintenance programmes where the priorities are the operation, rehabilitation and modernisation of the infrastructure. In fact, the users associations depend and plan on a 100% revenue collection, which is not necessarily the situation. This makes their financial situation somewhat vulnerable.

The current tariff system has two shortcomings, both of which are related. First, only a few districts have emergency funds. Tariffs have been set at a level sufficient only to pay day-to-day costs. Modules live from hand to mouth, collecting the tariffs for an irrigation cycle just in time to pay the wages and other expenses of the following month. As a result, there is no flexibility in case of an emergency. Second, the idea of charging in accordance with volume seems logical, but it presupposes that the districts will always have water. The absence of some sort of basic tariff that has to be paid by all users, no matter whatever may be the volume supplied, means that whenever the module is left without water its income drops to zero. In the absence of an emergency fund, it could become bankrupt in practical terms.

As a result of droughts, several modules have become bankrupt, or have been at the point of collapse, because they lacked sufficient water to raise the funds they needed to cover their basic operation costs. As a result, several modules have realised that they have to impose a basic tariff on all users (based, perhaps, on the size of each landholding) in conjunction with a volumetric system based on the actual amount of water supplied (or the area irrigated). Without such a dual system, the problems they faced during the previous drought will return yet again.

In terms of subsidies, while the transfer originally aimed to reduce government subsidies to zero, legal restrictions have meant that it has not always been possible to pay the CNA employees who still work in the districts from the tariffs that are charged. As a result, CNA employees who operate the water sources and the main canals, as well as management in the many CNA offices, continue to be paid

directly by the government. That means that the self-sufficiency budgets mentioned by the World Bank and the government are not self-sufficient at all because they fail to cover the costs of the CNA personnel whose income comes from funds supplied by the Finance Ministry. Subsidies thus remain, though at a much lower level than before the transfers, and the corresponding dependence on them makes the position of the districts vulnerable.

At the same time, the modernisation programmes of the districts continue to depend on investment by the federal and state governments. Progress is correspondingly slow because of the lack of funds. Because collection is the main objective of CNA, investments in general have been directed towards capacity increases and cost control (Bisher Alvarez, 1999). The viability of pressurised irrigation systems is demonstrable but, as Moreno Bañuelos (1999) points out, they require very substantial investments. For such investments to be achieved, higher-value crops would have to be introduced, the users would have to contribute, as would the federal and state governments with non-recoverable subsidies, while yet more subsidies would have to be obtained in the form of preferential interest rates from development banks. As a result, and because of the shortage of economic resources, the slow progress of modernisation is quite explicable.

The programme on the transfer of irrigation districts concluded at the end of 2000. According to (Garcés-Restrepo and Silva-Ochoa, 2004) some of the main lessons learnt include the importance of the political support at the highest level in the country; the importance of water legislation that defined property rights over water and provided new service arrangements with clear roles and responsibilities; the adequacy of incentives for farmers who initially were sceptical about the benefits of the programme; the institutional support; and the financial arrangements which even though still need to be improved, have provided the basis for keep the process going. Even though the results of the programme depend on the type of land tenure, the irrigated area and the cropping patterns of each district, overall, it shows a certain degree of success concerning the involvement of the water users and the basis for achieving self-sufficiency appears as a real possibility if users pursue fundamental issues such as continuous training, commercialisation, support services and improved financial management.

II) Turkish Experience: Participatory Irrigation Management⁹

In most irrigation schemes in Turkey, inefficient irrigation practices, poor management, operation and maintenance practices as well as poor training and extension activities resulted into serious problems including excessive water use, erosion, rising water table, salinisation, etc. The state budget had an increasing burden since it could collect only small amounts from the farmers as irrigation fees while large areas were brought under irrigation. With a shortage of staff, the General Directorate of State Hydraulic Works (DSI) found itself unable to meet the needs of the irrigated areas in terms of maintenance, rehabilitation and modernisation (available at <http://www.gap.gov.tr/Turkish/Tarim/wsm2.pdf>).

In Turkey, there are two governmental organizations that are responsible for constructing, managing and operating the irrigation and drainage schemes. These are:

1. General Directorate of State Hydraulic Works (DSI by its Turkish acronym), which is under the Ministry of Energy and Natural Resources, and is responsible for planning, development, and management of the irrigation infrastructure. In addition, the operation and management of the system and the water tariff are the duties of DSI.
2. General Directorate of Rural Services (GDRS), which was under the Prime Ministry, had the responsibility of on-farm development and for minor irrigation works (with discharge capacity of less than 500 l/s). GDRS was not responsible for operation and maintenance of the

⁹ This analysis was carried out by Dr. Sahnaz Tigret, Assistant Professor, Middle East Technical University, Ankara, Turkey.

irrigation schemes, but transferred them to water cooperatives after their construction. GDRS was abolished in 2004 and its duties have been transferred to the Ministry of Agriculture.

At present, 4.8 million ha of land are irrigated, out of which 2.8 million ha were developed by DSI. In addition, DSI and General Directorate of Rural Services have jointly developed 1.1 million ha. In addition, 0.9 million ha of land is developed by the farmers and other governmental or private organizations. Figure 1 shows irrigation developed by DSI over the years and Figure 2 shows the change in cropping patterns.

The area for irrigation (Fig. 1) includes the overall land but without roads, cemetery, houses, etc. (Svendsen, 2001). The irrigated area, on the other hand, is the land that is irrigated in specific years. The ratio of the irrigated area to the irrigation area has reached a maximum of 70 over the years, mainly because of lack of appropriate facilities and insufficient water available.

Surface irrigation, such as furrow, border, and flooding, has the largest share (94%) of the total irrigated area. The remaining area is irrigated by pressurized irrigation methods such as sprinklers and drips. Out of this amount, 200,000 ha are irrigated with sprinklers. DSI has also developed 80,000 ha of sprinkler irrigation and 11 000 ha of drip irrigation (DSI in Brief, 2005). DSI plans to develop 6.5 million ha by the year 2030.

Increase in production due to irrigation and selection of crops is in Table 1.

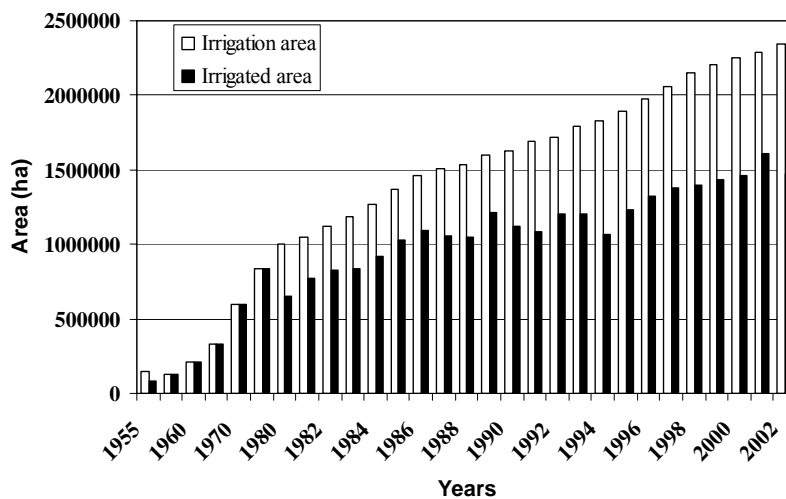


Figure 1. Irrigation area developed by DSI
(Source: Project and Construction Department, DSI)

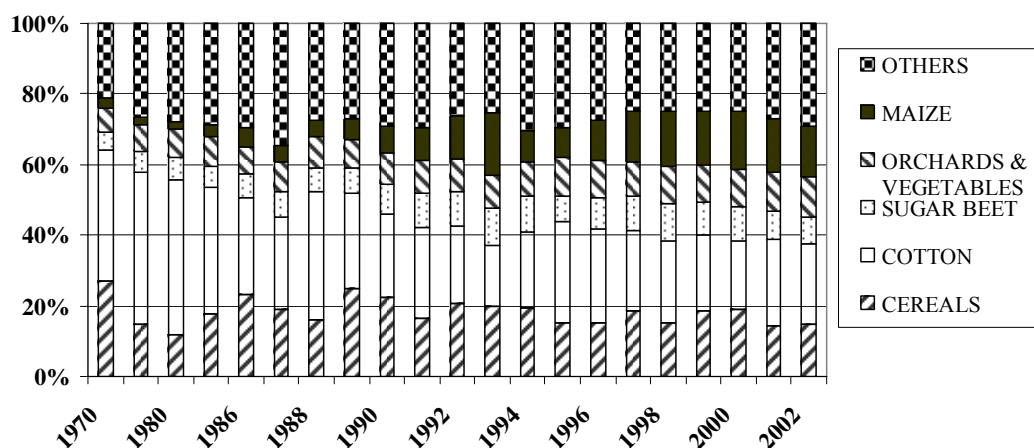


Figure 2. Cropping patterns
(Source: Operation and Maintenance Department, DSI)

Table 1. Increased production due to irrigation in selected schemes and for specific crops

| Crop type | Irrigation project | Production (kg/decare*) | | |
|------------|--------------------|-------------------------|-------|--------------|
| | | Irrigation | | Increase (%) |
| | | Before | After | |
| Cereal | Uluirmak | 160 | 360 | 125 |
| | Erzincan | 150 | 302 | 101 |
| | Cumra | 155 | 318 | 105 |
| Sugar beet | Tokat | 3 000 | 6 381 | 113 |
| | Eskisehir | 2 500 | 5 342 | 114 |
| Rice | Hayrabolu | 300 | 806 | 169 |
| | Altinyazi-Karasaz | 300 | 544 | 81 |
| Cotton | Salihli | 140 | 429 | 206 |
| | S. Urfa-Harran | 225 | 385 | 71 |
| | Seyhan | 95 | 559 | 488 |
| Maize | Van | 400 | 1 100 | 175 |
| | Igdir | 600 | 785 | 31 |
| Citrus | Alanya | 850 | 4 944 | 482 |
| | Aksu | 1 100 | 3 550 | 223 |
| | Mersin Bah | 2 100 | 4 143 | 98 |
| Fruits | Bursa | 1 077 | 2 100 | 95 |
| | Akçadag | 500 | 824 | 65 |
| | Yalvac | 2 500 | 3 836 | 53 |
| Vegetables | Bursa | 1 462 | 4 700 | 221 |
| | Mersin Bah | 1 570 | 2 047 | 30 |
| | Aksu | 1 074 | 3 750 | 249 |

*Note: 10 decare=1 ha

Source: DSI-ER, 2003.

Management of irrigation schemes

From 1954, DSI has had the legal responsibility to transfer its management duties to the publicly constructed irrigation schemes and local management. However, the initial policy of DSI was to transfer only small and isolated schemes, whose management was difficult. Until 1993, small schemes with a total area of about 62,000 ha, were gradually transferred to users. Local units, mostly villages, collaborated with DSI in the management of these types of schemes. DSI left the management activity to the village headmen (*muhtar*), with the approval of village assemblies (Svendsen and Nott, 1999), and the irrigation groups (IG) were established. DSI Directorate made a reduction of 20-40% in irrigation fees.

The Turkish government has been facing increasing difficulties in managing the rapidly growing irrigated areas: on average, 60,000-70,000 ha of irrigated land are added annually. Irrigation infrastructures, which have high investment costs, did not receive adequate maintenance from the farmers, mainly because of uncertainty of ownership (Boke, 1997). The farmers left the responsibility to the state, and consequently, the current operation and maintenance costs of the schemes have increased. Even though DSI was responsible for nearly 73% of the operation and maintenance costs (O & M) in terms of personnel, energy, fuel, transportation, etc., the collection rate of the water charges did not improve. A main reason was the low penalty for late payment of water charges. The penalty is 10%, and could only be applied once a year. Since inflation rates were very high during the past 20 years, the farmers preferred not to pay water charges on time. In addition, the collection of water charges is the responsibility of the Ministry of Finance, on which DSI had no control or say.

Table 2 shows several parameters related to irrigation between 1991 and 1997. As it can be observed, the charges (approved by the Council of Ministers in April each year) are sometimes lower than the value that it is proposed initially by DSI. The irrigation water charges per ha was only 1.5% or 1.6% of the production value. The highest collection rate was only 43%.

Table 2. Irrigation ratios and collection rates for DSI-managed systems

| Year | Estimated Area | Irrigation Ratio | O&M Charges | | Production value* | O&M Charges | | Ratio of Collection/ Assessment |
|------|----------------|------------------|-------------|----------|-------------------|-------------|----------|---------------------------------|
| | | | Proposed | Approved | | Proposed | Approved | |
| | (ha) | % | (\$/ha) | \$ | \$ | % | % | % |
| 1990 | 9100000 | 72.10 | 7.45 | 7.45 | 476.25 | 1.6 | 1.6 | 42 |
| 1991 | 8860000 | 70.00 | 8.06 | 8.06 | 529.61 | 1.5 | 1.5 | 36 |
| 1992 | 9130000 | 70.00 | 9.02 | 6.77 | 588.76 | 1.5 | 1.1 | 35 |
| 1993 | 9670000 | 72.00 | 7.76 | 7.76 | 656.05 | 1.2 | 1.2 | 39 |
| 1994 | 9605700 | 70.00 | 10.14 | 7.81 | 978.51 | 1.0 | 0.8 | 43 |
| 1995 | 6946000 | 70.00 | 10.55 | 10.55 | 859.00 | 1.2 | 1.2 | 43 |
| 1996 | 3261280 | 60.00 | 17.88 | 17.88 | 855.43 | 2.1 | 2.1 | 42 |
| 1997 | 2417940 | 56.10 | 14.09 | 9.44 | 1039.73 | 1.4 | 0.9 | 41 |

Source: Altinbilek et al., 2000

* Production value is per ha for specific years

Participatory irrigation management

In 1993, an accelerated transfer program (ATP) was initiated in four pilot areas: Izmir, Konya, Antalya and Adana, where irrigation groups had already participated in 40% of the irrigation activities and had worked efficiently (Svendsen and Nott, 1999).

The World Bank has supported the participatory irrigation water management in Turkey through the Participatory Privatization of Irrigation Management and Investment Project (PPIMIP). The project components included are operation and maintenance equipment, institutional strengthening and pilot rehabilitation and modernization schemes. A five-year, \$70 million programme was initiated in 1998 to support the water users organizations (WUOs) and related governmental institutions. This program enabled many WUOs to purchase maintenance equipment and vehicles for farm management. The total cost of machinery and equipments purchased was about \$33 million. Farmers covered 63% of the cost of the equipment while the state paid for the rest through the World Bank loan (Ozlu, 2004).

The objectives of the participatory irrigation management (PIM) were the following (Altinbilek et al., 2000):

1. Participation of users to increase the efficiency of O&M services through economical and technical measures.
2. Self-management. By law, farmers are now directly involved in the management. Instead of having an appointed manager, they have to elect the head and the board members of the Association. The elected board prepares an annual budget determines the unit price of water. The head of the association and the board members must consult with the farmers on this regard. At the water users association (WUA) assembly, which is hold 2-3 times each year, the board makes a presentation of its activities. If the performance of the board is found unsatisfactory, members may lose in the next election.
3. Decreasing O&M costs for the government. The O&M costs of the government decreases with PIM. The saved funds are then used to invest in new irrigation projects, or for other purposes by DSI.

The new system of management of secondary and tertiary canals by WUOs has meant more optimal use of water. Figure 3 shows irrigation transfers during 1975-2005. Figure 4 is the flow chart for the transfer mechanism. DSI initiates the transfer process. If irrigation scheme serves only a single village or single municipality, the transfer is made to the *muhtar* or the mayor. However, if a scheme covers more than one village or municipality, a WUA is formed in order to prevent conflicts between different villages or municipalities. Cooperatives were formed when schemes were developed with the GDRS support. These schemes were mostly for groundwater irrigation. In addition, limited number of irrigation schemes were transferred to universities and research institutes. Therefore, the term water users organizations (WUO) is used only to refer to these organizations.

Table 3 shows WUAs and their shares of irrigated areas. At present, WUA is the most important irrigation management institution, accounting for some 90% of the irrigated areas.

Table 3. Organizational Distribution of Transferred Irrigation Schemes

| | Number | Area (ha) | % |
|-------------------------|--------|-----------|-------|
| Village Authority | 220 | 36 869 | 1.96 |
| Municipality | 147 | 58 965 | 3.17 |
| Water User Associations | 330 | 1 686 104 | 90.6 |
| Cooperatives | 77 | 77 999 | 4.19 |
| Other | 4 | 1 032 | 0.5 |
| Total | 778 | 1 860 969 | 100.0 |

Source: Demir et al., 2005.

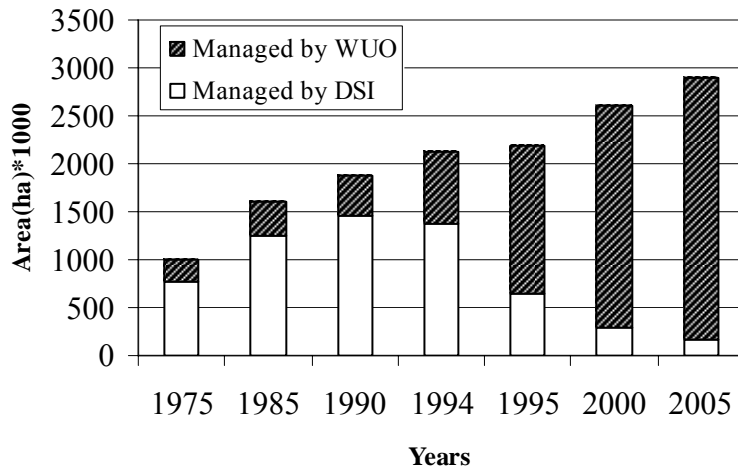
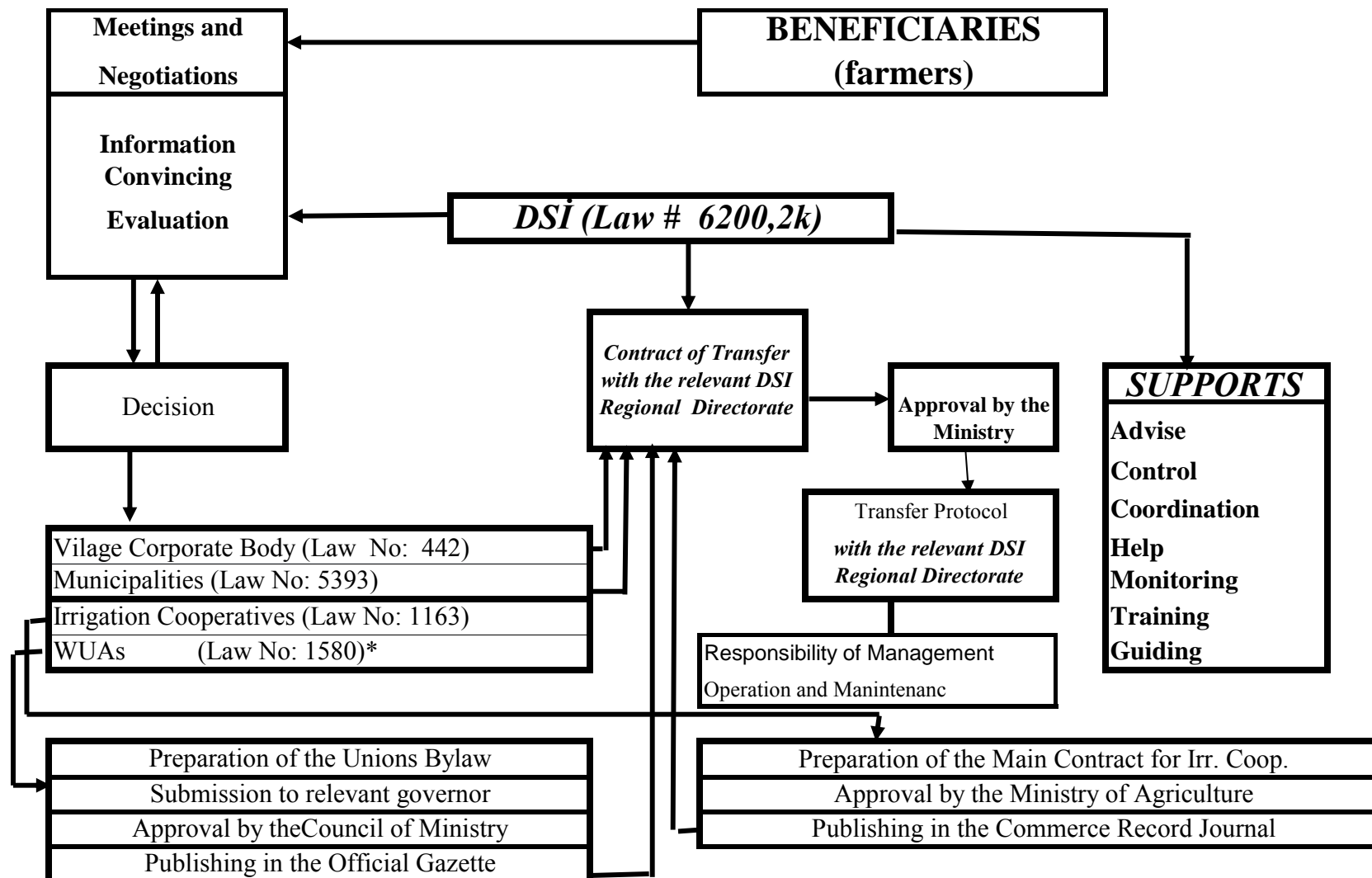


Figure 3. Progress in irrigation transfer in DSI-developed areas
(Source: Demir et al., 2005)

Irrigation transfer: important features

The transfer of irrigation systems to WUOs in Turkey differs from similar practices in other countries because of the following reasons (Altinbilek et al, 2000, Uskay, 2001):

- Transfers are voluntary.
- It uses multiple alternatives like WUAs, municipal- or village-based organizations, and cooperatives, based on the farmers' preferences and the sizes of the specific schemes.
- In order to avoid duplication of efforts and weakening users' responsibilities for managing the systems, the transfer of schemes are not restricted only to the tertiary units, or at the tail ends of the canals.
- The transfers are made according with the existing legislations.
- Due to legal constraints, it was not possible to transfer equipment and machinery from DSI to the WUOs. Accordingly, a loan from the World Bank was used to buy the necessary machinery.
- Before the transfer, DSI did not rehabilitate the irrigated areas. The farmers will be responsible for any future rehabilitation.
- DSI is providing free training programmes. The organizations are not profit-making. Most of the basic preparations for the accelerated transfer, including the initial training, were made in less than six months, while the transfers were being considered.
- DSI has the right to monitor the activities of WUOs, and interfere if any conflict or problem develops.



¹⁰ The law is changed on June 11, 2005 and new law is #5355.

Figure 4. Flowchart which indicates the transfer mechanism (Uskay, 2001)

Water tariffs in Turkey

Water pricing for irrigation is an important concern at present in many countries, including Turkey. National strategies may vary from one country to another. Many countries are now trying to recover at least the operation and maintenance costs. However, there are still many countries where irrigation water continues to be free.

Water pricing is a very complex, multi-dimensional, and multi-sectoral problem in most countries (Altinbilek et al., 2000). Financial, social, economical and political factors and governmental policies affect water pricing. In addition, priorities and preferences of countries dictate the focuses and directions of such policies. Many different factors affect water pricing (Boke, 1997). It has been recommended that water pricing should recover the capital cost. However, expensive investments have to be made to develop irrigation projects in regions where numerous farmers are poor. For small-scale irrigation schemes, water-pricing can be used to recover capital costs. However, this mostly is not possible for large-scale, capital-intensive projects. Concurrently, appropriate water charges are necessary to force farmers to conserve water, and consequently avoid salinity, erosion and other environment-related problems. In most developing countries, irrigation water charges continue to be low. The governments subsidize irrigation by transferring funds from other sources to ensure food security, which is considered to be a national priority. This is also the case for Turkey.

The methods used for pricing water include volumetric, area-based, charge per capita, benefit-based, charge per input, measured amount of water consumed, and some form of combination of the above factors.

Turkey considers various factors, like crops, seasons, locations, etc., into account to estimate the irrigation water price. However, water pricing in terms of operation, maintenance and management aspects of the irrigation schemes means recovering the costs of such services from the users. According to the Turkish legislations, water is a public good. Therefore, the authorities do not sell the water to the users at a price determined by cost estimations based on actual expenditures, but only try to recover the cost of transmission of water from the source to the fields. Thus, the main terminology used is “operation and maintenance charges” rather than “water pricing” or “pricing of water” (Altinbilek et al., 2000)

Two important considerations to estimate the level of water prices in Turkey are O&M expenditures, and irrigable areas. The O&M part of the water tariffs are estimated in accordance with the principles laid down in Article 28 of the DSI Law. According to this law, O&M charges can be estimated by dividing the total expenditure of the previous year by the surface area of the land that is expected to be irrigated. The area to be irrigated is estimated from the data obtained from the “Water User Information Form”, which also includes information on factors like cropping patterns and irrigation practices. The forms are collected from farmers before the start of the irrigation season (Boke, 1997).

Irrigation schemes are divided into two groups: gravity and pumped irrigation. They are then further subdivided according to the following criteria (Altinbilek et al. 2000):

- i) social factors like the location of schemes and conditions for irrigation development;
- ii) economic factors like crop type, price of crop, yield, market conditions, farmers’ ability to pay, etc.; and
- iii) Environmental factors like precipitation and temperature.

Five different prices are estimated, as shown in Table 4, for grains and cotton. The charges are established for each decare, and the lowest charge is for 0.1 decare.

Table 4. Irrigation Prices

| Group | Type of Irrigation | Regions | Tariffs in 2000 (\$/ha) | |
|-------|--------------------|------------------------------------|----------------------------|--------|
| | | | Grains | Cotton |
| I | Gravity | Eastern Anatolia | 0.67 | 2.00 |
| II | | Inner Regions | 0.89 | 2.67 |
| III | | Coastal Lines | 1.23 | 4.46 |
| IV | Pumping | Eastern Anatolia and Inner Regions | 2.23 | 6.68 |
| V | | Coastal Lines | 2.78 | 10.02 |

Source: DSI, I&R, 2000.

Each year, after approval of the tariff by the Council of the Ministers, DSI publishes annual water tariff regulations. While an operation and maintenance charge is applied to all irrigation schemes, investment charges are only used for some schemes which are listed in the annual tariff regulations. These charges are very low and are independent of the type of crop grown. It also lists special schemes to which discounts or surcharges are to be applied. Additional discounts and surcharges may be applied under certain conditions as noted below (Boke, 1997):

- If two crops are irrigated in the same piece of land in the same year, the second crop is subject to a 50% discount.
- Members may receive a discount of 12% or 16% on O&M rate, depending upon whether IG is responsible only for operation, or both operation and management. There is also a special provision for increasing this discount rate for special situations up to 20-25%.
- Farmers receive discount if there are serious crop losses due to droughts or floods.
- Discounts are available if DSI fails to supply water.
- If farmers pump run-off water from DSI schemes for sprinkler irrigation, the rate may be discounted by 35%. Drip irrigation receives a discount of 50%.
- Green houses may face a surcharge of 15-50%.

Water tariffs within the water users associations

By law, water pricing frameworks of WUAs are similar to those of DSI. The area and crop-based tariff method is mostly used for gravity irrigation schemes, and the volumetric method for pumped irrigation schemes. However, there are some differences in several issues such as calculation of expenditures, application of the tariff, and collection of charges (Altinbilek et al., 2000):

- Expenditures for a specific year are estimated by using a budget prepared before the irrigation season.
- The tariff is applied based on the conditions of a scheme and a region.
- Charges are collected and penalties are applied in the same year.

Monitoring and evaluation of water users organizations

DSI monitors the functioning of WUOs, who must provide the required information to DSI in accordance with the transfer protocol. In general, the performance of the transferred schemes have thus far been satisfactory. Equity in water distribution is maintained, and irrigated area is increased (Demir et al., 2005). The following sections present several issues related to the performance of WUOs.

Institutional Capacity

Table 5 and 6 show the professions and the educational backgrounds of the heads of the associations. Nearly half of the heads of associations are village headmen and mayors. This probably indicates that the participation of farmers is not enough. It should, however, be noted that both village headmen and mayors are elected as representatives in Turkey. Moreover, 17% of the heads of associations are graduates of universities or colleges, which is a remarkably high number.

Table 5. Professional status of heads of WUOs

| Professions of heads of associations | Number | % |
|--------------------------------------|--------|--------|
| Farmer | 138 | 43.67 |
| Village headman (Muhtar) | 85 | 26.90 |
| Mayor | 73 | 23.10 |
| Others | 20 | 6.33 |
| Total | 316 | 100.00 |

Source: Demir et al., 2005

Table 6. Educational status of heads of WUOs

| Education of heads of associations | Number | % |
|------------------------------------|--------|----|
| Elementary | 130 | 41 |
| Middle or high school | 136 | 42 |
| University or College | 64 | 17 |

Source: Demir et al., 2005

Currently, WUOs have 232 technical staff in 330 associations, and nearly 70% are agricultural engineers. However, there should be at least one agricultural engineer for each unit.

Operation and Maintenance Capacity

As noted earlier, the main motivation for transferring the schemes has been to reduce the economic burden of the state. In 2004, an average of 25 workers were employed per 10,000 ha. The corresponding figure for DSI in 1992 was 67.

In terms of maintenance activities, Table 7 shows those of DSI and the transferred schemes in 2003. There appears to be major maintenance requirements for the transferred schemes. Table 8 shows the reasons for non-irrigation both in the DSI and the transferred schemes. It indicates that WUO can develop appropriate capacities for maintenance activities but that they are behind DSI in terms of water infrastructure. Irrigation ratios and efficiencies are about 68 % and 40%, respectively.

Table 7. Maintenance activities, 2003

| | Total | DSI | Transferred |
|-----------------|------------|-----------|-------------|
| Main Canal | 4 078 656 | 1 249 311 | 2 829 345 |
| Secondary Canal | 1 740 624 | 459 028 | 1 281 596 |
| Tertiary Canal | 4 530 598 | 239 903 | 4 290 695 |
| Total | 10 349 878 | 1 948 242 | 8 401 636 |
| Drainage | 880 816 | 462 850 | 417 966 |

| | | | |
|-------------------|---------|--------|--------|
| Renewal of canals | 170 832 | 72 310 | 98 522 |
|-------------------|---------|--------|--------|

Source: DSI, Operation and Maintenance Department.

Table 8. Reasons for non-irrigation, 2002

| Organization | Inadequate water infrastructure | | Insufficient irrigation infrastructure | | Drainage-Related Problems | | | | Inadequate maintenance | |
|---------------------|---------------------------------|-----|--|-----|---------------------------|-----|----------|-----|------------------------|-----|
| | | | | | Groundwater | | Salinity | | | |
| | ha | % | ha | % | Ha | % | ha | % | ha | % |
| DSI | 1987.0 | 1.6 | 5919.0 | 4.8 | 2440.0 | 0.0 | 750.0 | 0.6 | 7556.0 | 6.1 |
| Transferred Schemes | 32693.0 | 6.0 | 33690.0 | 0.1 | 9275.0 | 0.0 | 17169.0 | 0.0 | 7165.0 | 0.0 |

Source: WASEMED, 2005.

| Organization | Topographic conditions | | Rainfed cropping | | Fallow | | Economic and social problems | | Other Reasons | | Total |
|--------------|------------------------|-----|------------------|------|---------|------|------------------------------|------|---------------|------|----------|
| | Ha | % | Ha | % | ha | % | ha | % | ha | % | |
| DSI | 4285.0 | 3.5 | 46364.0 | 37.6 | 20280.0 | 16.4 | 26196.0 | 21.2 | 7537.0 | 6.1 | 123314.0 |
| Transferred | 18545.0 | 0.0 | 144043.0 | 0.3 | 61604.0 | 0.1 | 115504.0 | 0.2 | 90629.0 | 17.0 | 530317.0 |

Source: WASEMED, 2005.

Financial Performance

Figure 5 shows the incomes and the expenses of WUOs from 1996. It is clear that the incomes of WUOs are always higher than their expenses. Figure 6 shows the incomes and the expenses in terms of different types of irrigation.

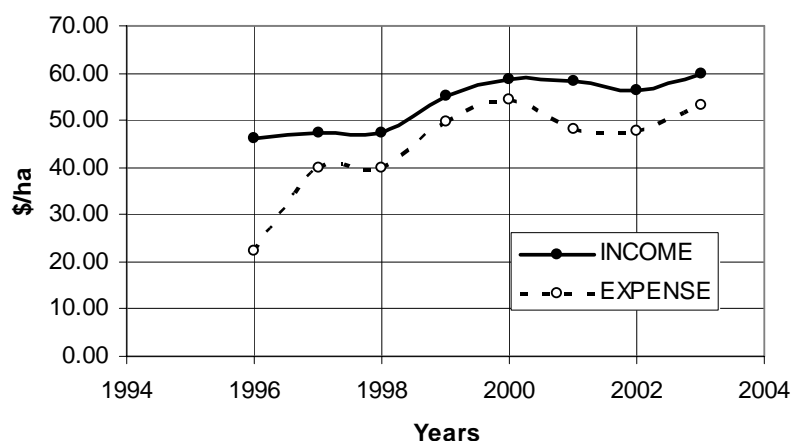


Figure 5. Incomes and expenses of WUOs
(Source: Demir et al., 2005)

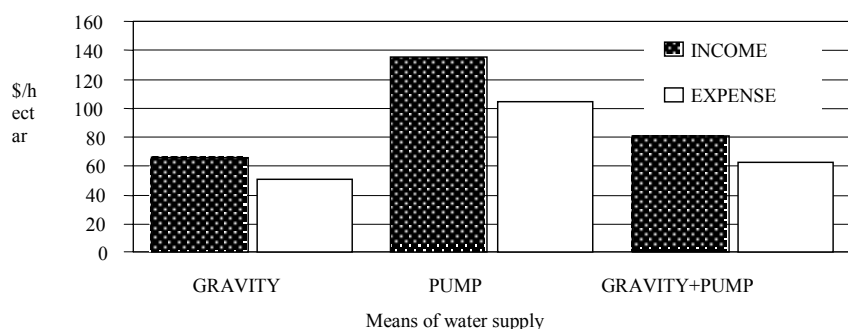


Figure 6. Incomes and Expenses of WUOs by types of irrigation
(Demir et al., 2005)

Table 9 presents a comparison between DSI and the transferred schemes with respect to irrigation fees for some selected crops. Irrigation fees have been lower than DSI values, but the collection rate has been much higher, around about 82%.

Table 9. Comparison of irrigation fees for some selected crops

| Crop Types | Gravity Irrigation (\$US/da) | | Pumped Irrigation (\$US/da) | |
|------------|------------------------------|-------|-----------------------------|-------|
| | DSI | TRANS | DSI | TRANS |
| Pulses | 6.56 | 4.19 | 19.96 | 6.77 |
| Sugar Beet | 20.26 | 9.21 | 64.28 | 23.93 |
| Cotton | 20.26 | 7.32 | 64.28 | 12.12 |
| Sunflower | 10.57 | 5.98 | 31.55 | 14.06 |
| Corn | 13.11 | 6.91 | 42.12 | 18.82 |
| Fruits | 20.26 | 8.17 | 64.28 | 27.78 |
| Citrus | 33.67 | 11.43 | 106.24 | 39.69 |
| Vegetables | 16.83 | 11.28 | 52.45 | 26.29 |

Source: Demir et al., 2005.

Energy consumption by WUOs has been lower than DSI-managed schemes. Energy consumption per hectare by DSI and WUOs schemes have been 364 kWh and 1307 kWh, respectively (Ozlu, 2004).

Gender Issues

Women in rural areas constitute a major work force. At present, nearly 70% of the women who work are in agricultural activities. In addition, between 1990 and 2000, percentage of women employed decreased from 34% to 28% in general, but increased from 49% to 49.2% in agriculture. Thus, there has been a slight increase in the percentage of women in agricultural labour force (Gunaydin, 2005). Further attention should be given to this slight change when constructing new infrastructure in rural areas. At present, limited information is available on the involvement of women in WUO administrative units, but probably, only few of them are involved. There are signs, however, that WUAs are hiring women agricultural engineer as general secretaries.

Transfer status at regional level

Table 10 shows the status of the transfers at the regional levels. In some regions, all the schemes have been transferred and. In some others, the proportion is around 40%, even though the number of such areas is rather small. In general, 96% of all the schemes have been transferred to WUOs throughout the country.

Irrigation Methods

Table 11 shows the irrigation methods used in DSI-managed and the transferred schemes. No discernable change can be noticed in the irrigation methods.

Table 11. Irrigation methods used by DSI and in transferred schemes

| Regions | DSI | | | | Transferred | | | |
|--------------|------------------------------|-----------------|------------------|-------------|------------------------------|----------------|------------------|-------------|
| | Total Irrigated Land (ha) | Surface (ha) | Sprinkler (%) | Drip (%) | Total Irrigated Land (ha) | Surface (%) | Sprinkler (%) | Drip (%) |
| Region I | 3143 | 38.18 | 61.8 | 0 | 26318 | 84.16 | 4.93 | 10.91 |
| Region II | | | 1.2 | | 75012 | 100 | 0 | 0 |
| Region III | 1586 | 98.8 | 0 | 0 | 22205 | 23.08 | 75.9 | 1.02 |
| Region IV | 5025 | 100 | 0 | 0 | 131893 | 87.49 | 12.51 | 0 |
| Region V | 4164 | 100 | 0 | 0 | 6454 | 100 | 0 | 0 |
| Region VI | 1044 | 52.87 | 47.13 | 47.13 | 256466 | 90.95 | 6.95 | 2.1 |
| Region VII | 352 | 100 | 0 | 0 | 42310 | 94.63 | 5.37 | 0 |
| Region VIII | 7789 | 100 | 0 | 0 | 13868 | 100 | 0 | 0 |
| Region IX | 15355 | 100 | 0 | 0 | 24557 | 100 | 0 | 0 |
| Region X | | | | | 19408 | 83.41 | 16.59 | 0 |
| Region XI | 1715 | 85.54 | 14.46 | 0 | 28048 | 78.97 | 21.03 | 0 |
| Region XII | 1709 | 88.53 | 11.47 | 0 | 41607 | 98.14 | 0.55 | 1.3 |
| Region XIII | 123 | 100 | 0 | 0 | 110925 | 93.76 | 6.24 | 0 |
| Region XV | 2230 | 100 | 0 | 0 | 8789 | 100 | 0 | 0 |
| Region XVII | 10575 | 100 | 0 | 0 | 23269 | 97.32 | 2.68 | 0 |
| Region XVIII | 8501 | 100 | 0 | 0 | 4281 | 100 | 0 | 0 |
| Region XIX | 1259 | 100 | 0 | 0 | 25950 | 100 | 0 | 0 |
| Region XX | 3303 | 100 | 0 | 0 | 143166 | 96.52 | 3.1 | 0.38 |
| Region XXI | | | | | | | | |
| Region XXII | | | | | 2500 | 100 | 0 | 0 |
| Region XXIII | 756 | 100 | 0 | 0 | | | | |
| Region XXIV | 2252 | 100 | 0 | 0 | 31935 | 100 | 0 | 0 |
| Region XXV | 263 | 100 | 0 | 0 | 20670 | 100 | 0 | 0 |
| Total | 71144 | 95.93 | 3.38 | 0.69 | 1082220 | 92.09 | 7.03 | 0.88 |

Source: DSI, 2002 In: DSI-I&R, 2005.

Table 10. Transferred area and percentage in DSI-developed schemes by 2005

| Region | DSI-developed irrigation units | | Operated by cooperatives | | | Constructed by DSI for public or private org. | | Total irrigation | | Schemes transferred to WUOs | | Operated by DSI | | | | DSI irrigated and managed | |
|--------------|--------------------------------|----------------|--------------------------|---------------|-------------|---|--------------|------------------|----------------|-----------------------------|----------------|-----------------|--------------|-----------|--------------|---------------------------|-------------|
| | No. | Area (ha) | No. | Area (ha) | No. wells | No. | Area (ha) | No. | Area (ha) | No. | Area (ha) | No. | Area (ha) | No. | Area (ha) | Area(ha) | % |
| 1 | 26 | 58044 | 22 | 4424 | 125 | | | 48 | 62468 | 25 | 56244 | 1 | 1800 | | | 1800 | 2.88 |
| 2 | 21 | 120151 | 66 | 13911 | 419 | | | 87 | 134062 | 21 | 120151 | | | | | 0 | 0 |
| 3 | 50 | 75531 | 79 | 21496 | 566 | 7 | 799 | 129 | 97826 | 37 | 70325 | 2 | 1692 | 4 | 2715 | 4407 | 4.5 |
| 4 | 49 | 182047 | 295 | 175640 | 4008 | | | 344 | 357687 | 47 | 177107 | 2 | 4940 | | | 4940 | 1.38 |
| 5 | 56 | 52978 | 15 | 3051 | 86 | 1 | 300 | 71 | 56329 | 51 | 33417 | 2 | 19200 | 2 | 61 | 19261 | 34.2 |
| 6 | 33 | 309172 | 24 | 16630 | 407 | 3 | 1225 | 57 | 327027 | 30 | 307947 | | | | | 0 | 0 |
| 7 | 45 | 85083 | 94 | 17970 | 439 | 1 | 900 | 139 | 103953 | 41 | 83543 | | | 3 | 640 | 640 | 0.62 |
| 8 | 20 | 79724 | 27 | 15660 | 274 | 1 | 1950 | 47 | 97334 | 14 | 72234 | 1 | 2700 | 4 | 2840 | 5540 | 5.69 |
| 9 | 23 | 75076 | 24 | 5030 | 138 | 1 | 225 | 47 | 80331 | 27 | 68373 | 2 | 4265 | 3 | 2213 | 6478 | 8.06 |
| 10 | 15 | 39916 | 2 | 200 | 5 | | | 17 | 40116 | 15 | 39916 | | | | | 0 | 0 |
| 11 | 55 | 56162 | 64 | 19925 | 480 | 3 | 1067 | 119 | 77154 | 52 | 55095 | | | | | 0 | 0 |
| 12 | 51 | 75194 | 55 | 18511 | 441 | 1 | 610 | 106 | 94315 | 42 | 68018 | 4 | 4111 | 4 | 2455 | 6566 | 6.96 |
| 13 | 37 | 73270 | 22 | 5847 | 137 | | | 59 | 79117 | 32 | 68480 | 2 | 650 | 3 | 4140 | 4790 | 6.05 |
| 14 | | | | | | | | | | | | | | | | | |
| 15 | 10 | 158363 | 1 | 80 | | 2 | 7090 | 11 | 165533 | 7 | 145623 | | | 1 | 5650 | 5650 | 3.41 |
| 16 | | | | | 2 | | | | | | | | | | | | |
| 17 | 20 | 59908 | 3 | 580 | 19 | | | 23 | 60488 | 6 | 33625 | 5 | 21710 | 9 | 4573 | 26283 | 43.5 |
| 18 | 50 | 106320 | 290 | 57006 | 1640 | 2 | 50 | 340 | 163376 | 46 | 101436 | | | 2 | 4834 | 4834 | 2.96 |
| 19 | 25 | 21035 | 1 | 220 | 8 | | | 26 | 21255 | 20 | 15832 | 2 | 4378 | 3 | 825 | 5203 | 24.5 |
| 20 | 16 | 42620 | 16 | 5917 | 150 | 2 | 920 | 32 | 49457 | 16 | 42620 | | | | | 0 | 0 |
| 21 | 33 | 170507 | 52 | 15348 | 354 | | | 85 | 185855 | 31 | 169587 | | | | | 0 | 0 |
| 22 | 7 | 13203 | 2 | 925 | 26 | | | 9 | 14128 | 5 | 12804 | | | 2 | 399 | 399 | 2.82 |
| 23 | 15 | 12695 | 8 | 1660 | 45 | | | 23 | 14355 | 13 | 6077 | 1 | 5178 | 1 | 1440 | 6618 | 46.1 |
| 24 | 7 | 70320 | | | | 1 | 380 | 7 | 70700 | 4 | 61040 | 1 | 1150 | 1 | 7750 | 8900 | 12.6 |
| 25 | 38 | 52574 | 6 | 6450 | 131 | 2 | 250 | 44 | 59274 | 33 | 51475 | 1 | 600 | 2 | 249 | 849 | 1.43 |
| Total | 702 | 1989893 | 1168 | 406481 | 9900 | 27 | 15766 | 1870 | 2412140 | 615 | 1860969 | 26 | 72374 | 44 | 40784 | 113158 | 4.69 |

Further Thoughts

Over the past 50 years, irrigation development in Turkey has been significant. The state has constructed 570 dams and most of the rivers have now been controlled. However, the state has not been successful yet in terms of controlling salinisation, as a result of which the projects have low irrigation ratio and efficiency. At present, 35% of the population live in rural areas, but nearly 48% of the population work in the agricultural sector. Urban migration has contributed to higher unemployment, mostly for unskilled people. This could be interpreted as that the water sector has fulfilled the expectations of the state, but at the same time, that the state has not been able to implement appropriate employment generation policies compared to the speed with which it has developed irrigation.

Decentralisation of irrigation through participatory management has been welcomed by the farmers, and the state has now transferred 96% of the schemes to the beneficiaries. The process has resulted in a reduction of O&M costs, staff number, and energy uses. Additionally, the collection rate for irrigation fees and the irrigation ratios have increased; and farmers are involved in the operation and the maintenance of on-farm canals. New efforts have been made to determine the water fees based on the volume of water used by measuring the duration of uses.

While the previous tangible benefits can be measured, there have been also intangible benefits, among which are:

- ensuring effective and sustainable irrigation management;
- achieving adequate, reliable, and equitable water distribution;
- providing better and more reliable water distribution management in terms of droughts;
- improving collaboration between farmers and local administrations; and
- reducing complaints, disorders, and conflicts.

Irrespective of the considerable progress made in terms of transferring the irrigation systems to the users, there are still many problems which need to be resolved in the coming years. Among these problems are the following:

- The complicated administrative structure (Figure 4) needs to be streamlined. The institutional structure is complex, and these constraints complicate the operation of the overall system.
- A new law for the WUAs is necessary. For example, according to the present legislation, WUAs cannot have a bank loan, which makes it very difficult for them to rehabilitate infrastructure or machinery.
- The WUAs need more technical personnel, who should be properly trained.
- Farmers should also be trained, sooner the better.
- Many of the irrigation systems require urgent rehabilitation since most of them are already 30 years old.
- More realistic and effective water pricing methods need to be developed.
- Improvements in irrigation efficiency are an important requirement, especially as they continue to be low for government and farmer-managed irrigation systems. Special efforts are needed to improve irrigation efficiency.

Finally, an evaluation by FAO (Svendsen, 2001) considers that the programme on irrigation management transfer in Turkey, inspired in Mexico and elsewhere, considers that strengths have been significantly more than its weaknesses, which should not be overlooked in any manner.

Systematic evaluations should be encouraged so that the countries understand how they can improve and how to strengthen both their formal and informal institutions, including the processes, weaknesses and strengths of the participatory irrigation management.

IV. DECENTRALISATION EFFORTS AT THE RIVER BASINS LEVEL

Many Latin American countries became interested in river basin organisations in the late 1960s and the early 1970s, mostly in an attempt to replicate the experiences of the Tennessee Valley Authority (TVA) in the United States. TVA was considered to be a good example of river basin development in the 1950s and 1960s, but since then its shortcomings have become increasingly apparent, and also the potential replicability of TVA-type of institutions in developing countries has been seriously questioned since late 1960s. Some Latin American countries, and a few other countries like India, tried to replicate the TVA experiences.

The approach to use river basins as a management unit in the region could also be partly explained by the then prevailing national policies that favoured a regional planning approach which could create development poles to ease the pressures on the urban and industrial centres and also simultaneously contribute to the economic development of the poorer regions of a country. The TVA model was generally viewed as a possible way to achieve further development and industrialisation of the countries. Several regional development corporations were established on the basis of river basins, e.g. river basin commissions in Mexico towards the end of the 1940s and the beginning of the 1950s (Tortajada and Contreras-Moreno, 2005; Barkin and King, 1986).

The general concept of water management at the river basin level received wider acceptance in the 1990s, when the interest in river basin organisations became more widespread not only in Latin America but also in many other parts of the world¹¹. This interest, however, stemmed not from the use of river basin units as poles of decentralised development, as was the case earlier, but mainly due to a general shift of the world opinion towards integrated water resources management. It was felt that a broader approach, based on integrated management compared to infrastructural development per se, might provide a better solution to the existing water scarcity and quality problems (García, 2000).

At the regional level, many bilateral and multilateral commissions were created, like the Bermejo and Pilcomayo Commissions, Inter-Governmental Plata River Commission, the Amazon Cooperation Treaty, etc. (Biswas, et al., 1999; Cordeiro 1994 *in* García, 1999). At the national levels, there was a general trend towards the establishment of river basin organisations in several Latin American countries during this period. However, even though many central institutions have started a process of decentralisation (mainly for the agricultural sector), for all practical purposes a centralised top-down management structure along sectoral lines continues to be in place, in spite of the creation of many organisations at the river basin level.

Latin American Experiences: The Cases of Mexico and Brazil

Historically and traditionally, the Latin American countries have been heavily centralised in terms of planning, management and decision-making, and the water sector has not been an exception to this general trend. Hence, simple adoption of a policy advocating decentralisation in terms of river basin management organisations is unlikely to succeed. The mind-sets of senior officers of the water ministries must change, but there are no signs that this is happening at present in the countries that are establishing

¹¹ The French and the British experiences on river basin management were noted with considerable interest in many Latin American countries. However, these European experiences were never critically and objectively analysed to determine to what extent these could be the most optimal units for water management, and their relevance and potential replicability under differing physical, environmental, social, economic, legal and institutional conditions of Latin America.

new institutions for river basin management. They must believe that decentralisation and delegation of authority are essential for improving the water management practices, otherwise, any attempt to decentralise will continue to remain rhetorical for all practical purposes. Politically such statements have proved to be useful at least over a short-term, but the process itself is unlikely to succeed, as often appears to be the case at present. In addition, irrespective of the consideration as to what may be the best unit for river basin management, human and financial resources will continue to remain important constraints for long-term planning and management of water resources in Latin America, whether the process remains centralised or becomes decentralised. Centralised or decentralised institutions cannot function efficiently without management and technical expertise, as well as timely availability of necessary funds.

In Latin America, Brazil and Mexico are the only two countries where river basins organisations are legally mandated at present. Analyses of river basin management practices from these two countries are discussed next as an illustration of the present status of the applicability of the concept.

I) Mexican Experience: Water Management at the River Basin Level

At the end of the decade of the 1940s, the Mexican government embarked on large-scale water-based regional development programmes. The first river basin commissions (Papaloapan, Grijalba, Tepalcatepec and Balsas) were established to coordinate the activities of the different ministries working in the several states of the region, where the programmes were initiated. The funds for this large-scale investment programmes were allocated to the commissions, as well as a wide spectrum of responsibilities. The commissions were designed to be dependent on the federal authority responsible for water: they had no autonomy. These river commissions proved to be reasonably effective instruments for the implementation of the regional policies of the country. Their tasks included not only financial matters at the regional levels, but also planning and coordination activities which were earlier the responsibility of ministries and governments at the state level (Tortajada and Contreras-Moreno, 2005).

The main investment programmes of the commissions included initiatives like water resources, construction of irrigation projects, programmes on flood control and hydropower generation. However, they were also responsible for expenditures for roads, schools, public health issues, and so on, in the regions. The power, and thus efficiency, of the several commissions depended on the priority the region has had at the national level. Their main weaknesses, however, were that they were created as coordinating and advisory units, with no power to force any public or private institutions to comply with any legislations, or to question any unwarranted environmental and social impacts (Barkin and King, 1986).

An important factor to note for the time during which the commissions were functional, is that the river basin commissions being semi-autonomous institutions, were coordinating entities for the national budget 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 socio-economic conditions of the regions. This task was especially challenging, mainly since it depended on the political will of the political parties and required considerable commitment from all the parties, which was, and continues to be, a most difficult task.

In 1982, the economic crisis affected very negatively all productive sectors in the country as well as all national and regional institutions. During this time of economic crisis and changing development policies priorities, and in an effort to promote overall decentralisation in the water sector, the Ministry of Agriculture and Water Resources decided to dissolve the river basin commissions. The Ministry 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. It was decided that “plans for the use of water resources, developed by the authorities at the municipal, state and federal levels, will be based on the

hydrologic basin, but taking into consideration the development trends in each region.” (PRI/IEPES 1982, p 152).

In 1989, it was decided again that the responsibility for overall planning, management and development of water resources in the country would be under one institution, the CNA. In terms of legislation, the National Water Law and the Federal Law on Water Excise Taxes set the regulatory, economic and social frameworks for water management. The National Water Law establishes the overall policy-making for water resources and the CNA is the institution responsible for implementing it.

The National Water Law noted, in art. 13, the following aspects regarding the structure of the river basin councils:

“following a decision by its Technical Council, the Commission (CNA) shall establish basin councils to coordinate and liaise with the Commission, federal, state and municipal departments and agencies; and representatives of users of the hydrological basin in question, with a view to formulating and implementing programs and actions to improve water administration, development of water infrastructure and the respective services, and the preservation of basin resources. Within the scope of the basin councils, the Commission shall agree with the users on any temporary limitations to existing rights in the event of emergencies, extreme scarcity, over-exploitation or declaration of protected areas. In such circumstances, residential use shall have priority.” (Anon., 1997).

It is in the Regulations of the Law (Second Title, Chapter III, articles 15 to 17) that the following issues related to the river basin councils are included:

1. Territorial limits (according to the geographical area of the river basin);
2. Its structure (The General Director of the National Water Commission, who presides over it; a non-voting Technical Secretary; one representative of the river basin committee per water use; number of users may not be less than the rest of the members of the Council; governors of the states within the river basin will attend as per CNA’s invitation, as well as an indefinite number of officials from federal, state, and local governmental institutions, as well as institutions and representatives of social organisations who are considered as relevant by the members of the council, in the understanding that they cannot make any intervention or vote during the sessions).
3. Its organization and role (according to the rules issued by CNA, which will determine the actions and procedures to be taken towards the implementation of a series of actions oriented to proposing guidelines that reflect the reality of the development of the river basin; the promotion of authority and society participation in the formulation, approval, follow-up, up-dating, and assessment of programmes of river basin; the promotion of the integration of task forces for the proposal of solutions and recommendations; selection of priorities, as well as other foreseen water planning tools by CNA; support to achieve technical, financial, material and technological resources required for the implementation of specific actions, and economic studies performed by CNA with the purpose of determining the amount of contributions to be paid by consumers in support of CNA action programmes).

Coordination of the federal, state and local bodies regarding water management in Mexico, as proposed in the National Water Law of 1992, is at the river basin level, at least in paper. However, river basin councils are only coordinating and consensus-building agencies between the government and local groups, but do not have any implementation role. Agreements reached within the river basin councils are not binding because the federal authority (CNA) has the absolute unilateral and discretionary power to

accept or disregard any decision taken, should it considers it necessary. Therefore, the National Water Law does not establish any framework in terms of decentralisation of water management at the river basin level, neither administratively nor politically.

Twenty-five river basin councils, out of the 26 that were planned, have already been established, but are mostly not functional yet. In terms of activities, the river basin councils are expected to manage water resources from integrated and regional perspectives, and involve water authorities at the federal, state and municipal levels, as well as the various users. For operational purposes, the river basin councils define four territorial levels: basin, sub-basin, micro-basin and aquifers, where the bodies are respectively known as councils, commissions, committees and groundwater technical committees¹² (Marañón 2004).

By law, the river basin councils have to approve the river basin plans which, once integrated within the National Water Master Plan, become mandatory for the federal government, and indicative for the local and the state governments and water users. Bottlenecks and necessary actions and resources needs are to be identified and evaluated, and unrealistic or unfeasible situations are expected to be feedback into the regional planning process (Tortajada, 2000b). The problem, however, is that most of the river basin councils, even at present, are not yet operational: they are in the process of organisation. Even though the National Water Law stipulates that the river basin councils can develop and implement programmes for the construction of water infrastructures which could be considered to be strategic, the fact remains that because the councils have not yet been fully functional, they do not have any say in the planning, design or operation of any major water infrastructure in the country. Formally, the river basin councils have very little decision-making power since CNA remains responsible for activities such as water licensing, collection of water taxes and water investment programmes (Wester et al., 2003). If and when the basin councils become fully operational, it is yet to be seen as to whether the central authorities will allow the councils to use their decision-making powers on important issues, or if they will continue with their traditional centralised decision-making.

In theory, the basin councils have representatives from the federal and the state governments from the water and other sectors like the Federal Power Commission, Mexican Oil Company, etc., academia, NGOs, other and regional committees for the users of the different sectors (industrial, agricultural, drinking water providers, services, etc.). Specific commissions and committees can be established within the councils only when there are specific problems, i.e., evaluation, regional considerations, or groundwater. The representation of the water users represents another constraint since even though participants from different sectors attend the meetings, regrettably they do not necessarily represent the views of the majority of the stakeholders of their sectors.

It should be noted that the users of water are only those who have titles to withdraw and use water, and citizens and organised civil society do not have titles, and hence cannot be part of the discussions at the basin level, until and unless they are first acknowledged and invited by CNA (Tortajada, 2000). In addition, not all members have the right to vote: only the representatives of the users, and the state governments and the President of the council have voting rights. The rest of the participants have only the right to express their opinions, which would not be taken into consideration, until and unless CNA considers them to be appropriate (Guerrero and García-León, 2003; Guerrero, 2000).

¹² With the objective to manage the water resources of the country in a more coordinated way, Mexico has been divided in regions and sub-regions, with 13 regions defined based on the hydrology of the country, and 102 sub-regions on the basis of political jurisdictions. Each sub-region included a number of municipalities of the same state, so that regional programmes could be planned at the sub-regional level. At present, there are 314 hydrological basins, 37 hydrological regions and 13 administrative basins in the country.

The basin councils can be considered within the country as virtual bodies. Basically it is in the most advanced basin council in Mexico, the Lerma-Chapala, that master planning and resulting infrastructure operations have been subject to joint decision-making processes in which the CNA no longer exercises the sole responsibility. The last surface water agreement in the Lerma-Chapala basin, originally proposed by the CNA-dominated technical working group, required several modifications by the concerned states and users before it was accepted. While the CNA still plays a dominant role, this case appears to indicate that counterbalancing objectives have made limited inroads in the decision-making process (Scott, 2001).

Also in the case of the Lerma-Chapala basin, until very recently, most of the member states of the basin councils declined to participate in any meetings arguing that the legal framework did not give them any rights or responsibilities. At present, however, the representatives of the different sectors have realised that their participation is essential, if changes in the regions are to be achieved. Such attitudinal changes are likely to result in more participation and in more autonomy for the stakeholders, who are gradually becoming actors instead of being spectators (Guerrero and García-León, 2003; Guerrero, 2000). According to Wester et al., (2003), at the 24th ordinary session of the Lerma-Chapala river basin, agricultural water users were present in large numbers for the first time, and demanded a larger say in the deliberation of the Council. However, the lack of substantive stakeholder representation in the basin councils in general is indicative of the difficulties of decentralising water management.

It has been in the Lerma-Chapala basin (specifically in the states of Guanajuato and Queretaro, two of the five states which are part of the basin), that new institutional arrangements have been put in place for the management of water resources. Bodies known as COTAS (Technical Committees for Groundwater according to CNA, and Technical Water Committees, according to the State Commission of Water and Sanitation in Guanajuato, now Guanajuato State Water Commission) have been established with the objective of reducing serious over-exploitation of the aquifers. This is done through the development of new criteria for water allocation, with the participation of the several water users. Even though this is an innovative alternative, it is still not enough, since only two of the states which are part of the basin (Guanajuato and Queretaro) have COTAS, which, in addition, are managed with totally different approaches.

According to the CNA, the COTAS should depend on the federal government, financially as well as in terms of authority. This naturally limits their actions and efficiency. However, the government of Guanajuato has supported the COTAS as a true means for decentralization, both from institutional and financial viewpoints. The main problem is that the CNA is still not willing to give up its decision making role and economic power. The COTAS are not empowered with any legal authority, and thus are not likely to enforce any agreements or contribute to the reduction of the over-exploitation of the aquifers in the state (Marañón-Pimentel and Wester, 2000). It is worth noting that when the state of Guanajuato developed its own master plan, which was formulated by the local experts, considering the local problems and proposing local alternatives, it faced very strong opposition from the CNA throughout the plan formulation process. It is evident that the central government is only willing to transfer programmes, but no resources or authority (Marañón-Pimentel, 2005; Guerrero, 1999 *in* Marañón-Pimentel and Wester, 2000;).

The main constraint regarding river basin management is not that the councils are not entitled to develop any regulations or execute any administrative or legal action. If the councils were operational, they would have a very important role to play as coordinating bodies. The main problem is that the overall operational framework to manage water resources at the basin level is still not functional in the country. The legislation exists, but it is still not clear what would be the operational functions of the councils, or how the councils are to be included in the administrative structure of the country at the administrative level with state and municipal governments, so that they could complement and support each other. So

far, only one out of the 25 river basin councils that have been created is operational. In most cases, the councils do not even have staff or offices, not to mention implementable plans or financial support.

The present problems of water scarcity in many river basins arise not only because of lack of water but also due to unacceptable water quality and poor management practices. The demands from all different uses and users are increasing rapidly, but the management expertise and financial resources of the concerned institutions are increasing only incrementally. Unless these trends are reversed, the water situation of the country is likely to get worse. Additionally, the main focus of water planning and management is still vested in one single institution at the central level, which has been unable thus far to respond to the increasing needs of the sector. Even though 25 river basin councils have been established thus far, the legal framework to give them autonomy, funds and responsibilities has yet to be developed. The Mexican government has still not formulated, let alone implemented, strategies to decentralise the functions, responsibilities and funds from CNA, and transfer them to the basin councils and/or to the appropriate authorities at the regional, state or municipal levels. On the basis of their performances so far, the existing basin councils cannot be considered to be viable units for water management at the regional levels. At best, they could be considered to be advisory institutions that are subordinate to the interests of CAN; fundamental changes will be necessary if they are to become successful institutions for regional water management (Guerrero, 2000).

Modifications to the National Water Law were approved on April 2004. One of the main changes to the Law has been the creation of river basin organisms, which are expected to be “autonomous units for technical, administrative and legal purposes” (SEMARNAT 2004, p 41) and incorporate the interests of civil society groups. Interestingly, in spite of the very questionable performance of the institutional arrangements at the river basin level so far (Guerrero and García León, 2003), the 2004 National Water Law states that the institutions for water management at the river basin level would continue to be the basin councils (even though they have practically no implementing roles), that the opinions and concerns of the users would still be channelled through the general assemblies of the basin councils (which so far have not proved very useful), and that the river basin councils will be “autonomous bodies, but will be under the federal authorities.” In fact, in the draft version of the water law, it was proposed the decentralisation of CNA from the Ministry of the Environment, very much pursued by some of the institutions and mostly rejected by others. However, this idea was rejected primarily for financial considerations, since it would have meant that the Ministry of Finance would have lost an annual revenue of approximately \$ 7 billion.

The CNA was given 18 months from April 2004 to publish revised regulations and establish the new river basin organisations. This time has passed and the regulation still has not been published. As mentioned by Scott (2006), the CNA is at a critical impasse, with some officials now seeking to revise the water law yet again.

As it can be observed, there are two separate and incongruous water management systems in place in Mexico. One, the official system, which has resulted from decades of centralised water and financial resource allocation and which is firmly rooted in Mexico. The second, a struggling form of decentralized autonomy within official institutions coupled with growing civil society demands and increasing public participation, which is at odds with the previous one. While the expeditious view is that the second will succeed from the first in an orderly process, there are clear indications that interests within official institutions, notably the CNA, oppose these developments.

I) Brazilian Experience: Water Management at the River Basin Level

Brazil is one of the most advanced countries of the region in terms of river basin management. Geographically, Brazil is by far the largest Latin American country. It has three large river basins

(Amazon, Tocantins and São Francisco) and two other groups of river basins (Plata and the remaining rivers that flow to the Atlantic). The Plata river basin includes the Paraná, Paraguay and Uruguay rivers. Finally, the Atlantic river basin complex includes the Atlantic North, Atlantic Northeast, Atlantic East I, Atlantic East II and Atlantic Southeast.

Historically, the regional economic development in Brazil has been heavily dependent on the hydropower sector, which has received many special privileges compared to the other water sectors like irrigation, industrial and municipal water supply, and navigation. In fact, during the late 1970s, most of the dams in the country were constructed primarily for hydropower generation. They were thus basically single purpose development, and multiple uses of water did not receive adequate attention. Accordingly, the institutions responsible for generation and management of hydropower became very powerful, both politically and financially, certainly at a level that was significantly higher than the irrigation-related institutions.

Brazil is a federal nation. In terms of legislations, many of the Brazilian states have formulated their own laws, mainly because of the delay in developing a national water law by the federal government. Along with the legislations, most of the states also progressed towards the establishment of river basin committees. Legal and institutional frameworks are currently being developed on important issues like the establishment of water agencies, committees, norms, information systems, introduction of water tariffs, water permits, etc. The institutional framework at present includes the National Water Resources Council, with the authority to manage and plan the water resources at the national, regional and state levels. It approves the guidelines for the permits for water use and withdrawals. It is also the final arbitration stage for inter-stage conflicts. Water agencies, which act as executive secretariats for the river basin committees. Agencies, which are the executive body of the river basin committees and implements their decisions. The responsibility for the management of water resources in the country is vested in the federal government. Thus, it has the majority voting power in the Council, 50% plus one vote, in terms of decision-making (Garrido, 2001; Porto et al., 1999).

The National Water Law was approved in 1998. However, the law for the State of Sao Paulo already existed from 1991¹³; the State of Ceara, approved its law in 1992, and during the subsequent three years, five other states followed their example. Issues like integrated water resources management, river basins as management units, provisions for public participation and provisions for water pricing, were common in the laws of several of the state.

In the case of the state of Sao Paulo, the Water Resources Law was approved by the State Congress for the 1992-1996 period. A regular evaluation of the plan has been carried out through annual reports prepared by the executive office of the State Water Resources Council for each management unit. During the development process of the plan, there were frequent interactions between the State Plan and the basin plans developed for the various management units. The State Plan provided the overall direction and technical and economical mechanisms for the orientations of the basin plans and programmes. The basin plans, on the other hand, focused on programmes for sustainable development of the specific management units. Other important points in the process were decentralisation of the planning process which enabled the water management units to propose their own development programmes, ensured consolidation and integration of the basin plans at the state level and the consideration of interfaces with other states,

¹³ The basis for implementation of water management practices in Sao Paulo is in the state constitution of October 1989 and the Water Law 7763 of 30 December 1991. Law 7763 regulates the general principles stated in the constitution. The law clarifies the different mechanisms for the development of the plans and their implementation, including water permits, charges and cost-benefit. It also regulates the creation of the basin committees and basin agencies (Braga, 2001).

regional, municipal and urban plans. Once the state plan is formulated, it is reviewed by the state Congress, and following its approval, it becomes a law (Braga, 2001).

Under the Brazilian law, the river basin committees are considered as coordinating units which bring together the different stakeholders to discuss the various problems and decide on possible solutions with the objective of protecting the natural resources within the river basin, especially in terms of water resources. The committees can act within the entire river basin, including sub-basins, any tributaries to the main streams, and group of neighbouring river basins or sub-basins (Garrido, 2001).

The composition of the river basin committees varies in the different states (Porto, 1998). In the state of Sao Paulo, the committees consist of representatives of three groups: state government, municipalities, and stakeholders (professional associations, universities and organised groups interested in the region). Each group has one-third of the representatives. In the state of Santa Catarina, 20% of the representatives are from the state government, 40% from the municipalities and organised civil society, and 40% from the stakeholders. In the state of Ceara, there is no specific number for the seats for any of the sectors: the only stipulation is that the state government and the municipalities should have the same number of representatives.

Some examples of efficiency of river basin organisations are demonstrated by experiences in the states of Sao Paulo and Ceara. In the Piracicaba river basin, agreements have been reached on water allocation for minimum flows, industrial withdrawals and effluent dilution, during the monthly meeting of the commissions between water supply utilities, power sector companies and industrial sector. In the state of Ceara, 80% of the conflicts were sorted out not in the courts, but within the committees (Porto, 1998).

State of Sao Paulo

A preliminary assessment of the water resources of the state of Sao Paulo indicated that the management units located in the eastern part should have priority in implementing integrated water resources planning. It was decided that the management units for the Upper Tietê, Piracicaba and Baixada Santista rivers should be treated simultaneously. Thus, a plan was prepared (HIDROPLAN), which took into consideration the multidisciplinary nature of water resources planning and its interrelations with other sectors of the economy. The plan was conceived to be dynamic, and was based on different scenarios for future water demands for different uses in the watershed, including wastewater management, pollution control, electricity generation, urban water supply, etc. Seven development alternatives were generated for this plan, from which the most optimal one was finally selected (Braga, 2001).

Having in mind water management at the river basin level, the state of Sao Paulo was subdivided into 22 water management units (Law 29,034 of 27 December 1994 that passed the State Water Resources Plan for that period) which initially took into consideration aspects such as hydrology, climate, types of soil, environmental aspects, etc. However, during a second phase, the criteria were issues such as economic development and political cohesion. There is a basin committee which approves the basin management plans and deliberates on all water-management related-issues. The basin committee has 48 members including members of the state, municipalities, water users and non-governmental associations, each one of them with 16 members. The arrangements so far have meant that there is participation of the interested parties and that the plans that are decided within the basin council represent a commitment for all sides. The administrative support to the State Water Resources Council is provided by an executive office which includes members of the state agencies in charge of the management of water resources and environment. This coordinating body facilitates the decision-making process among the members of the council. On the other hand, the administrative support of the basin committees is provided for the water agencies. These

are the bodies which develop the plans for the basin committee, for the charges for water use and pollution, and for financing of the long-term management programmes of the basin¹⁴ (Braga, 1999).

According to Barth (2001), the creation of the committees was done very rapidly because of resources given to the river basins by the State Water Resources Fund. This fact was considered to be negative, since the political cohesion to establish the committees was replaced by an interest in obtaining resources from the Fund. However, later on, between 1993 and 1997, 20 committees were created, two of them acting in two river management units. The most important factors that contributed to the successful creation and consolidation of the committees, included the existence of decentralised units of state entities; the existence of Intermunicipal Consortia of River Basins; the election of municipal mayors as part of the river basin committee; and the fact that the resources from the State Water Resources Fund were allocated taking into consideration the evolution of the committees, which provided the necessary infrastructure and technical support to the committees.

During the process of creation of management units, the Piracaba river basin was chosen, as a pilot exercise, to be the first basin. The reason was because the Piracaba river basin had, in that time, already three decades of social mobilisation for the protection, conservation and recovery of its waters.

Piracaba river basin has become a very good example of public participation, which Braga (1999) presents in a multiobjective planning process with the Paraiba river basin. The Paraiba river basin has a drainage area of 55,400 km². It represents only 0.7% of the territory at the national level and 6% of the southeast region, but it includes some of the most industrialised areas in the country, generating more than 10% of the GDP at the national level, with 14 million people, including more than 8 million people living in the metropolitan area of Brazil.

Three Brazilian states share this river system, Sao Paulo, Rio de Janeiro and Minas Gerais. However, the study focused only on the part of the basin represented by the state of Sao Paulo, which means an area of approximately 23% of the entire basin (13,500 km²) in between the two largest cities in the country (Sao Paulo and Rio de Janeiro) and with a population of 1.5 million inhabitants. Paraiba river basin has 27 members divided equally among the state government, municipalities and organised civil society, including universities, professional associations, NGOs, etc. A series of workshops were organised with the basin committee members with the objective to identify the main problems and the most appropriate institutional arrangements and management models to improve the environmental conditions within the basin. Seven objectives were identified and both structural and non-structural alternatives were analysed. The structural alternatives included studies and projects related to environmental sanitation such as sewage collection and treatment, solid waste disposal systems, and water supply, irrigation and drainage infrastructure. In the case of institutional arrangements, these included institutional development with the support of public and private organisations; water charges and permit systems; modernisation of monitoring systems for water quantity and quality aspects; and environmental conservation. The study was carried out in real time with the members of the basin committee. It showed that consensus-building is possible, although complex, if the objective is to incorporate the opinions of the stakeholders and marry them with those of the decision-makers.

The implementing role of the Paraiba river basin was strengthened from the beginning of 2001, with the objective to establish water charges for the users within the basin. In 2002, the newly established National Water Agency (ANA), and the states of Minas Gerais, Rio de Janeiro and Sao Paulo signed a five-year

¹⁴ The Sao Paulo State Water Resources Plan uses three technical and legal instruments: water permits for derivation or dilution of wastewater; water pricing; and cost-sharing of multiple purpose or common use water projects.

agreement which objective was the integrated water resources of the Paraíba river basin, which is being implemented at present¹⁵.

The process to create the river basin committees has been gradual and it has been plagued with complexities. However, it has been recognised that in order to implement water management at the river basin levels, issues like decentralisation, water permits and water pricing should be promoted, and appropriate legal and institutional frameworks need to be developed. Two of the most important tools have been to have very clear objectives, and to include as most interested parties as possible in decision-making. Even when there are no perfect processes, a more efficient water resources management can be achieved if it is realised that the institutional frameworks should respond to the specific needs of the regions, accommodating hydrologic, social, political and cultural differences.

Further Thoughts

Even though the current momentum in Latin America is moving towards the concept of river basin management, one cannot prejudge the results of this shift. Integrated river basin management is a very complex subject, and there is no clear consensus among the water experts as to what issues are to be integrated, through which processed and by whom. Until there are analyses of the performance of the river basin institutions as management units, and they are compared with other alternative institutional arrangements, no definitive conclusions can be drawn as to which should be the preferred route.

Only two countries in the region, Mexico and Brazil, have developed legal and institutional frameworks for river basin organisations as units for water resources management. In other countries, where river basins organisations exist, they are not necessarily within the national policy-making framework, which makes their operation more complex. However, while the existence of legal and institutional frameworks within the national policy-making is important, it does not assure either that the river basin organisations will be fully functional or that they would be supported by the administrative structures of the countries concerned.

Unfortunately, the traditional concept of river basin organisations is now being increasingly considered to be as the only alternative available for decentralised water resources management, primarily because it is the prevailing global trend. In the long run, this may or may not prove to be the best option for all the Latin American countries. In the case of Brazil, the legal, institutional, technical and social frameworks are giving positive results. What has been most interesting is how the participation of interested parties has been promoted. In the long run, that is a very important factor that will even determine the success of the implementation of the plans for the development of the basin and the conservation of its resources.

In the case of Mexico, there is clearly a long way to go. Among many constraints faced by the river basin councils are their lack of experience (both technical and managerial) as to the processes by which water policies could be formulated; reluctance of the central authorities to disseminate reliable data and information, lack of appreciation by the authorities on the importance of stakeholders' participation, and the absence of use of proper economic instruments like water pricing and demand management, and appreciation of the importance of social and environmental issues. The main institutional challenge for the future is how best to transform the basin councils, which in practice are advisory agencies with very little real authority, into basin councils that govern, plan, organize, run, control and supervise water management at the river basin level.

¹⁵ For an extensive review on the institutional, legal, technical and social frameworks for river basin management in Brazil, see Braga et al., 2005.

As mentioned by Wester et al. (2003), so far, driving the water reforms in Mexico are the increasing water overexploitation and its impacts, and the vested interested of the hydraulic bureaucracy. As mentioned by Scott (2006), and agreed by the author, the federal authority should commit to pursue water resources management decision-making at the local level, and facilitate river basin or “regional” water resource allocation through data, analysis, and decision-support. Such a process would be very useful, since it would sum up the technical expertise of the CAN while giving voice to the public opinion and a real role to stakeholder involvement. In order to move beyond their consensus-building role, however, the basin councils require enhanced administrative authority currently vested in the CNA.

V. CONCLUSIONS

Governance, first, and decentralisation, second, are considered at present to be one of the new solutions to the old problems. Decentralisation processes are advocated for their potential efficiency gains by incorporating local information in decision-making and removing unnecessary layers of bureaucracy. Decentralisation has also been welcomed for its potential to improve issues such as efficiency, equity, accessibility, responsiveness, and quality of services delivered. However, as noted by Hutchinson and LaFond (2004), decentralisation does not guarantee improved efficiency or improved outcomes by itself. There are numerous requirements which are often not considered, but which influence the extent of the success or the failure of the decentralisation processes. These include local managerial and technical capacity, accountability systems, transparent and implementable legal frameworks, clear division of responsibilities, and sufficient funding to fulfil mandates and to meet local priorities.

There is nothing inherent in decentralisation which would ensure that it will be successful. In certain cases, it may even contribute to negative impacts, depending upon how is implemented the devolution of administrative powers and mechanisms to monitor the subnational authorities who have been vested with new powers, responsibilities and resources. Decentralisation is thus unlikely to be a cure for all the ills of a poorly functioning sector, be it water, energy, health or communications. Its success or failure will mostly depend on very well defined roles and responsibilities; mechanisms for holding individuals and governments accountable; human, physical and financial capacity of the local governments or local bodies to undertake any activity, and the presence of enabling conditions in social, political and economic terms.

Some of the main reasons for promoting decentralisation processes can be traced to the lack of funds at the central level, dissatisfaction with the services provided by the central governments, and unnecessary bureaucracy which results in longer decision-making times. Furthermore, decentralisation is expected to benefit the societies as a result of public participation, due to the opportunities they have to express their views, preferences and concerns, at least in theory.

It should, however, be noted that in any discussion related to behaviour and participation of society, a starting point should be to acknowledge the enormous complexity of involving “society” as a whole, meaningfully and effectively in any decision-making process. The approach is far too simplistic to yield any definitive long-term benefits. Society is often viewed as if it was constituted of a few individuals and/or groups, when in fact it consists of a heterogeneous group of individuals, citizens, organised associations and unorganised communities, many of who have vested interests in the direct outcomes of any process in terms of the final decisions. This complexity has been one of the main reasons for the current and past failures to establish dynamic, interactive and objective communication, interaction and cooperation between the various levels of governments and society. It is a major challenge to involve constructively and effectively a broad and diverse group of formal and informal organisations, many of whom may have only limited, or even no interest, in discussing specific issues irrespective of their overall impacts in improving some of the indicators of their quality of life. In fact, although stakeholders participation is frequently advocated, substantive stakeholder representation still has not been achieved, in the sense that there is no decision-making power in the hands of the minorities, ranging from local governments to the poor populations.

In terms of formal and informal institutions in any country, it is unrealistic to expect that one sector, for example the water sector, can be decentralised in the midst of other heavily centralised sectors, be they for energy, agriculture or communications. Water sector institutions in a country can only be as efficient as the management of the rest of the other development sectors. The current implicit global assumption

that water management institutions can be improved unilaterally when other development sectors remain centralised and many times inefficient is simply not a viable proposition.

In the case of Mexico, decentralisation has resulted in new opportunities for local parties to participate and express their views in all types of activities. Some of the main constraints, however, have been that decentralisation, at least in the water sector, has largely taken the form of deconcentration, with the resulting limitations. This has also been hampered by the limited capacity of the municipal governments to handle the responsibilities, and also by ambiguities in laws and regulations that need to be addressed if the local governments are to assume more responsibilities in any policy and programme arenas.

The transfer of irrigation districts, or participatory irrigation management, implemented both in Mexico and Turkey, can be considered successful but not perfect. With support from the highest political levels, the necessary organisational and financial arrangements, and the will of the formal and informal institutions involved to achieve the proposed goals of autonomy and increasingly financial self-sufficiency, the results from both the countries so far can be considered to be encouraging. The lessons learnt have included the realisation of the importance of the overall support by the central institutions, transparent financial arrangements, appropriate incentives to the farmers and provision of agricultural extension services, technical assistance, legal aspects and training programmes. These are aspects which newly decentralised organisations need to succeed.

The situation, however, is quite different if the performance of the existing institutions for river basin management is considered. So far, the overall concept has not been implemented in the countries in Latin America where it has been introduced. In the case of Brazil, a long-term complex processes is resulting in positive results. However, Mexico still needs to revise its legal, institutional and social arrangements in order to achieve practical results such as efficient management of water resources at the basin level.

While the demands for water for various uses have increased significantly in Mexico in recent decades, management practices have improved only slowly and incrementally. Consequently, the water problems of the country, in terms of quantity, quality and management, have become more serious and complex than ever before in history. The demands from different uses and users are increasing rapidly, but the technical and managerial expertise and financial resources of the concerned institutions are growing only incrementally. Unless these current trends can be reversed, the water situation of the country is unlikely to improve in the foreseeable future by any significant extent. Furthermore, in spite of the efforts at decentralisation, 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. Nor has it been willing to decentralise appropriate decision-making powers, investments funds and/or technical and managerial expertise.

Surprisingly, after 70 years of continuous hierarchical water management and planning practices, Mexico still needs to learn how best to structure the organisations at the river basin level from a decision-making viewpoint. Among many other constraints faced by these river basin councils have been the lack of knowledge and expertise on the economic, social and environmental aspects of water; no clear understanding of the processes through which water policies could be formulated for the country and what policies should be considered; reluctance by the central authorities to disseminate reliable data and information on the status of the water quantity and quality in the country, lack of appreciation by the authorities on the importance of stakeholder participation, need for using proper economic instruments like water pricing and demand management, increasing societal demand for transparency and accountability, etc.

While there has been much discussion about decentralisation in recent years, in practice water management in Mexico continues to be hierarchical and top-down. Organised civil society and NGOs are still quite a recent phenomenon in the country, and groups are only realising the importance of their opinions. It will need time before these groups become vocal, and then, they will have to realise the importance of making informed decisions before expressing their view. Regrettably, OECD considers that water management in Mexico is now on an unsustainable path.

There are, however, positive and encouraging indicators which show planning and management of water resources are improving. What is essential at this point is to formulate a good and implementable framework for the water sector in Mexico, given a realistic assessment of its political institutions as they are at present, as well as their potential for change.

Finally, it should be noted that there are some very important groups can influence decision-making in the countries. These are the international organizations, which in many cases choose not to see the real needs of the countries, where they are heading, and most importantly, what are the boundaries conditions needed to reach their objectives. If good governance is increasingly recognised as a form to add more voices, responsibilities, transparency and accountability to the formal and informal institutions, it may be time to realise that this definition includes not only national sectors, but also international institutions.

Only one example will suffice to illustrate the above comment. The World Bank claims that the new 2005-2008 Country Assistance Strategy in partnership with Mexico has been designed in consultation with Mexican authorities at the federal, regional and municipal levels, as well as civil society representatives. The loan is for \$4.8 billion over four years and it is designed “to support the government’s commitment towards fighting poverty and inequality” (<http://web.worldbank.org/WBSITE/EXTERNAL/COUNTRIES/LACEXT/MEXICOEXTN/0,,contentMDK:20185321~pagePK:141137~piPK:141127~theSitePK:338397,00.html>). Two of the four objectives of this “new” strategy include reduction of poverty and inequality (increased access to and quality of education, expanded access to health care and pensions, low-income housing, and land ownership, and facilitation of the coverage of excluded groups, especially women and indigenous people), and environmental sustainability (integration of principles of sustainable development into country policies and programmes, while tackling environmental issues such as water scarcity and high rates of deforestation). This is, governance-related issues.

The World Bank affirms that they have designed this project “in consultation with the representatives of different levels of government, municipalities included, and with civil society representatives.” If the World Bank is serious in “reducing poverty and inequality” or in “promoting environmental sustainability,” one would assume that previously it has assessed what have been the impacts of their previous loans on the same areas, so that, this time, they can be sure this strategy will improve the lives of million of minority groups such as indigenous people living under the poverty line, who lack all type of even basic services, and who live in the worst conditions in spite of the social programmes that have been implemented throughout the history of the country, mainly when many of them have focused on decentralisation aspects.

Whether Mexico is in the “correct” path towards decentralisation or not, the population and the various levels of governments, still have to learn to recognise and evaluate if the changes that are occurring in the country are attributable to the processes and interventions that constitute decentralisation reforms, or if they could be mostly attributable to other phenomena. In other words, the improvements in any one sector of the country does not depend in any specific reform: it is a much more complex set of interactions of social, economic national and international phenomena, which we still have to learn how to harness and implement in the country at the local, state and national levels. By not acknowledging the reality in a country, and by pretending what it is not, international organisations must share some responsibilities for

the current situation with the other actors. Good water governance in terms of transparency and accountability may produce good results to change the attitudes not only of the national and subnational governments, but also of the international organisations associated in the process.

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ANNEX I.

¿SE HA DESCENTRALIZADO LA GESTIÓN DEL AGUA EN MÉXICO?¹⁶

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INTRODUCCIÓN

El Maestro Urbano Farías¹⁷ ha dicho que en México, las tierras y las aguas tienen un tratamiento diferente, derivado de su distinta naturaleza jurídica. Las primeras son de propiedad privada y, por excepción, pública, mientras que las segundas son públicas y excepcionalmente pueden entrar al dominio de los particulares. En todo caso, dicho dominio es sui géneris, por la naturaleza cambiante y fugitiva que tienen las aguas, que las hace propiamente inaprensibles. Es más bien un derecho de explotación, no de propiedad en el sentido tradicional del concepto, si bien el párrafo quinto y la fracción I del artículo 27 contemplan la posibilidad de que, por excepción, haya agua susceptible de apropiación por particulares -entendiendo por tales a cualquier persona física o moral distinta a “la nación”-, siempre y cuando no sean *aguas nacionales*. En realidad ello implica una titularidad del derecho para explotar, usar o aprovechar un bien que está en un constante devenir y no una propiedad privada sobre un bien aprensible en el sentido tradicional.

La regla es, entonces, que por principio, las aguas subterráneas y superficiales son nacionales, cuya gestión en México proviene de un proceso de centralización que se inició desde la Colonia, se abrió camino en la Constitución de 1917, con la Comisión Nacional de Irrigación, la Secretaría de Recursos Hidráulicos y la actual Comisión Nacional del Agua, y a pesar de que ambas constituciones respetaron dos esferas soberanas -Federación y Estados- la práctica política y administrativa fue adquiriendo cada vez más rasgos centralistas con la intención de consolidar la integridad territorial y la identidad nacional. La meta última era consolidar un verdadero estado nacional.

La centralización administrativa, política y económica ha sido la característica dominante del arreglo federal mexicano, con un resultado evidente: el gobierno federal se ubica por encima de la soberanía de los estados y de la autonomía de los municipios por lo que asumió la tarea de construir la gran infraestructura de riego y proveer el recurso para el desarrollo urbano-industrial, a partir de lo cual concentró la gestión de los recursos y las atribuciones para llevarlas a cabo, incluyendo la capacidad total de las decisiones, sin excepción alguna.

Un breve repaso de los antecedentes históricos de lo que hoy es el marco constitucional y legal del régimen hídrico en el país puede ser útil para ubicar en perspectiva el sentido profundo y la entronización del centralismo que, hoy por hoy, distingue la gestión del agua en nuestro país.

¹⁶ Las opiniones vertidas en este documento son de estricto carácter personal y no necesariamente reflejan las de la Comisión Estatal del Agua del Gobierno de Sonora.

¹⁷ Derecho Mexicano de Aguas Nacionales. Editorial Porrúa, México, 1998.

EL MARCO CONSTITUCIONAL Y SUS ANTECEDENTES INMEDIATOS¹⁸

De acuerdo con la Dra. Talía Denton Navarrete¹⁹, la Constitución liberal de 1857, con un enfoque principalmente individualista, no se refiere a la propiedad de las aguas. Así el artículo 27 establece que la propiedad (en general) de las personas no puede ser ocupada sin su consentimiento, sino por causa de utilidad pública y previa indemnización.

El 4 de junio de 1894 se expidió la Ley sobre aprovechamiento de Aguas Federales, en cuyo artículo 1 se autorizó al Ejecutivo Federal para que otorgara concesiones a particulares y a empresas privadas, señalando las condiciones que debían cumplirse en cada caso. Por otro lado, la Ley otorgaba una serie de franquicias y exenciones respecto de la importación de bienes destinados a la explotación de las aguas concesionadas, así como a las inversiones realizadas en la construcción de obras hidráulicas.

El 6 de enero de 1915 se publicó el Decreto promulgado por Venustiano Carranza, -llamado también Ley Agraria de 1915- en cuyo artículo 1 se declararon nulas todas las enajenaciones de tierras, aguas y montes pertenecientes a los pueblos, rancherías, congregaciones y comunidades, hechas por los jefes políticos, gobernadores de los Estados o cualquiera otra autoridad local en contravención a la Ley de 25 de junio de 1856²⁰ y demás leyes y disposiciones relativas, así como las concesiones y ventas de “tierras, aguas y montes”, hechas por la Secretaría de Fomento, de Hacienda o cualquier otra autoridad federal desde el 1 de diciembre de 1876, hasta la fecha, con las cuales se hayan invadido u ocupado ilegalmente los ejidos, terrenos *de repartimiento* o de cualquiera otra clase, pertenecientes a los pueblos, rancherías, congregaciones o comunidades.

El 25 de enero de 1917 se presentó al Congreso Constituyente una iniciativa respecto al régimen al que quedaba sujeta la propiedad raíz y la del subsuelo, en la que se reconocía que el concepto de propiedad vigente durante la época colonial descansaba en el principio absoluto de la autoridad del rey, dueño de las personas y de los bienes de sus súbditos. La necesidad de coordinar los intereses de los varios elementos constitutivos de las colonias, hizo que los reyes españoles dieran al principio supremo de su autoridad sobre todos los bienes de las expresadas colonias la forma del derecho de propiedad privada. El rey era, en efecto, el dueño a título privado de los bienes y aguas, como cualquier particular puede disponer de los bienes de patrimonio; pero dentro de ese derecho de disposición, concedía a los pobladores ya existentes y a los nuevamente llegados, derechos de dominio que tomaban todas las formas de derechos territoriales entonces en uso.

La iniciativa señalaba que la Constitución de 1857 había eludido, por miedo a las consecuencias, las “cuestiones de propiedad”: si la nación ha vivido cien años los trastornos producidos por el error de haber adoptado una legislación extraña e incompleta en materia de propiedad, sentenciaba, preciso será reparar ese error para que aquellos trastornos tengan fin y remataba esta idea con la que, desde entonces y hasta nuestros días, se sostiene la política hídrica en México: *“Creemos haber conseguido lo que nos hemos propuesto. La proposición concreta a que acabamos de referirnos anuda nuestra legislación futura con la colonial en el punto en que esta última fue interrumpida, para implantar otra, no precisamente mala, sino incompleta. Al decir que la proposición que hacemos anuda nuestra legislación futura con la colonial no pretendemos hacer una regresión, sino al contrario. Por virtud de existir precisamente en*

¹⁸ El presente apartado fue elaborado a partir de información contenida en la obra “Derechos del Pueblo Mexicano. México a través de sus Constituciones”. Cámara de Diputados XLVI Legislatura del Congreso de la Unión. Tomo IV. México, 1967.

¹⁹ “El Agua en México”. Versión electrónica. México, 2005.

²⁰ Se refiere a la *Ley de Desamortización de Bienes de Manos Muertas*, promulgada por el Presidente Ignacio Comonfort, en esa fecha.

dicha legislación colonial el derecho de propiedad absoluta en el rey bien, podemos decir que ese derecho ha pasado con el mismo carácter a la nación”.

Finalmente, después de 4 días de agrias discusiones, el 29 de enero de 1917, el artículo 27 de la Constitución queretana fue aprobado por unanimidad de 150 votos. Del texto aprobado reproduzco a continuación algunos de los apartados en los que se hace alusión al agua:

(Primer párrafo) La propiedad de las tierras y aguas comprendidas dentro de los límites del territorio nacional, corresponde originalmente a la nación, la cual ha tenido y tiene el derecho de transmitir el dominio de ellas a los particulares constituyendo la propiedad privada.

(Tercer párrafo) La Nación tendrá en todo tiempo el derecho de imponer a la propiedad privada las modalidades que dicte el interés público, así como el de regular el aprovechamiento de los elementos naturales susceptibles de apropiación para hacer una distribución equitativa de la riqueza pública y para cuidar de su conservación.....

(Quinto párrafo) Son también propiedad de la nación las aguas de los mares territoriales en la extensión y términos que fije el derecho internacional; las de las lagunas y esteros de las playas; las de los lagos interiores de formación natural que estén ligados directamente a corrientes constantes; las de los ríos principales o arroyos afluentes desde el punto en que brota la primera agua permanente hasta su desembocadura, ya sea que corran al mar o que crucen dos o más Estados; las de las corrientes intermitentes que atraviesen dos o más Estados en su rama principal, las aguas de los ríos, arroyos o barrancos, cuando sirvan de límite al territorio nacional o al de los Estados; las aguas que se extraigan de las minas y los cauces, lechos o riberas de los lagos y corrientes interiores en la extensión que fije la Ley. Cualquiera otra corriente de agua no incluida en la enumeración anterior se considerará como parte integrante de la propiedad privada que atraviese; pero el aprovechamiento de las aguas, cuando su curso pase de una finca a otra, se considerará como de utilidad pública y quedará sujeta a las disposiciones que dicten los Estados.

(Séptimo párrafo) La capacidad para adquirir el dominio de las tierras y aguas de la nación se regirá por las siguientes prescripciones:

I. Sólo los mexicanos por nacimiento o por naturalización y las sociedades mexicanas tienen derecho para adquirir el dominio de las tierras, aguas.....

VI. Los condueñazgos, rancherías, pueblos, congregaciones, tribus y demás corporaciones de población, que de hecho o por derecho guarden el estado comunal tendrán capacidad para disfrutar en común las tierras, bosques y aguas que les pertenezcan o que se les haya restituido o restituyeren, conforme a la Ley del 6 de enero de 1915.....

Desde su nacimiento, el artículo 27 ha experimentado 16 distintas reformas. Sin embargo, para los efectos de esta nota importa la cuarta de ellas, ocurrida el 21 de abril de 1945, cuya parte sustancial amplió el alcance de las *aguas nacionales* en los siguientes términos:

Las aguas del subsuelo pueden ser libremente alumbradas mediante obras artificiales, y apropiarse por el dueño del terreno, pero cuando lo exija el interés público, o se afecten otros aprovechamientos, el Ejecutivo Federal podrá reglamentar su extracción y utilización y aún establecer zonas vedadas, al igual que para las demás aguas de propiedad nacional. Cualquiera otras aguas no incluidas en la enumeración anterior, se considerarán como parte integrante de la propiedad de los terrenos por los que corran o en los que se encuentren sus depósitos, el

aprovechamiento de estas aguas se considerará de utilidad, y quedará sujeto a las disposiciones que dicten los Estados.

No obstante la pésima redacción de la reforma, queda clara a fin de cuentas la intención del legislador constitucional de *agregar* las subterráneas al listado de las aguas nacionales, cuando establece que el ejecutivo federal ejercerá una serie de atribuciones "...al igual que para las demás aguas de propiedad nacional". En última instancia, la consideración Sexta de la Iniciativa con que el Presidente Manuel Avila Camacho envió su propuesta de reforma no deja lugar a dudas:

.....Que la utilización cada vez mayor y más frecuente de las aguas del subsuelo para el abastecimiento de las poblaciones, abrevadero de ganados, usos industriales o para el cultivo agrícola, reclama que se establezcan bases legales que permitan reglamentar y controlar su aprovechamiento, sin menoscabar la iniciativa privada y aceptando como norma general que el dueño de un predio puede alumbrar y apropiarse libremente las aguas subterráneas en su propio terreno, salvo en los caos que medie el interés público.....

Hasta antes de la reforma, las aguas subterráneas no habían recibido ningún tipo de tratamiento en la disposición constitucional por lo que su aprovechamiento cabía dentro de la previsión genérica que, hacia el final del párrafo quinto, había hecho el legislador en el sentido de que todas las aguas no incluidas en la enumeración se consideraban "parte integrante de la propiedad privada que atravesase, pero el aprovechamiento de las aguas cuando su curso pase de una finca a otra, se considerará como de utilidad pública y quedará sujeta a las disposiciones que dicten los Estados".

El efecto neto de la reforma fue el de comprender a las aguas subterráneas entre las nacionales, ampliando con ello en forma definitiva su control sobre prácticamente cualquier tipo de agua y haciendo virtualmente imposible la participación de los gobiernos estatales, dado que el concepto prácticamente comprendía, de manera inequívoca, la totalidad de las aguas.

LA CREACIÓN DE LA COMISIÓN NACIONAL DEL AGUA

A finales de los años ochenta, este modelo de gestión hizo crisis: no pudo sostenerse ni fue capaz de hacer crecer la frontera agrícola con riego, al mismo tiempo que la revolución urbano industrial rebasó la disponibilidad del agua, así como la capacidad de los sistemas hidrológicos para procesar adecuadamente los contaminantes.

Ante esta situación, se crea en 1989 la Comisión Nacional del Agua, que adopta la forma de un organismo federal desconcentrado, con la pretensión, entre otras, de que, a diferencia de sus antecesoras, fuera abandonando gradualmente las funciones de construcción, operación y financiamiento de los sistemas hidráulicos, los que habría de transferir a las autoridades locales y a los usuarios.

En este sentido, el resultado neto consistió en la transferencia de los distritos de riego a los usuarios, a través de una estrategia que contempló tres ángulos fundamentales: la autosuficiencia financiera, la independencia administrativa y la eficiencia en el uso del agua.

En el momento de su creación, una de las primeras tareas de la CNA fue la de readecuar el marco jurídico del agua a las nuevas necesidades del país, por lo que en 1992 se publica la Ley de Aguas Nacionales que confiere a la CNA una serie de atribuciones que la transforman en autoridad federal única del agua, señalándose de manera expresa en su artículo 4 que

La autoridad y administración en materia de aguas nacionales y de sus bienes públicos inherentes corresponde al Ejecutivo Federal, quien la ejercerá directamente o a través de la Comisión Nacional del Agua.

De acuerdo con esta ley, a la CNA le corresponde, entre otras funciones:

- Otorgar los permisos de extracción de agua y descarga de aguas residuales,
- Formular el programa nacional hidráulico,
- Recaudar y fiscalizar las contribuciones relativas al agua,
- Expedir las normas en materia hidráulica y
- Vigilar el cumplimiento y aplicación de la ley.

La Ley de Aguas Nacionales es complementada con la Ley Federal de Derechos, la cual establece cuotas que deben pagar los usuarios por utilizar las aguas nacionales.

Un punto central en la instrumentación de estrategias para garantizar el desarrollo sustentable del recurso agua es la participación de los usuarios y las autoridades locales en la planeación y el manejo del agua, por lo que la Ley de Aguas Nacionales de 1992 prevé la formación de Consejos de Cuenca, como instancias de coordinación y concertación entre los gobiernos federal, estatal y municipal, y los representantes de los usuarios de la respectiva cuenca o grupo de cuencas hidrológicas.

En síntesis, México cuenta con tres grupos de instrumentos para el manejo del agua:

- Los reglamentarios, cuyo fundamento es la Ley de Aguas Nacionales
- Los económico-financieros, cuya base es la Ley Federal de Derechos en Materia de Agua, y
- Los instrumentos de coordinación y concertación, a través de los Consejos de Cuenca, con los que se aspiraba a desatar un proceso de descentralización de atribuciones a los usuarios y gobiernos locales.

LA NATURALEZA DE LA DESCENTRALIZACIÓN EN MÉXICO

En México, la descentralización es un proceso relativamente nuevo, quizá no tanto en el lenguaje, pero sí en las prácticas de la administración pública. Su instrumentación se ha abocado principalmente a distender las presiones políticas planteadas por la excesiva concentración de decisiones en el gobierno federal.

Es decir, la descentralización en México se ha hecho consistir en una herramienta para afrontar crisis, implicando un reconocimiento de errores acumulados por una administración pública que ha concentrado más atribuciones que las que es capaz de ejercer con eficacia. Ese reconocimiento se ha expresado en decisiones políticas que de manera intermitente han tenido lugar en el país a partir de la década de los años ochenta, inaugurando este aliento descentralizador la reforma municipal impulsada por el presidente Miguel De la Madrid que, como lo señala Victoria Rodríguez²¹, fue decisiva no sólo porque puso los cimientos sobre los que se han construido los programas de descentralización subsecuentes, sino también porque inició el desarrollo de una “cultura de la descentralización” en México. En respuesta a la demanda generalizada de una mayor descentralización, De la Madrid envió al Congreso de la Unión una iniciativa para modificar el artículo 115 de la Constitución Política, fortaleciendo al orden de gobierno municipal al

²¹ *La Descentralización en México. De la Reforma Municipal al Nuevo Federalismo*. Fondo de Cultura Económica, México, 1999.

que se dotaba de nuevas atribuciones y recursos, delineando en la iniciativa la justificación política de la reforma en los siguientes términos:

La centralización que en un periodo anterior permitió que el país acelerara su crecimiento económico y su desarrollo social ha dejado de ser útil y se ha convertido en una severa limitación para el proyecto nacional del país.....

A la reforma municipal le siguió la descentralización educativa de la que si bien se habían sentado las bases en el gobierno del Presidente José López Portillo, (1976-1982) mediante la desconcentración que permitió la creación de 31 delegaciones generales de la Secretaría de Educación Pública en cada una de las entidades federativas, a las que se dotó de responsabilidades y funciones operativas, no fue sino hasta el gobierno del Presidente De la Madrid cuando se transfirió la responsabilidad absoluta de la educación básica y normal federal a los gobiernos estatales, lo que implicó no sólo desconcentrar la administración educativa, sino descentralizar constitucional y políticamente la educación desde el gobierno federal a los estados y Municipios.²²

Otro hito de la reforma política descentralizadora fue el caso de los servicios de salud, también durante el gobierno del Presidente De la Madrid, dentro de la estrategia general de *descentralización de la vida nacional*, iniciándose el proceso en los servicios dirigidos a población abierta (la que no está incorporada a algún sistema de seguridad social), proponiéndose integrar en un solo organismo los servicios que antes prestaban los gobiernos federal, estatal, el Programa de Solidaridad Social por Cooperación Comunitaria y la Coordinación General del Plan Nacional de Zonas Deprimidas y Grupos Marginados. El objetivo era acercar los recursos y los procesos de toma de decisiones al lugar donde se generaban las demandas de salud. En forma complementaria y a fin de generar el marco constitucional y legal adecuado, se reformó el artículo 4 de la Carta Magna y se promulgó la Ley General de Salud en la que se definieron las facultades que correspondía ejercer al gobierno federal y aquellas en las que concurrirían las entidades federativas y los municipios.

LOS CONSEJOS DE CUENCA COMO EXPERIENCIAS DE DESCENTRALIZACIÓN EN MATERIA DE AGUA

Si bien es cierto que en materia de planeación, desde 1975 el Plan Nacional Hidráulico²³ reconoció que en el aprovechamiento de los recursos hidráulicos la cuenca resultaba la unidad de planeación más adecuada, especialmente porque con ello se respetarían los espacios naturales del ciclo hidrológico y sería posible establecer un valor promedio a la disponibilidad del agua, no fue sino hasta la reforma legislativa de 1992 cuando en México las estructuras institucionales tendieron a ajustarse a esta regionalización natural que trasciende la geografía política estatal.

El artículo 13 de la Ley promulgada en ese año creó los Consejos de Cuenca en los siguientes términos:

La Comisión, previo acuerdo de su Consejo Técnico, establecerá consejos de cuenca que serán instancias de coordinación y concertación entre la CNA, las dependencias y entidades de las instancias federal, estatal o municipal y los representantes de los usuarios de las distintas cuencas hidrológicas, con el objeto de formular y ejecutar programas y acciones para la mejor administración de las aguas, el

²² Luis F. Aguilar Villanueva. *El federalismo mexicano: funcionamiento y tareas pendientes*. Hacia un nuevo Federalismo. Alicia Hernández Chávez, Coordinadora. F.C.E. México, 1996.

²³ “Antología de la Planeación en México”. Tomo 5. Secretaría de Hacienda y Crédito Público. Fondo de Cultura Económica. México, 1985.

desarrollo de la infraestructura hidráulica y de los servicios respectivos y la preservación de los recursos de la cuenca.

Ningún artículo de la Ley abordó de nuevo el tema de los consejos de cuenca y no fue sino hasta el Reglamento de ésta, en cuyo Título Segundo, Capítulo III, se alojaron tres artículos (15 a 17) en los que se abordan los temas relativos a:

4. Su delimitación territorial (que corresponde al área geográfica de la cuenca);
5. Su integración (El Director General de la Comisión Nacional del Agua, quien lo preside; un Secretario Técnico, que carece de voto; un representante de los usuarios de la cuenca por tipo de uso y cuyo número no será inferior al resto de los integrantes del Consejo; los titulares de los poderes Ejecutivos de las entidades federativas comprendidas en la cuenca, quienes concurren a invitación de la CNA, así como un número indeterminado de funcionarios de dependencias y entidades de los gobiernos federal, estatales y municipales, así como instituciones, organizaciones y representantes de organizaciones sociales que se considere conveniente por los miembros del consejo, en el entendido de que sólo disponen de voz en las sesiones.)
6. Su organización y funcionamiento, (de acuerdo con reglas expedidas por la CNA, las cuales determinarán acciones y procedimientos para la realización de una serie de acciones orientadas a proponer lineamientos que reflejen la realidad del desarrollo hidráulico en la cuenca; promover la participación de autoridades y sociedad en la formulación, aprobación, seguimiento, actualización y evaluación de la programación hidráulica de la cuenca; promover la integración de comisiones de trabajo para plantear soluciones y recomendaciones; concertar con la CNA las prioridades de uso y los demás instrumentos previstos en la programación hidráulica; apoyar las gestiones necesarias para lograr la concurrencia de los recursos técnicos, financieros, materiales y tecnológicos que requiera la ejecución de acciones, y participar en el desarrollo de estudios financieros que lleve a cabo la CNA con objeto de determinar los montos de las contribuciones de los usuarios para apoyar la ejecución de la CNA).

En suma, tenemos que la coordinación Federación-Estados-Municipios en materia hídrica en el país, propuesta en la Ley de Aguas Nacionales de 1992, tiene un marco de actuación que se denomina consejo de cuenca y, analizada su naturaleza, podemos decir que se trata, en estricto sentido, de una entidad de apoyo, de consulta a los gobiernos y grupos locales, pero carente de atribuciones ejecutivas.

Es una entidad coadyuvante de la autoridad federal en la planificación, gestión, control y fiscalización de las acciones a realizar. Sus acuerdos no son vinculantes, dado que la autoridad federal tiene, de manera unilateral, la más absoluta facultad discrecional para asumirlos o desecharlos, si así lo considera conveniente, por lo que la Ley de Aguas Nacionales nada aportó en materia de descentralización, ni en sus aspectos administrativos ni en sus aspectos políticos.

Es decir, la reforma legislativa de 1992 no aportó, estrictamente hablando, ningún elemento a favor de la descentralización y en ese sentido hay que reconocer la congruencia existente entre los apartados conceptuales de la Ley y los que proveen el marco institucional de actuación de la autoridad. Congruencia de la que, como veremos más adelante, carece la abundante reforma de abril de 2004.

A lo sumo, la Ley de Aguas Nacionales de 1992, planteó, en su artículo 5º, la posibilidad de que el Ejecutivo federal se *coordine* con los gobiernos de las entidades federativas y municipios, cuidándose bien el legislador de agregar, en el más puro estilo centralista: “...sin afectar sus facultades en la materia.....”, si bien es correcto que así fuera, dado que en la estructura jerárquica de la legislación mexicana, una ley reglamentaria de una disposición constitucional, como lo es la de Aguas Nacionales,

respecto del artículo 27 constitucional que fija el régimen jurídico de las aguas nacionales y confiere a “la Nación” -que, para efectos prácticos, es el Gobierno Federal- la propiedad de las aguas “nacionales” -que son prácticamente todas- no puede pasar por encima de la disposición de origen, es decir, la norma constitucional reglamentada.

Hay que repetirlo: en México, la gestión del agua no presenta ningún grado de descentralización ni en lo administrativo ni en lo político.

La descentralización administrativa es una forma jurídica en que se organiza la administración pública, mediante la creación de entes públicos, dotados de personalidad jurídica y patrimonio propios. De acuerdo con la Doctrina²⁴, de manera unánime, el único carácter que se puede señalar como fundamental del régimen de descentralización, es el de que “*los funcionarios y empleados que lo integran gozan de autonomía orgánica y no están sujetos a los poderes jerárquicos*”. Es una forma jurídica en que se organiza la administración pública, mediante la creación de entes públicos por el legislador, responsables de una actividad específica de carácter público.

Es decir, la esencia de los organismos descentralizados es su separación de la administración central, en el sentido de que no están sujetos a las decisiones jerárquicas de ésta, por lo que es, al mismo tiempo, *una separación orgánica, administrativa y técnica*.

En suma, la descentralización administrativa es una técnica de organización jurídica de un ente público que integra una personalidad a la que se le asigna una competencia territorial y un conjunto de atribuciones, a efecto de que las ejerza en forma autónoma, no subordinada jerárquicamente a otro ente central.

Desde la perspectiva política, este tipo de descentralización constituye una forma de distribuir el ejercicio del poder entre distintos entes de derecho público, ubicados en distintos órdenes de gobierno y, más concretamente, atañe a la delegación o transferencia de facultades de la Federación a los gobiernos de los Estados.

EL MARCO FEDERAL MEXICANO

A diferencia de otras constituciones de tipo federal, en México los poderes de la Unión ejercen atribuciones delimitadas de manera expresa, mientras que las entidades federativas gozan de facultades implícitas, según la fórmula dual prevista por el artículo 124:

Las facultades que no están expresamente concedidas por esta Constitución a los funcionarios federales, se entienden reservadas a los Estados.

Esto no quiere decir, como lo señala Jorge Carpizo²⁵ que los poderes de cada estado pueden actuar libremente, sin otra limitación que la de no invadir la esfera de las atribuciones de la Federación, pues también dichos poderes deben funcionar conforme a las facultades expresas que les otorgue la Constitución local respectiva.

²⁴ Miguel Acosta Romero. Teoría General del Derecho Administrativo. Editorial Porrúa, México, 1979; Gabino Fraga, Derecho Administrativo. Editorial Porrúa, México, 1973; Diccionario Jurídico Mexicano. Instituto de Investigaciones Jurídicas de la U.N.A.M., México, 1993.

²⁵ *Constitución Política Comentada*, etc...

Si bien este mecanismo de distribución resulta sencillo, ello es sólo en apariencia, pues la propia Constitución señala una serie de reglas adicionales que definen los siguientes tipos de facultades:²⁶

1. Facultades atribuidas a la Federación;
2. Facultades atribuidas de manera expresa o tácita a las entidades federativas;
3. Facultades prohibidas a la Federación;
4. Facultades prohibidas a las entidades federativas de manera absoluta y relativa;
5. Facultades coincidentes;
6. Facultades coexistentes;
7. Facultades de auxilio, y
8. Facultades derivadas de jurisprudencia de la Suprema Corte de Justicia de la Nación

Tomando en cuenta que no es propósito de este trabajo entrar a la discusión del tema, sino simplemente dejar apuntadas la variedad -ciertamente confusa- de alternativas que ofrece el marco constitucional mexicano de distribución federal de competencias entre órdenes de gobierno, recorro al marco conceptual de la *coordinación* que nos ofrece el maestro José Ma. Serna de la Garza²⁷, que nos refiere cuatro modalidades básicas que admite el régimen constitucional mexicano de las relaciones de colaboración y que se deriva del análisis del significado y de las implicaciones normativas de todas aquellas disposiciones que en el texto constitucional mexicano hacen referencia a la *coordinación* o a la *concurrentia*.

1. La coordinación como principio de organización

En este caso, los órdenes de gobierno actúan en una posición de igualdad jurídica y deciden ejercer de común acuerdo ciertas competencias que la Constitución prevé que se ejerzan en forma separada. Ninguna de las partes tiene facultad de imponer a la otra su criterio, lo que hace que los órganos de coordinación tengan carácter puramente deliberante y sus resoluciones carezcan de efectos vinculantes, señalando como ejemplo la disposición constitucional²⁸ en la que se señala que la federación, los estados y los municipios impulsarán el desarrollo regional de las zonas indígenas “...mediante acciones coordinadas entre los tres órdenes de gobierno....”

2. La Coordinación como título competencial formal o procedimental

En este caso se alude a una competencia para establecer obligatoriamente un método de actuación tanto de los poderes propios como de los ajenos, un *ensamblaje*, señala el autor, de las diversas competencias que recaen sobre el sector, señalando como ejemplo de esta forma de coordinación la facultad del Congreso de la Unión para aprobar leyes que establezcan bases de coordinación en materia de seguridad pública y de protección civil.

3. La coordinación como fórmula de cooperación

Este caso se refiere a la coordinación como la posibilidad de un ejercicio mancomunado, de forma que una determinada actuación pública sólo puede ser realizada en forma conjunta: ambas partes intervienen en un único proceso de decisión, señalándose como ejemplo el caso de la regulación “conjunta y coordinada” de las conurbaciones.²⁹

²⁶ Carpizo, Jorge, “Comentario al artículo 124 constitucional”. Derechos del Pueblo Mexicano. México a través de sus constituciones, México, Cámara de Diputados, LV Legislatura, Miguel Angel Porrúa, 1994, pp. 953-959.

²⁷ “El Régimen Constitucional de las relaciones de Colaboración del Sistema Federal Mexicano”.

²⁸ Artículo 2, inciso B, fracción I.

²⁹ Artículo 122 constitucional, apartado G, inciso c).

4. La coordinación o la concurrencia como título competencial material

Por último, este caso se refiere al otorgamiento expreso de una competencia sustantiva al orden de gobierno federal que le permite incidir sobre las competencias de los otros órdenes de gobierno, es decir, en este caso la coordinación aparece, en sí misma, como una competencia sustantiva que habilita al poder central a imponer a los gobiernos locales el marco de una política sectorial, encontrándose en este caso la fracción XXIX-C del artículo 73 constitucional que establece la facultad del Congreso de la Unión para expedir las leyes que establezcan la concurrencia del Gobierno Federal, de los Estados y de los Municipios, en el ámbito de sus respectivas competencias, en materia de asentamientos humanos.

Como vemos, al lado de este sistema *dual* que contempla nuestra Constitución y que importa una distribución rígida de competencias, con efectos residuales para las entidades federativas, ha venido evolucionando, aunque de forma incipiente, un sistema más flexible de coparticipación o colaboración, si bien debe reconocerse que la reserva formal a favor de las entidades federativas que establece el artículo 124 ya mencionado, se ha traducido en que la Constitución ha otorgado muy pocas materias a los estados, bastando como ejemplo el listado de las 30 fracciones de que consta el artículo 73 constitucional en el que se señalan el grueso de las materias sobre las que ejerce facultades legislativas el Congreso de la Unión, amén de otras disposiciones que le otorgan las mismas facultades, como el artículo 26 (en materia de planeación del desarrollo) o el 28 (en materia de monopolios, control de precios y protección al consumidor).

La revisión de algunas disposiciones del mencionado artículo 73, nos permite valorar en su justa medida las materias en las que, en todo caso, la Federación ha decidido generar efectivamente algún mecanismo de colaboración -específicamente de descentralización- con los gobiernos locales, así como los límites impuestos a dicha colaboración:

Artículo 73.- El Congreso tiene facultad:

XXIII.- Para expedir leyes que establezcan las **bases de coordinación** entre la Federación, el Distrito Federal, los Estados y los Municipios, en materia de **seguridad pública**.....

XXV.-así como para dictar las leyes encaminadas a **distribuir convenientemente** entre la Federación, los Estados y los Municipios el ejercicio de la **función educativa**

XXVII.-

La Federación tendrá jurisdicción sobre los planteles que ella establezca, sostenga y organice, sin menoscabo de la libertad que tienen los Estados para **legislar sobre el mismo ramo educacional**.....

XXIX.-

Las entidades federativas **participarán en el rendimiento de estas contribuciones** especiales, en la proporción que la ley secundaria federal determine.....

XXIX-C.- Para expedir las leyes que establezcan la **concurrencia del Gobierno Federal, de los Estados y de los Municipios**, en el ámbito de sus respectivas competencias, en materia de **asentamientos humanos**, con objeto de cumplir los fines previstos en el párrafo tercero del artículo 27 de esta Constitución.

XXIX-G.- Para expedir leyes que establezcan la **conurrencia del Gobierno Federal, de los gobiernos de los Estados y de los Municipios**, en el ámbito de sus respectivas competencias, en materia de **protección al ambiente y de preservación y restauración del equilibrio ecológico**.

XXIX-I. Para expedir leyes que establezcan las bases sobre las cuales la Federación, los estados, el Distrito Federal y los municipios, **coordinarán sus acciones en materia de protección civil**.

XXIX-J. Para legislar en materia de **deporte**, estableciendo las bases generales de **coordinación de la facultad concurrente entre la Federación, los estados, el Distrito Federal y municipios**; asimismo de la participación de los sectores social y privado.

XXIX-K. Para expedir leyes en materia de **turismo**, estableciendo las **bases generales de coordinación** de las facultades concurrentes entre la Federación, Estados, Municipios y el Distrito Federal, así como la participación de los sectores social y privado.

XXIX-L. Para expedir leyes que establezcan la **conurrencia del gobierno federal, de los gobiernos de las entidades federativas y de los municipios**, en el ámbito de sus respectivas competencias, en materia de **pesca y acuicultura**, así como la participación de los sectores social y privado.

En los casos de asentamientos humanos, medio ambiente, salud y educación, la promulgación de leyes *generales* ha brindado una alternativa de auténtica descentralización, que si bien adolece de las debilidades propias de una estrategia decidida y arbitrada desde el centro³⁰, representa un fenómeno indiscutible de competencias compartidas que confiere a las entidades federativas una transferencia neta de atribuciones que les ha permitido ocupar un espacio en el que ejercen su potestad legislativa en materias cruciales para la orientación de su desarrollo.

Al contrario de lo ocurrido en estas materias, en el caso del agua el marco constitucional, y su ley reglamentaria, han sido hasta ahora inflexiblemente centralistas. Al respecto, el citado artículo 73 no deja lugar a dudas al establecer a favor del Congreso de la Unión la facultad de:

.....dictar leyes sobre vías generales de comunicación, y sobre postas y correos, **para expedir leyes sobre el uso y aprovechamiento de las aguas de jurisdicción federal**.

Si relacionamos esta disposición con lo establecido por el artículo 27 de la propia Constitución en el que se definen los alcances del concepto *aguas de jurisdicción federal* que ya hemos señalado, aunado a lo dispuesto por el artículo 4º de la Ley de Aguas Nacionales, que establece que “la autoridad y administración en materia de aguas nacionales y de sus bienes públicos inherentes corresponde al Ejecutivo Federal, quien la ejercerá directamente o a través de la Comisión Nacional del Agua”, podemos entender el monopolio que el gobierno federal ejerce en la materia y que se expresa no sólo en sus atribuciones para marcar la política del agua, sino además porque posee las facultades suficientes para hacerse consistir en la pieza fundamental de la gestión.³¹

³⁰ Martín Díaz y Díaz. “México en la vía del federalismo cooperativo. Un análisis de los problemas en torno a la distribución de competencias”. Barra Mexicana-Colegio de Abogados, Homenaje a Fernando Alejandro Vásquez Pando, México, 1996.

³¹ Parrado, Salvador y Sancho, Tomás. “Análisis de los Consejos de Cuenca en el Ámbito del Sistema Mexicano de Gestión del Agua”. Organización Meteorológica Mundial, quien atribuye a los autores las opiniones, conceptos y recomendaciones expresadas en el estudio.

LA REFORMA A LA LEY DE AGUAS NACIONALES DE ABRIL DE 2004

Más allá de la magnitud de la reforma de 2004 a la Ley de Aguas Nacionales, resulta importante rescatar una serie de documentos que le antecedieron y que, en perspectiva, anunciaban la decisión del Gobierno Federal de imprimirle a la reforma un federalismo de corte cooperativo, no autoritario.

En este sentido, resulta útil referirnos a los términos en los que esta forma específica de descentralización está conceptualizada en tres instrumentos de política fundamentales para el Sector Hídrico nacional.

1. El Programa Especial para un Auténtico Federalismo 2002-2006

Expedido por la Secretaría de Gobernación, este programa señala entre sus objetivos fundamentales, el de *“impulsar la transferencia de Facultades, funciones, responsabilidades y recursos de la Federación a los gobiernos locales.”*

2. El Programa Nacional Hidráulico 2001-2006.

En sentido semejante y más concretamente en materia de gestión del agua, este programa señala: *“Para que el marco legal responda a las necesidades del sector se requiere revisarlo a fin de mejorar la efectividad en el manejo descentralizado del agua. La presente administración consolidará la descentralización de los programas de infraestructura hidroagrícola y de agua potable y saneamiento, instrumentará los mecanismos necesarios para transferir programas, funciones y recursos a las entidades federativas.*

En congruencia con ese objetivo, el propio Programa propuso mejorar el manejo del agua asumiendo el compromiso expreso de *“apoyar la adecuación de los marcos legales y administrativos estatales en materia hidráulica a fin de fortalecer la participación estatal en el sector y fomentar la creación de Comisiones Estatales de Aguas, mismas que se conciben como organismos públicos descentralizados cuyo objetivo principal será fungir como promotor del desarrollo hidráulico en el estado y en las que recaerán las funciones que transfiere la Comisión Nacional del Agua.*

3. El Programa Nacional de Medio Ambiente y Recursos Naturales 2001-2006

En sentido semejante, este programa señala expresamente como uno de los pilares de sus objetivos estratégicos: *“el fortalecimiento de las relaciones entre los tres niveles de gobierno, para evitar la excesiva concentración de funciones en la federación”*, indicando que la descentralización efectiva de la gestión ambiental y de los recursos naturales, será eje rector de la Secretaría de Medio Ambiente y Recursos Naturales y de sus órganos desconcentrados, entre ellos la Comisión Nacional del Agua, enfatizando que *“lo que se pretende es fortalecer las capacidades locales de gestión y aumentar la eficiencia administrativa del gobierno en su conjunto.”*

Por otro lado, la propia exposición de motivos de la reforma dejaba en claro la aspiración de mejorar los niveles de coordinación entre los niveles locales de gobierno y el nivel central, así como ampliar la ingerencia de aquéllos niveles de gobierno en la gestión del recurso, tal como se desprende de la lectura del siguiente apartado:

“...es necesario considerar plenamente el reclamo social de que se cambie el estado que guarda la gestión del agua en México, todavía con gran intervención de los niveles centrales en actividades específicas que hace tiempo deberían ser directamente gestionadas en las cuencas del país, en los estados y en los municipios sin requerir tutela alguna desde el ámbito central....Paulatinamente,

México va quedando rebasado por otros países Latinoamericanos con niveles de desarrollo apreciables, como Chile, Argentina, Brasil, Perú y Colombia, debido a las dificultades para desconcentrar y descentralizar la gestión pública del agua.”

Sin embargo, al contrario de los compromisos programáticos y políticos señalados hasta aquí, la reforma legislativa propuesta por el Ejecutivo Federal y publicado en el Diario Oficial de la Federación el 29 de abril de 2004, lo único que propone es:

1. La creación de los organismos de cuenca, que dejan de ser las actuales gerencias regionales que en pocas palabras no representan sino una experiencia regional de desconcentración de atribuciones que en última instancia seguirán residiendo en el ámbito central de decisiones de la propia Comisión Nacional del Agua.
2. La reestructuración de los consejos de cuenca, como instancias de coordinación y concertación, carentes de facultades, atribuciones y recursos.

Tal parece que la inclusión de la figura de los Consejos de Cuenca formó parte de compromisos de carácter institucional asumidos por la CNA, como parte de las negociaciones financieras que favorecerían a programas impulsados por el Gobierno Federal, como lo señala Parrado:³² *“En la ronda de negociaciones entre el Banco Mundial y la CNA para la elaboración de la nota conceptual (primera fase crucial del proceso) del préstamo que financiaría el PROMMA II, los responsables del Banco Mundial manifestaron que uno de los elementos claves que condicionaría el préstamo estaría vinculado a la capacidad que el proyecto tendría de demostrar que las decisiones que afectan a la cuenca se adoptan en el nivel más cercano a la misma, por los actores del agua que en ella se encuentran.....”*, lo que en última instancia explicaría la desmesurada profusión discursiva y programática de la idea descentralizadora por el Estado; la reiterada aparición explícita del tema en el texto de la Ley y la ampliación del articulado correspondiente a los Consejos de Cuenca, si bien con avances nulos en los hechos.

El autor de esta nota considera que lejos de avanzarse en la descentralización de la gestión del agua, la reforma fortaleció aún más el centralismo, pues consolidó la presencia del Gobierno Federal a nivel regional mediante la erección de organismos -que indebidamente reciben esa denominación, pues se trata de simples órganos- plenamente subordinados a la jerarquía central.

Si juzgáramos el esfuerzo legislativo significado en la Ley por la magnitud cuantitativa de la reforma, tendríamos que reconocer que no tiene precedente: de un total de 124 artículos, se reformaron 114; se adicionaron 66 y se derogaron 2.

Por lo demás, a diferencia del texto original que, como vimos, nada contemplaba en materia de descentralización, la reforma a la Ley de Aguas Nacionales incluyó 13 distintas alusiones, en los siguientes términos:³³

1. Artículo 5. Para el cumplimiento y aplicación de esta Ley, el Ejecutivo Federal:

III. **Favorecerá la descentralización** de la gestión de los recursos hídricos conforme al marco jurídico vigente.

2. Artículo 7 BIS. Se declara de interés público:

³² Op. Cit. Página 29

³³ El texto de los artículos ha sido editado, conservando íntegros los párrafos que aluden a la descentralización.

II. **La descentralización** y mejoramiento de la gestión de los recursos hídricos por cuenca hidrológica, a través de Organismos de Cuenca de índole gubernamental y de Consejos de Cuenca de composición mixta, con participación de los tres órdenes de gobierno, de los usuarios del agua y de las organizaciones de la sociedad en la toma de decisiones y asunción de compromisos;

III. **La descentralización** y mejoramiento de la gestión de los recursos hídricos con la participación de los estados, del Distrito Federal y de los municipios;

3. Artículo 9. "La Comisión" es un órgano administrativo desconcentrado de "la Secretaría", que se regula conforme a las disposiciones de esta Ley y sus reglamentos, de la Ley Orgánica de la Administración Pública Federal y de su Reglamento Interior.

Son atribuciones de "la Comisión" en su Nivel Nacional, las siguientes:

I. Fungir como la Autoridad en materia de la cantidad y de la calidad de las aguas y su gestión en el territorio nacional y ejercer en consecuencia aquellas atribuciones que conforme a la presente Ley corresponden a la autoridad en materia hídrica, dentro del ámbito de la competencia federal, **con apego a la descentralización** del sector agua, excepto las que debe ejercer directamente el Ejecutivo Federal o "la Secretaría" y las que estén bajo la responsabilidad de los Gobiernos de los estados, del Distrito Federal o municipios.

XVI. Regular los servicios de riego en distritos y unidades de riego en el territorio nacional, e integrar, con el concurso de sus Organismos de Cuenca, los censos de infraestructura, los volúmenes entregados y aprovechados, así como los padrones de usuarios, el estado que guarda la infraestructura y los servicios. **Esto no afectará los procesos de descentralización** y desconcentración de atribuciones y actividades del ámbito federal, ni las disposiciones, facultades y responsabilidades estatales y municipales, así como de asociaciones, sociedades y otras organizaciones de usuarios de riego, en la coordinación y prestación de los servicios referidos.

XXV. Celebrar convenios de coordinación con la Federación, el Distrito Federal, estados, y a través de éstos, con los municipios y sus respectivas administraciones públicas, así como de concertación con el sector social y privado, y favorecer, en el ámbito de su competencia, en forma sistemática y con medidas específicas, **la descentralización de la gestión** de los recursos hídricos en términos de Ley.

4. Artículo 12. El Director General de "la Comisión" tendrá las facultades siguientes:

X. Apoyar y verificar el cumplimiento del carácter autónomo de los Organismos de Cuenca, en los términos dispuestos en la presente Ley y en sus reglamentos, conforme a los **procesos de descentralización** de la gestión de los recursos hídricos.

5. **Artículo 14 BIS 3.** El Instituto Mexicano de Tecnología del Agua es un organismo público descentralizado sectorizado a "la Secretaría", que tiene por objeto, de acuerdo con su instrumento de creación y estatuto orgánico, realizar investigación, desarrollar, adaptar y transferir tecnología, prestar servicios tecnológicos y preparar recursos humanos calificados para el manejo, conservación y rehabilitación del agua y su entorno, a fin de contribuir al desarrollo sustentable.

El Instituto se apegará a lo dispuesto en la presente Ley y en sus reglamentos en materia de **descentralización del sector agua**, y favorecerá la participación de instituciones académicas y de investigación del país en el cumplimiento de las atribuciones contenidas en este Artículo.

6. Artículo 14 BIS 5. Los principios que sustentan la política hídrica nacional son:

IV. Los estados, Distrito Federal, municipios, consejos de cuenca, organizaciones de usuarios y de la sociedad, organismos de cuenca y "la Comisión", son **elementos básicos en la descentralización** de la gestión de los recursos hídricos;

7. Artículo 15 BIS.....

Los Gobiernos de los estados, del Distrito Federal y de los municipios conforme a su marco normativo, necesidades y prioridades, podrán realizar programas hídricos en su ámbito territorial y coordinarse con el Organismo de Cuenca correspondiente, para su elaboración e instrumentación, en los términos de lo que establece esta Ley, la Ley de Planeación, y otras disposiciones legales aplicables, **para contribuir con la descentralización** de la gestión de los recursos hídricos.

8. Artículo 20.....

El Gobierno Federal podrá coordinarse con los gobiernos de los estados y del Distrito Federal, a través de convenios de colaboración administrativa y fiscal para la ejecución por parte de estos últimos, de determinados actos administrativos y fiscales relacionados con el presente Título, en los términos de lo que establece esta Ley, la Ley de Planeación, la Ley de Coordinación Fiscal y otras disposiciones aplicables, para **contribuir a la descentralización** de la administración del agua.

9. Artículo 85....

El Gobierno Federal podrá coordinarse con los gobiernos de los estados y del Distrito Federal, para que estos últimos ejecuten determinados actos administrativos relacionados con la prevención y control de la contaminación de las aguas y responsabilidad por el daño ambiental, en los términos de lo que establece esta Ley y otros instrumentos jurídicos aplicables, para **contribuir a la descentralización** de la gestión de los recursos hídricos.

10. Artículo 113 BIS 1.....

"La Comisión" y los Organismos de Cuenca podrán coordinarse con los gobiernos de los estados y del Distrito Federal, para que estos últimos ejecuten determinados actos administrativos relacionados con los bienes nacionales al cargo de "la Comisión", en los términos de lo que establece esta Ley y otros instrumentos jurídicos aplicables, para **contribuir a la descentralización** de la gestión de los bienes referidos.

Lo que resulta de los textos transcritos hasta aquí es que la Ley introduce el concepto de la descentralización, sin comprometerse con su instrumentación y sus alcances. Como afirma María Luisa Torregrosa:³⁴ está claro que todo proceso de descentralización de funciones implica el derivar espacios de poder en la gestión del recurso, previamente concentradas a nivel federal, a otros ámbitos de gobierno y sectores. El hecho de que (con la reforma a la Ley de Aguas Nacionales en México) no hay claridad en los ámbitos de poder que se van a transferir y a qué instancia y nivel territorial de ingerencia, ha favorecido la confusión respecto a qué función y responsabilidades tiene cada instancia, tanto las gubernamentales federales, estatales y municipales, como los Consejos de Cuenca.

³⁴ "Gestión Integrada de Consejos de Cuenca en México. Un Proceso en Construcción" IV Congreso Ibérico sobre Gestión y Planificación del Agua. Tortosa, Cataluña, España. Diciembre de 2004.

Lejos de verse mejorada la idea descentralizadora, lo que se desprende de los textos es que el Gobierno Federal, *favorecerá* la descentralización, en los términos que discrecionalmente considere pertinentes, no sólo en cuanto a su oportunidad, sino en lo que se refiere a las materias, grados, regiones, etc. Es decir, la Ley no descentraliza -ni fija las reglas para ello- sólo menciona que tiene el propósito de hacerlo.

Por otra parte, al lado de estas disposiciones, aparece una Comisión Nacional del Agua fortalecida, pues de las 16 fracciones en las que la Ley de 1992 enlistaba sus atribuciones, la reforma de 2004 las elevó a 54, consolidando además su presencia regional a través de los llamados *organismos de cuenca*, cuya naturaleza ha sido asumida erróneamente como un esfuerzo descentralizador, cuando en realidad sólo se trata de su propia consolidación regional.

Por efecto de la reforma legislativa, la Comisión Nacional del Agua, por conducto de estos Organismos de Cuenca, conserva el ejercicio de la autoridad en la materia, así como la gestión integrada de los recursos hídricos, incluyendo la administración de las aguas nacionales y de sus bienes públicos inherentes.

Sobre este particular, la lectura del Artículo 9 no deja lugar a dudas, al señalar:

.....

La Comisión tiene por objeto ejercer las atribuciones que le corresponden a la autoridad en materia hídrica y constituirse como el Órgano Superior con carácter técnico, normativo y consultivo de la Federación, en materia de gestión integrada de los recursos hídricos, incluyendo la administración, regulación, control y protección del dominio público hídrico.

En el ejercicio de sus atribuciones, "la Comisión" se organizará en dos modalidades:

- a. El Nivel Nacional, y*
- b. El Nivel Regional Hidrológico - Administrativo, a través de sus Organismos de Cuenca.*

Los Organismos de Cuenca constituyen, como puede verse, un fenómeno de *desconcentración* -no de descentralización- pues como otro de los artículos adicionados -el 12Bis 1- lo señala: los Organismos de Cuenca, en las regiones hidrológico-administrativas son unidades técnicas, administrativas y jurídicas especializadas, adscritas directamente al Titular de la CNA

En todo caso, por si alguna duda existiera todavía, el artículo 12 Bis 2 la despeja definitivamente al señalar que “*..el Director General del Organismo de Cuenca, estará subordinado directamente al Director General de Comisión Nacional del Agua.*”

Es decir, lo que se tiene es una autonomía técnica, propia de un órgano desconcentrado, y la esperada descentralización se redujo a que la principal función de los Organismos de Cuenca consista en ser el conducto para realizar las tareas a cargo de la CNA (artículo 12 Bis, primer párrafo); y cuyo Director General se encuentra directamente subordinado al Director General de la CNA (artículo 12, Bis 2, segundo párrafo) y sea nombrado por el Consejo Técnico de la CNA, a propuesta del Director General de la misma; que los recursos a cargo de los Organismos y las disposiciones para su manejo y rendición de cuentas serán determinadas por la CNA (artículo 12, Bis 5); que los Organismos ejercerán sus atribuciones conforme a los lineamientos que expida la CNA (12 Bis 6), etc.

En síntesis, las anteriores características significan que los llamados Organismos de Cuenca, responden a una denominación inadecuada como “organismos”, en virtud de que sólo son *órganos* desconcentrados de otro desconcentrado (la CNA) de la SEMARNAT, aunque ello no sea muy explícito en la Ley.

En este sentido, resulta relevante precisar la definición de la desconcentración administrativa, con la que típicamente coinciden los llamados *Organismos de Cuenca*, para lo cual recurrimos a lo dispuesto por el artículo 17 de la Ley orgánica de la Administración Pública Federal que señala:

Para la más eficaz atención y eficiente despacho de los asuntos de su competencia, las Secretarías de Estado y los Departamentos Administrativos podrán contar con órganos administrativos desconcentrados que les estarán jerárquicamente subordinados y tendrán facultades específicas para resolver sobre la materia y dentro del ámbito territorial que se determine en cada caso, de conformidad con las disposiciones legales aplicables.

Por otra parte y aunque ello no tenga más relevancia que la de enfatizar que, lisa y llanamente, estamos en presencia de un fenómeno administrativo de carácter estrictamente centralizado, la situación que se presenta en el caso de los Organismos de Cuenca, es decir, la existencia de un desconcentrado de un desconcentrado no es nítidamente coherente con el artículo 17 de la Ley Orgánica de la Administración Pública Federal, del que se desprende que los desconcentrados sólo se subordinan directamente a los Secretarios de Estado.

En suma, lo que tenemos que hacer es reconocer que la reforma legislativa no contribuye a la descentralización de atribuciones a los niveles locales de gobierno. Que lo que tenemos es un fenómeno de desconcentración administrativa, representada por organismos regionales que conservan, respecto de la autoridad central, una clara y expresa subordinación jerárquica, tal como corresponde a un ente desconcentrado. En buena medida, pudiera decirse que lejos de estar en presencia de una auténtica descentralización administrativa, lo que advertimos es que se perfecciona el control centralizado de la política hidráulica en el país, al desconcentrar a nivel regional la presencia del gobierno central con la suma absoluta de las atribuciones en la gestión del agua.

Lamentablemente, innumerables estudios y documentos oficiales asumen que los consejos de cuenca en México forman parte de un proceso de descentralización, si bien le anteponen una variada adjetivación: incipiente, reciente, insuficiente, etc., con lo que desplazan el debate central que, a mi juicio, debe iniciar con el reconocimiento de que, en materia de descentralización de la gestión del agua, en México aún no se ha dado el primer paso.

Una de los inconvenientes que ello ocasiona es el desánimo de los usuarios y los gobiernos locales, pues si bien intuyen que con la conformación de los Consejos de Cuenca se han dado los pasos encaminados a la formalización de las instancias de participación y de decisión compartida, no tardan mucho en advertir que sus expectativas no corresponden con la realidad, dado que la estructuración institucional de la cuenca (Organismo de Cuenca y Consejo de Cuenca) presenta una clara desvinculación, al mismo tiempo que tales instancias carecen de facultades para gestionar los asuntos de su incumbencia, ubicándose, en todos los casos, por encima de ellos, la CNA.

Cuando el artículo 13 de la reformada Ley de Aguas Nacionales establece que los Conejos de Cuenca, *no están subordinados a la CNA o a los Organismos de Cuenca*, preconizando con ello su pretendida fortaleza -vía su carácter independiente- lo que en realidad consigue es desarticular la participación de los usuarios de los ámbitos del poder real en la gestión, impidiendo la decisión conjunta, que es la forma más elaborada de la participación y la única que garantiza el compromiso con las decisiones.

En el estudio de Parrado³⁵ se enlistan los síntomas que posee la generación de frustraciones en el proceso participativo de la cuenca en México:

³⁵ Op. Cit. Página 45

- La participación de los usuarios no siempre se ha producido al inicio de los procesos decisorios, sino en estadios avanzados de éste;
- La CNA ha proporcionado buena información técnica respecto a los temas que debían ser tratados en los órganos auxiliares; sin embargo, los usuarios representantes se quejan de no tener información de quiénes son los usuarios de la cuenca, es decir, sus representados.
- No hay muchos acuerdos ni resultados vinculantes del proceso participatorio para todos los actores involucrados en él;
- No ha existido un debate en el seno de la CNA antes de la implementación de los instrumentos de la participación sobre los temas en los que deberían participar los usuarios, qué grupos de actores deberían ser involucrados en el proceso, cuáles son previsiblemente sus expectativas y qué instrumentos de participación serían los adecuados para ello, y
- En ocasiones, el tiempo para que los usuarios opinen ha sido muy escaso.....

La paradoja del centralismo en la gestión del agua en México es que siendo el nuestro un sistema formalmente federal, presenta los problemas típicos de los estados unitarios: saturación, desapego, burocratismo, ineficacia, etc.

En un estudio reciente³⁶ en el que se evalúan los conflictos por el agua ocurridos en el país entre los años 1990 y 2002, -cuyo número ascendió a 5 mil, aproximadamente- los autores ubican la insuficiencia de los mecanismos de negociación necesarios en esta materia, como una de las causas que ha dificultado su resolución, urgiendo el estudio de las atribuciones, funcionamiento real y recursos (económicos, legales y humanos) de los consejos de cuenca para una mejor comprensión de la capacidad potencial de esta figura para resolver problemas.

En suma, con todo y la limitaciones que se quiera, lo cierto es que cuando el Gobierno Federal ha decidido compartir responsabilidades con otros órdenes de gobierno, ha impulsado las reformas constitucionales adecuadas a ese propósito, mediante el uso del mecanismo que representan las leyes *generales*.

Nadie dudará hoy día que en las condiciones actuales, caracterizadas por la complejidad y heterogeneidad social y económica del país y con enormes rezagos sociales, sea conveniente rechazar una única autoridad federal en materia de agua para enfrentar una serie de problemas estructurales, lo que nos lleva a proponer, siguiendo al Dr. José Ma. Serna de la Garza³⁷, la realización de un proceso de descentralización que sea, al mismo tiempo, selectivo y gradual que no reste a los poderes de la Unión capacidad de acción, entendiendo el proceso como una gran estrategia de fortalecimiento de las capacidades del Estado Mexicano en su conjunto y no del gobierno federal o de los gobiernos estatales por su cuenta, lo que implica, también, reconocer los distintos grados de desarrollo de las entidades federativas y, por tanto, rechazar la adopción de “soluciones” uniformes que disimulan las diferencias, tal como ocurre en la actualidad con los denominados “acuerdos” de coordinación entre el gobierno federal y los gobiernos de las entidades federativas que, en un formato único para Chiapas, Sinaloa, Zacatecas o Nuevo León,

³⁶ Mariana Becerra Pérez, Jaime Sainz Santamaría y Carlos Muñoz Piña. “*Los conflictos por agua en México. Diagnóstico y Análisis*”. Gestión y Política Pública. Volumen XV Número 1. Primer Semestre 2006. CIDE. México.

³⁷ “La Lógica Centralizadora del Sistema Federal Mexicano”. Instituto de Investigaciones Jurídicas de la U.N.A.M. México, 2005.

establece unilateralmente los compromisos de las “partes”, pues como afirma Mauricio Merino³⁸ *la descentralización no ha tendido al reconocimiento de la diversidad regional mexicana, sino a la homogeneidad de criterios, políticas e instrumentos, pues los estados han de aprobar leyes comunes y de aceptar formatos iguales para acceder a las ventajas políticas de la descentralización. Los rasgos peculiares de estados y municipios, en cambio, se han entendido como trabas que complican el proceso.*

A mi juicio la Ley General del Equilibrio Ecológico y la Protección al Ambiente (Artículos 11 y 12), es un buen ejemplo de cómo avanzar en la identificación de las particularidades y en la gradualidad de las decisiones, pues en sus disposiciones contemplan las materias que son susceptibles de convenirse entre el gobierno federal y los estatales, reconociendo con ello, por lo demás, la posibilidad de que la iniciativa surja de las propias entidades federativas, comprometidas en este caso a acreditar que cuentan con las capacidades suficientes para ello.

En el caso de la gestión del agua, una decisión de esta naturaleza debe ir acompañada de una verdadera y constructiva discusión, con una agenda comúnmente acordada entre gobiernos. Una discusión que permita definir y traducir en acciones concretas el discurso descentralizador del Estado. En principio, para definir los límites mismos de la descentralización y que nos permita convenir respuestas responsables y claras a preguntas tales como: ¿Quién puede responsabilizarse de cada una de las funciones relacionadas con la gestión del agua? ¿Cuál es el margen de participación que se considera óptimo? ¿Hasta dónde se puede descentralizar el sistema? A mi juicio, esa discusión debe iniciarse reconociendo que en México, en esta materia, todo está por hacerse.

³⁸ “La (des) centralización en el sexenio de Carlos Salinas. Foro Internacional. Enero-Junio 1996. El Colegio de México.