The Situation in Mexico

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Abstract:

Water management in federal countries is a complex matter per se, which requires an analysis with different approaches, taking into consideration technical, political, social, environmental and economic aspects. Generally, success in the administration of water resources is more affected by social and political aspects than by technical or environmental aspects. Mexico is not alien to this situation and although it has made considerable progress in the administration of water resources, very significant differences persist between water availability and economic and social development. This work focuses on the analysis of the progress made within the legal framework that took place with the reform of the National Water Act in 2004, and on addressing the aspects that most affect water management in Mexico, including inconsistencies in the different water uses, as well as the limitations that a lack of political will gives rise to in the legal framework.

I. Introduction

It may seem that an analysis on water issues must be approached from a technical and environmental viewpoint. However, economic, social and political aspects must also be taken into consideration when the situation of water in a country is reviewed, as these are the factors that, in the majority of the cases, lead to a country having successful water management. Mexico is not alien to this situation and although its technical and natural problems are varied, the main curb to an adequate management of water sources, resides in social and political factors.

The different federal and state authorities have acknowledged that the question of water is an issue that is both strategic and of national security, which has become a central element in environmental policies as well as social and economic development. Its availability conditions the possibilities of growth and development of a large part of the Mexican territory.

II. General Information about Mexico

Mexico covers a surface area of 1,964,375 km^2, and an exclusive area of territorial sea of 3,149,920 km^2. It also has considerable climate diversity due to its relief. Two thirds of the national territory is considered arid or semi-arid, whilst the south-east is wet, with more than 2,000 mm of rainfall year in some areas.

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Mexico has 31 federal states and one federal district (D.F.) comprised of 2,439 municipalities and 16 D.F. delegations respectively.
According to the last population census in the year 2005, there were 103.26 million inhabitants, of whom 77% were located in urban areas, whilst 23% were in the rural areas. The population density is 52 inhabitants per km^2.

Related to its economy, the GDP per capital in Mexico in 2007 was 8,400 dollars, and the inflation registered in the year was 3.76%.

III. Information of the water sector in Mexico

In Mexico, the water of the rivers, lakes and aquifers belongs to the nation and its administration corresponds to the Executive Power. The country is divided for hydrological-administrative purposes into 13 regions based on the river basins and not the political-administrative divisions, which in turn are divided into 653 aquifers or hydrogeological units.

Figure 2.1 Hydrological-Administrative Regions

a. Mean natural availability of water

Mexico receives around 1.51 billion cubic metres in the form of rainfall, of which only 1.9% infiltrates the subsoil and recharges the aquifers. The country has mean natural availability of 465 billion cubic metres of renewable fresh water.

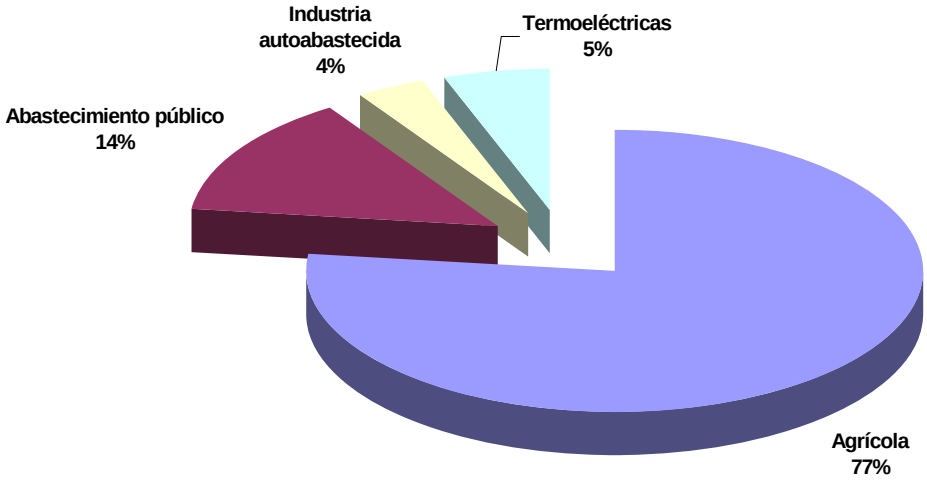
The mean natural availability per inhabitant is 4,416 m^3/inhab/year, which has dropped considerably over the past decades. In some hydrological-administrative regions, the availability per capita is particularly low, as is the case of region XIII "Aguas del Valle Mexico" where the mean natural availability is 144 m^3/inhab/year due to the excessive concentration of population around the country's capital.

b. Water Uses

63% of the water used in the country comes from surface sources (rivers, streams and lakes), whilst the remaining 37% comes from ground sources (aquifers)

In agreement with the water use, agricultural activities occupy the largest concession volume with 77% of the total.

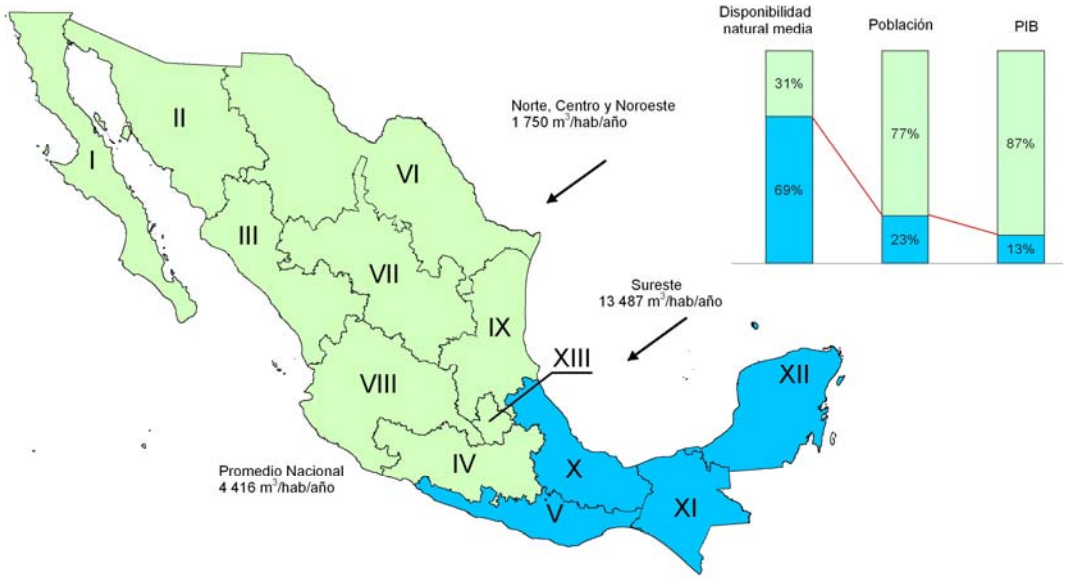
Figure 2.2 Percentage distribution of the concession volume by types of use.



c. Regional contrast between water development and availability

In agreement with the mean natural availability, the country can be divided into two areas: North, Centre and Northwest with 1,750 m3/inhab/year and the Southeast area with an availability of 13,487 m3/inhab/year. Based on this division very important contrasts can be pointed out between availability, population and GDP, as the majority of the population and contribution to the value of the country's production is concentrated in the areas with less availability, as seen in figure 2.3.

Figure 2.3 Regional contrast between development and water availability



d. Inconsistencies in the distribution and administration of water

The current distribution and administration of water in the country results in some inconsistencies between the uses and development generated.

- The agricultural sector, which makes use of the largest amount of water in the country, employs approximately 20% of the economically active population and only generates 6.5% of the GDP.
- Irrigated agriculture uses 78% of the water abstracted in the country. The methods applied are traditional in more than 80% of the surface and the average efficiency in the use of water is estimated at 46%
- Agricultural use does not pay duties for the water used.
- The water resource is considered as being subject to moderate pressure; however, in the centre, north and northwest areas it is a limiting factor for development.

IV. Water Management in Mexico

a. Legal framework

The legal framework that governs water management in Mexico is based on the Political Constitution of the United Mexican States. It is established therein that the ownership of the water included within the limits of the national territory corresponds originally to the Nation. Likewise, the conditions are mentioned for the water to be considered as federal, or of state or private jurisdiction, practically all the surface waters of the country and all its aquifers corresponding to the former.
Table 4.1 Legal framework of water management in Mexico

• Political Constitution of the United Mexican States • Art. 27, 28, 115 • National Water Act (LAN) and its regulation. • Federal Duty Act • General Health Act • Official Mexican Standards	**FEDERAL**
• State laws in water-related matters	**STATE**
• Laws in municipal matters • Municipal regulations • Administrative provision	**MUNICIPAL**

b. Institutional Framework

The National Water Commission (CONAGUA) is the administrative, regulatory and consultative body in charge of exercising authority in national water matters in Mexico. CONAGUA is a de-concentrated administrative body of the Secretariat of the Environment and Natural Resources (SEMARNAT). It is constituted according to the National Water Act (LAN) and its attributions are organised within the national, regional and local areas.

On national matters, CONAGUA must act as the authority in issues related to the quantity and quality of the water and its management in the national territory, as well as exercise the attributions that correspond to it as established in the LAN.

At a regional level, the authority in water related matters corresponds to the Basin Authorities (formerly Regional Managements), which are responsible for administering and preserving the national waters in each one of the 13 hydrological-administrative regions.

c. Water Management until 2004

Prior to the reform made to the LAN, water resource management was not included within the State participation field, limiting the development capacity of the States.

The limitations and most impacting criticism of water management included:

- CONAGUA is the only possible arbitrator at all levels of change, exchange or conflict
- It is widely surpassed with respect to water management responsibilities.

- It favours the different development levels of the States, going from total indifference and inability, to interference with federal responsibilities with respect to legislation.
- Lack of regulation, planning and policies related to water issues in general and drinking water and sanitation services in particular.
- Lack of coverage and quality in all senses
- Plundered basins due to over-concession and with serious environmental risks.

V. Reform to the National Water Act (LAN)

In 2004, a series of different proposals made by the Union Congress generates the amendment of the Law:

- The world water crisis as a threat to safety and social stability.
- International acknowledgement of water management with a human-environmental-economic approach.
- Water considered as a strategic resource and of national security.
- Increase of local conflicts due to the use of the resource.
- Insufficient organised participation of society.
- Growing impact on the degradation of the ecosystems due to the contamination of the resource.
- Limited response capacity of states and municipalities in water management

The reform to the National Water Act occurs in response to the intention to reconsider the control of the resource and to foster the existence of a policy that shifts from a centralised allocation model that is unsustainable faced with the relative scarcity of water resources, to a joint responsibility model between the three orders of government and society, that will contribute to integrated water management. The problem must be transformed from an issue centred on public investment and on the unlimited access to water, to another model based on the construction of a mechanism that fosters the efficient use of water, with the aim to guarantee its availability in an immediate future via the recovery of the basins and its water balance, with full knowledge, approval and participation of users and society in general.

For the reform to have sufficient effect so as to provoke a structural change, it should address the decentralised and participative management and organisation, including an administration of the resource through Basin Councils and Authorities, looking for:

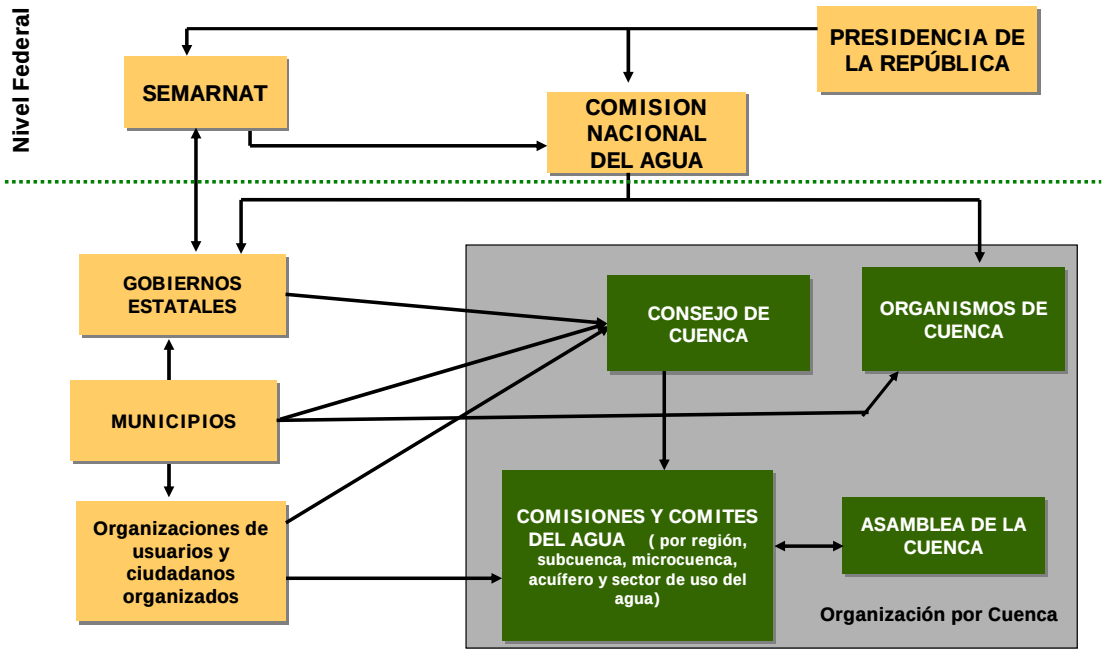
- Shared responsibility between government orders and users
- Healthy financial system, which will permit decentralisation with autonomy in the destination of the resources.
- Democratic institutions with ample attributions in the Basin Authorities
- Efficient administration and planning systems in water-related matters
- Development of an integral information system in water-related matters.

The reform poses the following governing principles for a water policy

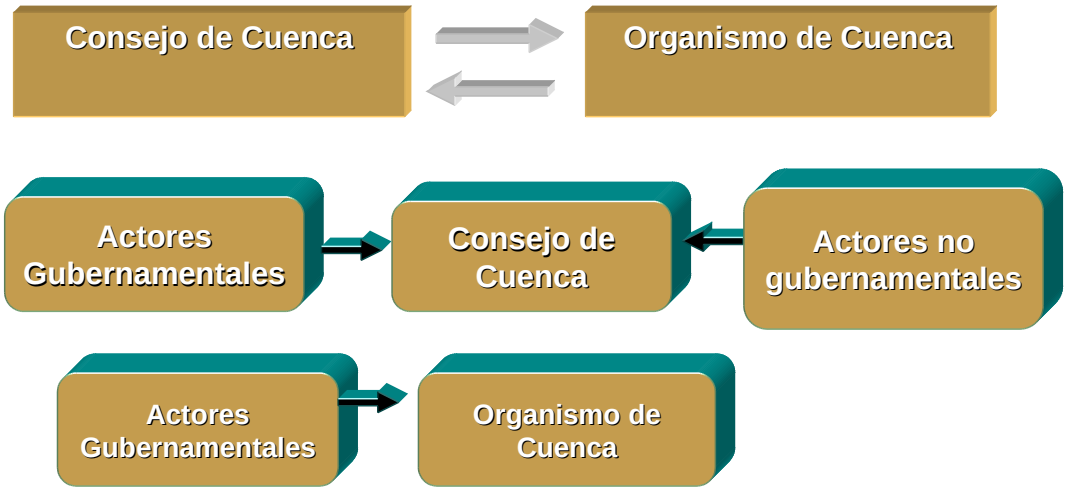
- Water is public property, it is vital, vulnerable and finite, with an economic, social and environmental value.

- Integrated water management by river basins is based on a national water policy and on direct action with the decisions of local players.
- The attention of the water demands must be aimed at social well-being, economic growth and environment protection.
- The water uses by basins, including aquifers, must be regulated by the State.
- The State must guarantee that the water concession and allocations are based on the real availability of the resource.
- The State will promote solidarity in water-related matters between federative entities, users and organised society, with the support of the Basin Councils and Authorities.
- The integrated water management is closely linked to sustainable development.
- Integrated water management makes it possible to:
    - Have a common vision of all the problems of water
    - Mitigate or solve conflicts
    - Use the available potentials of the resource.
    - Attend to social needs.
    - Develop the economy.
    - Protect the environment.

Figure 5.1 Operation diagram with the new LAN



With the new LAN a new bimodal participation model is adopted where the basin boards and basin organisations interact with the different government and non-government players.



The main additional characteristics of the new act include:

- Improvement in the protection of water rights and its management, with criteria of social equity and respect for investments
- Reinforcement of the conditions to transmit rights
- Clarification of the role of the Public Water Rights Registry (REPDA), which operates regionally.
- Establishment of obligations in the repair of environmental damage, in addition to the payment of duties and imposition of sanctions
- Establishment of bases to organise a financial system
- Reinforcement of the administrative sanctions and classification of unlawful acts in connection with the Federal Criminal Code.

Joint responsibilities are derived from the new LAN between States and Municipalities, highlighting among others:

- Promotion among user organisations.
- Investment and support in the measurement of the resource.
- Feasible proposals to prevent, use, control and treat water.
- Promotion in the increase of efficiency, quality and coverage in drinking water, sewage and sanitation in urban and rural areas.
- Improvement and restoration of hydro-agricultural systems.
- Support to organisms, operators and users.
- Development of research, development and technology transfer projects.
- Promotion of private participation schemes.
- Promotion and participation of society in the preservation and care of water.

VI. Strong and weak points of the new LAN

The amended LAN, conceptualised in the Union Congress, with little participation by CONAGUA and rejected at the beginning by the Federal Executive, was approved, including amendments that leave a very controversial document, as it does not go far enough for some, presenting complex and incomplete amendments, but including concepts that many, including the centralist part, would never have accepted. It poses decentralisation but it does not define it and leaves it for the players to battle out in the political terrain of the conciliation of interests.

The lack of political will, at this time, to apply the LAN with all its consequences regarding the opening up to decentralisation, has created a stagnation that seeks to maintain the centralisation of the administration of the resource.

On the other hand, having considered the compulsory decentralisation in the reform of the Act, its application would have had to have been carried out in an unlimited manner, not considering the peculiarities and position of each federative entity, some of which want and can, others want, but cannot, some may oppose it, but do not want to and others do not want and cannot. The alternative of advancing gradually and via conciliation agreements would permit advancing gradually and according to the requested or appropriate rhythm for each State. However, this opening-up permits, among other possibilities, the lack of prevailing political will that is concluded in a reform where everything remains the same.

VII. Conclusions

Reality has surpassed the institution that concentrates water-related functions and a management of the public administration in agreement with the 21st century is required, with the application of the principles of the amended LAN. Sustainable development guides us towards the need to think globally and act locally. In administration terms, a solution to the problems must be sought at the level where they are generated, where people's participation in water decisions is possible and feasible. Nobody better than the actual users to solve their problems.

The federal government must limit itself to create the conditions, with a joint several and subsidiary approach towards users and society, with the States and Municipalities being jointly responsible.

To efficiently advance in the solution, the problem must be approached integrally and holistically, and it must count on the following considerations:

- The water management guidelines must be urgently modified, making it truly integrated and participative

- The applicable law, although imperfect, is an appropriate instrument to take the necessary steps in this sense.

- Political will and conciliation of interests is necessary to gradually and sustainably advance in accordance with the capacity and willingness of each federative entity.

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