

AN INTERNATIONAL BASIN MANAGEMENT COUNCIL
IN THE NORTH MEXICAN BORDER.

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ABSTRACT: The border Mexico-USA shares 3,326 km from which 1,740 km are water it means 52.31% of the border. The difference from other countries is that this border has legal instruments related with the quantity of the water and how it can be divided. The treaty that gives the division of the waters was signed in 1944 and creates an International Boundary Water Commission (in spanish Comisión Internacional de Límites y Aguas (CILA) encharged of follow up the treaty and generate all the mechanism to attend the problems in any moment. However nowadays both countries have signed another legal instruments (Convenio de la Paz, Programa Frontera XXI, etc.) to include others items such as ecological issues, trying to look for regulate the bilateral relationship since the bilateral holistic point of view but none of them substitute the Treaty of 1944, that is the reason why it regulates the issues today. Under these circumstances, the geographical area requires of mechanisms that attend this holistic situation, this is why this article promotes the creation of the International Watershed Council, where CILA with international knowledge and historical work in the zone is the main basement of this Council and by a serial steps promotes changes and by this way CILA can become in an equitable mechanism which reduces the conflicts resulted from the well management of the bilateral waters in a context of an asymmetrical border.

KEY TERMS: Basin Council, equitable mechanism, asymmetrical border, Holistic management of water.

INTRODUCTION

Border Mexico-USA is singular in the world, because in this place live together the first world economy with a developing country, that is the reason why the characteristics are very particular and as all the borders has its problems, they can be classified in social, political, economical, and environmental issues. This border can't afford to be in conflict because its asymmetrical, this is the reason why the only way for living together is cooperation.

Between others, the legal line is one of the most important. In 1944 and since Century XIX, Mexico and USA looked for boundaries agreements including water resource. The master mechanism that follows up the agreements reached in the Treaty of 1944, is the CILA and the dynamic tool is the act. However, the circumstances that origin legal instruments already described above, is not anymore the same, at the beginning of Century XXI; population, economy and border interrelations increased, besides one item has emerged as a main variable that is environmental, and of course inside of it: water (because more than 50% of the border is water). Really is important modernized the master mechanism, and this is possible with the creation of the Basin International (Binational) Council, matter of this document, where CILA is the main base because the acknowledgement of its work by both countries and of course its historical rol.

Characteristics of the basins

The north mexican border shares with USA 3,326 km of which 1,740 km are water, it means 52.31% of the border, it is compound for the Colorado, Bravo and Tijuana rivers.

Colorado River Basin.

Colorado river flows through nine states in the two countries (7 in USA and 2 in Mexico). The river runs more than 2730 km, of which 38 km is shared as a border, between Arizona's southwest and Baja California's northeast. The river has its origin in the Rocallosas mountains, in the northwest of Denver, Colorado, in USA and has its flows towards California Gulf in Mexico.

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The hydrographical area of the watershed is 632,000 km², of which 5200 km² are in Mexico and the annual average volume (in 90 years of historic register) is 18,500 millions m³. The river irrigates more than 1.5 millions of hectares in the southwest of the USA and Mexico, and supplies water to 30 millions of inhabitants (Pitt *et al.*,2000).

There are about 10 major dams and 80 deviations in 2240 km of the Colorado river, that took water from the river to the agriculture and other uses. Many reasons already made drastically alterations in the Delta of the Colorado River between them we can find exploitation of the surface water and the ground water because the construction of the major dams (Hoover, Glen Canyon, Parker, etc.) the lining of the All American Channel, deviations of water and river channelizations, etc. (Pitt *et al.*,2000).

About 80 years ago the Delta was a fecund ecosystem, covering about more than 7700 km² it used to provide each year, millions of cubic meters of water charged of fertile land. Nowadays, less than 5% (about 400 km²) of the historic ecosystem remains and big part of it depends of the agriculture return flows and the occasional floods. The loss of the big part of the ecosystem of the Delta has devastated the fauna and its communities (Culp,2000).

The main problems that have been identified in the Delta river are: the decrease of the flood, increase of the pollution of water comes from the use and reuse resulted from the upstream run offs, where each day the human activity is increased, mainly through the agricultural production, energy generation and the municipalities demand, all of this provoked salinization, that is a serious problem for the river users, mainly in the down river basin and Mexico. All of this represent an overview not so good for Mexico as a last user of the river basin.

Distribution of the water in Colorado River nowadays is ruled by the Water Treaty signed in 1944 by Mexico and USA. Under this umbrella of the Treaty, USA is engaged to give to Mexico each year 1,850 millions of m³ and any other quantity of water that comes to the Mexican derivation points with certain conditions stipulated in the Treaty and in the delivering sites specified in the Art.11. Procedures to deliver are: Mexico, before the beginning of each civil year, present through CILA (Mexican side) an annual program of monthly assignment and also makes a weekly proposal of assignments by day. The Mexican requirement is transmitted by IBWC (USA side) to the Bureau of Reclamation who makes everything to achieve the delivering program.

Bravo River Basin.

Territorially watershed belongs half to Mexico and the other half to USA. The international river basin has a surface of about 457,000 km². From this total, 226,000 km² are in Mexican territory and 231,000 km² in USA. The economy in the USA side watershed, based in the data of Texas Water Development Board (TWDB) is based in agriculture, agroindustry, manufacture, mineral production, trade and tourism. The population is about one million of people, but for the year 2040 appraisals presume that will get 2.5 millions of residents always USA side (TWDB, 1990).

The total demand of water in the USA side is 951.7 millions m³. The biggest part is exported to other basins and basically is for the agriculture use. Water for irrigation is the main demand with 664.2 millions m³; follow by the municipal use with 242.0 millions m³. In the north part of the basin the main supplier is the aquifer. In El Paso the main user is agriculture and the main source is Elephant Dam.

Between the main problems that they are facing are sedimentation, floods, and water quality below the New Mexico Dam, all of them are affecting the conditions of the river and the deliveries to Texas. In the Amistad and Falcon Dams water uses are of recreation mainly (TWDB, 1990).

The water quality is affected by the salinity, suspended solid resulted from the agriculture and the municipalities and industrial discharges. The aquifers are going from potable to saline.

In the next 50 years the use of water is not going to change. However the projections of the water needs to municipal use is going to be twice in the year 2040.

For the Mexican side, the river basin represents 11.6 per cent of the total national territory. Inside of it there are huge urban and industrial settlements. It means, a population of more than eight millions of inhabitants and a little more of nine thousands industries. In general the river basin is an arid and semiarid region. In the downstream occurs the major precipitation with values rates of 458 millimeters. This is due that the major part of the rain is generating by the humidity that comes from the Gulf of Mexico (Herrera 1998).

In the basin 83% of the surface water is profitable; the 14.8% is lost by evaporation in the reservoirs, and the rest 6.7% is delivered to USA according to the International Treaty of 1944 (Herrera 1998).

The fast increase of the population (approximately 9 millions of inhabitants inside of the Mexican part of the basin), as well as the industry, have provoked more and more conflicts in the use and the profitable of the water between the different users, particularly in areas of the Mexican side of the Rio Bravo, where the availability is not advantageous. This has been provoked the need of transferring water from neighboring basins. As a resume, the watershed faces three critical points:

- Competition for the use of the resource among states and also between users (the last conflict registered by water in Mexico was between Nuevo León, Tamaulipas and National Water Commission about the understanding of the rights of the water, stipulated in the Agreement of Coordination for the profitable of the water in the basin of the San Juan River, signed in September 1990).
- Pollution of streams and reservoirs particularly in Río Bravo.

- Scarcity of the resource

Nowadays Río Bravo-Río Grande is ruled by Convention of 1906 and the Treaty of 1944, with the first, Mexico was used to receive 74 millions m³ to irrigate Juárez Valley, with the second is considered the water that comes from the tributaries and is delivered as follow: 2/3 part of the discharges of the Conchos River, San Diego, San Rodrigo, Escondido, Salado and Arroyo de las Vacas, the total volume that discharge from Alamo and San Juan and the ½ of the water of Río Bravo. To USA the deliver is as follow: the total of the waters from the Pecos, Devils rivers, manantial of Goodenough and Arroyos Alamito, Terlingua, San Felipe and Pinto. The half of the flow of Río Bravo, 1/3 of the stream coming from Conchos, San Diego, San Rodrigo, Escondido, Salado and Arroyo de las Vacas, not less all together and in cycles of five years consecutives than 431.72 millions m³.

Tijuana River Basin.

It has a surface of about 4,460 km², 72% of it is in Baja California mexican side, it means 3,215 km². Tijuana river begins in Agua Hechicera small stream, borns in Juárez Mountain Range, and recieve the discharges of three flows before to arrive to the Abelardo L. Rodríguez Dam. At this point is named Palmas small stream. Down stream of the dam, is called Tijuana River, cross the city, goes into american side and discharge finally in the Pacific Ocean. This river has an average anual volume of 79 millions m³. Related with groundwaters has three main acuíferos: Tijuana Valley, Tecate Valley and La Rumorosa-Tecate.

The main identified problem in the basin is the overexplotation and pollution of the acuíferos and small streams resulted mainly of the wastewater discharges from the big cities.

Actually the distribution of the water of the Tijuana river is ruled by the Water Treaty of 1944. In the Treaty never is mentioned the quantity of the water assigned to each country, but in the Art. 16, the proposal is related to an equitative distribution between both countries of the water of the system of Tijuana river.

LEGISLATIVES ASPECTS OF THE BASINS

In this geographical zone, the legislative context has a register of several Treaties that all of them has been looking the equitative shares of the waters and since few time ago the control of the quality of the water and the acuíferos.

Signed on March 1st, 1889 with ratification on November 21, 1900, Mexico and USA decided to subscribe the Convention to avoid difficulties resulted from the changes in the layers of the Bravo and Colorado Rivers and at the same time settle the Boundary International Commission (SRE, 1976), the main objective is examine and decide all the differences or questions resulted from the border related with changes in the layer of the rivers or any other issue that affect the border line related with the main issue (S.R.E./CILA, 1957).

In 1906 México and USA subscribed the Convention to Equitative Distribution of the Waters of Rio Grande, in 1933 was in effect the Convetion for the Rectification of North Río Bravo in the Juárez-El Paso Valley (SRE, 1976).

Later, in the Treaty about the Distribution of the International waters between Mexico and USA in 1944, the International Boundary Commission change the name to International Boundary Water Commission (CILA) to be in function all the time while the Treaty operating. CILA is compound by a Comissioner, a Consulting Engineer and any secretaries and translators considering convenient with residence in the border of the both countries. The characteristics of CILA are defined in the article 2 and they make reference that it is an international organism, compound by two sections, one for each country and in the case of Mexico belongs to the Ministry of Foreign Affairs, and in the case of USA to the State Department.

This Treaty rules through CILA the common use of the international waters, mainly the related to domestic, municipal, agricultural, cattle, and energy uses, also others uses non industrials, navigation, fish and hunt and any other beneficial use defined by the Commission, who also follows the agreements of waters, uses and civil works, stipulated in the Treaty, the mechanism is to do together reports to be submitted each two years to the respectives Governments (S.R.E./CILA, 1957).

The Treaty appoint that the Commission is going to make agreements called **acts**, these acts need to be approved by both Governments in a period of 30 days since the date of deliver, in the case of any of the Government is not agree, both going to take note and if they arrive to any agreement they need to comunicate to both Commissioners to be able to follow the procedures to take what they convene (SRE, 1976).

Treaty of Waters of 1944, celebrated between Mexico and USA establish the way of the distribution of the hydraulics superficial resources among both countries, and establish that both countries engaged to give preferential attention to the border problems in matter of sanitation.

Act 242 of CILA define the general criteria to management border groundwaters and Act 289 stablish the engaged of the joint observation of the waters quality, surfaces and groundwaters in the border line.

With the objective of improve and maintain the environmental conditions of the border line in 1983, Mexico and USA signed the Convention for the Cooperation, Protection and Improvement the Environment of the Border Line, called La Paz

Convention, because it was signed in South Baja California in Mexican side. This Convention ruled both countries for prevent, reduce or eliminate the pollution of water, air and soil in an area of 100 km to each side of the border line.

In February 1992, the environmental authorities of both countries formulated the Holistic Environmental Plan (PIAF) and later Frontera XXI, saw as a new era of the binational planning because involved two new items: environmental health and natural resources. The three main points are: put in practice the public awareness, enforcement of the building capacity, and guarantee the interinstitutional cooperation. The main environmental objectives were to be reached in five years, the main strategy was to establish evaluation program. Implementation of Frontera XXI Program was through eight Binational Groups related with air, water, dangerous residual solid, prevention of the pollution, emergency planning, cooperation to implement the law, environmental information, natural resources and environmental health. Nowadays it pretends to finish this Program.

CRITERIA TO IMPLEMENT AN INTERNATIONAL BASIN COUNCIL

This border is classified between the ruled, not only because the Treaty but because has a dynamic element that is **the act** elaborated by CILA. But nowadays the reality has overpass the structure and not only by itself but the emergency of the environmental issue and particularly for the water resource that has been raised to the international political scenario.

That is the reason why is not matter of controversy some declarations of the Commissioners about that CILA is an effective mechanism because has let the distribution of the resources and the observation of the quality of border waters surfaces and groundwaters, the controversy is when talk only of distribution and observation and not of remediation.

The true is that CILA is a mechanism of follow up but not of prevention, because is not considered two of the factors that modify the water availability (it means quantity and quality), they are: human being with the use and abuse of the resource and the other is related with the natural phenomena such as droughts, el niño, etc.

In this sense there is not easy access to information and public awareness is not working to take decisions. But is important to mention that CILA is not perverse, because some of the negotiations are closer to pro-USA than Mexicans, the real thing is that in many cases are factors that establish a criteria, it means in the other side of the border many things are made in a better way with less corruption, clearer laws and rules, with scientific groups more integrated, multidisciplinary, and in the Mexican side corruption, without information it doesn't mean that doesn't exist, divided groups, laws that don't work and in the worst case don't exist. Therefore when is necessary decide something is obvious that what is best work clear and legal comes from USA. That is the reason why is needed to look for equity in the border, beginning precisely from the asymmetrical situation.

But at the same time CILA has an advantage that is to be a legal mechanism with historical and transcendental work acknowledgement by both sides in matter of water, here is the point of beginning where is possible to modernize the mechanism through legal modifications.

The objective of promote the creation of a Bilateral Basin Council (BBC), is change the way of how we are managing water, the reason is that now a lot of people is not part of, but is part of the environmental deterioration, is necessary to create mechanisms to solve conflicts provoked by upstream pollution and natural extreme phenomena such as drought that impide at this moment to compliment water engaged to USA.

BBC proposal is as a conciliator mechanism, where planning by the users is necessary according with the quantity and quality of the resource, at the same way is the technological availability. Strategic need to include the local relation with the State, the USA Congress according with the structure that the federal policy has with the sector and the interest groups.

To achieve this objective is recommended the next (Herrera, 1998):

- Taking in account four elements from the international experience: planning, control, fiscally and evaluation
- Considering national and international legal structures, to be able to legitimate consensus to a conservation strategy; promote a major participation of the users considering the basin as a basic unity of planning and management, integrated the management of the water in quantity and quality; use efficiently the water and control the pollution given the title to the water in both sides as an economical and social good.
- New defines of the rol of actors: state need to be more supervisor that controller, training need to be direct to the institutional enforcement in priority areas related with research technological development it means planing, water management, environmental impact and water quality, hidrometeorology, hidroagriculture uses, sanitaton and potable water. Polluter-payer concept is need to joint to the user participation.
- BBC need to look of efficient use and planning that include the people who is directly affected, because the scarcity of water is due basically from pollution and abuse in the use of the resource.
- In 1994 was settled in the Mexican side the Rio Bravo Basin Council, is necessary make changes to make possible include the participation of the American side, to avoid that management of water became partial, this need to be holistic because water doesn't know about administrative border line.
- Is necessary taking in account that globality forces the openended because borders desappear, technological innovation implement, internationalitation of the production and distribution need to be part of the efficient use of the infrastructure, productive factors, educational level and training of the human resources.

- Necessary is to use the clause of the UNPD to reduce the risk in the process of negotiation because the size of USA, mainly because this Program recommends to all States who share natural resources formulate points of bilateral or multilateral agreements, in a way that the benefits not make harmful the development and interests of everybody particularly those from developing countries.

Besides, taking in account the international experiences, the elements that is need to be considered for the operation and implementation of the BBC are (Born S.M., Genskow K.D., 2001):

- The ecosystem that exists in the basin, all the ecological, hydrological etc., aspects.
- The problems derived from the socioeconomical and demographical aspects. Need to be consider the appropriation system (common, public and private) that exists in the basin, public policy related with water.
- Historical situation of the basin, it means *social capital* of the basin. The particularity of the basin what makes different from the others.
- The legal context that is in the basin.
- Which are the main variables that makes possible the team work or the joint participation in the basin.
- The organizational process, structure, decisions and educational levels.
- Leaderships and leaders.
- Academical support, research, etc. What makes possible a deep knowledge of what is happening in the basin.
- Governmental Structure.
- Financial Funds.
- Holistic Basin Management Plans (actions that have been made to solve the problems)

It is necessary evidentially to work in three additional main elements for the implementation of the BBC in an international basin: first what need to be understanding nowadays by sovereignty, second how is the implementation of the concept of equity in the relation upstream and downstream in an asymmetrical border and third a mechanism of dispute solution.

CONCLUSIONS

The shared basins Río Tijuana, Colorado and Bravo between Mexico-USA face problems of availability and pollution of water, this is due mainly to the increase of the growth of population in the border, and the use of water in the agriculture and industry. All of this users makes competition for water and the result is the conflict in this geographical area cannot afford to be on that. That is the reason why is necessary to work in a joint planning among two countries, for a long term with the idea to get an equitable distribution and a surveillance of the use and abuse of use of water.

Under this context, the document propose several ideas that need to be taking in account to create the Binational Basin Council, there are mainly four items as the most important: planning, management, fiscalization and evaluation. Considering three issues such as: legal and institutional advancements at international and national levels, the globality context and the implementation of international clauses that protect the environment. Also is necessary to mention all fourteen key elements needed to operate the implementation of the Basin Council, some of them are: ecosystem, demographical increase and socioeconomical aspects, laws, financial funds, the variables that makes possible the team work, leaders, governmental structure and holistic management plans, between others.

Finally is evidently that is necessary to work in three additional elements very important for the implementation of the BBC in an international basin, they are: what is necessary understand nowadays by sovereignty, how to manage in an asymmetrical border, the concept of equity to be implemented upstream and downstream and finally the mechanism of disputes solution.

Besides is necessary consider that the main basement of the structure of the BBC, is basically CILA because its historical and legitimate work acknowledgement by both countries.

REFERENCES

- Born, S.M., Genskow K.D., 2001. Toward Understanding. New Watershed Initiatives. A report from the Madison Watershed Workshop. University of Wisconsin-Madison. USA.
- Culp P. W., 2000. Restoring the Colorado Delta with the limits of the law of the River: The case for voluntary water transfers. The Udall Center for Studies in Public Policy. The University of Arizona. September.
- Herrera, A.P., 1998. La necesidad de una gestión sustentable en el manejo del agua en la zona fronteriza del Río Bravo. Facultad de Ciencias Políticas. Universidad Nacional Autónoma de México.
- Pitt, J., Luecke, D.F., Cohen M.J., Glenn E. P., and Valdés-Casillas C., 2000. Two Countries, One River Managing for Nature in the Colorado River Delta. Natural Resources Journal, Volume 40, No.4, fall.

Secretaría de Relaciones Exteriores (SRE), Comisión Internacional de Límites y Aguas (CILA) entre México y los Estados Unidos Sección Mexicana, 1957. Tratados y Convenciones sobre límites y aguas entre México y los Estados Unidos. Ciudad Juárez, Chihuahua, México.

Secretaría de Relaciones Exteriores, 1976. Tratado para resolver las diferencias fronterizas pendientes y para mantener a los Ríos Bravo y Colorado como la frontera internacional entre los Estados Unidos Mexicanos y los Estados Unidos de América. Tlatelolco, México.

Texas Water Development Board (TWDB), 1990. Water for Texas today and tomorrow, Austin Texas, USA.