

Magdalena River: a Tropical Institutionally Complex System, River and River Basin Strategies

La Rivière Magdalena: un système tropical institutionnellement complexe, fleuve et bassin versant

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RÉSUMÉ

La rivière Magdalena était le principal moyen de transport en Colombie, depuis quatre siècles. Au cours des 50 dernières années, il a été délaissé au profit du développement du réseau routier et des transports aériens. Son bassin versant de 257 000 km² regroupe environ 75% des habitants du pays. Dans ce contexte, la rivière et son bassin sont une priorité pour le développement colombien. CORMAGDALENA, conformément à l'article 331 de la Constitution colombienne ainsi que la loi 161 de 1994, a été créé comme une entité corporative spéciale de l'État, avec une autonomie budgétaire et financière administrative. La mission de CORMAGDALENA est de veiller à la pleine valorisation de la rivière Magdalena, en particulier en ce qui concerne la navigation, l'activité portuaire, l'aménagement et la conservation des sols, la production hydroélectrique et sa distribution, ainsi que d'établir les grandes lignes directrices pour la planification hydrologique, la gestion intégrée du fleuve et ses affluents, et la préservation de l'environnement. CORMAGDALENA a créé le Centre de recherche de la rivière Magdalena afin d'avoir un allié scientifique dans les processus de prise de décision. Les stratégies des cinq dernières années pour stimuler la navigation, les accords dans un cadre institutionnel complexe, et le système de coordination pour la gestion du bassin sont présentés dans cet article.

ABSTRACT

The Magdalena River was the main transportation medium along four and a half centuries in Colombia. During last 50 years of modern growing it was forgotten as long as roads and air transportation was developed. Its basin is 257 000 km² big and it has about 75% of Colombian inhabitants. As a result the river and its basin is a priority for Colombian development. CORMAGDALENA, in accordance with Article 331 of the Colombian Political Constitution, and the Law 161 of 1994, was constituted as a special corporative entity, with administrative budgetary and financial autonomy. CORMAGDALENA's mission is to ensure the full utilization of the Magdalena River, regarding to navigation, port activity, fitness and soil conservation, power generation and distribution and also issue guidelines for the hydrologic administration, river integrated management, sustainable use and environmental preservation. CORMAGDALENA created the Magdalena River Research Center in order to have a scientific ally for improving decision processes. The strategies in last five years for boosting navigation, deal with the complex institutional framework, knowing the system and basin coordination are shown in this article.

KEYWORDS

Governance Strategies, Navigation, Public Private Partnership, River Management

1 MAGDALENA RIVER BASIN: THE SYSTEM

Río Magdalena is the most important river in Colombia; running through the Andean and Caribbean regions, which are the centre of Colombia's development. It flows from South to North traversing a distance of around 1536 km with an average discharge of 7000 m³/s. The basin area is around 257,000 square kilometers, which corresponds to 22.8% of the total surface of Colombia. The average daily sediment load is around 370000 Ton, the yearly average precipitation is estimated 2000 mm with a variation in the inner basin from 800 mm to 5000 mm (Cormagdalena, 2009). The elevation in the basin varies from 0 to 5700 meters above sea level, and considering the tropical geographical position it configures a wide diversity of ecological conditions. Río Magdalena is one of the major sources of damage in Colombia caused by flooding.

Given the geological conditions, all the middle part of the river is constituted by a complex system of wetlands and a changing meandering river course. The young river's sediment dynamics offer a rich land in the middle basin for agricultural activities which compete against a vulnerable and rapidly reduced forest area.

In Magdalena river basin inhabits about 75% of Colombian population with its economical and livelihood activities. There are 728 municipalities in the river basin (Including the more important Cities in Colombia), 129 along the river (including Barranquilla the third biggest city in the country). They are organized in 20 provinces, 23 regional environmental authorities (not always the province corresponds to a regional environmental authority), 4 urban environmental authorities (for bigger cities) and 12 national natural parks. Municipalities and provinces have their own territorial governing office, regional environmental authorities, parks administrative units and urban environmental authorities, constantly overlaps functions and responsibilities. Regulations, requirements and policy normally come from the central government in an endemic top-down scheme which accentuates and perpetuates the technical weakness and low operative capacity of all the local and regional institutions.

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1.1 Management issues and instruments

The riparian municipalities in most cases show low live conditions and poorness. So through the creation of Cormagdalena, and ensuring its responsibility of coordinate efforts for river preservation and exploitation, the aim was to promote the improvement of live conditions of mentioned communities.

Cormagdalena was, in consequence, destined to deal with main issues related with river resources profiting. But at the same time was postulated as the public entity in charge of the coordination of all institutions effort in the basin. Main mandatory responsibilities from Cormagdalena, includes navigation, port activity, fitness and soil conservation, power generation and distribution, fisheries and freshwater natural resources conservation, and also issue guidelines for the hydrologic administration, river basin integrated management and stakeholders efforts coordination.

Even when Cormagdalena was constituted in 1996, first decade it was dedicated to know the system and the river uses organization. Efforts in River basin Management were done by the issue of the Magdalena River Basin Land Use Planning. During second half of the institution life, efforts in river flood management were done. In last six years a second refining process for the river basin management with the support of French Government led to the issue of the Magdalena River Basin Management Plan (PMC, given its acronym in Spanish). That Plan represents a more operative instrument to define goals or objective to coordinate with the basin stakeholders. From 2012 it started a Magdalena River Master Plan (PMA, given its acronym in Spanish), a study carried out with the support of Chinese Government aimed to establish the main strategies and pathway to a more intensive but sustainable river resources exploitation.

1.2 Institutional Framework

From 2011 the water issues and specifically Magdalena river issues have raised up in central government agenda as a results of an extreme flood event which caused more than 400.000 Hectares flooded, more than 3'200.000 people affected, 1300 people dead and about 6052 million dollars in

productive and material losses (Comisión Económica para América Latina y el Caribe (Cepal), 2012)

This situation has caused in one hand the recognition of Cormagdalena functions and its relevance and in the other hand the direct participation and intruding of many other institutions from the government, the regions and the civil society working on studies, plans and strategies for river and river basin management. As a results Cormagdalena has to deal with the opportunity of being heard given the sudden importance of the system under its administration and at the same time be relegated given the other institutions temporary leaderships.

Cormagdalena is a National Institution depending of the Transport Ministry; it was conceived like this considering navigation was the door to open in order to promote regional development. However it has administrative and financial Independence. It is also related to the Environmental Ministry. Above Cormagdalena ordinances and regulations there is a higher hierarchy: the regulatory acts from ministries. In that sense, regarding the river basin management, obeying the National Policy for Integrated Water Resource Management from 2010, and profiting the relevance of the Magdalena River, Environmental Ministry is ready to issue the Strategic Magdalena River Basin Plan. It is expected to serve as a framework to define regional sustainable development agreements.

By contrary, in a lower hierarchy level, there exist the sub-basin committees with the responsibility to develop and implement its own sub-basin Management Plan. In the local context municipalities have their own land use planning normally issued more than ten years ago.

One of the biggest Cormagdalena challenges is to conciliate and articulate those plans, programs and institutions in a titanic exercise of governance.

2 THE STRATEGY

The recent fame and relevance of the river system not only in institutions but in media and civil society, allow that "ancient" and important needs can find finally a place for discussion and implementation. This conjectural situation was well understood by Cormagdalena, which has had the experience of waiting in the back burner for a decade and suffered a total lack of commitment and support for important projects. These kinds of projects are for instance:

- Civil works for river training and rehabilitation of navigation in Magdalena River. It is important to mention that the Magdalena River was the main transportation medium along four and a half centuries in Colombia. The River currently transports about 2.500 Tons/year when a fast and secure estimation of the river transportation capacity shows a possible amount of 30.000 tons/year.
- Develop integral programs for hydrological risk management instead of dikes and hard measures.
- Develop and implementation of modeling systems for hydraulic scenarios of flooding (high discharges) and navigation (low discharges).
- Implementation of a Basin Observatory and strengthening and enforcement of the PMC. It must be able of linking the Ministry Strategic Plan and the local and regional sub-basin plans.
- Development and implementation of productive sustainable projects as hydropower projects, valuation and exploitation of hidro-biological resources.
- The creation of a research center for the Magdalena river issues. Even when the center was established by law, the absence of political commitment did not facilitate at all the process for its creation.

The navigation was recognized from the central government as an important economical tool and after flood event, even more and more sectors started seeing this as an alternative to reconstruct and develop the affected area. Thus the main door was open and the strategy placed.

2.1 Prioritization and Rapid Results

The key was the arrangement of the projects, its prioritization for a cascade of execution and implementations. As long as the institution has been working on the technical and financial structuration of many of the mentioned projects its years of progress were strategically presented to the central government and decision makers. So that navigation was the economical savior for a depressed and affected river system. Given the progress of the training river studies for navigation rehabilitation, which has feasibility studies and primary design, the financial support from central Government was obtained.

Attached to navigation, modeling was perceived as a needed tool, also justified from an environmental perspective for eco-hydrological understanding of the system and as a tool for scenarios and flood

studies. Profiting the Holland – Colombian Water Partnership, result of assistance asked by Colombian Government to the Dutch Government given its experience in flood control and water management, Cormagdalena asked for support for a modeling program implementation.

In parallel the procedures and doors knocking for the creation of the research Center were carried out. The idea was to place in the Research Center as a natural scientific and technical institution, the modeling program and in that way gives it a first and important working tool and financial source.

Another side project was related to navigation environmental benefits and it is regarded to the carbon credits given the avoided emissions as consequence of changing transportation mode (from road to river). Now projects related to deforestation avoided given thousands of kilometers of roads not constructed for ground transportation, are visualized as a possible income an additional environmental benefit.

All of these projects started one by one and started to put Cormagdalena in the center on the River management and as a leader of governance process. However and important situation was waiting to solve and put all described above on the way. The primary design of river training civil works were made more than four years ago and even with a very recent designs, to develop the final detailed design can take a couple of year for a institution with the public character as Cormagdalena. Even more complicated is the fact that after final designs the river can change in question of weeks and more engineering efforts will need to be perform. So that, all the above expectations and the institutional credibility was depending on the technical capacity and the river dynamics.

Finally as a result of a deliberation process leaded by the former entity Director, a Public-Private Partnership (PPP) was proposed. The first one in the country born from a public initiative. The idea was to contract not the civil works but the service of maintenance of a given set of strict conditions for navigation (including water depths and river curvature radius). In that way a big concessioner can use its private and proved technical capacity to rapidly adapt and built the needed infrastructure. It is expected in that manner to assure the public resources, which will be paid after the service is rendered.

This final strategy allowed the release and progress of all the processes and projects mentioned and many more currently in construction phase. In conclusion, the slow developments of last decade were pushed up and implemented in two years thanks to a strategic concatenation of needs and solutions, the intense and atypical proposal of doing a PPP as an alternative for overcome the dynamical geomorphology of the river and the slow reacting capacity of a public organization.

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