



The Magdalena river recovery project.

Enrique Illera Pabón

Yesica Ríos Bedoya

Sara Carolina Zapata Rodriguez

Esumer University Institute

Faculty of international studies

Medellin, Colombia

2017

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Enrique Illera Pabón

Yesica Ríos Bedoya

Sara Carolina Zapata Rodriguez

Research paper submitted to qualify for the title of:
International business professional

Director:

Edwin Gómez Urán

Codirector:

MSc in international business

Investigation line:

International business

Esumer University Institute

Faculty of international studies

Medellín, Colombia

2017

Acknowledgments

First, to God the Father of the Heavens, for giving us life and all the things we find in it, for the day to day blessings, for his great kindness, mercy, love and happiness.

In the present thesis paper, we give thanks to our families who have supported us on the road to becoming professionals and accomplishing one of our many dreams.

To the Esumer university for giving us the opportunity to study and graduate as professionals.

To our thesis advisor, MSc. Edwin Gómez Urán for his effort and dedication, who with his knowledge and experience have succeeded in us as a group of thesis to successfully finish the career.

Summary

In the last decades, the economic development of the country has been on the rise and also the social investment projects such as the construction and the bettering of the road mesh, tunnels, building of bridges, channeling of urban rivers, big investments for bettering the mobility of large cities and much more, in effect, behind all these development projects hides a big problem. Corruption masks itself within these activities for progress with the goal of enriching the coffers of unscrupulous and corrupt people, leaving the country and its people immersed in a financial problem alongside a great crisis and an economic slowdown. This sickness for money has lead the executive power to reform tributary measures, in other words, it's the people who are responsible for the millions of dollars that the public officials and large foreign countries steal under the false pretexts of infrastructure projects of economic and social development.

In consequence, the project looks to focus on the positive aspects of the recovery project and its scenarios, where its main factors are bribes, prevarication, concealment of information, poor processes, lack of studies, non-compliance, lack of social responsibility and the main factor a

permissive government. At the end the facts were undeniable leaving as its main victim the Magdalena river and its inhabitants, with results such as poverty of many and empowering of few. Victimization of a resource which since the beginning of Colombian history has been a main channel of development, shutting down one of the best alternative solutions in bettering the transport logistics. Now all that's left are questions such as; is there money for the project? Can we trust such a corrupt country? Is it possible to surpass the environmental issues? Will we someday have an active and efficient river system? All these questions are easy to ask yet difficult to answer.

Key words: Recovery, Magdalena river, navigability, transport, river system, dredging, sediments, Cormagdalena, Obredecht, Navelena

Abstract.

In the last decades the country's economic development has been on the rise and also its social investment projects such as; the construction and maintenance of the road mesh, tunnels, construction of bridges, canalization of urban rivers, big investments for the bettering of the mobility in the larger cities, among many other investments. In effect behind all these different expenditures hides a big problem; corruption masks itself within these activities of progress with the objective to enrich others leaving the country immersed in the financial problem alongside a great crisis and an economic deceleration. This sickness for money has made the executive power reform tributary measures. That is to say it's the people who are responsible for the millions of dollars the public workers steal and large foreign companies behind the facade of infrastructure projects of sustainable economic and social development.

In consequence, the project looks to focus on positive aspects of the recovery project and its scenarios where the principal factors are bribes, concealment of information, bad processes, lack of studies, non-completion, lack of social responsibility and the main factor being the passive government. At the end the results were inescapable, leaving as its main victim the Magdalena River and its surrounding inhabitants. The results were more poverty for most and riches for less, victimizing a resource that since the beginning of history has served as a main channel in Colombia's development, turning off one of the best alternative solutions in the logistic bettering of

transportation. All that's left now are questions such as how will there be money for the project? Can we trust in such a corrupt country? Is it possible to surpass the environmental problem of the river? Will we someday count on a river system that's active and efficient? All these questions are easy to ask but difficult to answer.

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Introduction

In the present document, the reader will find a descriptive study that reads deep into the phenomenon related to the project of recovering the navigability of the Magdalena River, proposed by the national government as a crucial undertaking for the strengthening of Colombia's economy, development and progress. With a special interest in the improvement of transportation, commerce and communication between different regions of the country; a need that is no longer satisfied by the current land transport model, which presents environmental problems, obsolescence of the automotive fleet, detriment of the road mesh and the high costs that this demands.

Likewise, the study has as general objective to analyze this project of regaining the navigability of the Magdalena River and its impact in the region it's developed. For this, (a) the specific objectives of understanding the historic evolution of the Magdalena river project and its regional impact are considered; (b) describe the current state of the aforementioned project; and (c) analyze the projects prospective and its implications.

In the first chapter, the reader will find: the general approach to the study, taking a tour of the background of the project and a state of the art of the situation, objectives and justification of the problem that's to be studied and the description of the methodology of study, which is oriented by the inductive method since it allows the analysis of the process and the future of the situation of the problem in function of the described events. In the second chapter, a description of how the project has been executed until now can be found. In the third a perspective of the project where the possibilities and the future panorama of the problem are analyzed. Finally in the fourth chapter you will notice the most representative findings of the in depth analysis.

1.1 Background.

Many years ago, the Magdalena river was one of the main routes that connected Colombia with the world, it was an axis of national commerce, a great portion of imports and exports were realized

here, nevertheless, today it's barely passable. The country was focused on the construction of railways, roads, and the economic expansion of cities such as Medellin, Cali, among other cities which aren't crossed by the Magdalena river meaning that they require land based transport as a solution and at the same time a new model of transport was being developed and the river began losing its importance as a main means of transport (Lugo, s.f.).

We must mention that Colombia in the last years has entered a wave of international commerce, this requires a focus on the analysis about the current situation of the Magdalena river Project, according to the book *where is the Magdalena river going?* (Rodriguez, 2015), the Magdalena river hasn't counted with a good initiative for river infrastructure and environmental projects, it also explains how the funds destined for various projects have been diverted outside of the project; In the year 1991, the corporation for the Magdalena river CorMagdalena was created with the purpose to carry out river development projects for the navigation of merchandise and transport of persons for the competitiveness of the country.

Illustration 1. Administrative headquarters of CorMagdalena



Source: Photo of the Heraldo, Cormagdalena headquarters in Barrancabermeja.

That is to say that in the investigation, the main inconveniences of the project are the sediments of the Magdalena river and the environmental crisis generated along the river. The national department of planning explained that with the passing of time the necessity to recover the navigability of the river for economic and social reasons was created. Due to this, a project that looked to regain the navigability of the main fluvial artery of Colombia was planned, which was executed by the Consortium Navelena with its majority partner Obredecht of Brazil, this foreign company would execute the works of channeling, maintenance and dredging of the river, from Puerto Salgar to Barranquilla with a route of 908 kilometers exactly. (Oxford Business Group, 2014). The reclamation project of the Magdalena river is an engineering project which functions with a riverbed dredging system in order to advance in the recovery of the navigability and allow the flow of passengers and cargo. (Andi, 2014)

Additionally, in terms of the environment and infrastructure, Manuel Rodriguez (2015), editor of the book *where is the Magdalena river going?*, explains that the project for the recovery of the river should involve projects of studies of the production of riverbed sediments, it should also be accompanied by environmental control and analysis with a special focus on deforestation, soil erosion, designs and execution of infrastructure projects, analysis of mining activity, strategy for control of rain water and sediment supply, alongside flood mitigation

In addition, he states that the infrastructure and water adequacy project in the Magdalena River lacks a comprehensive view of the river basin, which raises the question: what would be the scenarios of the volume of dredging and its associated costs under different sediment production scenarios from higher, middle and lower parts of the Magdalena basin? All these shortcomings should be part of the project for navigability, based on cost-benefit decisions of civil intervention with transdisciplinary science and not only in the development of a "gray" engineering project. (Becerra, 2015)

This shows that there are many gaps in the project due to the lack of research and development processes in the execution of the works, Engineering studies, environmental, social and stratigraphic 3D vision of environment variability. The author states that the government has not

taken into account the participation of the Colombian Engineering Academy for the evaluation and efficient design of the project route. (Becerra, 2015)

1.1 State of the art

The Magdalena river was the main fluvial artery of the country, centuries ago the Magdalena river had been of great importance for the development of the communities that since the precolombian era have settled on its banks, using it a means for transportation and survival with activities such as fishing.(El Herald, 2016)

The historical review of the Magdalena River shows that in 1823 Juan Bernardo Elbes, obtained the first navigation concession (Decree of July 3, 1823)and begins steam navigation, in 1851 an engineering report is presented to the Colombian congress by the body of engineers of the united states of America about navigation conditions, in 1878 comes the second concession headed by the engineer Francisco Javier Cisneros, 1924 Julius Berger consortium realized the first study about bettering the navigability of the river. (Minister of transport Laureano Gomez) and in 1973 Dutch Colombo MITCH mission project of studies about the Magdalena river and the Diquen canal (Odebrecht, 2014)

In the year 1823 transit begins (transit project for the Magdalena river) according to (Alfred, 1976) he speaks about the steam boats, these boats navigate the river easily, from the countries coasts to the interior, good navigability was due to the environmental conditions of the era, with the passing of time and the development of the country, the populations and deforestation contributed to the loss of navigability. In the year of 1828 the conception of navigation by the river Magdalena is granted to Mr. Elbers, his ships transited for a few more years but like always the company closed. For the year 1845 once again the navigability project is put in place where once again steam boats from different companies from Colombia and abroad sailed the river, these failed but other would shortly emerge. In the year 1882 the 20 or 30 steam boats that transited the river where the property of five companies, the most competent ones were owned by the Cuban Cisneros and the

united company; at this time the businessmen agreed on an itinerary to dispatch every three days a ship from Barranquilla up stream.

In 1915 and 1935 different foreign companies came to Colombia with the purpose to intervene with projects for the exploitation of hydrocarbons in the Caribbean region, which mobilized the development of port and rail infrastructure, agriculture and livestock also support other transportation systems such as railways, airports and especially the river Magdalena. In 1920 the country was on an economic rise and at that time the river was navigable and was of great help for development with a mobilization of merchandise for exportation of 167 thousand tons a year.

In 1922 there was a change in the way the river was navigated where the steam boats were changed to boats that used diesel combustion, making the time the merchandise travels much shorter. Thesis, the navigability of the Magdalena river as a key for the development of transport in Colombia (Leal; Patricia; 2010)

Also for the 1930`s Colombia`s river system began to pass onto a second plane, due to all the money the government invested in developing other forms of transportation such as railways and roads, creating a nationwide system of these(Sebastian Villareal A. and Ortiz Navar, 2016) in the 1930`s 40`s and 50`s the river was navigable and counted with main ports which slowly began losing importance due to the decline of the system: Barranquilla, Calamar, Zambrano, Magangué, Mompox, el Banco, Gamarra, Puerto Wilches, Barrancabermeja, Puerto Berrio, Puerto Salgar y La Dorada. (Bravo , 2014).

Then in the 1970s there was the Green revolution which consisted in that agrarian Colombia was being urbanized, generating a displacement towards the urban zones which drew great attention due to the huge growth in urban sectors and the demand for transportation by land with the effect of taking railways to a second plane along with the navigability of the Magdalena river. (Duque-Escobar, abril 15 de 2007)

THE MAGDALENA RIVER RECOVERY PROJECT

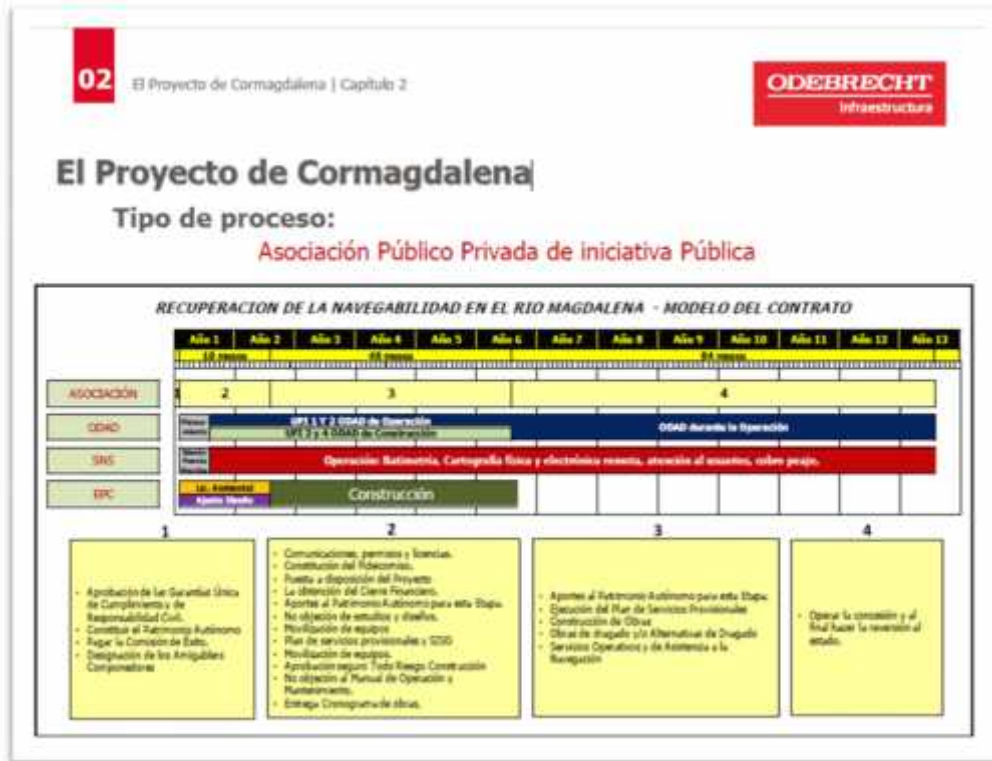
Later, in the 90`s, An event called "economic openness" was created. This happened in the government of President Gaviria, unlike in other neighboring countries, the opening in Colombia was not the result of an economic crisis or the exigency of an international organization, But because that was the direction the world was taking. And nobody wanted to stay behind (Dinero, 2013)

Since the 50`s until present time the government has implemented a model of development of conceptions for the construction of road mesh , bridges and tunnels based on tolls to finance the projects also a new entity called the road police is created to safeguard the transport system at a national level, For 1993 the National Road Fund becomes the Ministry of Transport, where entities such as CorMagdalena and others arise; The Regional Autonomous Corporation of the Rio Grande de la Magdalena (CorMagdalena) was created as a need for a government agency with the objective of recovering navigation and port activity, the adequacy and conservation of land, the generation and distribution of energy , As well as the sustainable use of natural resources and the preservation of the environment. CorMagdalena was created in 1994 (Cormagdalena, 2017).

Thus, from 2000 onwards the navigability of the Magdalena river was limited to small embarcments such as boats and chalupas due to the droughts of the last decades where the river level has significantly decreased great river bed Growth due to the sediments contributed by the mountains of the country and the different phenomena of removal of land, that is why the river has lost much of its seaworthiness. Given the countries great economic growth, the need to better the transport system, the global economic integration and the problems of road transport, the need surges within the country to begin large projects to better the transport systems and large infrastructure projects at a national level, one of those projects granted to Cormagdalena for the recovery of the river and its navigability (Alvear, 2007)

Reaching this point July 23rd of 2013 an agreement for the recovery of the Magdalena river is celebrated with Cormagdalenas project. At this stage some organizations are preclassified:

Illustration 1. Process of the projects civil development



Source. Obredecht web page

Illustration 3. Projects location.



Source. CorMagdalena web page

Corporate structures Firm organizations.

CODERMA

- Iridium Colombia Desarrollo de Infraestructura S.A.S (Dragados)
- Van Oord Colombia S.A.S
- RM Holding S.A.S
- Juneau Business Inc.

PFS NAVEGA MAGDALENA

- Acciona Concesiones SL
- JanDe Nul
- Castro Tcherassi
- Consultores del Desarrollo

NAVELENA

- Constructora Norberto Odebrecht Ltda.
- Valores y Contratos

However the Project has wasted years in planning and execution by private and state entities such as Cormagdalena and Navelena, this is what (Torres, 2011) manifests in his thesis “River transport of the Magdalena river as an alternative for the transport bulk exportation” which explains how public and private entities carried out the hiring for the Magdalena river project, the author manifests that in Dorada Caldas the 23rd of October 2010 there was a meeting between President Santos and the transport minister, German Cardona Gutierrez, where they executed ideas for the recovery of more than 900 km of river and bring back its navigability with a riverbed dredging system, different points were covered about the challenges that the project will face, one of them being the section between Puerto Berrio and La Dorada because they presented greatest difficulties, and in the future could transport merchandise equivalent to 1200 trucks, this would better the mobility on Colombian roads and the deterioration of the countries roads while bettering the environmental issues.

It should also be mentioned that in December 2014, this reclamation project for the Magdalena River began with the consortiums between Cormagdalena and Navelena this last one is part of the business group Obredecht (Redacción Negocios y Economía, 2017) ; The operations of river dredging started with backhoes that worked isolated sections of the river, removing mud from the bed near the port of Barrancabermeja, this demanding an investment of 600 million dollars in order to recover the navigability of the river this being, a century ago, the main route of transport in Colombia, the dredging looks to displace materials increasing the navigability for cargo ships from the interior of the country to the maritime ports with a trayectory of 900 km , by which raw materials such as coal, steel, passengers and containers would be transported with the various export and import goods.

The president of the republic Juan Manuel Santos, promoted the project which would facilitate the route and reduce the costs of the freight in an attempt to face a phase of deceleration of oil, coal and other traditional products struck by a fall of International prices

(Reutors, 2015) According to the consortium, the work would have a significant advance at the end of the year 2016. For the date that this Thesis is taking place on March 13, 2016, what happened to the project and what have been the results? April 4th 2017, the river contract expires as reported by Cormagdalena

1.1.1 The current results of the Project.

Given that Cormagdalena's work has been affected by multiple reasons, such as non-compliance of the date agreed for June 11, 2016 where Navelena should deliver a breakthrough, the corruption scandal of Navelena main shareholder, Obredecht, for more than US \$ 788 million in bribes estimated to have been distributed in 10 countries in the region has caused a political tension in the country, the corruption scandals are expected to continue (Portafolio, 2017) this greatly affects the idea of having an integrated navigation system in the country thus, Cormagdalena finds itself obligated to denounce the different companies that participated in the conceptions, for example the multinational Obredecht was obliged to apply the daily fine of 30 current minimum monthly salaries to Navelena S.A.S. For the non-fulfillment of the works. German del Toro Head of the Legal Office of Cormagdalena also stated that 12 of the 25 ports were prioritized for lack of compliance where seven of these are in the process of being sanctioned, these are: la Sociedad Portuaria Bocas de Ceniza (Superpuerto), Sociedad Portuaria Monómeros Colombo venezolanos, Sociedad Portuaria Michellmar, Sociedad Portuaria Riomar, Sociedad Portuaria Terminas Las Flores, Sociedad Portuaria Regional de Barranquilla y Sociedad Portuaria Regional de Magangué. (Mouthón, 2017)

1.1.2 Future benefits of the project

The benefits that a river transport system can bring to Colombia are immense. On the roads of Colombia trucks with more than two axles affect the road mesh almost six times more than a private car. Then, for every 1000 tons that are transported by the river, about 33 trucks would stop circulating and this way reduce the wear of the tracks

1.1.2.1 Scope in economic matters.

- It confirms that the project benefits are between \$ 1,158 and \$ 2,544 billion, depending on the level of cargo being mobilized.
- At the macro level, the Magdalena river water reclamation project would contribute \$ 1.8 trillion, or 0.25% of the Gross Domestic Product (GDP), between 2015 and 2026.
- It was also pointed out that for each peso invested in the recovery of the navigability of the Magdalena river would generate an additional 4.2 pesos.
- Several sectors could benefit from the project, including land transport services.

1.1.2.2 The projects social reaches.

- It is emphasized that the total number of jobs that would be generated in the project directly and indirectly would be 9,425 annually on average.
- There would be a dynamization of the region by the entrance of new institutional actors that could improve the security conditions and the perception about the region.

1.1.2.3 Environmental matters

- The environmental benefits of reducing CO2 emissions, generated by road transport, and benefits due to less need for road maintenance due to reduced truck traffic.

- In the transport sectors it would play a fundamental role, knowing the third sector in terms of emissions. The transport sector was responsible for 12.1% of total emissions by 2015. Cargo transport by river would reduce greenhouse gas emissions (GHG) emissions by 64% per ton compared to road transport. (Money, 2016)

This graphic exemplifies the results that the project would have in means of investment for the regions in the year 2015.

Graph 1. Impact on production by sector (Billions of pesos by 2015)



Source. Diner magazine 2014

It's said that these zones would be impacted greatly by the economic benefits due to investments and bettering of products and services such as investments in machinery and equipment worth 630 billion pesos, services to companies for 484 billion, construction of civil works for 360 billion, and the table describes all the impacts showing last the hotel sector and the different food services with a figure of 95 billion in economic development.

Regarding the future of the project, on April 4, 2017 CorMagdalena will have to explain firmly the expiration of the contract of the Public Private Alliance (APP) of the Magdalena River by Navelena sass, this statement will give CorMagdalena the opportunity to appeal to the government For a possible apparent urgency to have the resources needed to dredge and maintain the navigability of the Magdalena River, CorMagdalena stated that it will have \$ 40,000 million with which it intends to open a new contract with Power China, these are one of the options for the recovery project to guarantee the navigability of the tributary, this agreement will be given after the financial closure of Obredecht's signature, which can hardly be fulfilled., The new agreement will be given after finally putting an end to the APP 001-2014 subscribed With Navelena. (NILSON, 2017)

1.1 Approaching the problem.

The Magdalena river project seeks to recover the navigability of passengers and freight, making it one of the main fluvial arteries in the country once again. The state and the private sector envisage great benefits in terms of international trade in the reduction of transport costs and in times of delivery of goods boosting the economy of the country. Considering that the project is an initiative for the navigability in the country and the improvements in the transport sector, a good execution will be very important to achieve results that catapult the economy towards a global economy by means of an optimum and functional fluvial system to the one hundred percent. In short, a successful completion of the Magdalena project would be one of the biggest improvements in development for the country and its industrial sectors.

1.1 Problem question.

It is possible to carry out a mega work like that of the Magdalena River, in a country like Colombia, knowing its background in road infrastructure matrices?

1.1 Justification

This work is justified on the importance of the Magdalena river recovery project and its impact on the fluvial transport system in the country. In the case of Colombia, there are difficult geographical conditions for the transportation of goods and passengers by land. The large distribution of cities, towns, municipalities and footpaths throughout the country requires an efficient, economic model that allows a better development of their zones in economic, social and environmental matters. The current transportation model is in a critical state due to the obsolescence of the automobile fleet and high transportation costs, also bad road infrastructure, high gasoline costs, excess tolls, terrorist groups that hit trucks and discontent Of the truck guild due to consequences of the Government's failure to comply with the agreements reached (Diner, 2017).

Thus, the justification is extremely important, because a good execution and a good development of the work of recovering the navigability of the Magdalena river, would bring great benefits to the country and solve a transport problem that has been going on in Colombia for decades, reducing the price of products and Improving the economy.

1.1.1 Theoretic justification

This paper aims to recognize the model and execution of the Magdalena River recovery project in Colombia, as well as the intentions of the public-private sector and the importance they represent in the investment in infrastructure and development with the intention of identifying the advances, Delays and mistakes in the execution of the project. The thesis will explain the reality of investment, contracting and agreements agreed upon between government and private entities with an analytical and constructivist critique, making known the magnitudes of a work, the opinions of

experts, the most important reports and the events from the past, present and future that link to the execution of the project.

1.1.2 Social justification

The social justification of the thesis is undoubtedly one of the most important because the execution of the project will be carried out over 900 kilometers of the river, this development has important environmental and social implications because of where the Magdalena-Cauca basin crosses, this accounts for 24% of the country's surface, comprising nineteen departments and seven hundred and twenty-four municipalities and 32.5 million inhabitants, equivalent to 80% of Colombia's total population. (Foro Nacional Ambiental, Bogotá, 2015).

It should be noted that the implementation of the project will positively or negatively impact populations that not only live near the river, but also the majority of Colombians who depend on supplies and who live in different areas of the country. Thus, it is fundamental to recognize the social responsibility of the companies that develop the project and the regulations that the government has on these foreign entities, recognizing the main entities that are involved in acts of responsibility and irresponsibility, highlighting benefits and prejudices provided by foreign companies together with the intervention of the state.

1.1.3 Other justification

Finally, the research is justified by the desire to deepen the theme of the Magdalena river project with the idea of understanding the country's development model, together with the main evils that affect good development and progress, and how it is affected, benefiting the proposal of a river transport model to improve the country's competitiveness and the mobility of goods and passengers

1.1 Objectives

1.1.1 General objectives

Analyze the Magdalena river Project and its impact on the region.

1.1.2 Specific objectives

- Understand the historic evolution of the Magdalena river Project and its impacts on the regions
- Describe the current state of the Magdalena river Project.
- Analyze the prospective of the Magdalena river Project.

1.1 Methodological frame.

The present investigation will be descriptive, because it will start from the identification of the different factors that have affected the navigability of Rio Magdalena in Colombia, by means of this information from different primary sources like books, newspapers, official documents will be used and in addition the use of secondary sources like encyclopedias, articles and thesis of degree among others will be employed.

1.1.1 Method:

With the inductive method we intend to inform, investigate and analyze in order to draw general conclusions of the project, development, navigability and with the deductive method as a complement to achieve a general idea to carry out a more specific research project and relate it to the project of Recovery of the Magdalena River.

1.1.2 Methodology:

As a research method two methods will be applied, firstly the exploratory method will be used to investigate a wider and more complete view of the navigability of the Magdalena River. Also a descriptive research will help give a more detailed description of the project, taking into account expert opinions, points of view based on documentary research.

2 PROJECT EXECUTION

2.1 Necessity and evolution of the navigability of the Magdalena River in the region.

According to (Duque-Escobar, 2007), the development of the YUMA projects (name given by the Muiscas to the Magdalena River) is urgent, to make the river navigable with 1.2 m draft boats and capacity for 80 20-foot containers (TEU) and on two levels. The cost per TEU between La Dorada and the coast along 900 km would fall six times from \$ 1200 to \$ 200, that national purpose comprises two items:

1. The Recovery of the navigable channel of the Magdalena River, to reach Barranquilla and Cartagena recovering the Dique canal.
2. Construction and adaptation of the river ports: Puerto Salgar, Puerto Berrio, Puerto Galán, Barrancabermeja, Puerto Wilches, Capulco, Tamalameque y Magangué.

Likewise, the project represents an economic and social impact for certain regions of the country, even more considering the high concentration of population throughout the Magdalena River basin, presenting a political administrative division formed by seventeen departments (Caldas, Quindío, Risaralda, Santander, Huila, Tolima, Cauca, Valle, Cundinamarca, Boyacá, Antioquia, Cesar, Magdalena, Atlántico, Bolívar, Sucre y Córdoba) and 726 municipalities that represent 76% of the totality of the municipalities of the country. It should be added that the total area of these seventeen departments is 360.130 km² which represent 31% of the country's surface area and 76% of the area of the Rio Grande basin. Also these departments are constituted by 806 municipalities

that represent the 74.6% of the municipalities of the national territory, which 90% form the territorial spaces of the basin of the Magdalena River.(Cormagdalena, 2014)

The Magdalena River involves other components such as territorial-political-administrative entities, departments, regional autonomous corporation, Environmental Administrative Departments and the participation of the socio-economic environment, according to these activities, the report of (Atencio, 2014) manifests the need at the national level to create an administrative body. That is why, in 1991, the National Political Constitution of the same year, defined in article 331 the creation of a corporate entity of special regime of national order to carry out the sustainable development of the basin of the Rio Grande of Magdalena, Which they called "The Regional Autonomous Corporation of the Great River of the Magdalena".(CorMagdalena). The object for which this entity was created by the 1991 Constitution, is responsible for supplying sustainable socio-economic projects within the Greater Magdalena river basin by defining these functions: The recovery of navigation and port activity (93% of the country's river navigation is done within the Magdalena river basin); The adaptation and conservation of land (77% of agricultural production takes place within the Magdalena river basin), the generation and distribution of energy (72% of the country's energy generation is carried out within the basin Of the great river of Magdalena). Law 101 of 1994 also empowered Cormagdalena with the purpose of being the largest institutional instrument and achieving the sustainable development of the Rio Grande Magdalena basin. Law 161 of 1994 also grants benefits to the entity Like royalties, departments allocate 10% of the royalties as resources for the Regional Autonomous Corporation of the Magdalena River. These resources should be distributed to give a special treatment to the municipalities bordering the river basin of the Magdalena. (Colombia, 2016)

Cormagdalena began to develop different projects to achieve its objective, within which is the action plan of the ministry of transport, contemplated within the national development plan 2006-2010, which considers that the first objective is to develop the transport model With the purpose of creating multimodal transport corridors, and with this to improve the connectivity between the different regions of the country, allowing a linkage of isolated regions with agricultural and industrial characteristics (Sáenz, 2015). The objective of CorMagdalena would allow their main products of the different activities to distribution and consumption centers, this would contribute to

the economic development of the country through a reduction in transportation costs. For this, a time of execution of the project was fixed in the period 2007 - 2010.

Also, in the time that would take the execution of the work, the entity emphasized the annual maintenance works by means of dredging in order to be able to provide a navigable way 24 hours a day and 365 days a year, that looked for to guarantee a dredge between Calamar And Barrancabermeja of 6 feet and Barrancabermeja and Puerto Salgar of 4.5 feet (Castro, García and Benavides, 2015).

Subsequently, on September 14, 2014 and after many meetings between the public and private sector where they intervened to carry out the execution and signing of the contract for the recovery of the Magdalena River, which was attended by President Juan Manuel Santos in The Port Society, on the banks of the river, where he said that making this river navigable is a dream come true that will revolutionize the economy and the lives of Colombians.

In addition to the above, President Juan Manuel Santos said at the signing of the contract (registered by El Heraldo, 2014), that 60 percent of the navigability would already be in progress, in addition it says "There is no going back. The contract is already signed," said Santos during the ceremony attended by the Vice President of the Republic, Germán Vargas Lleras; The director of CorMagdalena Augusto García; The President of the Senate, José David Name; The manager of the Navelena Association, Jorge Barragán, and the transport minister, Natalia Abello, as well as congressmen from the region, the mayor of Barranquilla Elsa Noguera and the Atlantic governor José Antonio Segebre. Once the recovery contract is signed, in six months, the maintenance of the River will begin. Augusto García stressed (in Vanguardia, 2014) that in 9 months, that is to say, for the month of September of 2015, could have navigation conditions that will allow to mobilize convoys with 7,200 tons, from Barrancabermeja to Barranquilla; And with destinations such as the Dorada vessels with a thousand tons and thus allow better conditions of competitiveness for the products we consume Colombians.

illustration 4 Signing of the Magdalena river project



Source. (EL Herald, 2014)

This project will be in favor of the company Navelena, integrated by the Brazilian construction company Obredecht and the group Valorcon of Barranquilla. The most important thing said by the Colombian engineer Jorge Barragán in which he is in front of Navelena, is that the contract stage of the project is scheduled for January and the first works of intervention to the River (dredging) in July next year. Barragán explained that the construction works in the river will begin after the financial structuring of the project ends in March 2016, to start work in July 2016.

The director of Cormagdalena Augusto Garcia said that the reclamation of the navigability of the Magdalena river will last 6 years and that in a year of its execution 650 km will be enabled, additionally we have that by December of 2015 the section between Barrancabermeja and Barranquilla will be executed. After this Cormagdalena declared that the contractor will only be paid once the projects are executed and that they are functioning under proper conditions so that conveys of 7200 tons can be mobilized. (Portafolio, 2014).

As has been said, the recovery of the Magdalena River has had great economic investments and support from large private companies and government entities. In addition, \$ 2.5 billion of the project will cover activities such as dredging maintenance, satellite monitoring, inventory, Management of the project and the expenses of property and environmental compensation. (Time, 2017)

THE MAGDALENA RIVER RECOVERY PROJECT

There are also guarantees that were taken into account in the signing of the project. Cormagdalena and Navelena stated that when the project is completed, the river stretch from Barrancabermeja to La Dorada must be guaranteed, another guarantee is that the barges must be 65 meters long, 13 meters wide and a draft of 1,80 meters M. The convoy (between tugboat and barges) can be 210 m long and has a capacity to move up to 7,200 tonnes of cargo. It is also mentioned that the Magdalena river recovery project will bring to the regions the locations of new companies which will contribute to new jobs and a better quality of life in the different regions (time, 2017)

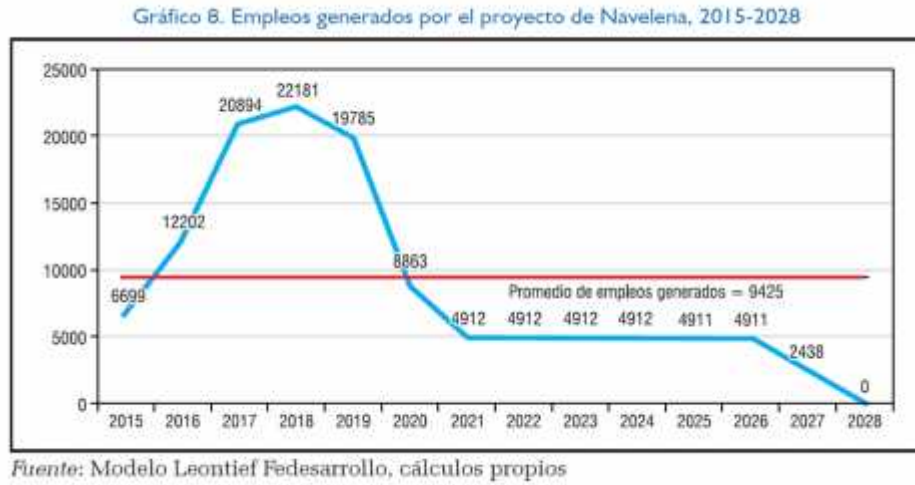
In addition to the above, it is mentioned in resolution No 00078 (March 23, 2017), which declares the serious breach of the obligations and expiration of the contract APP No. 001 of 2014 signed with the company NAVELENA S.A.S. For this contract, it is important to be clear that the entity was informed of the purpose of the financial support that was given by the representative of Navelena SAS, for this reason the entity Cormagdalena intervened through the announcement 201703000302 of January 31 of this year to give compliance of the obligations established by the entity Navelena. (Resolutions, 2017)

The entity Navelena will be responsible for responding for the fine that was imputed for not having fulfilled the contract of APP No 001 DE 2014 which refers to the recovery of the navigability of the river Magdalena, then after the the time stipulated by the fine Cormagdalena cites the associate in order to carry out the hearing of the expiration of the contract.

Equally so it can't be said that Navelena didn't comply with the project due to financial resources, but the socioeconomic and environmental impacts caused by the company in the Magdalena region are also taken into account, with this project came a certain level of income to the families of this region which helped with their sustainability and development and I help to recover a minimal part of the flow of the ecological resources of the river

Figure 2 shows a projection of the number of jobs that could be generated during each year of execution of the Navelena project. Jobs that would be generated from sectors such as trade, agriculture and repair services (Castro, García and Benavides, 2015).

Graph 2. Jobs generated by the Navelena Company, 2015-2028



Source (Castro, García y Benavides, 2015)

Interpolating the chart above, you can see that between 2015 and 2016, according to the projections of the study, more than 6,000 jobs would be generated in the first year, and more than 12,000 in the second. This information does not have a confrontation with the reality, since after the findings of corruption of the Obredecht signature, the project has stagnated. It is also evident that for the current year, 2017, the project would generate almost 21,000 jobs, and the employability peak would be in 2018, with 22,181; From then on, the quantity would start to decline, but it maintains very representative and encouraging numbers of employability. When the project is resumed, the estimates of this generation of employment will be maintained, since it would effectively boost the progress of the regions where it is present (Navelena, 2014)

2.1.1 The recovery progress of the Magdalena River.

Colombia has important natural resources such as two of its main rivers, the Cauca and the Magdalena River. The Magdalena River is a key element for the economic development and competitiveness of the country, as perceived by the government. The idea of having the navigable river allows great benefits in economic and social matters, to develop the project generates great challenges that prevent its execution, these challenges are so great the project seems like a fantasy for Colombia, problems such as corruption, global warming, Bad administrations, bribes by foreign

companies, frauds in tenders, bad planning and execution, environmental problems among others allow us to only fantasize about a navigable Magdalena river.

At this point, the newspaper El Herald said that the river was until the 1940s the main transportation route in Colombia, according to Cormagdalena report, until October 30, 2016, 1,908,910 tons were mobilized by this tributary and in 2010, the accumulated 12 months was 1,089,712. This is 3% of the total load that is mobilized in the country, with a value of less than 160 million; And 3.3 million passengers are transported mainly in Magangué, Barrancabermeja and the Momposina Depression. This figure is nothing compared to the truck sector that transports more than 80% of the goods in the country, and the main question that should be asked is, what about the dream idea the government had to have a river transport system in the Magdalena river and her recovery project? The answer is that to date, the Cormagdalena project is a total failure, due to factors that impede its execution and development such as the mismanagement of public money, the problem of global warming, bad executions, planning and studies in Engineering, as well as the negative impacts on social and corporate responsibility by foreign companies, mainly the Brazilian firm Obredecht. The Herald (El Herald, 2016)

The above statements will be explained briefly through investigations of primary and secondary sources, beginning with one of the first causes that impede the development of the project and is the phenomenon that affects the entire world as the environmental crisis called global warming.

2.1.2 Environmental problems of the Magdalena river

In Colombia global warming has affected the Magdalena river greatly. In an interview with Canal Caracol (Channel Caracol, 2015), the director of the Institute of Hydrology, Meteorology and Environmental Studies (Ideam), Omar Franco, expressed serious concerns about the impact of high temperatures between five and Six degrees above normal, producing a decrease in water level of about 50% ", this generated a red alert in the main channel of the Magdalena river near Barrancabermeja (center), because at that point the water levels are low, around 70 centimeters, "Franco said and added that seaworthiness and fishing may also be affected. This situation generated a pronouncement of the Ideam where he warns that the decline of the Magdalena channel is at "the lowest level in the last fifteen years," because at this point it usually has a depth of almost

two meters. In fact navigability is almost impossible, small boats that venture into the rivers low waters run the risk of suffering damage in engines and helmets of their boats.

Illustration 5. The Magdalena River dry.



Source. Mauricio Enrique Ramírez photos

Consequently to this problem, when the river dries, the dream dies of having a river system that will greatly improve the economy of the country and the quality of life of the Colombians, Yuma (river of friends), as the musicians call it, is only a memory and the possibility of being navigable as in its golden ages, is increasingly difficult.

Also in the case of global warming's impact on the river, one of the most affected sectors in terms of navigability is the port of Barranquilla; it faces a crisis in its port area due to the low draft and the accumulation of sediments in the river bed that prevents the entry of large vessels.

2.1.3 Social, political, and economic problem

The situation is serious, to the aforementioned; we can add the failure of the contract for the navigability of the Magdalena River awarded to the Navelena Company which is responsible for the breach of the project and Maintenance of port access channel for entry and exit of cargo ships. (RCN RADIO, 2017)

Illustration 6. Port of Barranquilla.



Source. The port of Barranquilla / Photo of Colprensa

The recovery project is linked to other problems such as the mismanagement of public money for the investment for the Magdalena River and its irregularities. The page (Extra.com.co, 2017) publishes the cases that are presented as research material by governmental entities such as the Comptroller, the Attorney General's Office and the Public Prosecutor's Office. One of those cases was the Agrarian Bank for a millionaire loan to the construction company Navelena for the recovery project of the Magdalena River. In this case the Agrarian bank was indicated of an alleged mismanagement of money when lending 1.5 billion pesos, awarded to the company Navelena SAS. What was the purpose of these loans? Be able to finance the recovery of the navigability of the Magdalena River and its maintenance what happened to the loan for the project? The loaned money was lost because of legal problems that the Navelena company, Obredecht subsidiary, is facing, in

respect to this scandal, the Agrarian Bank notes that "we are advancing the actions of collecting what's due" at the same time as the prosecution called for questioning of public officials like Marcela Ferrán, director of credit of the Agrarian Bank for the irregular process the billionaire loan to the Brazilian company which is in state of liquidity, also to the ex- president of the Agrarian Bank, Francisco Solano Mendoza, Arturo Adolfo Dajud Durán, delegate of the Minister of Agriculture, Andrés Escobar Arango, delegate of the Minister of Finance, Juan Luis Hernández Celis, representative of the National Government, and Luis Fernando Mejía Álzate, representative of the majority shareholders. It is the duty of the prosecutors to clear up the mismanagement of public money.

On the other hand, corruption has also been a decisive factor to affect Cormagdalenas Project for developing the recovery of the Magdalena river. The main point of corruption is how Obredecht bribed public officials in order to obtain tenders in the country, as a recent example, the prosecution imputed charges towards the commercial vice president of the Agrario bank , Alejandro jimenez Rodriguez for the granting of a credit of more than 120,000 million pesos to the consortium of Navelena, according to the Prosecutor's Office, Mr. Jimenez incurred in the participation of the adjudication of this millionaire loan and in the falsification of documents for the granting of this loan with the False plea that it would be an investment for the project.

In this regard, there are more cases of corruption such as the case of ex-ministers Cecilia Álvarez and Gina Parodi, the two ministers are under investigation by the Prosecutor's Office for alleged irregularities in the addition of a section of road to the route of the sun project, this happened in the year 2014 where the Santos administration added this contract to the route of the sun project as Section two which sums approximately 600 billion pesos. The two ex ministers were acting as Transport Ministers, favoring Section Two, with the objective of constructing the Ocaña-Gamarra route, the main interests of the women delegates was to add a section to the route for the Gamarra port project in the department of Cesar, this project has the approval of the Regional Port Society of Cartagena, such company has the powerful family of exminister Gina Parody as partners, the Cartagena Regional Port Society is interested in the fluvial highway and its ports located in The Cesar region, as it is a strategic point for the transport of cargo.

Illustration 7. Gamarra- Aguachica stretch



Source. (Photo of the semana magazine, 2016)

This act of corruption on behalf former minister Cecilia Alvarez was in itself beneficial to the port Gamarra project, because this section of highway will allow cargo to go through the port and will be within 7 hours of Venezuela and close to the main urban centers of Colombia. In the preparation of the document Conpes (document Conpes 3758) to restore the navigability of the Magdalena River. It was intended to benefit the Parody family and its millionaire investment in the port of Gamarra. (Diario La Libertad, 2017). Around this scandal, the prosecution linked to an investigation process the liberal ex-senator Otto Nicolás Bula Bula Precisely because of that additional Gamarra stretch, he is being held at the Picota prison in Bogotá. The public Prosecutor's Office believes he is responsible for the crimes of bribery and illicit enrichment of individuals for allegedly having irregularly obtained the Ruta del Sol S.A.S. Concessionaire. (Weekly Magazine, 2017)

Otro si del contra del proyecto

Illustration 8. Anther yes of the conpes document

7. Que mediante comunicado No. 2012-305-008705-1, del 13 de julio de 2012, **LA AGENCIA** dio respuesta a la comunicación del 15 de junio y manifestó su disposición para analizar algún tipo de iniciativa de **EL CONCESIONARIO** para desarrollar un proyecto sobre el Tramo de la Ruta Nacional 70 comprendido entre Ocaña – Aguaclara – Gamarra - Puerto Capulco (Los Ramales) con el propósito de realizar su Rehabilitación y Mejoramiento así como la Construcción de las variantes a los municipios de Ocaña, Río de Oro y Aguachica los cuales hacen parte integral de los Ramales.
8. Que por medio de la comunicación con radicado No. 2012-409-019905-2 del 13 de julio de 2012, **EL CONCESIONARIO** ratificó a **LA AGENCIA**, su interés de realizar los trabajos de rehabilitación y mejoramiento de la vía Ocaña – Aguaclara – Gamarra - Puerto Capulco y de construcción de las variantes a los municipios de Ocaña, Río de Oro y Aguachica en los términos contemplados en el Contrato para actividades adicionales.

Source. (Transport ministry, 2012)

The above evidence demonstrates the current situation of the project, which makes it difficult to execute, making increasingly difficult the possibility of having a river transport model that helps improve logistics, economic and social development of the country.

Lastly, the Magdalena river project is an engineering project that works with a riverbed dredging system to advance the recovery of navigability and allow the flow of passengers and cargo.

The recovery project for the navigability of the Magdalena River should involve feasible analysis projects of studies on the riverbed sediment production, since it presents a large amount of sediment in its bed, so that it should be accompanied by planning such as the analysis and control of the environment, with a deforestation analysis, soil erosion, infrastructure design and execution, analysis of mining activities, rainwater control strategies and sediment supply, as well as flood mitigation (Rodríguez, 2015) .

It also states that the infrastructure and water adequacy project on the Magdalena River lacks a comprehensive view of the basin, where questions such as what would be the scenarios of dredging volumes and their associated costs under different sediment production scenarios from the upper, middle and lower parts of the Magdalena basin? These approaches should be part of the Magdalena River navigability project, based on cost-benefit decisions with civil intervention and transdisciplinary science and not only in the development of a "gray" engineering project.

The Colombian Academy of Engineering proposes to analyze five points dredging of the riverbed project

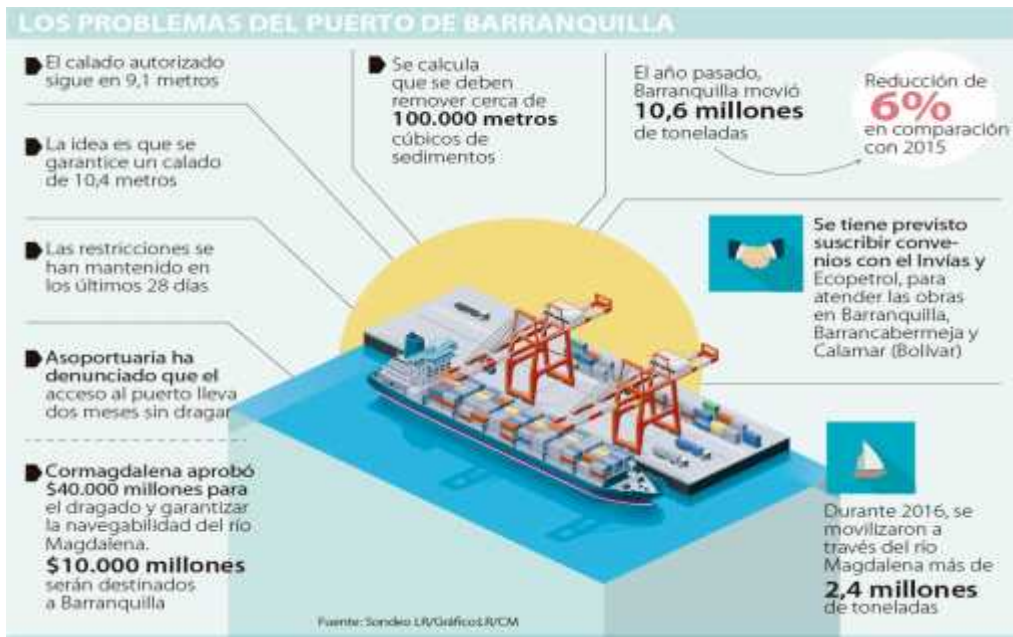
- 1) To analyze the short-term mitigation factors in the sub-watersheds in a critical state of soil degradation.
- 2) Review environmental policies in the control of soil degradation and preliminary assessment of compliance in critical areas identified.
- 3) Define the different scenarios of erosion in the basin to the year 2052 under the different states of environmental impact in the soils.
- 4) Create environmental recommendations for medium and long term erosion control.
- 5) Design a methodological and organizational framework to carry out an erosion monitoring plan in the Magdalena basin. (Colombian Society of Engineers, 2014)

On the other hand, Jaime Iván Ordóñez, president of the Water Resources Engineering Committee of the Colombian Society of Engineers, said in an interview with the newspaper El Espectador that the government's project has no technical viability; it's poorly conceived and designed. Also, the project was started under a series of false premises and their objectives were not clear or achievable. (EL HERALDO, 2014)

To date, the last dredging attempt by the Navelena consortium on the Magdalena River was in December 2016. The increase in sedimentation and climatic effects have the river in check and the area of Bocas de Ceniza, more serious though is the lack of solutions to the problematic alerting the Colombian companies especially the ones in Barranquilla for their liberal development in the matter of logistic of export and import commerce, the companies and the boats have taken measures in the reduction of the merchandise to be able to remove them of the port. (A.I.C, 2017)

Despite the announcement of CorMagdalena of 40,000 million to start with the project again and of which 10.000 million were destined for the port of Barranquilla, this money will not be used until the consortium between CorMagdalena and Navelena is terminated, the problematic of the the project is directly affecting businesses, forcing them to use ports such as Cartagena and Santa Marta, generating high transport costs. The level of draft of the Magdalena river must be above 10.8 meters and that at this moment its two meters below navigable. (Radio Santa Fe, 2017)

Illustration 9. Barranquilla Port



Source. Radio Santa fe, 2017

The agreement that sought to recover the navigability of the Magdalena River, was signed on September 13, 2014 and according to the schedule, the date to present progress of the project and generate the financial closure was last June 11 which expired along with The breach of the project. And since then CorMagdalena was obliged to apply the daily fine of 30 minimum monthly salaries enforced to Navelena S.A.S. For the breach in which it was immersed in after the problems of its majority partner, the company Obredecht (which had 87% of the shares)

The ideas and reflections of some experts at the beginning of the project were positive, opinions expressed that the project would have a positive impact on the costs of freight transport. Also they extracted statistics where they stated that the load would be a ton per kilometer and would be worth 33 pesos via river, while in train, if there were a line, it would be worth 40 pesos and in truck 52 pesos. The truth is that to this day none of the expectations have been realized. The navigability of the river has not contributed to the problem of transportation, "Many goods produced in the interior of the Nation today have to face high costs of internal freight to reach the Caribbean ports to foreign markets. (W radio, 2016)

Undoubtedly, given the short time frame and taking into account Obredecht's reputation problems; it is very difficult for Navelena to achieve continuity, which is why once again a space has opened for a new tender, a process that would delay at least one more year the beginning of the project.

This is a great setback for this initiative that has been waiting for decades to materialize and allow the country's main river to be navigable in order to facilitate the transit of barges that would reduce the cost of cargo transportation.

2.1.4 Foresight of the Magdalena River

The current scenario, from the perspective of the economic and institutional situation, is determining the Magdalena river new challenges to the difficulties caused by the Obredecht scandals. The Navelena consortium that has been in charge of financing the project today faces problems of bank guarantees and investors face problems of uncertainty and the situation is aggravated when the Regional Autonomous Corporation of the Rio Grande of Magdalena (CorMagdalena) decided the March 23 of this year declare the expiration of the contract with Navelena.

In addition, it seeks to carry out the assignment of the contract to a new firm and thus avoid starting from scratch by generating a new tender. In case of not finding a signature that complies with the regulatory parameters for the execution of the contract, a new public-private partnership

will be sought, opening tender and adjudicating at the end of 2017 or beginning of 2018, which will delay the project 2 additional years, Anticipating its culmination no sooner than 2021.

Public and private entities are awaiting the completion of the project. This is the case of Naviera Central, a subsidiary of the multinational Seacor, which has its hopes placed on the river, since it could transport more merchandise, going from 16 to 22 trips a year, for which they have invested 40 million dollars in Barges and tugs for the handling of fuel oil. In the case of Ecopetrol, the main user, who transports about 28,000 barrels of fuel oil, and precisely for this interest, signed in 2013 an agreement with CorMagdalena to contribute 50 billion pesos so that the project doesn't stop

Consequently, the government has planned a series of construction projects to triple the tributaries capacity to mobilize goods, so it is planned to include additional projects that will make the country more competitive. Likewise, the Port Society of Barranquilla has started the construction of a refrigeration warehouse with a cost of 20 billion pesos; said project will bring advantages such as the efficiency in the processes and the traceability of the cargo, guaranteeing the customers a cold chain for their perishables. On the other hand, in the port of Palermo, also located in the city of Barranquilla, the Coremar business group, contributed 60 million dollars for a cluster that would guarantee the hydrocarbon industry the transport of liquid cargo.

To this investment, we can add the one made by the port company, RiverPort, who have already raised a total of 60 million dollars. This company is made up of Itacol S.A. Of Colombia, and Gerdau of Brazil. It can be said that RiverPort has specialized in the receiving and loading of solid agricultural bulk and concentrate for animals, which has a bridge with encapsulated conveyor and two docks, with capacity for 800 tons per hour.

On their behalf, they have also made progress in their infrastructure and investment, companies like Bitco, which has a multipurpose port and now installed a gantry crane system to increase competitiveness. Also Portmagdalena, who have invested in the dredging system between

kilometers 0 and 2 of the channel, which already has a depth of 12.2 meters, which has allowed the entry of vessels of greater draft to the port area.

Also Michellmar, a company that has been investing in its port, which can handle up to 100 tractors per day, with a capacity of 35 tons each, and which has a transfer point that has a capacity of 92,000 tons of coal in bulk (LHB , Group, 2016). And lastly, the Company of Associated Ports (Compas), who presented a project in 2015 for 92 million dollars to expand its capacity, thus, allowing us to understand the advances made by the river industry in Barranquilla, in the interest of improving ports, with a projection towards the renewal of the navigability of the Magdalena River.

In the case of Gamarra, in the department of Cesar, the Bocas de Ceniza Society has projected investments of \$870 million dollars for a multipurpose port: the Fluvial Terminal of Andalusia.

Also in Barrancabermeja, the second most important city located on the Magdalena basin, a series of advances are being made to enhance the navigability of the river, by building the largest and most modern multipurpose port on the Magdalena. The company that has bet on this construction is the Swiss multinational Impala, which would benefit because it handles more than 50% of the load on this river. (Chavez, 2015)

They have built it in a space of 50 hectares, investing one billion dollars; Impala has the full confidence that the Magdalena will be the main alternative of transport capable of mobilizing all kinds of cargoes, reason for which they made the port very similar to the seaports, of private nature but of public use, also looking to attract investors who can use their terminal. Given its location, the port has the possibility of connecting trade between the Middle Magdalena, the South of Bolivar, the Santanderes and south-east Antioquia.

The future of the navigability of the river depends on the transfer of Navelena S.A.S contract (where Obredecht had 87% participation). and a company who has the option of receiving such a

transfer is the multinational PowerChina, if it meets the necessary requirements. This decision is in the hands of the Autonomous Corporation CorMagdalena.

The appearance of the Chinese industry in Colombias main river is not new, since the multinational company Hidrochina had already realized hydroelectric projects, ports and has participated in the navigability of the river; Unfortunately without the support of the ministry for the environment, nor the participation of the communities that were affected by their projects.

There is concern in some sectors about the participation of Chinese companies, as they have a history of conflict with the communities where their projects are based, also because of their non compliance to the environmental regulations, such as the case of Emerald Energy PLC, who have exploited oil In Caquetá, Putumayo and Amazonas.

PowerChina, on its behalf, does not escape the allegations of the violations of human rights and the environment; There are records indicating that the company has overlooked prior consultations with the communities in Nicaragua and Cambodia, has been responsible for negligence in the death of workers in Ecuador, and has violated forest laws in Bolivia. Which puts into question the transparency in the processes that the multinational may have in Colombia?

Another situation is added to the reputation of PowerChina and is that the entity that subsidizes the multinational, Sinohydro, is admonished by the World Bank and for 3 years has been blacklisted by some companies, given that they have been found guilty of Fraud in the commissions payments to influence the granting of contracts financed by the World Bank. However, this is not something that prevents them from being granted the contract for the recovery of the Magdalena River.

However, the State assumes that PowerChina's participation in the project, is beneficial, besides being the only card to play and not having to start from scratch with a new tender; and additionally, the legal processes that it has in other countries does not take it off the list to obtain the assignment of the contract.

PowerChina would be in charge of the execution of the contract, it should make the payment of the current debt with the Agrarian Bank that already surpasses the 130,000 million pesos. But in the event of the cancellation of the agreement with Navelena due to expiration of the terms, Cormagdalena would directly contract the dredging of the river between Barrancabermeja and Barranquilla, through public works, with the aim of not furthering the delay of the project. (MOUTHON, 2017)

2.1.5 Projections

María Fernanda Ortiz (2012) presents table 1, generated by the Planning Department in 2005, where they proposed medium and long-term river transport projections. At that time, it was estimated that in 2010 the permanent navigation in the river network would be 55% and in 2019, 80%; Given the situation that has had to go through the recovery project of the Magdalena River, these estimates lose their realism, since we are 2 years from the target and the consortium responsible for the works has not yet been updated, and these are projected to be completed in 2021. In addition, it was also estimated that the estimated investment would be 91.5% by the public sector and 8.5% by the private sector; To date, the reality is that the private sector must generate the largest possible investment to carry out the project.

Graphic**3.****Project****investment**

Meta	Hoy	2010	2019	Inversión estimada (millones de pesos 2005)
Consolidar el transporte fluvial en las principales cuencas del país	39% de navegación permanente en la red fluvial	55% de navegación permanente en la red fluvial	80% de navegación permanente en la red fluvial	Inversión pública \$1.065.860 (91.5%)
	3% de carga movilizada por modo fluvial	7% de carga movilizada por modo fluvial	10% de carga movilizada por modo fluvial	Inversión privada \$99.600 (8.5%)

Source: Guidelines for the urban territorial development of the river port cities on the Magdalena River. Application Salgar port. Ortiz (2012)

This investment, both in the public and private sectors, is estimated at 2.5 trillion pesos to carry out the project along the 908 kilometers between Dorada (Caldas), Puerto Salgar (Cundinamarca) and Barranquilla. 70% of this resource should be destined to the civil projects such as the channeling of the river, and hydraulic needs, by means of the placement of rock between Barrancabermeja and Port Salgar. Seeking that the river have a depth of seven feet, and can mobilize 7,200 tons of cargo. And the other 30% of the resource should be allocated to maintenance and dredging between Barrancabermeja and Bocas de Ceniza.

2.1.6 Impacts of restoration of river navigability

Fedesarrollo (2012) carried out a socioeconomic study that describes and analyzes the effects of the Magdalena rivers navigability, with the objective of being an orientation for the project to be efficient and improve the living conditions of the communities around the river , And of course, foreign trade.

Among the most obvious impacts of the project is the improvement of the navigation of the river, connecting the points of production and consumption between the different territories of the country at a lower cost. Here we would see a double-track economic impact, positive for the

reduction of transport costs, negative for the road transportation industry. The benefits would be between 1.1 and 2.5 billion pesos depending on the level of cargo that is mobilized by this route.

Fedesarrollo presents in graph (4) a reflection of the 10 sectors that would grow with the river navigability project. Among those who lead the list is the machinery and equipment industry for the development of the project; While those that would have less growth, but not insignificant, would be the services of ground transportation and the hotel and food industry.

Graphic four. Impact on gross production by region (Billions of COP from 2015)



Source: Fedesarrollo, 2012

Another sector of decent projected growth in this context is related to services to companies, construction of civil works, followed by metallurgical products and substances and chemical products. The sectors that would have low growth are the ground transport services and the hotel and food industry.

In addition, other positive impacts are associated with the improved exchanges with various countries, and possibly a reduction of costs in the products, since their transportation would be cheaper. It is estimated that almost 50% of the profits generated come from increased foreign trade.

Likewise environmental benefits such as the reduction of CO2 emissions generated by cargo trucks, which also contributes to a reduction of maintenance required on roadways and reduction of vehicular traffic.

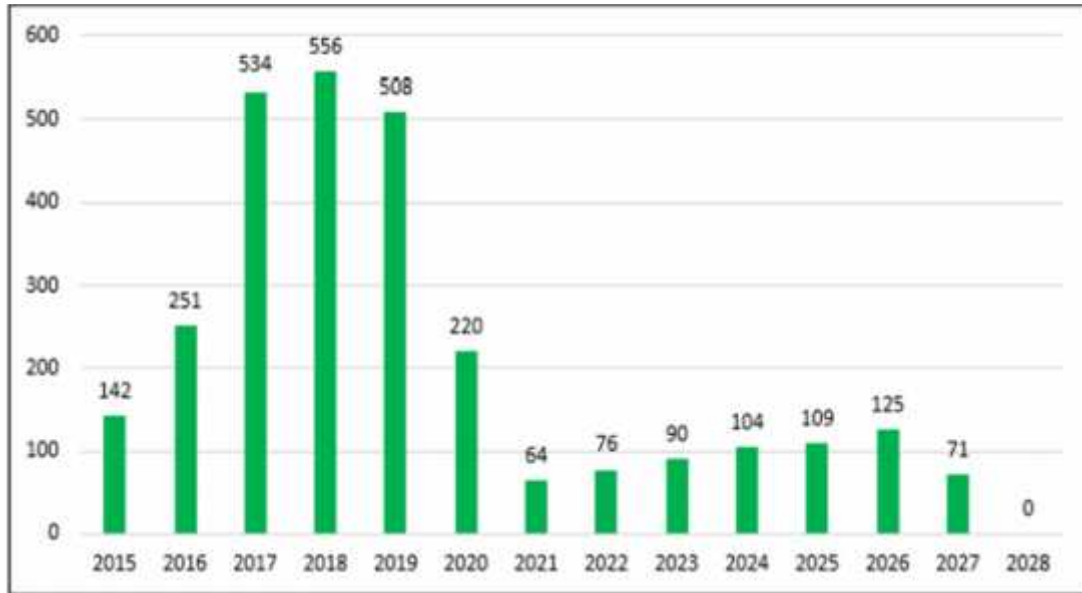
In graphic (4), it is possible to identify the contribution to GDP growth by the Navelena project. Here, the average difference in the growth rate is described year by year (within the period originally estimated for execution), observing for the current year a growth of 0.07%, an increase that has not occurred, due to the political difficulties And administrative aspects of the consortium.

In addition, in graphic five, we see the impact on GDP in monetary terms. The totality of these flows represents 1.8 trillion pesos, which corresponds to 0.25 of GDP in 2015, the year in which the research is carried out.

Graphic five. Contribution to GDP growth generated by the Navelena project, 2015-2028



Source: Fedesarrollo, 2012 Graph 6. Annual impacts on PIB, 2015-2028 (billions of COP de 2015)



Source: Fedesarrollo, 2012

In order for these benefits to develop, it is necessary to implement policies for the generation and substitution of cargo, in this way the river transportation system would be fully utilized and the savings generated can be effectively seen. This also implies the need to mobilize a greater culture for the use of this means of transport.

It is important to consider that this river continues to be the main source of economic, food and water resources for some communities located on its banks; So that the positive and negative effects that the project may have on the people living in these municipalities must be considered. One of them, of special importance is the prevention of the excessive contamination of the waters by the execution of the project. So it is the responsibility of the companies and the State to be present in the communities to address the problems that are presented there, even before the execution of the project since it would avoid the aforementioned problem.

At the labor level, the recovery of the Magdalena's navigability brings with it the generation of thousands of jobs, both qualified and unskilled, either in the works required by the canal, or in the ports that are being strengthened along the river.

There are also positive impacts on the fishing industry, which can also be interpreted as important benefits to the ecosystems of the basin, such as the improvement of the physical and hydrodynamic conditions of the river, as a function of the recovery of the channel, increasing the flow of fish towards the highest areas; The generation of feeding areas for fish, due to the type of works generated; The recovery of swamps and wetlands is necessary, since the annihilation of these, has generated sedimentation in the river that makes navigability impossible, so that it is a benefit both for the communities and for the project itself.

However, project implementation also poses some potential risks that correspond to the threat of sustainability of the fishing activity, due to the installation of artificial structures to divert the river, which would generate imprisonment of the fish in some areas. It is also possible that some endemic species such as Bocachico are endangered, since at very young ages they are very vulnerable animals; In addition, habitat fragmentation is foreseen, which affects the migratory routes of some species.

In addition, for the development of the project, it will be necessary to close the passage of some arms of the river, which would negatively impact the communities which would lose access to the water and food resources provided by these channels. And finally, the contamination that could be generated by the project in the waters and borders of the river.

3 FINDINGS

The navigability project is a great alternative to produce an opening for the market and the economy, motivating companies to use the river as a means of transportation for their goods, with a faster delivery process to ports and minimizing cost in freight

The problems of corruption that brought the projects tender, which involves public and private officials among them, Óscar Iván Zuluaga, presidential candidate; Former Vice Minister of Transportation Gabriel García Morales; The ex-senator Otto Bula; Juan Manuel Martínez, Managing Partner of Bonus Banca de Inversión SAS; The exministers Cecilia Álvarez correa and Gina Parody; Daniel García Arizabaleta, ex-director of Invias; Juan Manuel Barraza, former

superintendent of ports; The former director of royalties, Luis Fernando Andrade; The president of the National Agency of Infrastructures (ANI), Alberto Antonio Martinelli; The president of Obredecht in Colombia, Luis Antonio Bueno Junior. These are some of the many involved in the processes due to the scandal of the projects crisis in the navigability of the Magdalena River project (Hernández, 2017). To this is added the 120,000 million pesos that the Agricultural Bank lent to Obredecht, a loan requested on December 15, 2015 with a rate of interest lower than the normal market; The most surprising thing is that the loan comes six months after Obredecht's president, Marcelo, was captured in Brazil for corruption scandals (El Tiempo, 2017).

It should also be said that this loan was granted under the authorization of the Bank's board of directors only four days after the Superintendency's announcement declared Obredecht bankrupt. This loan was disbursed to the consortium of Navelena SAS and Valorcon, with the alleged intention to inject funds to the recovery project of the Magdalena River and that this project had been granted 2.5 trillion pesos in 2014. This entire resource came from the Colombian state funds to finance a project in progress of a broken company, financially the entity knew the current situation of the multinational and therefore decided to make the risk loan to a which was in a precarious situation. The first ones responsible for this multimillion-dollar loan were Agriculture Ministers Aurelio Iragorri and Minister of Finance Mauricio Cardenas. These should express to the public the reason for this loan under the interest of corruption. (Week, 2017).

This investment loan for the recovery project to the Brazilian company was under pressure by the main executive powers such as president Juan Manuel Santos, the vice president German Vargas Lleras, to the administration of Transport Natalia Abelló; Somehow the controls were made to generate a risk loan where no private bank wanted to have commercial participation because of the international problems.

In relation to the above, these phenomena plus the delays of the project have deprived the country of the possibility of having a more competitive economy. The project would have a new process of awarding contracts in 2017, to begin the recovery of navigability and it would begin to be developed in 2019 with a millionaire investment of 1.2 billion dollars and the finished project would be ready by 2023. If the Work is delayed for at least three more years, this would generate losses in the operational part of more than one trillion dollars annually for reasons such as the destination ports along the rivers and the rivers that drive the regions production along with

investments, in addition One of the most damaging impacts is the 1.3 trillion pesos that are left to be lost by stopping the transportation of 35% of the \$14 trillion of cargo that moves through the country in freight costs. (School of Engineers of Colombia, 2017).

The following finding was complemented by the research of the daily El Universal (Tom, 2010) on the problems generated by global warming in the Magdalena River. Climate change is a natural phenomenon at the global level that directly or indirectly affects all living activity, alters atmospheric compositions and different weather patterns due to the large burning of fossil fuels. This phenomenon is the main threat that affects the recovery project of the Magdalena river along with deforestation, achieving results such as decrease of the channel of Dique by more than 4 meters, in some riparian populations there are now sand strips up to 400 meters wide In the channel of this important tributary, making almost impossible the transit of any motorized transport.

If the problem persists, the main fluvial artery in Colombia will continue to dry, it will endanger all fishing activity and navigation, as well as the problems that would arise in the aqueducts service of some riverside populations such as Arjona, Calamar, San Estanislao de Kotska And San Juan, due to the fact that the Magdalena River has reduced its flow greatly complicating the supply of residential waters, not only would these activities be affected, but also some marshes, such as Stones, St. Estanislao de Kotska.

This problem affects the food supply of the region mostly the main source of food, the "fish", the rivers water level has decreased so much that the fishermen themselves of the Zambrano population in in their day to day only get Arenquitas and small species, this Affects a large number of families because of the few resources they have, they do not have enough income to buy similar products such as pork and beef. At the same time, the Barranquilla Port presents an unprecedented crisis due to the low level of water and the abundant river bed that makes up the muddy soil due to the erosion of the mountains and overflows of ravines along with the illegal mining, these environmental problems have been an impediment to the seaworthiness of ships that enter and leave the port with containers, therefore the economy of the country and mainly the economy of Barranquilla is affected by the costs in the additional freights that force them to use another port such as the Cartagena port or Santa Marta port, generating solutions not very profitable as the reduction of the weight of the merchandise on the ships so that these can enter and leave without having to run aground in the river bed, thus the operations generate little profitability for the

productive sector of the Region and damaging the good development of the different industrial sectors.

4 CONCLUSIONS AND RECOMENDATIONS

4.1 Conclusions

After an in-depth analysis of the background and current status of the Magdalena River navigability project, it is possible to conclude that:

- Historically, the Magdalena River has played an important role in Colombian trade. However, for some time now, this alternative has been neglected in order to implement land transportation, directing the nation's resources in strengthening the road network, Incurring immense costs and indiscriminate damage to the environment.
- The Magdalena River is currently experiencing environmental problems due to global warming, which has strongly affected the port of Barranquilla, where the river has a high sedimentation rate and a low water level, which prevents access by large vessels. This is one of the problems with which the project must deal. This is why the project began generating a dredging system of the river bed to advance in the recovering of seaworthiness and allow the flow of passengers and cargo.
- The river navigability recovery project is a great alternative to create an opening for the market and the economy at both the national and international levels.
- The Magdalena river transport project generates great alternatives to solving the problems presented by land transport in Colombia, by means of a much more economical and environmentally responsible transportation system
- The recovery of rivers navigability has had significant investments and support from both public and private companies.
- It is estimated that the total cost of the project would be 2.5 trillion pesos; Money that would cover works, maintenance of dredging, satellite monitoring, interventory, project management and property and environmental compensation expenses
- Interventions made on the river should be accompanied by planning such as environmental analysis and control, deforestation analysis, soil erosion, infrastructure design and execution,

mining activity analysis, rainwater control strategies, and the contribution of Sediments, as well as flood mitigation, in order to reduce and control the environmental impact of the project.

- The consortium's projections indicate that at the end of the project, it would be possible to move about 7,200 tons of cargo along the river.
- The project is currently stagnant thanks to the corruption scandal that Odebrecht, responsible for the Navelena consortium, is going through. Meanwhile, CorMagdalena Regional Autonomous Corporation has not been able to cede the consortium contract to continue with the project. In the event that such assignment is not possible, it would have to be resubmitted in order to award the project to another firm, which would further delay the course of the project.
- The Banco Agrario granted a credit of more than 120,000 million pesos to the Navelena consortium, which belongs to the multinational Obredecht; This money would have to be covered by the firm that comes to head the new consortium.
- Currently, several companies have invested a lot of resources to improve infrastructure in ports, which have tools of high technology and have grown alongside the seaports, as there is a great expectation regarding the navigability project. However, the transparency problem that the concession is experiencing tends to reduce the confidence of potential investors, generating economic losses in the ports.
- At the time of signing the consortium, estimates indicated that by 2015 there would already be a major advance in the section between Barrancabermeja and Barranquilla towards making this corridor navigable, and was intended to be completed by 2020; However, given the stagnation of the project, the new estimates indicate that before 2022 there would be no significant development of the project.
- In addition to the port in Barranquilla and Barrancabermeja, other cities are strengthened as points of great importance for river transport, as is the case of Gamarra, in the department of Cesar.
- Should the project succeed, the country would benefit because the connection between different parts of the country of high consumption and production would be improved at a much lower cost compared to land transport.

THE MAGDALENA RIVER RECOVERY PROJECT

- With the development of the project, economic sectors such as machinery and equipment, business services, construction of civil works, metallurgical products, chemical products, financial intermediation services, real estate services and petroleum refining products, among others, would grow.
- Foreign trade would increase, both because of the possibility of importing and the possibility of exporting products with lower transport rates.
- Reduction of CO2 emissions, as it would reduce the transit of high-caliber tractors, which would be replaced by ships and transporters.
- According to estimates, the project would contribute 0.25% of GDP in the years of its development, given the generation of employment, hiring qualified and unskilled workers. It would also generate a recovery of an additional 4.2 pesos for each peso invested in the project.
- In addition, it is necessary that the implementation of the project be accompanied by awareness campaigns on the use of inland waterway transport, so that it can be fully exploited.
- It is also necessary to take into account the communities that are going to be directly affected by the works and the project in general, respecting the needs that the inhabitants have regarding the spaces that would be modified, the activities that are developed there such as fisheries as a means of subsistence and the ecosystems that benefit not only the villagers but the project, since it is necessary to recover marshes and other habitats so as not to generate impacts on the river that adversely affect navigability.
- Perhaps considering the difficult situation that the project is going through its an appropriate time to rethink different aspects of political, social and environmental impacts and make the necessary adjustments based on solid and serious studies such as those that have been carried out, connecting more directly To the Colombian academy, which has constant updates on the important knowledge

4.2 Recommendations

- As a recommendation, observations must be made regarding the process being carried out by the Navelena consortium, taking into account that the options that the Cormagdalena Regional Autonomous Corporation has is to assign the contract to another firm or to start the contract bid again. So Cormagdalena must be very careful in each scenario, choosing a firm that is fully capable of carrying out the project demonstrating guarantees of permanence and transparency.
- That the firm that assumes the contract, either by cession or by tender, account of the project in all its phases, through periodical publications and open and transparent account performance, since the country needs to regain confidence in the industry that has in its hands Projects as important and of such social, economic and political importance as the recovery of navigability on the Magdalena River.
- Establish watchdog and guarantor agencies to accompany the project, thus supporting the previous item, to ensure transparency.
- That the communities that are currently settled in the river basin be taken into account, so that the regulatory processes for prior consultation are carried out with them, but also that social support is provided to them, so that they can take advantage of the benefits that the project would provide in their territories, and also to mitigate the collateral damages that can generate the execution of the project. Bearing in mind that the communities have interesting perspectives to contribute in this accompaniment, not only seeing them as passive populations, but exploring and exploiting their active participation.
- It is also necessary that all public and private entities that are involved in the development of the project join efforts to ensure the least damaging and negative environmental impacts on the ecosystems, habitats and species of the Magdalena River Basin, so that the implementation of the project could be viable, and actually meet the expectation of river transport as an eco-friendly means of transportation; Being thus possible the coexistence of this type of megaprojects with an ecosystem as diverse as the Magdalena river basin.

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