



## Paper 75 - The threats and challenges in navigating the Magdalena river

Chavez, Luis E

Profesional en ciencias navales, abogado marítimo, perito naval, MSC en Derecho Internacional y relaciones Exteriores, profesor de la Escuela Superior de Guerra y la Universidad Sergio Arboleda.

Luis Eduardo Chavez: [lechp8@gmail.com](mailto:lechp8@gmail.com)

**ABSTRACT:** The threats and challenges in navigating facing the granting by the Magdalena River in Colombia, where they are treated problems, that if not mitigated in time, does not fulfill the objectives of maintaining the waterway as a major axis of multimodal logistics focus and analyzes the problematic in the context of competitiveness and improvement of the waterway with a major impact on navigation and safety.

### The threats and challenges in navigating the Magdalena river

The port competitiveness<sup>1</sup> view from the commercial side, provoke that States develop an infrastructure that allows them to improve conditions for import and export their products either by building, adapting or improving communications systems. By year 2013, in this artery only 1,200,000 tons<sup>2</sup> of cargo was mobilized, with just a 0.21% utilization rate<sup>3</sup>.

In this regard, Colombia decides to improve the navigability of the Magdalena river through a concession, which seeks, using dredging and coastal modeling, to improve transport capacity, integrating production centers in the country hinterland, to the Caribbean's export ports, strengthening the infrastructure to serve as the main transport axis and also proposes the creation of logistics nodes along riversides, since its objective is to mobilize 8.3 million tons of cargo, which is one of the most important works made in the area of South America region.

The watershed has a high strategic value within the national context, since in it, 86% of Colombia's GDP is generated. The Magdalena River is the main waterway, and is crucial to the country's economy; in its basin are two Refineries, 5 main cities of the country, two of which have or are close to a million people population; it produces 70% hydroelectric production, is installed 95% of rail transport infrastructure, 95% of energy interconnection system, 85% of river transport, 72% of transport infrastructure and 70% road infrastructure. For this reason it seeks to use the natural conditions of the Magdalena River to communicate large production centers such as Bogota, Medellin, Bucaramanga, with the main Caribbean export ports of the country, looking for "Thus a national river network will be created, through which you can move production to any destination in the country, either for export or domestic consumption. In addition, the socioeconomic conditions of 57 municipalities will be improved in 8 departments, benefiting more than 25 million inhabitants<sup>4</sup>".

The morphology of the waterway and the amount of sediment that drags its flow to the sea is 144 million tons of sediment a year<sup>5</sup>, where it ends in the Caribbean, ends with a flow at the mouth of 6,700 m<sup>3</sup>/s<sup>6</sup> at its mouth, which added to poor maintenance, makes today river navigation very limited by lack of depth and seriously affecting the cargo transportation.

<sup>1</sup> [https://colaboracion.dnp.gov.co/CDT/Desarrollo%20Empresarial/Documento\\_FEM\\_2014.pdf](https://colaboracion.dnp.gov.co/CDT/Desarrollo%20Empresarial/Documento_FEM_2014.pdf) La calificación obtenida por Colombia en el Índice Global de Competitividad (IGC) mejoró al pasar de 4,19 a 4,23 3. Con este resultado, Colombia se ubicó en el puesto 66 entre 144 economías, mientras que el año anterior el país había ocupado la posición 69 entre 148 países.

<sup>2</sup> Fuente Ministerio de Transportes de Colombia

<sup>3</sup> Moreno Gómez Joaquín, La navegación y el transporte Fluvial en Colombia, Universidad Pedagógica y Tecnológica de Colombia-2006, se sigue fórmula planteada en páginas 20,...28.

<sup>4</sup> DNP

<sup>5</sup> <http://www.imeditores.com/banocc/deltas/cap6.htm>

<sup>6</sup> <http://www.revistacredencial.com/credencial/content/el-r-o-magdalena-esenario-primordial-de-la-patria>



This dynamic makes us have to analyze the different current threats and how security and protection plans should be implemented to mitigate the effects.

From this perspective, the river on national need will become an internationalized river for its export function, getting out of the classic definition in River Law, which defines it as "Those whose purpose is provided in ad hoc treaties, have an international regime not given by the River States<sup>7</sup>", because it would be defined by internal regulation and not by treaties with other countries.

For its size and the number of challenges that this project is proposing, besides to the different situations surrounding the river navigation, Colombia, looking to improve their competitiveness, must implement quality management systems in a coordinated manner, and expand coverage for the SOLAS<sup>8</sup>-PBIP<sup>9</sup> Convention, as the river inland brings new perspectives, thus, the state will develop a series of elements that strengthen river control, not only from the point of view of coercive authority, but also in regulations that will maintain 7x24 efficient navigation throughout the year, from the technical and environmental point of view, and in addition to have an effective control of ships and pollution prevention systems and assistance.

On the business side, they must implement systems that also involve the PBIP maintain systems and procedures to ensure that the safety in the supply chain is not violated by the different actors, because before arriving at the port of export, this burden is vulnerable and therefore management systems must expand their range to meet the rigors not only in the implementation of the PBIP Code but also in the adoption of new standards during the navigation which is the time of greatest vulnerability.

It is also important to determine that other difficulty is the large number of state actors involved in the process which brings more complexity.

For all these reasons, we ask ¿which are the challenges in the concession for recovering the navigation of the Magdalena River?

In order to improve competitiveness, Colombia, developing its strategic policy, has tried to establish parameters, seeking for a multimodal interconnection. The axes of this policy are the

<sup>7</sup> (Regulado por Principios de Barcelona- 1921)

<sup>8</sup> Ley 8a. de 1980

<sup>9</sup> Ley 730 de 2004.

documents COMPES<sup>10</sup> 3758, to restore the navigability of the Magdalena River, COMPES 3744 "Port Policy for a more modern country" and the COMPES 3547, formulated as the National Logistics Policy.

The plan to restore the navigability of the Magdalena River, which is supported by a program of strategic and priority interventions and proper maintenance of the waterway, so that the physical conditions necessary to improve future to achieve the use of this waterway as intermodal logistics corridor, is part of the following lines of action: i) advance the analysis required to run under a Public Private Partnership scheme -APP-(public private partnership) in the terms established by law 1508 of 2012. ii) River interventions, targeted to expand the navigation number of kilometers and to improve the navigability of the river (channeling works, dredging and maintenance). iii) Complementary actions aimed at developing and strengthening transportation services, logistics and intermodal, considering the sustainable use of the river eco-systemic services<sup>11</sup>.

On the other hand the "Port Policy for a more modern country" is part of the theme established by Article 2 of Law 1<sup>st</sup> from 1991<sup>12</sup>, revealing and regulating the spirit of each port considering interconnection facilities and cargo types there. Additionally, this document formulated strategies to improve efficiency in the provision of port services<sup>13</sup>.

As a third axis there is the National Logistics Policy that contains the strategies for the development of the national logistics system and its effective support to increase competitiveness and productivity. The transport has a significant effect on the business sector efficiency and productivity, population connectivity<sup>14</sup> to social services, the connectivity of the population in remote areas, regional and local development, and national and international integration. In this way the nodes or intermodal centers are articulated, evolving transportation concept wide, as logistics, that includes infrastructure and integrates the services offered and plans flows of people and goods that pass through<sup>15</sup>.

<sup>10</sup> Consejo Nacional de Política Económica y Social.

<sup>11</sup> Compes 3758

<sup>12</sup> Estatuto de Puertos Marítimos

<sup>13</sup> Compes 3744

<sup>14</sup> Se refiere a la capacidad y facilidad de movilización, acceso y conexión de las regiones a través de la infraestructura de transporte.

<sup>15</sup> Compes 3547



To this strategic set, we can add the 0000164 of 2015 decree, "Through which the strategically important logistics corridors were established for the country" where it continues the parameters established in Decree 1478 of 2014, defining them as "those physical means that facilitate the sharing and development of trade in general, by which the burden of both foreign trade and domestic trade is mobilized, allowing the link between production and consumption nodes together with their areas of influence ....", establishing into Article first of paragraph 2 of that standard I. Rio Magdalena: between Puerto Salgar- Barranquilla and Barranquilla - Cartagena (by the Canal del Dique).

It is important to remember that of all means of transport, inland waterways have the slightest effect on climate change and the lowest environmental impact. It takes place on an intermodal basis with existing or proposed rail and road services, including cross-border services. Navigation is inherently energy efficient and requires less fuel per ton of cargo. To the extent that the goods are transferred by road to inland waterways and coastal routes, traffic congestion can be reduced even in the more urbanized areas. Inland waterways, provided in the past links between countries during the war and peace and sought the means to overcome major political and cultural differences, whether in commercial use or even today, in its recreational use. The use of information technology and electronic communications can create improvements in the layout of channels, availability of information on water levels and tides, as well as close cooperation between all stakeholders and countries, to provide a much greater system capacity, while any possible environmental effect is reduced<sup>16</sup>.

That way and knowing the intention of the Government of Colombia to restore navigation on the waterway, we have to identify the problems encountered for the proper development of it, because in spite of having a regulatory framework, there are gaps to be addressed in order to achieve the objective of navigability.

For this purpose the National Government, through Cormagdalena, on August 15, 2014, awarded the contract for 2.5 billion pesos (US one billion) to execute recovery works of the navigability of the Magdalena River, to consortium Navelena, the only

bidder, made up of Odebrecht (Brazil) and Valorcon of Colombia companies for a period of 13.5 years.

From the problem and the development of the APP contract, some threats identified in the development plan navigating the Magdalena river, must be considered to achieve the objective of the contract and at the end achieves the competitiveness with significant investments in infrastructure and policy development, which is simply to be effective in navigation as well as the Country competitive and logistic development.

## 1. Troubles in the definition of Contractual terms

### 1.1 The width of the canal

The theoretical width of the canal, for a two-way river traffic, for machines 220 meters long and 26 meters wide, should be not less than six (6) sleeves over 30 meters, or 186 meters (for designer is 150 meters), but knowing that the APP contract considers only 52 meters and if the operating barges double hulls are added with a beam of 16 meters (in convoy would be 32 meters overall manga), then the recommended width of the canal would be in the order of 222 meters, otherwise it could affect the safety of navigation, although, if taken consider: the minimum margin agreed in Helsinki in 2008 (UKC) is 0.60 meters plus an increase in draft for pitching and heeling reasons, the dynamic collapse (squat), the error margins of sampling, sedimentation rate, and the type of material from the bed of the canal, the dynamic set will be dimensioned so that it will not reach to the probe under theoretical keel available<sup>17</sup>.

In the section Puerto Salgar-Barrancabermeja (256 Kms) it has been designed to present a wide of 150 meters and 7 feet (2,13 meters) deep at the end of the construction phase, with Fixed channeling works.

The section Barrancabermeja-Puente Pumarejo (628 Kms) will request a contract to be maintained performing using continuous dredging with a width of 52 meters and the same 7ft (2.13 meters) deep. It should be noted that these canal widths are intended for use in a two-way waterway.

<sup>16</sup>

<http://www.gwp.org/Global/ToolBox/References/The%20Handbook%20for%20Integrated%20Water%20Resources%20Management%20in%20Transboundary%20Basins%20of%20Rivers,%20Lakes,%20and%20Aquifers%20%28INBO,%20GWP,%202012%29%20SPANISH.pdf>

<sup>17</sup> <http://correvedile.com/enriquelequerica>

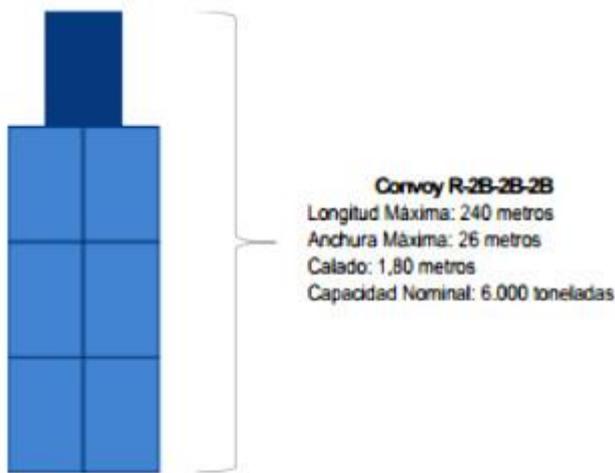


Características Canal Navegable	
Anchura del canal de verano	300 m (P. Salgar – P. Berrio)
Anchura del canal de verano	500 m (P. Berrio – Barranca)
Anchura del canal navegable de doble vía	150 m
Radio mínimo de curvatura	900 m

Fuente: Cormagdalena

This considering that the ship design for the Magdalena River (Colombia) established in the specifications, is a formation of R + 2 + 2 + 2 with 240 meters long, 26 meters wide and 1.8 meters in depth and a nominal capacity of 6,000 metric tons of payload. But the layout of the channels, not only must consider the sleeve of the vessels, but the maneuverability of the same, environmental factors such as wind and cross currents, floating vegetation, the distances to the veriles and banks, the squat effect and the minimum distance calculated between vessels to crossings and overpasses. Width required for the maximum convoy circulating on the river, composed of a tug and six (6) barges, with maximum dimensions waterway was determined (in conformation of puja R-2B-2B-2B) can easily navigate the curves 900 meter radius, traveling downhill. This width is 76 meters, which would be the maximum possible for the sector concerned curves are for one-way, but perfectly allows convoys crossing in straight sections or sectors<sup>18</sup>.

However, a (static) draft of 1.80 meters and a depth of 2.13 meters announced, the UKC is 0.33 meters, which only reaches half the UKC agreed and recommended in Convention Helsinki and even less by hydrodynamic effects which were already identified. For these reasons it can be inferred that within the given specifications to the Concession, it fell short in reference to the international standard already explained, may hinder future interaction and the utilization ratio of the waterway.



Fuente: Cormagdalena.

## 1.2 Approach Canal

<sup>18</sup> <http://correvedile.com/enriquelequerica>

It is not considered within the specifications the approach canal from Bocas to 2.8 kilometers offshore, neurgical part for entry of ships to the port area, nor is there a design for dredge and maintain at least one dársena of turn within the Port Zone<sup>19</sup>, or have anything planned for the changes when the new bridge with greater height is going to be in operative connecting the Atlantic Coast.

## 1.3 Signaling and Beaconing

The contract is not clear at this point and considering the exercise of the right navigation, it is pertinent to understand that the whole river security, understood as all safety measures that are within the navigation process and all actors responsibilities, requires among other conventions to identify and facilitate navigation as well as knowledge of deep and obstacles, ferry crossings, where the issue of signage is integral to permit the exercise, either by horizontal signs, alignments or beacons, lighting systems, satellite navigation systems and mapping.

Fort this case we can define some points to improve.

a) Develop or adopt a control system and river navigation safety, covering the length of the river with the corresponding stations, and which shall provide an effective and comprehensive control of river navigation.

b) Establish control systems of river navigation, river signaling, and implement and disseminate road rules to prevent collisions and nautical accidents.

c) Apply as ruled by the International Association of Light House Authorities (IALA), as relating to aid in inland waters and the national standards for implementing optimal overall safety river, due to the contract is limited to the works.

d) Restructuring SATELLITE NAVIGATION SYSTEM (SNS) in accordance with the provisions of the general guidelines of the International Association of Light Hase authorities (IALA), in IALA / A- 123, IALA / A-128, of which Colombia is signatory.

e) Adopt electronic mapping solutions designed and updated to allow greater boating safety and control of river navigation in real time on the Magdalena

<sup>19</sup> <http://correvedile.com/enriquelequerica>



River, this should be included in the proposal to improve the satellite navigation system (SNS).

#### 1.4 Reforestation

As mentioned before, the amount of sediment carried by the Magdalena to the sea is (200,000,000 m<sup>3</sup> / year), and the contract does not consider this aspect that makes the works undertaken not have an impact on the future sustainability of the works to be carried out, for this reason it is imperative to formulate an environmental management plan involving all environmental authorities in reforestation, given that according to Article 9 of 2008 law declaring 1242 as a public good and as such inalienable, imprescriptible and indefeasible, a strip of land that extends thirty (30) meters either side of the channel, measured from the line where the waters reach their highest increase<sup>20</sup>.

In this regard it is important to handle the concept of shared basins<sup>21</sup>, as the diversity of environmental authorities in the basin and its lack of cohesion do not allows the existence of a genuine comprehensive plan for managing the basin situation that should be easy due to the existent principle of the Corporación Autónoma specifically for the river, that was created in the "Constitución de 1991<sup>22</sup>", but has been short in the environmental theme, not to mention the regional politics managed, because in its banks, there are 14<sup>23</sup> Regional Environmental Corporations in total since the source of the river to its mouth, which have no management plans coordinated basin.

It is important to see that in addition to the statement, there are other not necessarily environmental institutions, which influence and regulate river activities; you can find a series of documents called guides. For example for the infrastructure sector, there is an "Environmental Project of the Maritime and River subsector" guide, produced by the INVIAS, but also there is a guide "technique for the formulation of management plans

<sup>20</sup> Ley 1442 de 2008

<sup>21</sup> "todas las aguas superficiales o subterráneas que marcan, atraviesan o están situadas en las fronteras entre dos o más Estados; por lo que respecta a las aguas transfronterizas que desembocan directamente en el mar, su límite lo constituye una línea recta imaginaria trazada a través de la desembocadura entre los dos puntos extremos de las orillas durante la bajamar" (Convenio de Helsinki 1995).

<sup>22</sup> El artículo 331 de la Constitución, dispone que esta Corporación será la "encargada de la recuperación de la navegación, de la actividad portuaria, la adecuación y conservación de tierras, la generación y distribución de energía y el aprovechamiento y preservación del ambiente, los recursos ictiológicos y demás recursos naturales renovables, en tal sentido se desarrolla su marco legal en la Ley 161 de 1994

<sup>23</sup> www.asocars.gov.co

and watershed management" of the Ministry of environment and sustainable development, as well as the one about the Coal transport issued by the Ministry of Mines and Energy.

#### 2. State Organization Issues

The governance of the Magdalena River is the most important risk, due to the number of players involved from an administrative point of view.

From the standpoint of transport, there is an intervención of the Ministerio de Obras Públicas-Dirección del modo acuático, the INCO<sup>24</sup>, the ANI<sup>25</sup>, the Superintendencia de Puertos y transportes, Cormagdalena<sup>26</sup> and the DIMAR<sup>27</sup>; from the environmental viewpoint, there are 11 "Corporaciones Autónomas Regionales", from the administrative point of view there are 9 departments, 1 Distrito Especial and not to mention that there are 54 Municipios until Barranco. There is also the AUNAP<sup>28</sup> for fishing regulations and the DIAN<sup>29</sup> for the regime and national income tax.

The different authorities with jurisdiction over the river are not aligned and river rule is not expedient for violations and has no procedures to establish responsibility for cases of collisions or accidents. Neither have technical standards for certification, construction and maintenance of ships that allow safe navigation, coupled with that has not yet been regulated the Estatuto Nacional de Navegación Fluvial de 2008, law 1242.

A simple example, there are different criteria for measuring the reference points or to determine the work; eg for Cormagdalena the KM 0 is in Bocas de Ceniza but for the Ministry of Transportation KM 0 is in the Sociedad Portuaria Regional- Barranquilla (SPRB) located 19.5 km from Bocas de Ceniza; or for example, to Cormagdalena the waterway begins at KM 0, but for DIMAR, the approach canal, an important part of the navigable canal extends from Bocas de Ceniza to 2.8 km offshore. For the APP, the KM 0 takes as a starting point the Laureano Gomez Bridge, and this is now a new KM 0.

For this reason it is imperative the need to "organize" the administration of the Magdalena River and clearly establish a procedure that gives each entity what it is necessary, but maintaining a

<sup>24</sup> Instituto Nacional de Concesiones

<sup>25</sup> Agencia Nacional de Infraestructura

<sup>26</sup> Corporación Autónoma Regional del Rio Grade de la Magdalena

<sup>27</sup> Dirección General Marítima

<sup>28</sup> Autoridad Nacional de Pesca

<sup>29</sup> Dirección de Impuestos y Aduanas Nacionales de Colombia



clear jurisdiction according to their functions or specify a single entity with all functions that will bring together all aspects of the river and thus functional competence issues could be resolved.

Thus we must articulate all activities whether training and certification of the river people; operation of ships and certification thereof; control for the ship's modifications; workshops and shipyards control; Governance, administration, maintenance, signage, mapping and knowledge of the river; Enabling and control of River Transport Companies; Monitoring, Control and Inspection; Assistance and Rescue; Security and Defence; Regulatory and legal procedures as well as defining the role of the Authority and its sanctioning activity; Research coordination for Violation of Rules; and indemnification limits for carrying out river activities, giving a whole range of coverage, control, surveillance and responsibilities of river actors and enabling true comprehensive security fluvial organized river affect efficiency mode, but also allows for an effective cooperation.

In the reality, the 1242 decree of 2008, even as it establishes penalties and has a river authority that is supposed to control river activities, does not allow the actual exercise of authority, since there is not currently a process in this administrative entity authorized to exercise such functions, for this reason it should be used to the Superintendence of Ports to do this because it is competent for this action. Becoming inefficient sanctioning activity in addition to dilute the responsibility of river control.

### 3. Operational Issues

#### 3.1 Sandbanks and Low River

These are presented by the change in the flow of water which makes navigation difficult and forces convoy fractionation; in the absence of adequate security measures would jeopardize the normal course of the operation, loss or contamination of the cargo and the ship.

##### 3.1.1 Convoy Fractionation

During navigation currently exist restriction zones or areas, that produce a non-continuous convoy navigation and operation turns vulnerable because should be split, so that should be considered to have fixed points of safe control for the docking and undocking of river artifacts that require special care due to the constant vulnerability of this. This problem may differ over time depending on the amount of sediment.

#### 3.1.2 Buildings on Sandbanks

The presence of fishermen along the Magdalena River has meant that poor people are forced to build weak houses without any security. That could be a reason to increase the accidentality or it could troubles also for observation and monitoring of the convoy.

#### 3.2 Assistance and Salvage

Referring to the State's obligations on assistance to ships in distress, its crew and cargo, there is no organization capable to perform these tasks, for that reason, it is important to have a corporate leadership to the obligation of mutual support between ships sailing in the basin, as the bailout and have equipment capable of performing the refloating ships.

In case of spillage of hydrocarbon material, you should consider a plan of action and coordination on environmental issues in coordination with Risk Agencies as UNGRD<sup>30</sup>, and local with emergency committees representatives as well as other companies that may collaborate or has legal mandate to perform these tasks as Ecopetrol. In addition you must have a contingency plan in different areas of the river for having different reaction capacities, because the consequences can be terrifying if you consider that 80% of the cargo handled are oil derivatives and a spill affects at least 15% of the country population watching the norm<sup>31</sup>.

##### 3.2.1 Environmental Damage

Due to the above, the risk of contamination of the basin is directly proportional to the amount of cargo being carried and measures exist to prevent these actions, which are usually of an operational nature, so it is important to note current regulations (as the Marpol 73-78 law 12/81), for the transfer of fuels and other polluting goods, and being on inland waterways, but it is the state that defines rules used, and the obligation of the use of double hull naval artifacts.

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<sup>30</sup> Unidad Nacional para la gestión del riesgo de desastres

<sup>31</sup> DECRETO N° 321 de 1999 (17 de Febrero) Plan Nacional de Contingencia contra Derrames de Hidrocarburos, Derivados y Sustancias Nocivas en Aguas Marinas, Fluviales y Lacustres que será conocido con las siglas – PNC- Plan Nacional de Contingencia contra Derrames de Hidrocarburos, Derivados y Sustancias Nocivas en Aguas Marinas, Fluviales y Lacustres que será conocido con las siglas – PNC –



### 3.2.2 Night sailing and dangerous goods

Resolution 003 601 of September 1, 2008 "By which measures related to transport and river traffic are issued" states, "Prohibit from the effective date of this resolution the transport of toxic substances is an integral part of this resolution, on all waterways in the country", then in his PARAGRAPH says "In the event that the mode of river transport is the only means available for transport, River Inspector of the jurisdiction where the sail documented request by the conveyor river originates, may authorize the transport only for fungicides, pesticides and / or fertilizers for agricultural use. "

In this regard it is important to note that these existing regulations and restriction to river transport of any goods listed in the Orange Book for the case, hydrocarbons, because of their special characteristics in addition to flammable, among others, should be considered, by administrative implications, limiting the operation 24x7, for that reason you should implement coordinated actions and management plans between authority and companies in order to have protocols and action plans and logistics to address situations that might lead a river incident, these procedures must establish the responsibilities of transporters, cargo owners and authorities to complement and facilitate mitigation action.

### 3.2.3 Fire

Fire is the greatest enemy of any vessel, in addition to no longer means of a contingency fire for example, if there are no boats or special equipment capable of fighting at the time, no authority to handle this kind of media, it must be obligatory that the authority should have this kind of means of mitigation, and should always have the seamanship training teams able to address the situation firsthand and implement equipment for the barges that operate automatically on cargo.

### 3.2.4 Bridges and electrical infrastructure

In the development of navigation there is an infrastructure made of Bridges and Electrical networks with poor signage that can interfere with the normal exercise of navigation mainly due to damage to antennas or oversized loads. If they have this kind of transport it is important prior to acknowledge these points in order to see the viability of transport and systems loading and unloading of them. Also is very important that the River Authorities create conventions to establish the signaling of them during all the navigation course.

### 3.3 Lack of certified personnel

One of the problems of navigation exercise is the lack of human talent capable and certified to perform work on board. It is vital the need to train staff in technical areas to develop transport efficiently.

### 3.4 Increased river traffic

The development of the waterway necessarily brings more interactions between ships navigating. Already including the Swiss multinational Technologicistic Impala and the Group of Rio Grande, in addition to traditional incumbents, going to have a major river fleet and increasing a major port development which in itself means that there is a tonnage of load to transport.

### 3.5 Theft, sabotage or contamination of the load.

Given that voyages of more than 800 km after the load to be reshipped on another vessel, commercial internationalization of the river being carried out, makes cargo insurance procedures have an end of the chain complies with the requirements for the buyer. In this sense the PBIP no longer will be limited to the ship-port interaction, as the freight has not left the country at the time of loading of the riverboat and controls for navigation evolve in order to ensure that the transported load is not going to be subject to criminal acts. It is also important to know the situation of the basin where they act illegal groups, and methodically assess these threats as they may be interested in having other sources of funding, but also carry out illegal activities such as the cultivation and processing of illicit substances and illegal mining, all in the same region of the basin, which is why the Intelligence and interagency coordination should be comprehensive and effective, to prevent the realization of crimes on board ships.

### 3.6 Sub-standard Ships

Currently, there is no operation of sorting or certification houses for ships and river barges that make the exercise of inspection for navigation in relation to the purpose of the ship and its technical conditions and mechanical repairs. It requires the implementation of these houses, as well as experts, assuring the state, that the means used are appropriate and comply with all aspects of river safety and seaworthiness, seeking the certainty that legally will meet the minimum standards, affecting the subject of Fluvial Integral Security, and allowing



Sub-standard Ships, which bring other risks linked to increased cargo and equipment that may have consequences for lack of foresight.

## Conclusion

The threats and challenges in navigating the Magdalena river, which are immersed in the concession contract for the recovery in navigating the waterway, are then contract type, since there are gaps in the specifications and its flaw does not allow effectively competitiveness in relation to inland navigation; also, there is a problem of jurisdiction with all state bodies involved so it requires a process that brings together coordination methods to facilitate the transport operation; Besides operational issues must be addressed promptly to minimize difficulties in boat handling, loading and delivery of goods efficiency.

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- Compes 3758 para reestablecer la navegabilidad del Río Magdalena

- Compes 3744 Política Portuaria para un País más Moderno
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## Recursos de Internet

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