

A large cargo ship is docked on a wide river. The ship has a white cabin and a dark hull. In the background, there is a dense line of green trees under a blue sky with some clouds. The water is a muddy brown color.

Inland Waterways Strategic Plan

Management Summary - 2013





1. Inland Waterways Strategic Plan	4
2. Opportunities of the IWSP	12
3. Goals of the IWSP	16
4. Strategy of Inland Waterway Transport	20
5. Improving the Institutional Framework at a National and Regional Level	30
6. Projects per waterway system	36
7. Implementation	52
8. Monitoring	58
9. Epilogue.....	62

1. Inland Waterways Strategic Plan





1.1. The Project

The Brazilian Federal Government intends to enhance the IWT sector and consequently contribute to the sustainable development of the country's economy. Therefore, the Ministry of Transport (MT) started the "Inland Waterways Strategic Plan" project in July 2012. This project resulted in a Strategic Plan for Waterways that aims to increase the amount of cargo that is transported on the Brazilian waterways. The Inland Waterways Strategic Plan contains recommendations for the development of a successful IWT system.

The development of this Inland Waterway Strategic Plan is part of the recent strategy of the Ministry of Transport to increase the participation of the waterway in an integrated transport matrix by means of establishing guidelines for the development of the sector, based on the PNLT. ANTAQ recently released the National Plan for Waterway's Integration - PNIH that aims at selecting potential locations for inland waterways terminals, developing a terminal database and software for ANTAQ usage, identifying the current and future main routes and transported cargo. The Inland Waterway Strategic Plan has a wider scope, in which an analyses of the institutional, physical river system, transport legislation as well as the economic analyses was carried out. The results of all partial products are brought together in this integrated summary.

1.2. Vision

The economy of Brazil is growing fast. This growth is mainly due to export of commodities/basic products and, aiming at facilitating this growth, the country needs an excellent transport system, in which all the modalities are well maintained, efficiently managed and strongly linked. Inland Waterway Transport (IWT) needs to be supported to become a serious alternative mode of transport in the Brazilian transportation network.

Waterway transport should be the most interesting mode for long distance transport. It is cheap, energy efficient and environmental friendly and safe and reliable transport to transport large amounts of goods. The railway is also a good alternative for certain connections, but this mode is less easy to access for new users, or requires large investments to build the connection. Road transport is interesting for short distances, less than 250km, on those routes with lack of waterway or railway connection nearby. The waterway should be used as much as possible, if available.

Essential elements for a successful inland waterway transport worldwide are a well maintained waterway, sufficient cargo that is suitable to be transported by barges, a supportive government system and a well-organized, safe and up to standard transport system, within a supportive social and environmental framework.

This Strategic Plan is based on four elements of the following vision:

1. Strengthen the IWT to consolidate the economy of Brazil

Improvement of the system will contribute to the competitiveness of Brazilian products on the world market. Due to the lack of an effective and reliable IWT system, many commodities are currently transported mainly by road and rail, while waterway transport could be more efficient (cheaper) and more sustainable. In addition, an efficient IWT system will improve the passenger transport service as a whole. The Brazilian transport sector has to deal with an increasing demand to transport bulk cargo for large distances, mainly to be exported via sea ports. This cargo should ideally be transported via inland waterways. Agricultural products (soy, wood, pulp), iron ore, ethanol are to some extent already being transported by barge in Brazil. Improving the IWT for these cargo types forms a basis for a solid inland waterway system. Furthermore, waterways users group could be enlarged by transporters of regional cargo and passenger transport. An example is container transport, ro-ro transport, or a more intensive passenger transportation network.

2. Start from a basis of current users

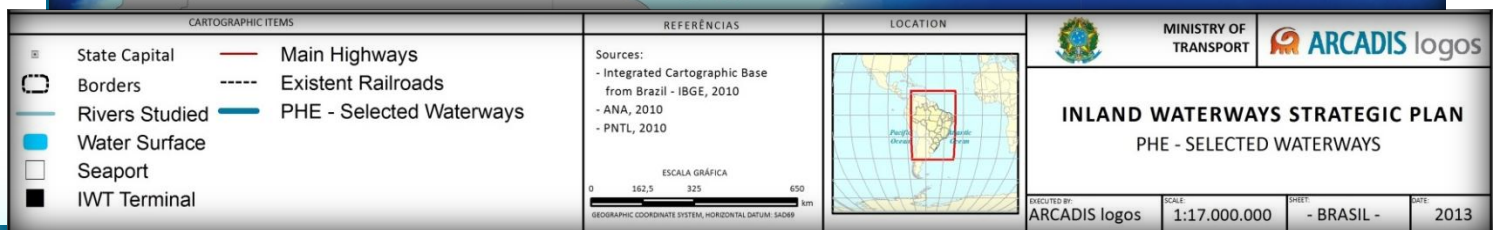
Facilitate and encourage the current users that can be the pioneers for larger scale IWT in Brazil. These current users form the basis for the strategic plan. They are the transporters of the rapidly growing flows of agricultural products (soy, wood, pulp), iron ore, ethanol that need to be transported on large distances to sea ports for export. Producers and shippers of these commodities have the best fitting demands in terms of speed, reliability and costs. These companies can set an inspiring example for other long distance or regional based cargo flows. Concerning passenger transport, improvement of the IWT transport system should start with current operators, inclined to lead the way.

A list of commodities, current and future, that could be transported by inland waterways in Brazil is:

- Agricultural products: soy, soymeal, corn, sugarcane, sugar, ethanol, cotton, fertilizers;
- Wood and pulp;
- Chemical and oil products;
- Iron ore, manganese, steel and coal;
- Building materials and sand;
- Containers and Ro-Ro trailers.

The commodities in this list are similar to the commodities as transported in Europe or the United States. The difference is in the amounts transported. In Europe the transport of containers is far more important for inland navigation compared to Brazil. Other products, like ethanol, are transported more in Brazil.

Map 1.1 Current used IWT Rivers



3. Build the network step by step

This navigability improvement should start with the rivers that are most urgently needed to be developed for the launching customers. By providing reliable transport conditions on the existing waterways, the mode gains credibility among the potential users and can further obtain cargo flows. Once the use of waterways has become common practice, other rivers can be added to the network. The navigability of the selected waterways needs to be improved by several measures, like dredging, building or expanding locks and rock demolition. The priority of these measures is determined by willingness and opportunities at the regional level and the demand for cargo transport.

4. Build the network together

The waterway is part of a logistic and institutional system in which many stakeholders play their role. Therefore, the implementation of the plan should be a joined effort of all stakeholders involved. Most stakeholders have a positive attitude towards the initiative of the Ministry of Transport (MT) to develop a strategy for IWT, which at several levels should be used to reach a joined vision. Stakeholder engagement is considered very important for the development of the IWT and the successful implementation of the Inland Waterways Strategic Plan. Therefore, the development of this Plan considered stakeholder engagement throughout its strategy.

1.3. Scope

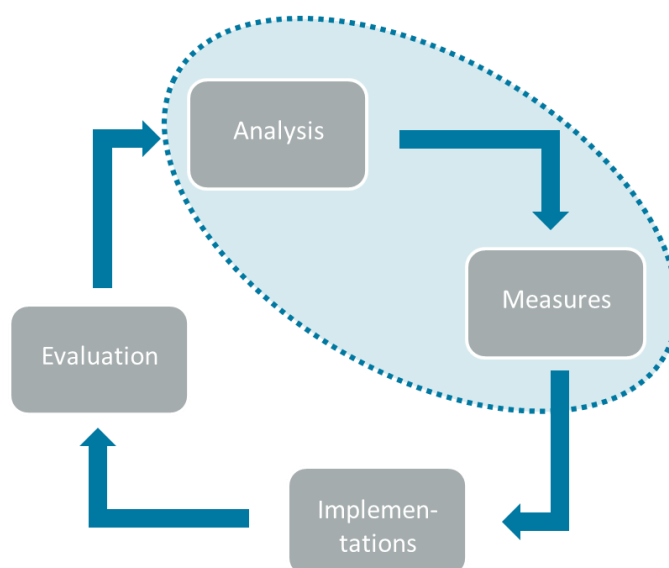
This Inland Waterways Strategic Plan (IWSP) was prepared in one year and provides a starting point for lift off the IWT. The analysis on the Brazilian IWT elements was done by desk research (assessment and diagnosis) and stakeholder consultations. The implementation process of this plan will provide confirmation and detailing of the recommendations.

This IWSP was prepared on national and regional levels. In the implementation phase of the IWSP details like the exact location of terminals, the selection of project partners and stakeholder and cost estimates need to be elaborated in more detail.

During the plan development the Ministry of Transport (MT) was closely involved by participating in workshops with the ARCADIS team and commenting the products.

The research topics and the geographical scope, considered in the development process of this plan, are presented in this chapter.

Figure 1.1 Scope of the Project (Two Steps of Policy Cycle)



1.3.1 Main Research Topics

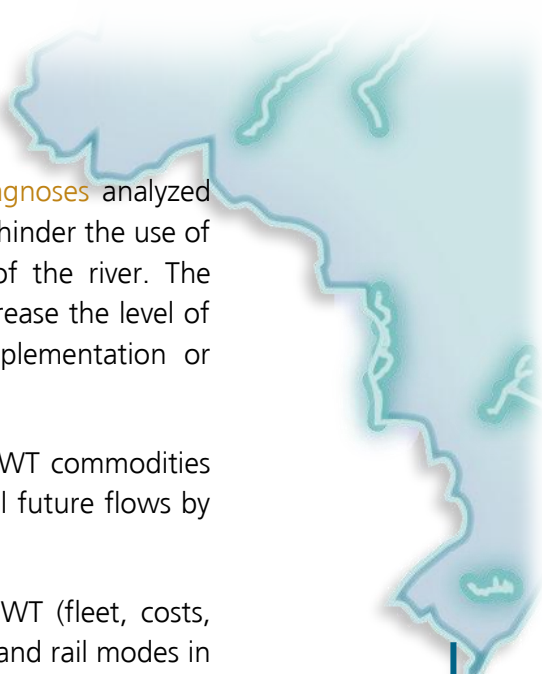
From the assessment and diagnoses of the current IWT system, it was possible to identify strengths and weaknesses of the current IWT sector and the opportunities and threats for future development. These served as the basis for defining the goal and strategies (main actions / guidelines) of the plan presented in this document.

During the analyses of the Brazilian IWT, several studies were done and reported. Previous reports are:

1. Work Plan Report;
2. Public Consultation report: Stakeholder Consultation;
3. Report on Diagnosis and Evaluation;
4. Report on Elaboration and Evaluation of Strategies.

As the starting point of the process of developing this plan a participatory diagnosis was conducted through interviews with some selected groups of stakeholders, which resulted in the Stakeholder Consultation report. The interests of different groups were considered for the characterization of the current IWT system, combined with a more detailed analysis and diagnoses of the themes.

The IWT system in Brazil was analyzed during the Diagnoses and Evaluation phase in two levels, the macro and regional levels, and considered the following elements: physical river system, environment and social aspects; economic aspects, transport system and governance and institutions.

- 
1. The **physical river system and environmental and social diagnoses** analyzed the main impedances related to navigability conditions that hinder the use of a waterway or obstruct navigation on certain stretches of the river. The environmental characteristics that may, to some extent, increase the level of complexity of the licensing process required for the implementation or expansion of waterways were also described.
 2. The **economic aspects** were essential to identify the main IWT commodities and passengers flows and consequently determine potential future flows by the year 2031.
 3. The **transportation system** addressed the components of IWT (fleet, costs, crew, etc.) in order to assess competitiveness with the road and rail modes in terms of costs, accessibility to the IWT market and system reliability.
 4. The **governance and institutions** research made it possible to understand the legal and institutional framework in which IWT operates and portrays governance in Brazilian waterways and, consequently, identify bottlenecks and strategic points which should be targeted for specific actions.

A benchmark was carried out as a part of the assessment and diagnoses phase. This was also based to the elements mentioned above, enabling a direct link with the Brazil's system. In order to gather inspiration for the development of this plan, the inland waterway transport (IWT) in Europe (EU) and the United States (US) were chosen as a benchmark for Brazil, due to their well-developed IWT system.

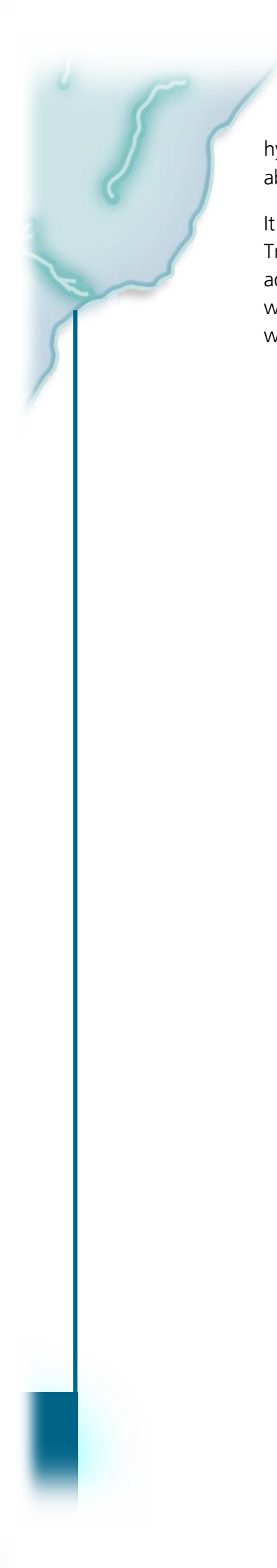
The Strategies Report elaborates and compares several options for the future development of inland waterway transport in 2031.

1.3.2 Geographical Scope: Selection of rivers

The selection of the river sections with potential for commercial navigation was carried out in several stages of the elaboration of this plan. The selection process aimed to define the river sections that should receive more attention in the diagnosis and evaluation of the current system and in the strategy elaboration.

First, a preliminary assessment of the national waterway system was conducted based on the rivers presented in the technical proposal, which are: Amazonas / Solimões - main channel and tributaries, Madeira, Tapajós, Juruena and Teles Pires, Tocantins and Araguaia, São Francisco, Parnaíba, Tietê and Paraná, Paraguay, and Mirim and dos Patos Lagoons.

A preliminary list of river basins and rivers to be studied was prepared. It was then made compatible with the river sections that DNIT/DAQ, together with Waterway Administrations, also considered relevant for the study. This list was submitted to the Ministry of Transport, who had requested the inclusion of the Uruguay River. The final list of river includes eight of the twelve Brazilian

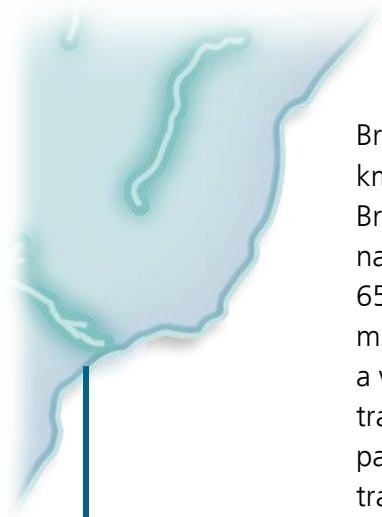


hydrographic regions, where 63 rivers and one canal were analyzed, covering about 35,000 km of rivers.

It is worth mentioning that in this work fourteen rivers listed in the National Transport Plan of 1973 (PNV 1973), four of which are federal, have not been addressed. The potential for commercial navigation and passenger transport were not identified in those rivers that could justify their inclusion in the analysis, with reference to the horizon of the study the year 2031.

2. Opportunities of the IWSP





Brazil has an extensive network of rivers and lakes, with approximately 63,000 km in length, distributed in twelve basins. Despite the wide expanse of the Brazilian rivers, only about 21,000 km¹ of them are currently considered navigable and of these, identified commercial shipping on a large scale in only 6500 kilometers in 2012. The waterways are currently used to transport 25 million tons of cargo and 6 million passengers per year. This participation reflects a very modest share of Inland Waterway Transport (IWT) in the current cargo transport; about 5% when compared with the rail (30%) and road (52%). In passenger transport IWT also holds a limited share compared to road and air traffic.

Inland waterway transport has many advantages over other modalities. This mode is considered to be energy efficient, environmental friendly, safe, reliable and less expensive.

2.1. Cargo Transport

Given the potential of commodities suited for the transport on inland waterways in Brazil (large volumes of bulk cargo over long distances) many opportunities were identified for the development of IWT. Exports of Brazil have grown considerably in the last decade and almost all exports use seaports to reach the main importing countries, like China and western European countries. When the forecasts for production and exports of all important commodities are considered, the prospects for inland waterways in Brazil are excellent. The agricultural production of soy and corn, the two main crops in Brazil, will continue to expand until 2031, the forecast horizon. Import of commodities (for example fertilizers) will increase as well. Current Inland waterway transport of chemical products, oil and coal and Ro-Ro transport will steadily increase. Another potential projects for developing inland waterway transport is the construction of new plants and systems that will be built near waterways to profit from a cheaper and reliable transport mode.

2.2. Passenger Transport

Passenger transport on inland waterways in most parts of Brazil only occurs under special conditions being, for example, an alternative transport mode in some cities to overcome traffic congestion in rush hours. In the Amazon region, however, passenger transport on waterways is very important, with currently 6 million long distance passengers and an expected growth of 40% up till 2031. Also short distance (ferry) services are important in this area, with an equal amount of passengers. The main reasons for this particularity in this region are its

¹ANTAQ, NAVEGAÇÃO INTERIOR, SUPERINTENDÊNCIA DE NAVEGAÇÃO INTERIOR – SNI 3º TRIM/2012

extensive river system and the limited number of roads in this vast area. For a large number of destinations transport on waterways is the only means of transport.

2.3. Navigability Conditions

The most favorable rivers for navigation are generally those with features of lower course or lowlands, characterized by a gentle slope and are fairly regular and large. The main rivers of the lowlands that have extensive stretches with favorable characteristics for navigation and without the need for major interventions are the Amazon, Solimões, Trombetas, Madeira, Paraguay and Jacuí Rivers, Lagoa dos Patos, and the downstream sections of Tocantins and Tapajós rivers. All these rivers already have commercial navigation in varying levels of intensity. Their main obstacles are some points with sand bars.

In Brazil, the main upland rivers that have navigable stretches are: Paraná, Tietê and São Francisco. The rivers with more potential for the development of waterways are the Tocantins, Araguaia, Tapajos, Teles Pires, Parnaíba and Uruguay. During droughts, however, the navigation conditions are too restrictive, because natural obstacles emerge in the river bed.

2.4. Natural and Social Environment

The waterway transport is the most suitable for more sensitive areas, because of its lower impact on the environment when compared to roads and railways. It is important that the implementation of the engineering works, needed for making the development of this mode, is done with the minimum impact on the environment. In the case of the Paraguay, Uruguay, Amazon and Madeira waterway systems the planning of works must also consider the interests of neighboring countries.

2.5. Institutional Framework

The structure of the waterway management causes ineffective waterway management. The management of multiple uses of water resources is insufficient. The prioritization of investments on waterways in Brazil is too low. There is a need of differentiation among licensing process for engineering works required to enable a waterway and for maritime structures. The participation of EPL with regard to the planning of integrated logistics for the country is yet new. CONIT could give further support in integrating actions among different interests associated to the waterways feasibility.



2.6. Regulatory aspects

IWT regulations were identified as relevant if related to the following aspects: ship building, crew, taxes and terminals. Development of the IWT will provide opportunities for the inland shipyards market, terminal builders and people seeking work as crew, but regulatory changes are required to make sure the demand is met.

2.7. Waterway Management System (operation)

The information systems related to the waterways are often not available and in general not concentrated into one authority or well connected. Comparing the Brazilian and European/American situation, it has become clear that this type of process in Brazil is not very efficient.

2.8. Intermodality

Most of the potential commodities to be transported on waterways have an overseas final destination, which makes the export port the final point. The choice of a deep sea port defines the route that will be used to transport the cargo and therefore the logistics chain.

3. Goals of the IWSP



The main goal for the Inland Waterways Strategic Plan is:

Accommodate 120 million tons of cargo by inland waterway transport in 2031.

Three important assumptions that support the expected growth and are related to the commodity segments and their own characteristics are:

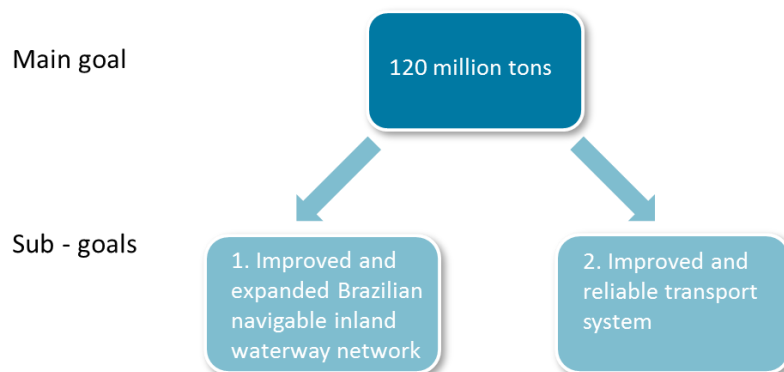
- a) Autonomous growth of existing IWT flows in no or restricted competition with other transport modes.
- b) Additional IWT flows resulting from investments in processing plants and logistic systems, which will use waterways.
- c) Current and additional IWT flows in heavy competition with other transport modes and chains.

The current modal share of IWT for the main relevant commodities (soy, soy meal, corn and fertilizers) is approximately 9% in terms of ton-kilometers (taking into account both volume and distance). For 2031 the modal share is expected to grow towards 38-39% for these commodities in ton-kilometers, more than four times the current share.

Improving the situation of IWT for the most promising cargo types forms a basis for the development of the inland waterway system and this could result in lower logistic costs and higher competitiveness for the Brazilian products in the international markets. In addition, waterway users group can be enlarged by including some shippers of regional cargo and passenger transport. Passenger transport by inland waterways is also expected to increase, especially in the Amazon Region, due to the economic and population growth of the region and the investments in waterways by the Brazilian Government.

The Inland Waterways Strategic Plan contains a strategy that should accommodate the growth of inland waterway transport by facilitating the capacity and the quality of the inland waterway's network. The axes for this strategy are two sub-goals, both equally important to reach the main goal. The sub-goals are formulated in Figure 3.1.

Figure 3.1 Main and sub goals



Brazil currently has an extensive network of navigable rivers or with the potential to become navigable. The goal of MT is to improve the quality and expand the waterways network of Brazil in order to optimize its commercial potential. The PHE (Plano Hidroviário Estratégico) focuses on the rivers that can facilitate / optimize the logistics of the Brazilian economy for the cargo that is most suitable for Inland Waterway Transport. The main existing waterways should be improved and the waterway network should be expanded with more than 3.000km (46% of increase compared to the stretches of rivers that are not yet used for this comprehensive scale transport of cargo.)


In addition to physical improvements in the waterways, it is of equal importance to increase the reliability of the transport system. An effective and efficient system demands guaranteeing that the necessary maintenance work is regularly done, adequate river information is provided and the other elements of the transport chain are upgraded to support the expected growth. To increase the quality and reliability of the transport system the following demands must be met:

- The transport chain for both cargo and passengers must have sufficient capacity and all the elements of the transport system must be reliable and of high quality. In addition, passenger transport must be safe and comfortable. Encouraging IWT should ideally be done using the latest technology, research and innovations of the shipbuilding industry.
- The institutional framework must be improved in order to ensure the required support, provide incentives, and encourage environmental sustainability and integration of the system.



4. Strategy of Inland Waterway Transport





The goals and sub goals are the basis of a strategy that aims to improve the inland waterway transport in an integrated way. This chapter will explain the two main axes of the strategy, and it contains the following topics:

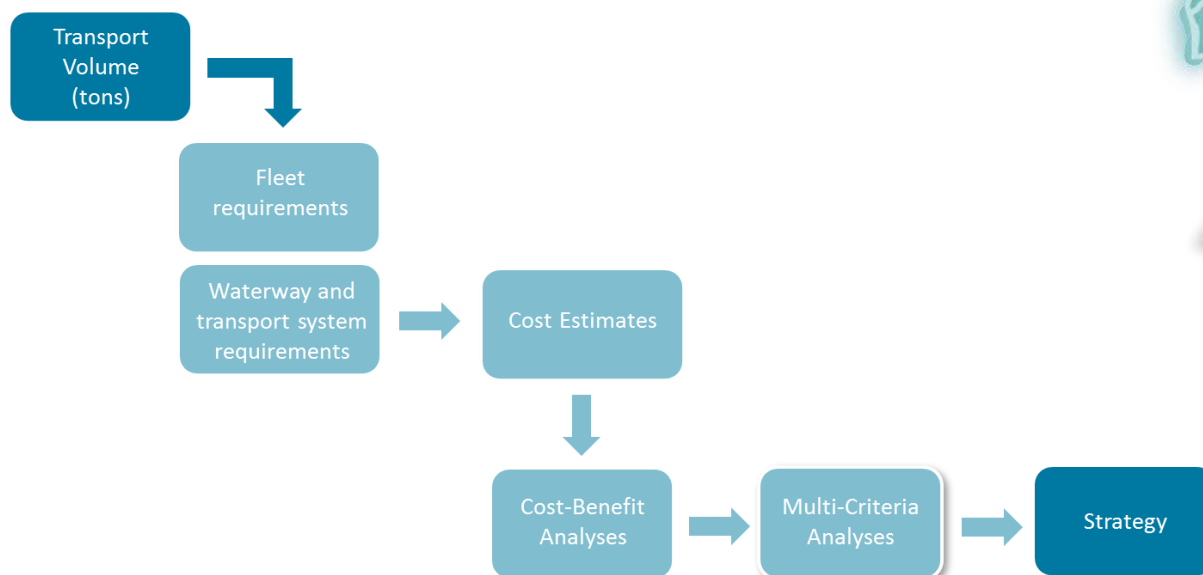
- Brazilian waterway network expanded and improved to an adequate level. This paragraph also shows the process of selection and the description of a development strategy for water transportation.
- Improved and developed reliable transport system: in this paragraph the elements of the transport system are characterized, outlining recommendations for improvement and proposing a model of cooperation to ensure the implementation of plan.

4.1. Improved and expanded Brazilian Navigable Inland Waterway Network

The study included all waterways that currently accommodate cargo flows of 50.000 tons per year (or more) or have potential for such amount of flows. These waterways are Amazonas, Solimões e Negro, Madeira, Tapajós e Teles Pires, Tocantins, Araguaia, Parnaíba, São Francisco, Paraguai, Paraná e Tietê, Hidrovia do Sul (Lagoa dos Patos, Triunfo e Jacuí). Bulk cargo with low value per ton is most suitable for large scale transportation on inland waterways, especially if transported over large distances. These cargo types will be the engine for the development of transport over water in general. In the slipstream of this development other types of cargo and passenger transport may also use the expanded and well maintained waterways.

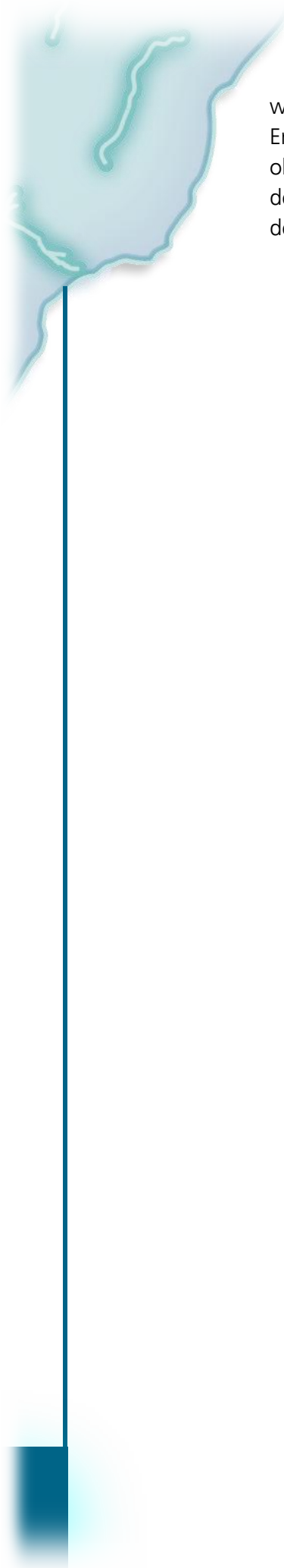
Figure 4.1 describes how the strategy in this Inland Waterway Strategic Plan was elaborated and calculated.

Figure 4.1 Methodology to elaborate and calculate the Strategy



To increase the annual load transported by inland waterway, the waterway network and needs to be improved and expanded. These investments were prioritized from the point of view of the cargo, while these selections will benefit the transport of passengers. A forecast of the volume of cargo to be transported on waterways in the year 2031 was prepared, the location of the main producing areas and ports to which the cargo should be transported were indicated. Based on this, the waterways that could potentially receive these loads were indicated. Not all of these waterways, however, present minimum conditions to hold cargo transportation. These conditions can improve by (physical) intervention in both the waterway system and the transportation system as a whole. The costs of these measures (investment costs, transportation and maintenance) were determined for different development strategies (containing combinations of measures). These development strategies were then compared using a Cost-Benefit Analysis (CBA) and a Multi Criteria Analysis (MCA) that support the selection of the development strategy to be adopted in this Waterways Strategic Plan.

The Cost/Benefit Analysis had two purposes: to determine whether the proposed strategies were a good investment/decision (justification/feasibility) and to provide a basis for comparing and ranking strategies. While the CBA shows the feasibility of waterway development, it does not consider aspects other than economics. Although a key aspect, recommended public policies should not be solely based on investment and transport costs, but also on a broader set of objectives. The results of the Cost-Benefit Analysis were, therefore, complemented with a Multi-Criteria Analysis (MCA). The Multi Criteria Analyses



was structured in four dimensions: Economic, Institutional Cohesion, Environmental Sustainability and Social Sustainability. For each dimension the objectives and criteria were developed. The result was a classification of development strategies. The combination of these tools supported the process of decision making.

Map 4.1 Selection of the rivers for the Inland Waterway Strategic Plan

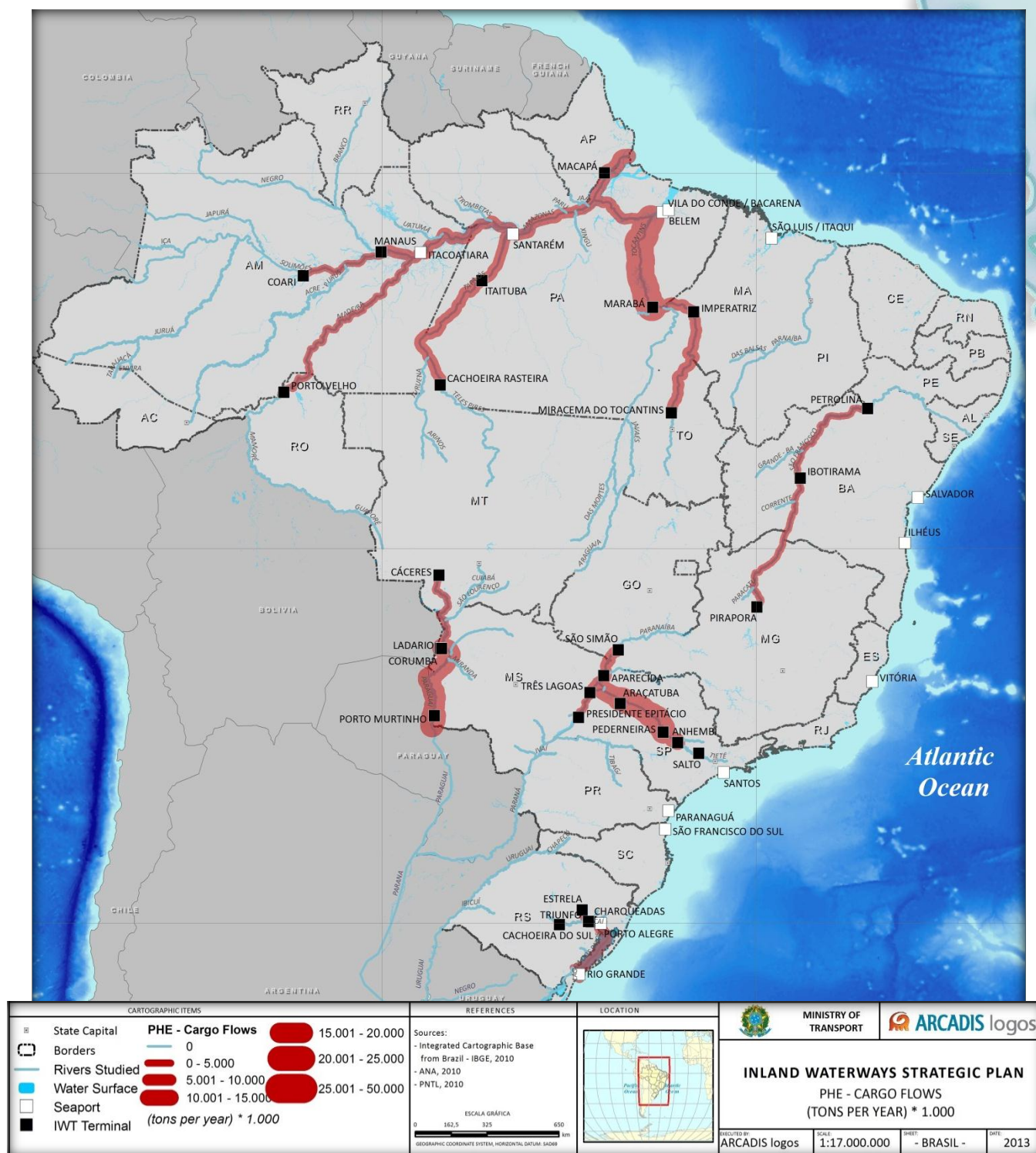


When all these rivers are upgraded to a proper level of quality, they can accommodate more cargo. This will help to increase the total cargo flow for inland waterways transport. If new rivers are added to the system, this will cause a shift of cargo transport between the waterways. This leads to the forecast until 2031 as illustrated in Table 4.1. In the Map 4.2 these flows are visualized in a geographical overview for waterway transport, which does not include the cabotage and sea going vessels. The cargo flows were combined with the possibilities of improving the waterway and the needed convoy sizes. This resulted in the overview per waterway and convoy dimensions in Map 4.3. The waterways should be maintained at this minimum required quality level.

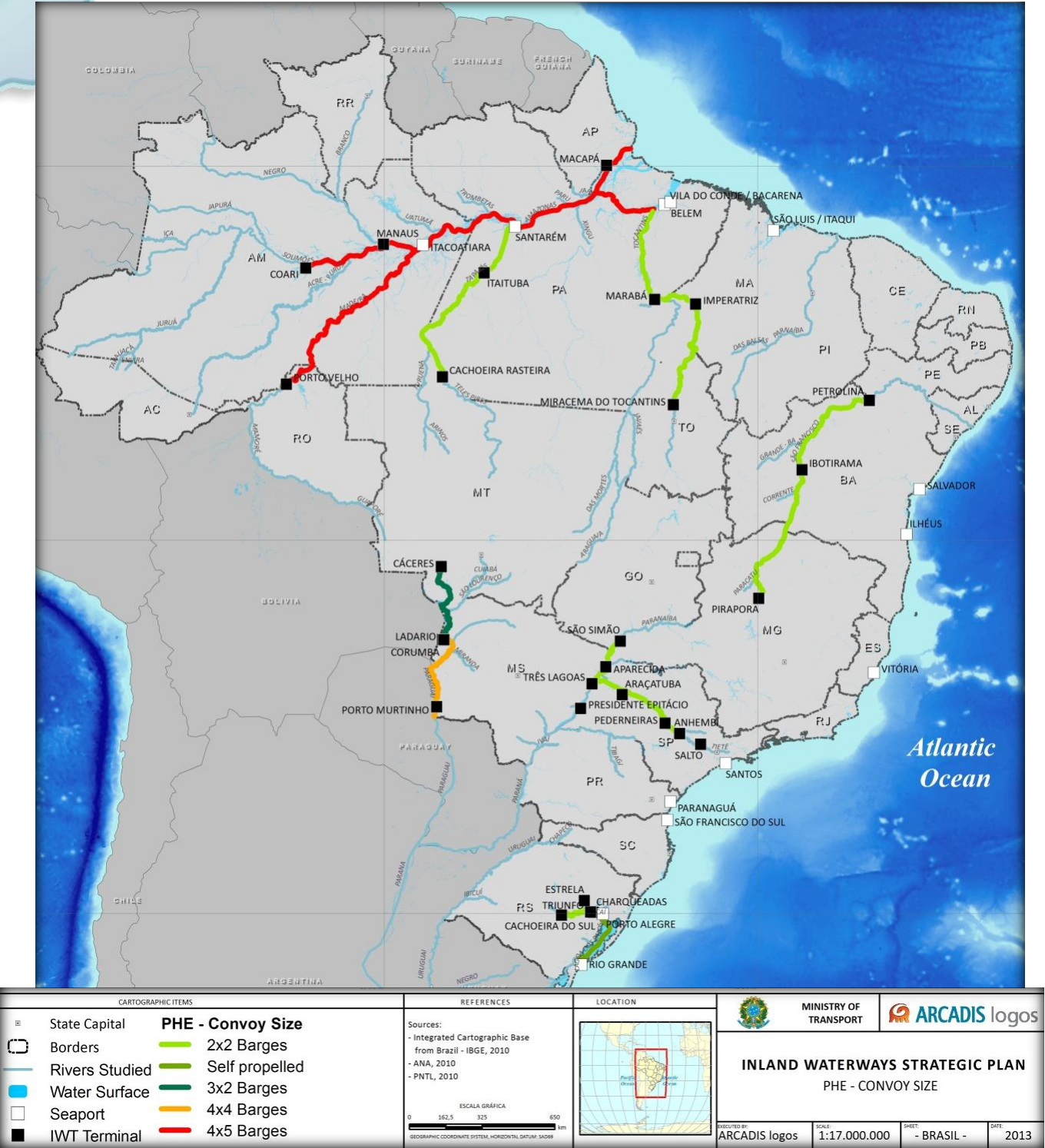
Table 4.1 Cargo Forecast IWT Brazil 2031 per Waterway and Commodity (in million tons)

Transport flow	flows without modal competition	Flows from investments in plants and logistic systems	Agricultural flows (soy, corn) with heavy modal competition	Total
Amazon	11.5			11.5
Madeira	2.2		2.5	4.7
Tapajós			9.7	9.7
Tocantins		32.5	8.6	41.1
Sao Francisco	0.1		2.6	2.7
Paraná – Tietê		16.0	4.8	20.8
Rio do Sul	3.9	3.0	2.5	9.4
Paraguay River	14.9		5.5	20.4
Total	32.5	51.5	36.3	120.2

Map 4.2 Overview of Inland Waterway Transport Flow 2031



Map 4.3 Overview of convoy types per river as a basis for requirements per waterway



4.2. Improved and Reliable Transport System

The first key element for reaching an improved and reliable transport system is integration. Since the situation is very complex and many private and public organizations are involved, it is important to cooperate closely on the same goal at all levels. A cooperation model is proposed for this. The second key element is a step wise approach that starts with improvements on the short term, while all involved will follow the same route towards long term improvement. Major points of improvements (long term improvement) and pilot projects (short term improvement) are selected.

The strategy to reach the improved and reliable transport system has a technical component, and an evenly important organizational component. The strategy to improve the situation of the transport chain and the institutional framework contains the following elements:

- Improvement of transport chain elements;
- Improving of the institutional framework at the national and regional level.

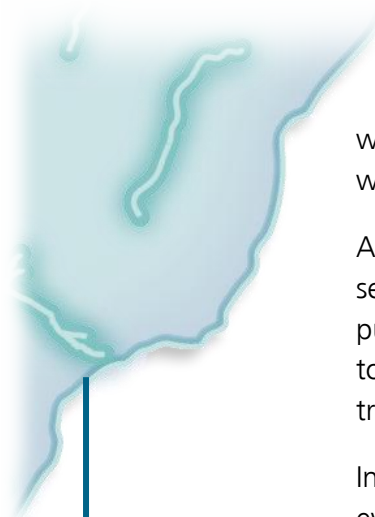
4.2.1. Improvement of the Transport Chain

Bringing cargo from one place to another must be seen as a logistic chain, where every element affects another: the total chain is as strong as its weakest link. A more efficient transshipment would have a positive effect on costs. To achieve that, the whole chain needs to be improved and connecting infrastructure needs to be provided to support the potential volume increase. With good connections, companies can make the most optimal choices for their transportation needs. At the connection points, clusters of companies can be developed. The connections between road and waterways should be improved, especially between agricultural producing areas (soy, corn) and waterway terminals in the North (e.g. Cachoeira Rasteira and Miracema do Tocantins).

4.2.1.1 Arranging Public Private Partnerships

It is crucial for a successful development of IWT that the implementation of the improvement works by public and private parties are being coordinated. It is useless to invest on the improvement of the navigability of a specific waterway if the private parties are not investing simultaneously in fleet expansion and terminal development along this river. If the public parties invest in waterway improvement to support the development of a specific industry, they will have to be sure that the private parties will actually develop the industrial site. To prevent the ineffective spending of large amounts of public and private money both parties will have to tune their mutual investments constantly.

A close cooperation between the public and private parties is required to achieve this coordinated approach that reduces the financial risks that both public and private parties take in case of IWT development. The cooperation will also lead to an exchange of demands and design specifications for the development of



waterway improvement works and inland barges and push-boats. Waterway as well as fleet management can be optimized by means of this exchange.

As a first step for establishing partnership, the public sector consults the private sector to enable a better understanding of their demands for navigation purposes. In a more extended cooperation, government allows the private sector to discuss and provide input in the development process of inland waterway transport in Brazil.

In the development of inland waterway transport the private sector could play an even more prominent role. The public sector has long used available funding methods, such as user fees, taxes, and municipal bonds to manage the costs of infrastructure assets. More recently governments are also embracing concessions and other forms of Public Private Partnerships to help turn a significant short-term financial cost into a long-term financial proposition for sponsors. Under such deals, a private sector provider commonly designs, builds, finances, and operates an asset, receiving payment on the basis of the availability of the facilities or use of the facility. These contractual relations between public and private entities involve aligning a significant investment of private capital, transferring some risk to the private sector, and increasing the public benefit. Also if the private sector, depending on navigation like shippers, will have enough return on investment they might be interested to invest in waterway improvements. Two major private groups were considered as potentially interested in developing PPP for waterways: trading and production companies, and construction companies.

4.2.1.2 Providing Skill Training and Education

Qualified truck drivers, terminal operators and crews determine the efficiency and effectiveness of the transport chain. Professional shipping needs a modernized education system to go along with new innovations in the ship building industry. Also sufficient personnel need to be educated to navigate the increasing fleet. And above that, these personnel needs to be educated for navigating the right rivers (since every river has its own specific characteristics) and deployed at the right rivers basins. In view of the highly specialized profession of inland crew members, and pilots a specialized inland navigation education system will have to be developed. Discussions with the public parties are essential at this stage as the public parties determine the manning requirements for inland shipping.

5.Improving the Institutional Framework at a National and Regional Level



A cooperation model is presented to improve the institutional framework. The cooperation model is based on two pillars:

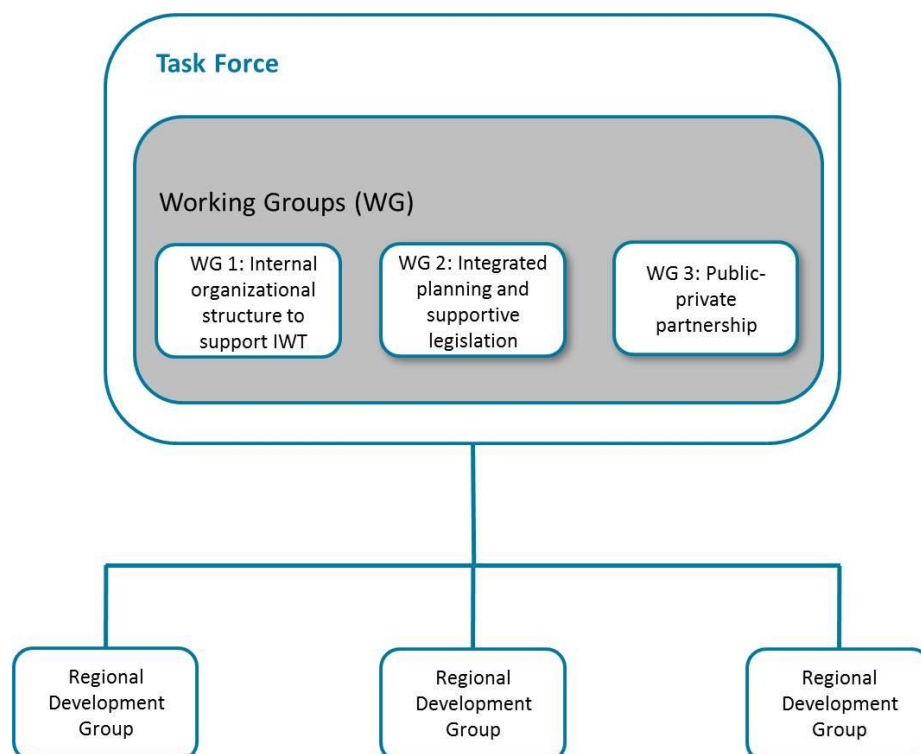
- National level: A Task Force IWT Development
- Regional level: Regional Development Group

The Task Force IWT Development will create the conditions for the implementation of the Inland Waterways Strategic Plan. The Regional Development Groups will coordinate the efforts for the development of IWT for a specific waterway.

5.1. Task Force IWT Development

Through a Task Force an integrated government planning is being achieved through the participation of all relevant government agencies. The participation of the private stakeholders provides the basis for a lasting public-private partnership. Within the Task Force separate working groups (WG's) can be formed to decide about relevant topics in more detail. These working groups are: WG1) Internal organizational structure to support IWT; WG2) Integrated planning and supportive legislation; WG3) Public-private partnership. The Regional Development Groups will coordinate the efforts for the development of IWT for a specific waterway. The organization of the Task Force and the Regional Development Groups is shown in Figure 5.1. The Task Force and Regional Development Groups will have to represent the main relevant stakeholders.


Figure 5.1 Organization of the Task Force IWT Development



The Task Force is summarized in the table below.

Table 5.1 Task Force summary

Aim of the Task Force	
Create the conditions for the implementation of the Inland Waterway Strategic Plan for the development of IWT in Brazil.	
Suggested Agenda	
<ol style="list-style-type: none">1. Confirmation of the Master Plan and its selection of preferred strategy.2. Validation of the project list3. Organize the working groups4. Selection of a limited number of pilot projects5. Monitoring of the development and results6. Promotion and communication about IWT7. Decision to end or continue the Task Force	
Participants involved	Public and private representatives: CONIT (chaired and represented by the Minister of State for Transport, that have as members the Ministry of "Casa Civil", Finance, Planning, Budget and Management, Development, Industry, and Trade, Agriculture, Livestock and Supplies; and the Secretary of Port as well as of Civil Aviation, besides some civil society representatives), Waterway Administrations, SEGES, EPL, DNIT, ANTT, ANTAQ, Ministry of Energy, Ministry of Defense (Navy), Ministry of Environment, National Water Agency (ANA), Ministry of Foreign Relations, Cargo owners (trading companies), Shipping lines, Terminal operators.



The Inland Waterways Strategic Plan presents sets of recommendations that should be evaluated and discussed within each working group. These are:

Table 5.2 Task Force working groups

Internal organizational structure to support IWT	Integrated planning and supportive legislation	Public-private partnership
<ul style="list-style-type: none"> •Balance attention among different modes of transport •Improve and clarify the framework and organizational embedment for the Waterway Administrations •Better arrange the geographical spread of the WA' •Develop guidelines for the WAs to follow •Develop a classification and information system 	<ul style="list-style-type: none"> •Integration of water management issues in the development of a long term IWT infrastructure in order to articulate the demands of the different users •Provide intermodality conditions to support waterways, through supportive legislation. •Stimulate and integrate passenger transport 	<ul style="list-style-type: none"> •Develop Design, Build, Financing, Maintenance contracts •Encourage innovation on ship building •Incentives to encourage the waterway transport •Promote the Waterway Transport to new users •Develop crew requirements

A Regional Development Group (RDG) will be installed for each waterway. The RDG is the platform to execute the improvements in the waterway in an integrated way. The primary responsibility for the implementation of a specific development project in the river will be with the Waterway Administration of that specific waterway. The River Basin Committees can fulfill an important role in the Development Group as they integrate the users of water resources in the region. The members of the RDB will assist the Waterway Administration in implementing the projects and sharing the intention to reach their common goals, confirming and guarding the timeframe, discussing problems and celebrating the reached milestones. In this way the integrated government planning process and the public-private partnerships will further be strengthened on the practical level of the waterway improvement project.

The organization of the Regional Development Groups is summarized in the table below.

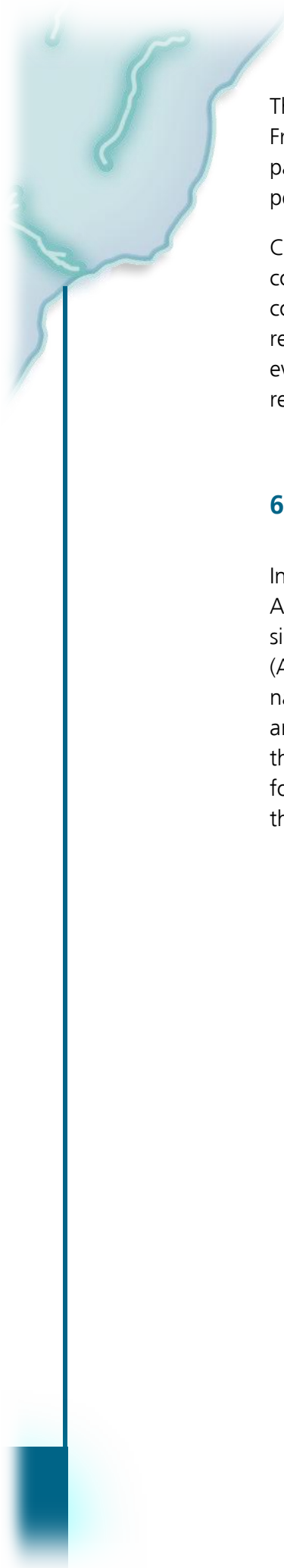
Table 5.3 Organization Regional Development Groups

Aim	
Implement the required projects in a specific waterway together throughout the life span of the assets. All members add their own efforts to the Waterway Administration while implementing the improvement project for a specific waterway	
Suggested Agenda	
<ol style="list-style-type: none">1. Formulate common goal2. Market study, Design study and execution of the projects3. Permits, contracts, financing and concessions4. Confirm and monitor timeframe5. Determine efficiency and effectiveness indicators to evaluate the waterway management and operation6. Promote long term transport contracts and new markets for IWT	
Participants involved	Public and private representatives to be determined specifically for each separate development project



6. Projects per waterway system





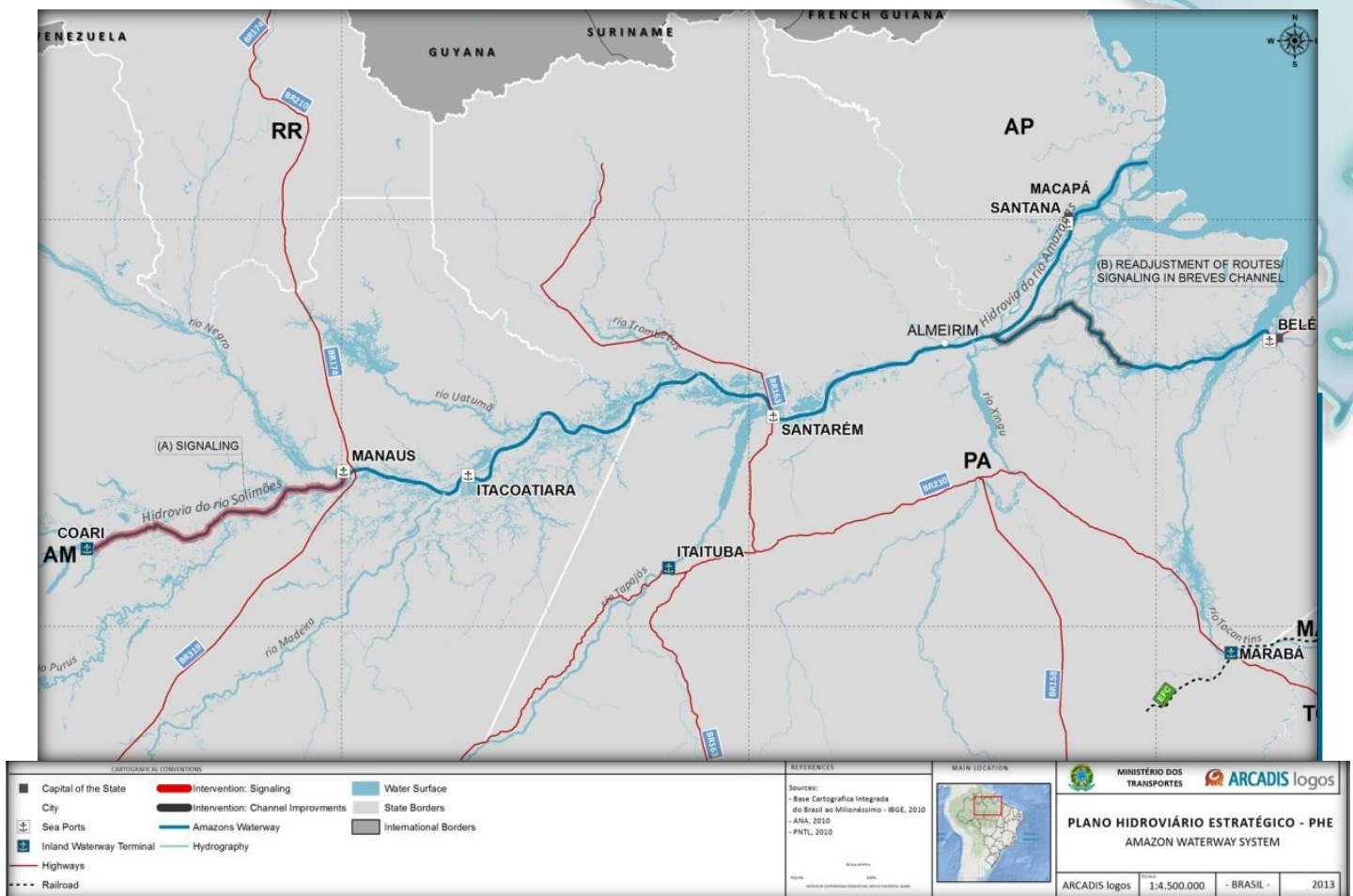
The project lists for the RDB's of the Amazon, Madeira, Tapajós, Tocantins, Sao Francisco, Tietê Paraná, Hidrovia do Sul and Paraguay are listed in the following paragraphs. Investments in fleet and terminal expansion were considered to be performed by private parties.

Considering the regional vulnerabilities the planning of the civil works shall consider the environmental characteristics of the surroundings, the traditional communities living nearby rivers and the interests of neighboring countries. It is recommended that a Strategic Environmental Assessment is conducted to evaluate the aggregated impact of all the initiatives being considered for each region.

6.1. Amazon Waterway System: Amazon, Solimões and Negro Rivers

In order to improve the navigability conditions in the described sections of the Amazon, Solimões and Negro Rivers few investments are necessary. Mainly signaling, along Solimões and Negro Rivers, between Manaus (AM) and Coari (AM), is required, because of the existence of mobile sandbars that restrict navigation in some sections. Civil works like enlargement of the river, dredging and river regularization were identified as necessary in the narrowing located in the section between Almeirim (PA) and the Tocantins River mouth. To handle the forecasted volumes of cargo in 2031, the handling capacity of the terminals and the capacity of the fleet will have to be increased.

Map 6.1 Civil works and Signaling in the Amazon, Solimões and Negro Rivers

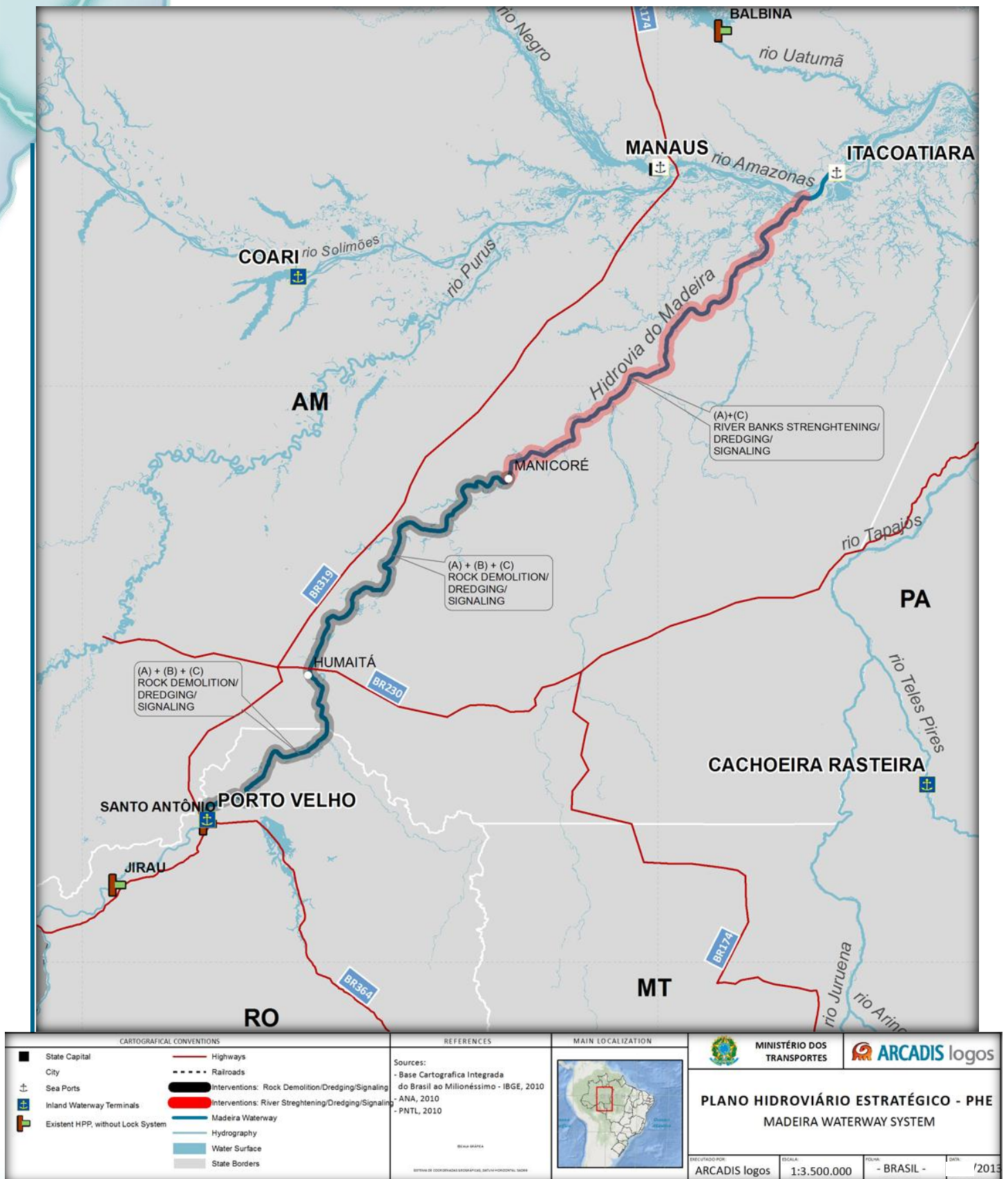


There are also measures recommended to improve passenger transport. These are improvement and funding of public passenger terminals, combining IWT services for local use and tourists in the Amazonas, addressing the regulation and inspection geared at improving the level of service of passenger (public and tourist) transport.

6.2. Madeira Waterway System: Madeira River

The required civil works comprehend rock demolition on the rocky outcrops areas, in order to allow navigation during the dry season. In addition, activities like dredging and regularization works are necessary to mitigate and avoid the aggradation problems along the river, especially during dry season. Since the aggradation problems are dynamic, an updated signaling system is required to guarantee the safety of navigation. To accommodate the forecasted cargo volumes the capacity of the terminal facilities, the handling capacity of the terminals as well as the fleet will have to be expanded.

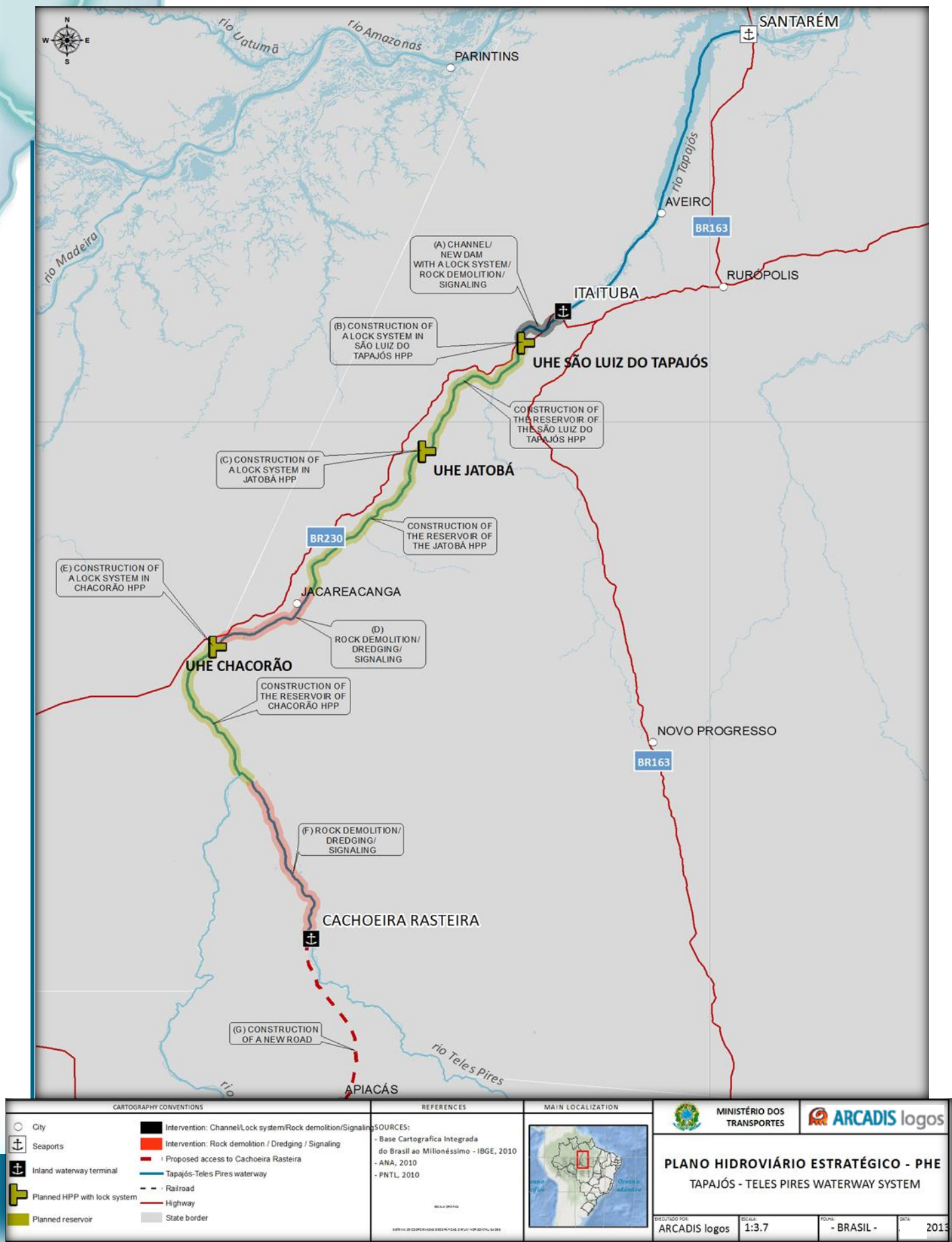
Map 6.2 Civil works and Signaling in the Madeira River



6.3. Teles Pires-Tapajós Waterway System: Tapajós and Teles Pires Rivers

The IWT, between Santarém and Cachoeira Rasteira, depends directly on the construction of HPPS, with lock systems, which will allow navigation along extensive sections of the rivers. However, between Itaituba and Cachoeira Rasteira additional measures are required, such as rock demolition, dredging, river regularization and signaling. It is very important that these proposed measures are analyzed together with the hydropower plants and other projects that are being considered for this same area. To handle the forecasted volumes of cargo in 2031, the handling capacity of the terminals will have to be created in Cachoeira Rasteira.

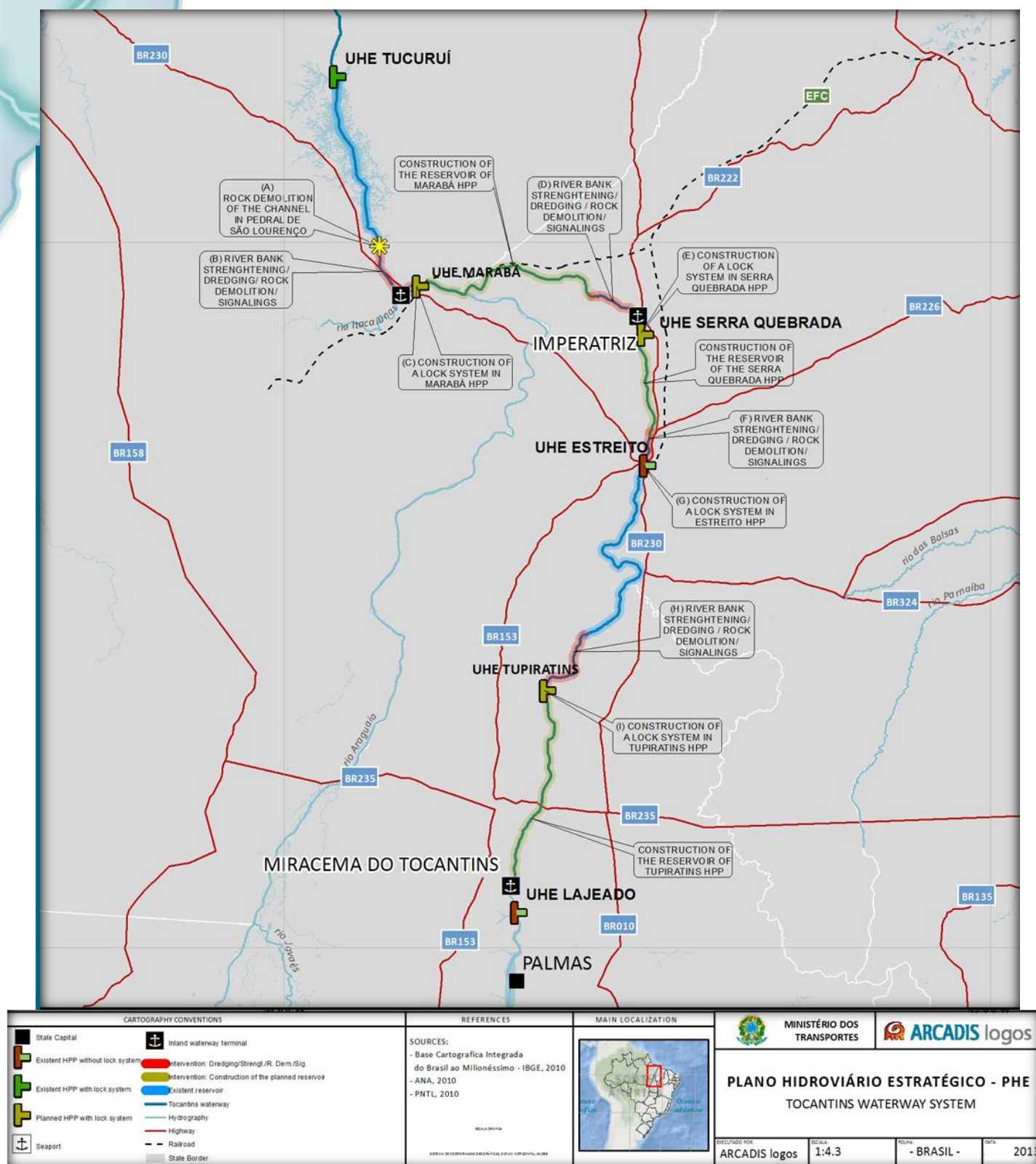
Map 6.3 Civil works and Signaling in the Tapajós River



6.4. Tocantins-Araguaia Waterway System: Tocantins River

Between the Tocantins mouth and Marabá city (PA) the main intervention consists of rock demolition in Pedral de São Lourenço. The construction of the Marabá, Serra Quebrada and Tupiratins HPPs, with lock systems, is a minimum requirement for the viability of IWT upstream of Marabá city. Additionally, the river sections that will remain in free flow will require measures as regularization of the river bed, dredging, rock demolition and signaling. An inland terminal for cargo, where transshipment from trucks to barges will take place, is also planned to be implemented. To handle the forecasted volumes of cargo in 2031 the handling capacity of the terminals will have to be created along the Tocantins. The capacity of the fleet will also have to be created.

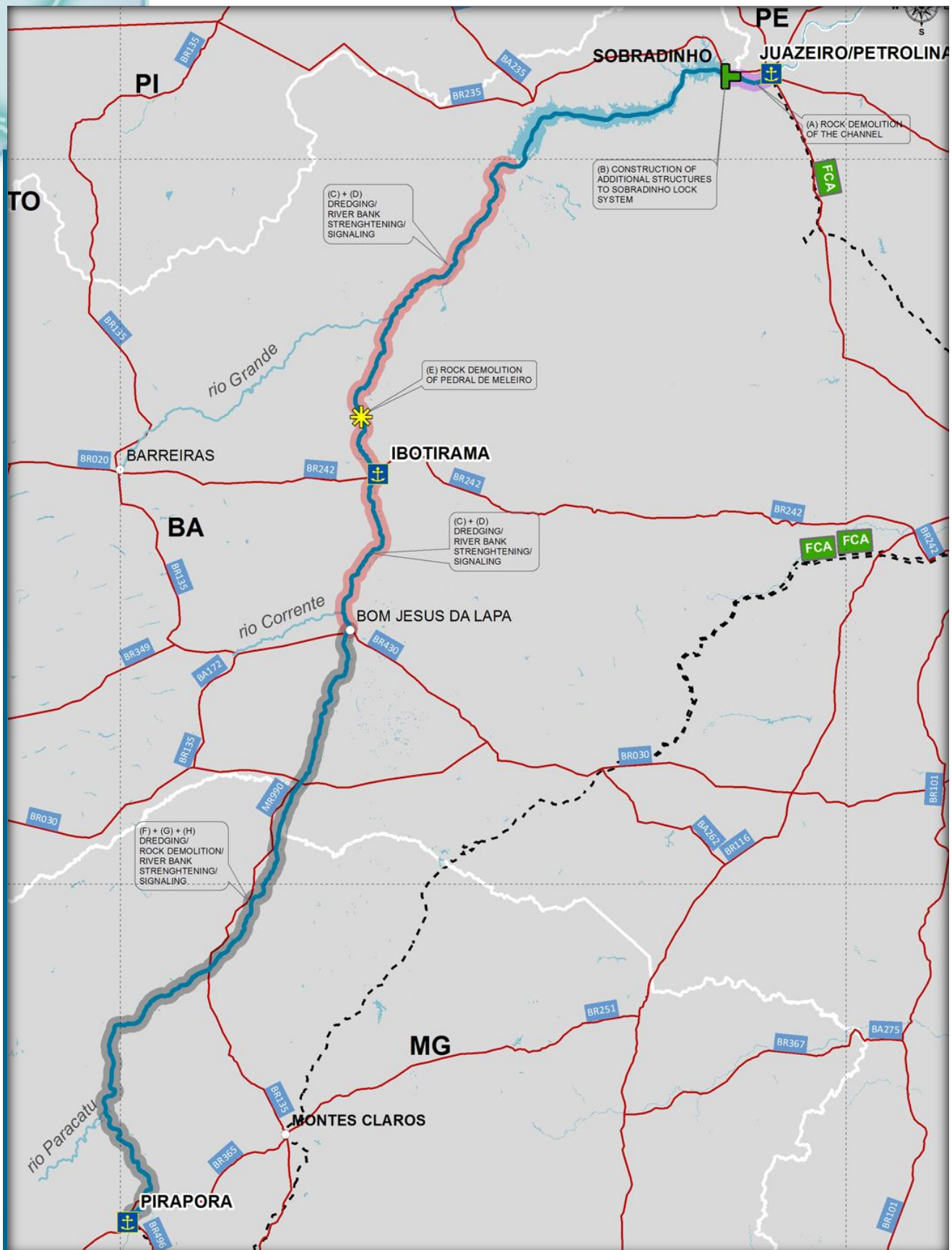
Map 6.4 Civil works and Signaling on the Tocantins River






6.5. São Francisco Waterway System: São Francisco River

In order to improve safety and reliability in the IWT between Juazeiro (BA)/Petrolina (PE) and Ibotirama (BA), measures are required, such as rock demolition in Pedral de Meleiro and in the section between Juazeiro and Sobradinho dam, construction of additional structures in the Sobradinho Lock, aiming at increasing its efficiency and dredging and river bank regularization. In the section between Ibotirama (BA) and Pirapora (MG), interventions like dredging, river bank regularization, rock demolition and signaling are also required. To handle the forecasted volumes of cargo in 2031 the handling capacity of the terminals and the capacity of the fleet will have to be created along the São Francisco. Terminal expansion will be required in the sea-ports as well as on the rail terminals. There is potential for the expansion of the São Francisco River navigation between Juazeiro/ Petrolina and Itaparica dam, expanding navigation in 400 km. To do so, it is necessary that Riacho Seco and Pedra Branca HPPs will be built and equipped with locks.

Map 6.5 Civil works and Signaling, in the São Francisco River

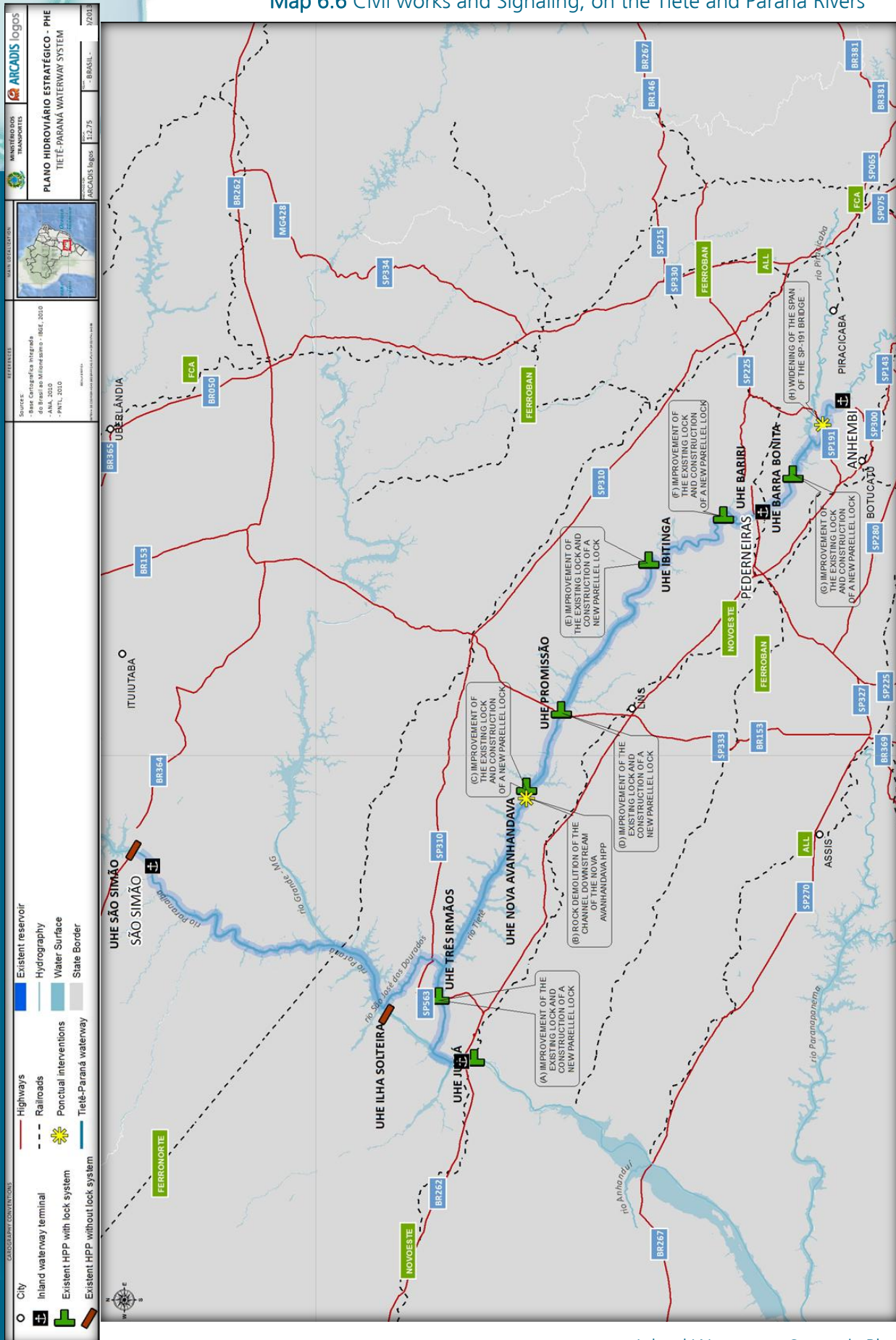


CARTOGRAPHICAL CONVENTIONS		REFERENCES	MAIN LOCATION	 			
<ul style="list-style-type: none"> Capital of the State City Inland Waterway Terminal Existent HPP, with lock Intervention: Dredging/Strenght./Sig. Intervention: Dredging/Rock Demolition/Strenght./Sig. Intervention: Rock Demolition 	<ul style="list-style-type: none"> Punctual Intervention São Francisco Waterway Hydrography Water Surface Highway Railroad State Borders 	<p>Fontes:</p> <ul style="list-style-type: none"> - Base Cartografica Integrada do Brasil ao Milionésimo - IBGE, 2010 - ANA, 2010 - PNTL, 2010 		<p>PLANO HIDROVIÁRIO ESTRATÉGICO - PHE SÃO FRANCISCO WATERWAY SYSTEM</p>			
EXECUTADO POR		ESCALA		FOLHA		DATA	
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6.6. Tietê-Paraná Waterway System: Paraná, Paranaíba and Tietê Rivers

In order to improve the navigability conditions in the Paraná and Tietê Rivers, civil works are required in these rivers, such as: additional locks in the existing systems, widening of the span and heightening of the bridge (SP-191) and rock demolition in the rock formation downstream of Nova Avanhandava. To handle the forecasted volumes of cargo in 2031 the handling capacity of the terminals and the capacity of the fleet will have to be created along the Tietê Paraná Rivers. Terminal expansion will be required in the sea-ports as well as on the rail terminals.

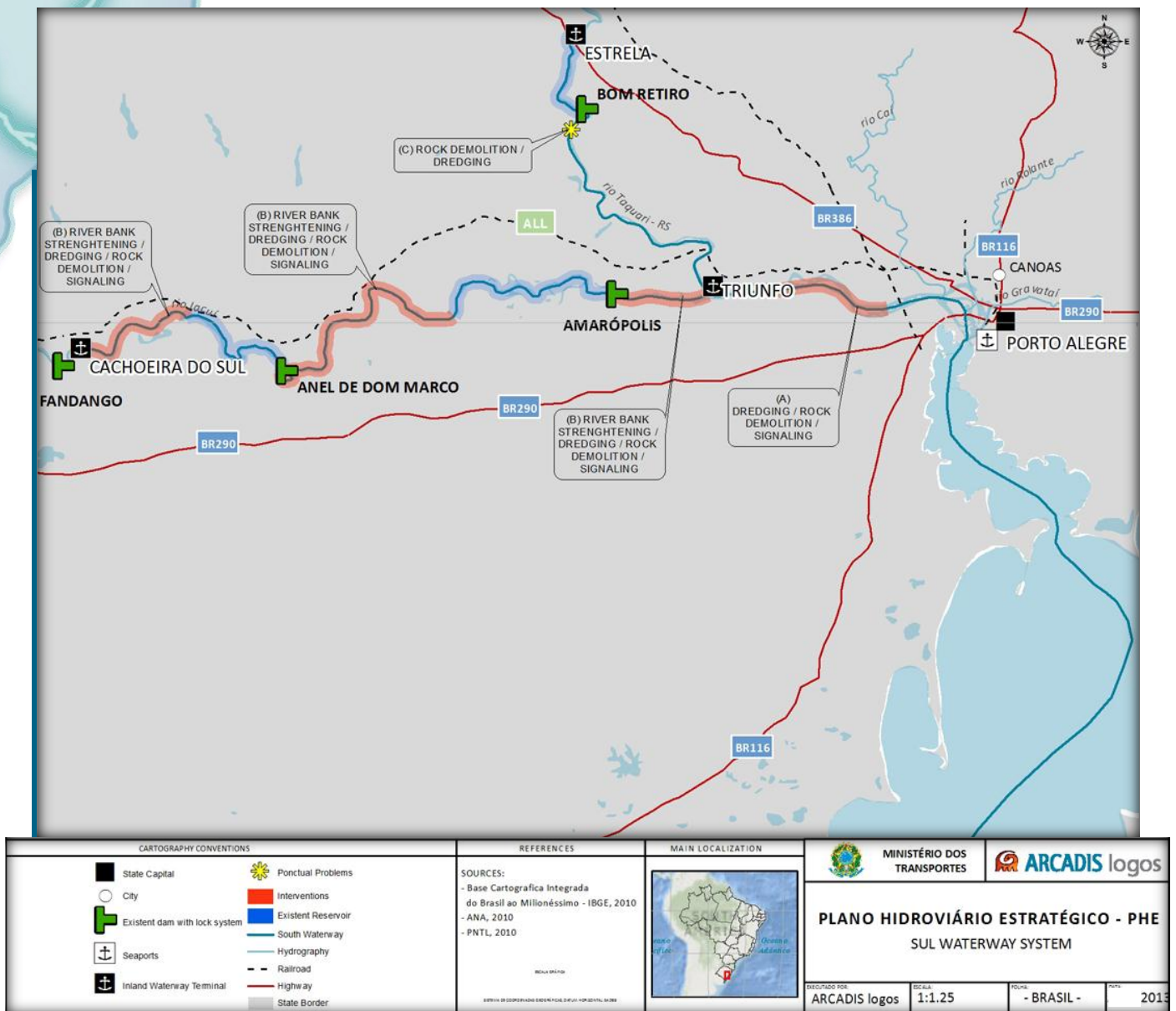
Map 6.6 Civil works and Signaling, on the Tietê and Paraná Rivers



6.7. South Waterway System: Jacuí and Taquari Rivers and Lagoa dos Patos

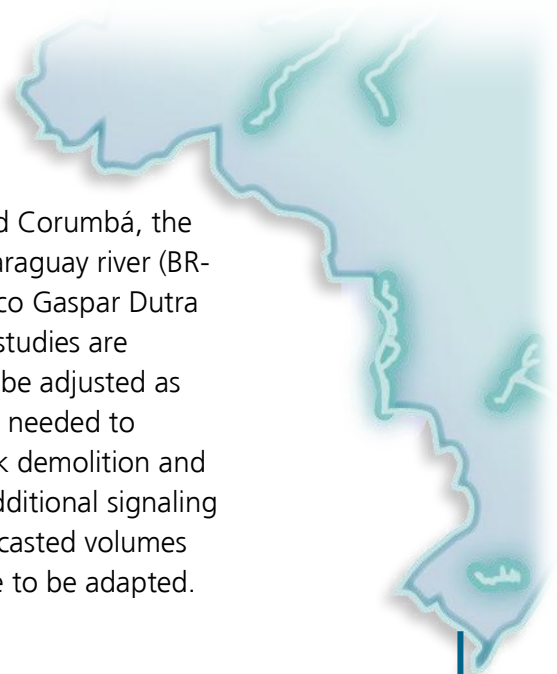
In Jacuí River, between Porto Alegre (RS) and Triunfo (RS), and in Taquari River, between Triunfo (RS) and Estrela (RS), the required civil works, such as rock demolition and dredging, are important to improve safety and reliability of the IWT. In the section of Jacuí River between Triunfo (RS) and Cachoeira do Sul (RS), civil works such as river bank regularization, dredging and rock demolition and the update of the signaling system are also required. To handle the forecasted volumes of cargo in 2031 the handling capacity of the terminals will have to be created for each of the cargo flows on the Hidrovia do Sul system. Terminal expansion will be required in the sea-port of Rio Grande do Sul.

Map 6.7 Civil works and Signaling, in the Hidrovia do Sul (Rivers of the South)

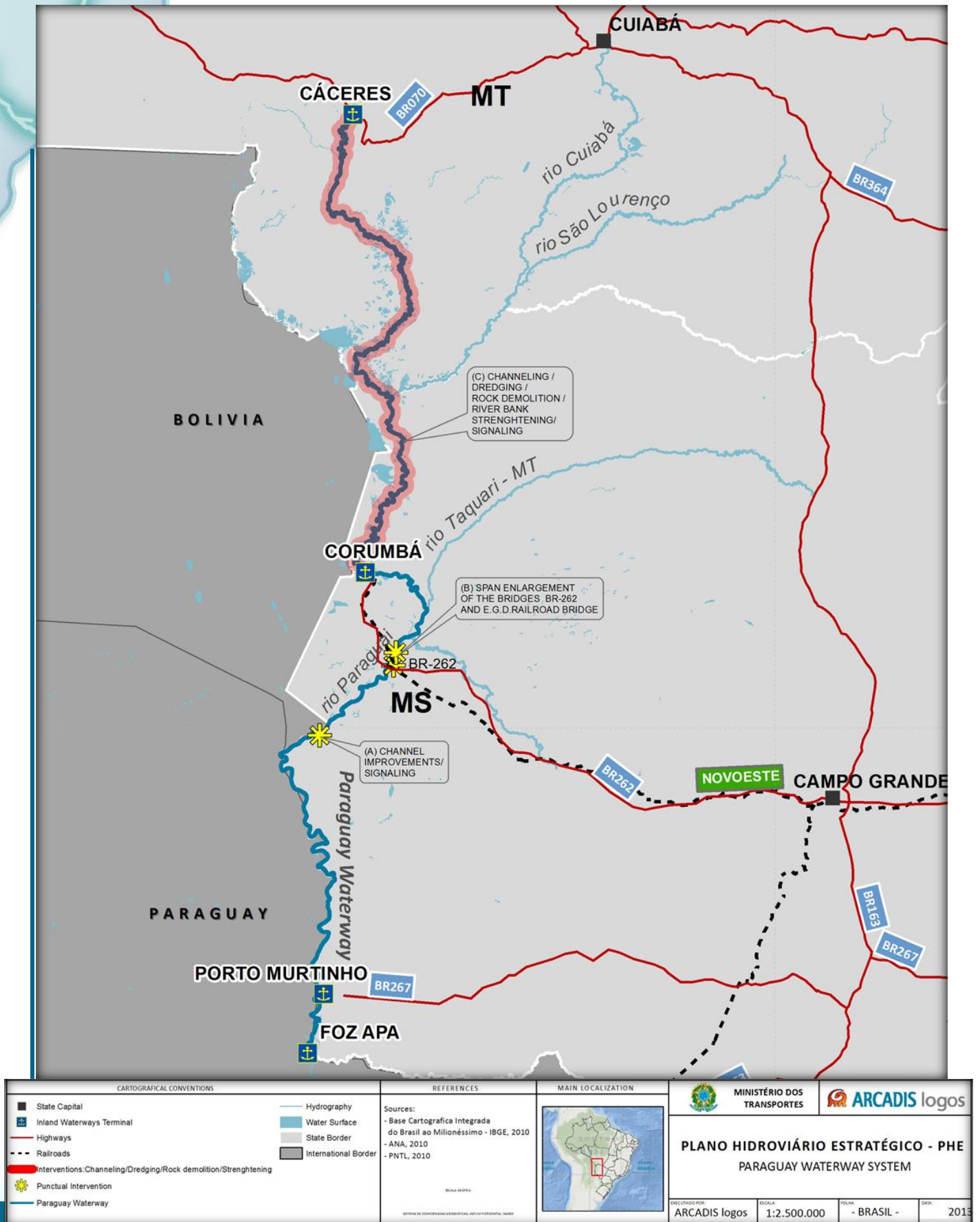


6.8. Paraguay Waterway System: Paraguay River

In the section between the Brazilian borders (rio Apa mouth) and Corumbá, the spans enlargement and heightening of two bridges that cross Paraguay river (BR-262 and rail road) are necessary. This rail road bridge called Eurico Gaspar Dutra is a historic heritage, therefore, to modify its structure, detailed studies are necessary. The curves that affect navigability conditions need to be adjusted as well. In the section between Corumbá and Cáceres the activities needed to improve navigation are dredging, river banks strengthening, rock demolition and adjustments in the natural channel through many kilometers. Additional signaling systems are also necessary in all the sections. To handle the forecasted volumes of cargo in 2031 the handling capacity of the terminals will have to be adapted. The capacity of the fleet will also have to be created.



Map 6.8 Civil works and Signaling, in the Paraguay River



7. Implementation





7.1. Investment Planning

The total investments in waterways are estimated to be about R\$ 17 billion. This amount will be spread over a period of 11 years, and the investments will be executed early enough to reach the goal before 2031. The preparation phase of the investments, which involve studies and preliminary designs, including the Basic Designs, (which in general require 2 - 3 years) start in 2015 for the majority of the projects. Therefore, in the period between 2014 and 2016 the expenses are limited to the costs of the preparation phase, which is estimated as 1.5% of total investment costs. Between 2018 and 2020 the expenses will peak to approximately R\$ 3 billion per year, when the Detailed Designs and civil works are concentrated. From 2021 and further, the investment cost will decline and the investments will be finished by 2024. Besides the investments in the waterways the private sector is also expected to invest. The total private investments amount to more than 5 billion R\$ in inland terminals, the same order of magnitude in sea terminals and more than 4 billion R\$ in fleet expansion. The large scale investments demand time due to the necessity of the plan confirmation as a whole and the organization of the implementing process, and this is particularly time demanding when considering stakeholder involvement in these processes.

The recommendations to improve the organizational part of the transport system will require less budget than the physical interventions. This does not mean they can be organized easily. In the main report an overview is provided of the recommendations that improve the organizational aspects of the transport system including the required estimated budget.

Table 7.1 Investment planning

SECTION		RESTRICTIONS	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	TOTAL
A M A Z O N I A S	Coari - Manaus (Solimões / Negro rivers)	(A)					0,38	0,38	49,25													50,0
	Almeirim - foz do rio Tocantins (Amazonas / Canal de Breves rivers)	(B)			1,88	1,88	82,08	82,08	82,08													250,0
M A D E I R A	Itacoatiara - Porto Velho (Madeira river)	(A)			4,00	4,00	4,00	262,67	262,67	262,67												800,0
		(B)					15,00	328,33	328,33	328,33												1000,0
		(C)						1,50	1,50	197,00												200,0
T A P A J O S - T E L E S P I R E S	Santarém - Itaituba (Tapajós river)																					
	Itaituba - Cachoeira Rasteira (Tapajós and Teles Pires rivers)	(A)			2,50	2,50	2,50	164,17	164,17	164,17												500,0
		(B)		4,88	4,88	128,05	128,05	128,05	128,05	128,05												650,0
		(C)		1,50	1,50	1,50	73,88	73,88	73,88	73,88												300,0
		(D)				4,20	4,20	183,87	183,87	183,87												560,0
		(E)					2,25	2,25	2,25	88,65	88,65	88,65	88,65	88,65								450,0
		(F)									3,75	3,75	246,25	246,25								500,0
		(G)				3,46	3,46	151,36	151,36	151,36												461,0
T O C A N T I N S	Marabá - Vila do Conde	(A)			4,95	4,95	216,70	216,70	216,70												660,0	
		(B)				1,35	1,35	88,65	88,65												180,0	
	Marabá - Miracema do Tocantins (Tocantins river)	(A)			1,75	1,75	1,75	68,95	68,95	68,95	68,95	68,95									350,0	
		(B)							5,25	5,25	344,75	344,75									700,0	
		(C)					2,00	2,00	2,00	78,80	78,80	78,80	78,80	78,80							400,0	
		(D)							1,50	1,50	98,50	98,50									200,0	
		(E)					4,80	4,80	157,60	157,60	157,60	157,60									640,0	
		(F)						3,38	3,38	147,75	147,75	147,75									450,0	
(G)					1,00	1,00	1,00	39,40	39,40	39,40	39,40	39,40							200,0			
S Ã O F R A N C I S C O	Petroliña - Ibotirama (São Francisco river)	(A)					0,36	23,64													24,0	
		(B)						0,23	14,78												15,0	
		(C)				0,04	0,04	5,42													5,5	
		(D)		0,48	0,48		31,52	31,52													64,0	
		(E)						0,36	23,64												24,0	
	Ibotirama - Bom Jesus da Lapa (São Francisco river)	(A)				0,04	0,04	5,42													5,5	
		(B)			0,23	0,23	14,78	14,78													30,0	
	Bom Jesus da Lapa - Pirapora (São Francisco river)	(A)				0,11	0,11	6,90	6,90												14,0	
		(B)			0,38	0,38	16,42	16,42	16,42												50,0	
		(C)						0,45	29,55												30,0	
P A R A N Á	São Simão - Pereira Barreto (Paraná and Tietê rivers)																					
	Três Lagoas - Pereira Barreto (Paraná and Tietê rivers)	(A)			4,50	4,50	4,50	221,63	221,63	221,63	221,63										900,0	
	Pereira Barreto - Anhembi (Tietê river)	(A)							5,40	177,30	177,30										360,0	
		(B)		4,20	4,20	4,20	206,85	206,85	206,85	206,85											840,0	
		(C)		1,85	1,85	1,85	91,11	91,11	91,11	91,11											370,0	
		(D)		1,65	1,65	1,65	81,26	81,26	81,26	81,26											330,0	
		(E)		1,65	1,65	1,65	81,26	81,26	81,26	81,26											330,0	
		(F)		1,65	1,65	1,65	81,26	81,26	81,26	81,26											330,0	
(G)							0,15	0,15	19,70										20,0			
H I D R O V I A D O S U L	Rio Grande - Porto Alegre (Lagoa dos Patos)																					
	Porto Alegre - Triunfo (Jacuí river)	(A)			1,20	78,80															80,0	
	Triunfo - Cachoeira do Sul (Jacuí river)	(A)			10,20	334,90	334,90														680,0	
	Triunfo - Estrela (Taquari river)	(A)			7,50	246,25	246,25														500,0	
P A R A G U A I	Foz rio Apa - Corumbá (Paraguay river)	(A)					0,75	49,25													50,0	
		(B)			1,50	1,50	98,50	98,50													200,0	
	Corumbá - Cáceres (Paraguay river)	(A)						10,24	10,24	10,24	672,43	672,43	672,43								2048,0	
Total costs (xmillion R\$)			17,4 58,4 831,9 1833,9 2828,3 2804,5 3028,3 2119,2 1700,6 1125,5 453,1																			16801,0
Year			13	14,0	15,0	16,0	17,0	18,0	19,0	20,0	21,0	22,0	23,0	24,0	25	26	27	28	29	30	31	
%			0,1 0,3 5,0 10,9 16,8 16,7 18,0 12,6 10,1 6,7 2,7																			
Legend			Studies and Preliminary Designs (including the Basic Design)																			
		(A) - (B)	Civil Works and Detailed Design																			
			Detail description of the following restrictions can be found in Chapter 6																			

Table 7.2 Investment planning terminals and fleet

TERMINALS	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	
Amazon		143,0	143,0	143,0													429,0
Madeira			81,7	81,7	81,7												245,0
Tapajós	46,0	46,0	46,0	46,0	46,0	46,0	46,0	46,0	46,0	46,0							460,0
Tocantins		149,4	149,4	149,4	149,4	149,4	149,4	149,4	149,4								1195,0
Sao Francisco		112,3	112,3	112,3													337,0
Paraná - Tietê		357,6	357,6	357,6	357,6	357,6											1788,0
Rio do Sul	152,7	152,7	152,7														458,0
Paraguay River	61,8	61,8	61,8	61,8	61,8	61,8	61,8	61,8									494,0
Total	260,4	1022,7	1104,4	951,7	696,4	614,7	257,1	257,1	195,4	46,0							5406,0
FLEET	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	
Amazon		59,7	59,7	59,7													179,0
Madeira			61,0	61,0	61,0												183,0
Tapajós	38,2	38,2	38,2	38,2	38,2	38,2	38,2	38,2	38,2	38,2							382,0
Tocantins		112,1	112,1	112,1	112,1	112,1	112,1	112,1	112,1								897,0
Sao Francisco		28,0	28,0	28,0													84,0
Paraná - Tietê		78,6	78,6	78,6	78,6	78,6											393,0
Rio do Sul	57,7	57,7	57,7														173,0

7.2. Pilot Projects

Pilot projects will be implemented to improve the waterway transport on the short term, implementing innovative elements to the system and to set a good and inspiring example. The following pilot projects are proposed:

1. Implementation of (first level) RIS (River Information Services)

- Implementation of RIS in a waterway that is currently used, like Tietê - Paraná, South or Madeira, or Amazon rivers. The implementation starts with a RIS system that is focused to provide information to the skippers. If successful, the pilot can be rolled out to the rest of the country. Additional functionalities, such as Electronic Reporting and real-time data exchange can be added to the RIS system.

2. Intramodal transport as part of regional development

- Developing an intramodal corridor in cut-off waterways with many opportunities for regional cargo flows, like the São Francisco, Hidrovias do Sul, Tietê-Paraná. Development of the waterway and transshipment points to make inland waterway transport interesting as an alternative mode. The transportation from origin to the destination will be realized by several transport modes (=intramodal transport). The project involves the upgrade of the inland waterway infrastructure, the realization and operation of transshipment points (in the region and at the "end" of the waterway), the realization of infrastructure to the transshipment points (road/rail) and the realization of logistic service companies. This development stimulates new and existing economic activities within the region.

3. Public Private Partnership

- Development of a Public Private Partnership for the maintenance of the waterways. The public party hires a private company for design, build, finance, maintenance in a contract for several years. Tocantins and Tapajos Rivers are examples of suitable rivers for this pilot.

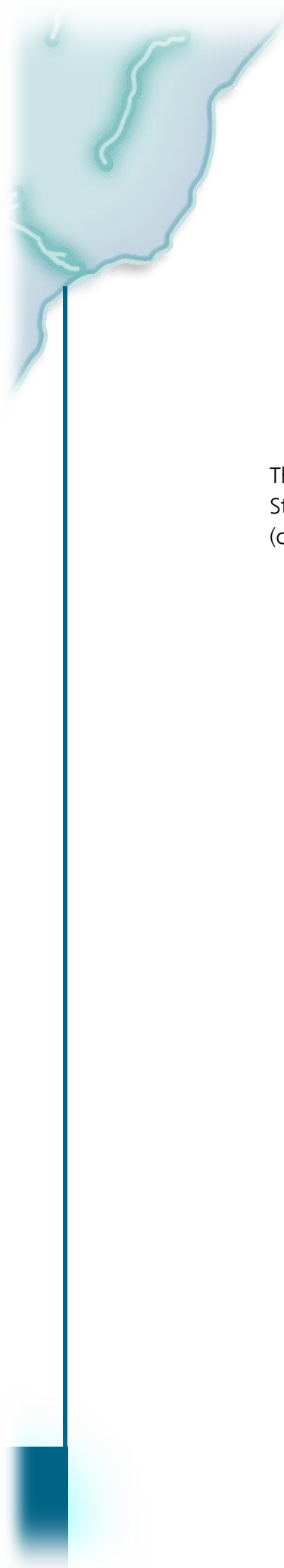
4. Inland Container Terminal development

- Developing an inland container terminal in an area with potential for container transport, like Tietê-Paraná, Amazon or Hidrovias do Sul.

7.3. Communication

The Ministry of Transport means to bring the project further with the involvement of the stakeholders. In addition, publicity will help to build awareness and interest in the IWT. The communication of the IWSP will be done in two stages. In the early stages of the implementation of the IWSP, a number of stakeholders need to be involved to make the project a success. These are mainly the stakeholders that need to be involved in the implementation of the Task Force and Regional Development Groups. For other stakeholders it is sufficient to inform them or talk to them in this early stage. The communication strategy is as follows:

- **Involve:** this is the most intense way of dealing with a certain stakeholder group. Active participation of this group is necessary, because they need to be involved in the first steps of the implementation of the strategy and the Task Force/Regional Development Groups:
 - CONIT (chaired by the Minister of State for Transport. Members: Ministry of Justice, Defense, Finance, Planning, Budget and Management, Development, Industry, and Foreign Trade, Cities, and the Special Port Secretariat of the Presidency of the Republic),
 - Waterway Administrations,
 - SEGES, EPL, DNIT, ANTT,
 - Secretary of Ports SEP, ANTAQ,
 - Ministries of Energy, of Defense (Navy), of Environment/ANA,
 - River Basin Committees (Public/Private cooperation),
 - Transport companies (shipping lines, cargo owners, terminal operators).
- **Talk:** a group that may have worries about negative effects and may have a limited access to power and knowledge needs to be invited to “talk”.
 - Representatives of local communities
 - NGO's (Fundação Nacional do Índio (FUNAI), Fundação Cultural Palmares (FCP), Instituto do Patrimônio Histórico e Artístico



Nacional (IPHAN), Instituto Brasileiro do Meio Ambiente e dos Recursos Naturais Renováveis (IBAMA))

- **Inform:** this group claims less attention and efforts. At this early stage of the implementation of the IWSP it will suffice to keep this group informed on a regular basis.
 - Industrial companies, Service providers to IWT (dredging companies, shipyards, consultancy firms), Energy sector
 - Sector organizations, industry associations (ex. FIESP), producers associations (ex. APROSOJA) and Scientific community (UFAM, UNIR, IMEA)

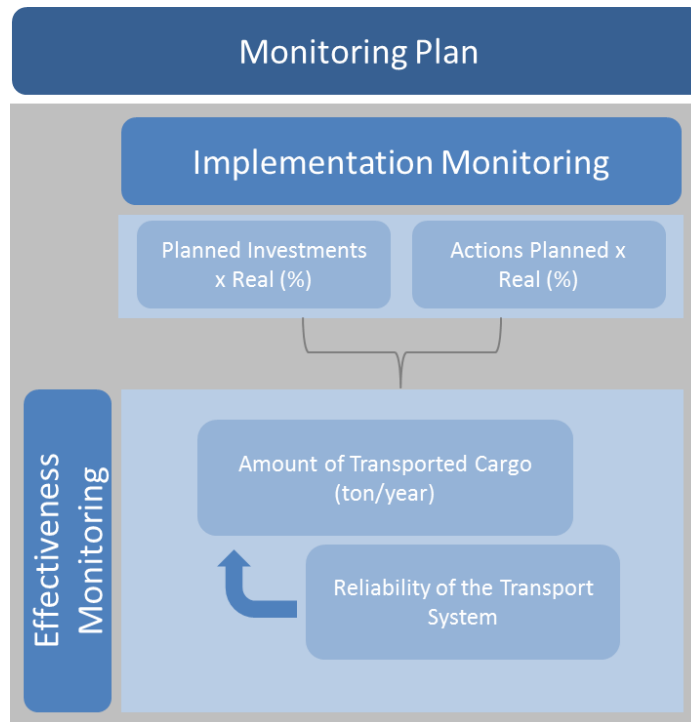
This communication strategy needs to be reviewed on a regular basis. Stakeholders that only need to be informed at an early stage need to be involved (consulted) in a later stage of the implementation.

8. Monitoring



It is essential that the IWSP is implemented and makes the difference that it is aimed for. Monitoring is thus important. For monitoring of investment planning there are two types of indicators: implementation monitoring and effectiveness monitoring. The first consists of evaluating the progress of the investments and action plans (time, budget, quality); the second evaluates the effect of the investments and the goal achievement.

Figure 8.1 Monitoring plan – Elements and Key Results Indicators



In the first step the most important information is gathered. This includes:

Implementation

1. Did the preparations for investments start according to plan?
2. Are the investments going according to the agreed plans (measured in budget, time, and quality)?

Inventory information on infrastructure and fleet

- Capacity per waterway and capacity of individual locks in the concerning waterway
- Handling capacity of ports and terminals per waterway
- Fleet capacity per waterway

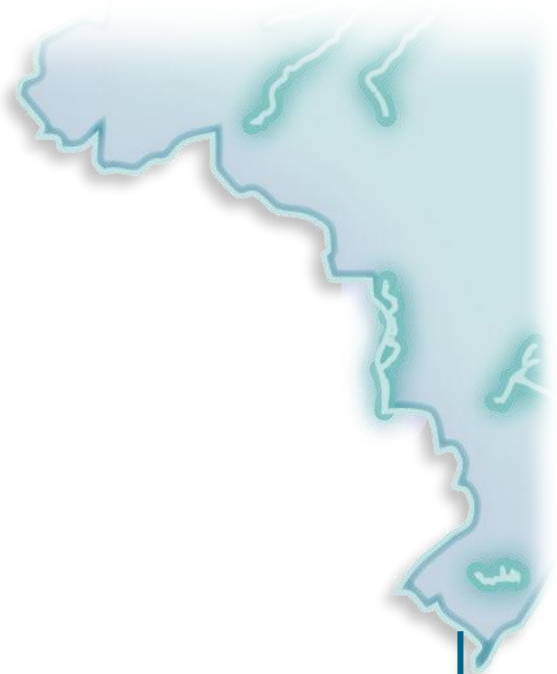
Transport flows: amount of cargo transported

- Per waterway
- Per month
- Per commodity
- Including origin and destination

Information on transport safety

Number of accidents with

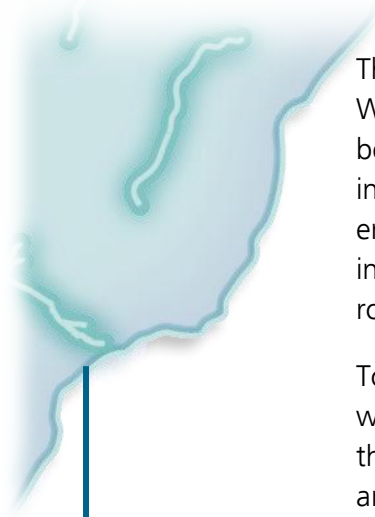
- Only material damage
- Injuries
- Fatalities





9. Epilogue





This Inland Waterways Strategic Plan marks the beginning of a change for Inland Waterway Transport in Brazil. Implementing this change will not be easy, but the benefits for Brazil will be large. It will require coordinated investments in infrastructure and believe in the power of this energy efficient, cheap, safe and environmental friendly mode of transport. All organizations and companies involved must work together to improve the system. Everybody has to carry a rock to build this house.

To create successful Inland Waterway Transport the government should provide a well-maintained waterway or organize the preconditions for companies to fulfill this task. The trading companies must decide about the routing of their cargo and bring sufficient cargo that is suitable to be transported by barges to the vessels. The different governmental organizations must work together to create a supportive government system and a well-organized, safe and up-to-standard transport system, within a supportive social and environmental framework. The transport companies can support the government with expert knowledge and can set an inspiring example for other transport companies to switch to this mode of transport. Passenger transport improvement starts with current operators as well, inclined to lead the way. The recommendations in this plan provide the main steps to take. The IWST is also a tool for organizing this public and private cooperation with a Task Force and Regional Development Groups.

As the Inland Waterway Transport in Brazil is successfully improved, this mode will be a good alternative that is integrated into the entire transport system. Companies and the public can choose between road, rail and waterway transport, or a combination of the three, to achieve the optimal transport solution in terms of cost, reliability, safety and travel time. The economy of Brazil will experience the benefits. The increasing demand to transport bulk cargo to be exported via sea ports will be facilitated by the efficient IWT system. Using IWT will result in lower inland transport cost for these commodities and, as a consequence, in lower prices and a better competitive position of the Brazilian products on the world market. The improvements will form a basis for a solid inland waterway system that can be expanded in cargo types, geographical scale and facilities. If the basis is ready, the dynamics of economy and needs of the natural and social environment will always require attention to maintain well, which counts for all the modes in the transport system.

The strategy that is presented in this plan is the first step on a pathway of waterway developments that stakeholders will follow, continually contributing to making IWT an important mode of transport in the national transport matrix. Like one of the many push-boats that will traverse the country, each improvement by any local or regional stakeholder helps to push the sector ahead.

