

THE INFLUENCE OF TRAFFIC ON WATERWAYS APPS FOR ECONOMIC AND SOCIAL DEVELOPMENT OF WESTERN AMAZON

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ABSTRACT

The transport system is essential for the promotion of economic development of a country. Ballou says that the best transport systems contribute to increased market competition, ensuring economies of scale in production and reduce prices of goods. The transport system of a country is planned according with their geographical characteristics. In the case of Brazil, because it is a continental country and rich in waterways, provides developing regions with vast natural resources available, but still failed to achieve desired levels of growth, due their planning process does not include equally all regions. In this context, the water transport is highlighted by presenting its various economic and social advantages, to have low cost and less polluting. In the Amazon region, which has the largest watershed of the country and of the world, this modality is not structured properly, because are many obstacles that hinder their development such as inadequate ports, lack of security on ships, poor supervision by the responsible agencies, among others. Such difficulties can be observed in the flow of production is mainly done by boat, production systems and settlements, known as Local Production - APLs, the states of the Western Amazonia, for example, the APLs of the farming town of Tabatinga in the state of Amazonas, beekeeping in the city of Sing in Roraima, wood and furniture in the city of Ariquemes in Rondonia, due process have difficulty in shifting loads, because the shift is deficient. Other factors relevant

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to increased attention on water transportation in the region are given, first, by industrial development be delayed, with the exception of the Amazon that has the Industrial Pole of Manaus - PIM in its capital, second, because it has a wide geographic area and finally be the means of transport used by locals, as there are municipalities without adequate planning for the implementation of other means of locomotion. So it is very important infrastructure quality for the waterway sector will contribute to the development of the region in question. Thus, this study aims to show the importance of water transportation system in the discharge of the production of local productive and therefore the economic development of the western Amazon, and showed that the added benefit of application and better investment in the waterway is modal significant in economical, political and social.

Palavras-chave: Water Transport; Local Production Arrangements; Western Amazon

INTRODUCTION

The relationship between transportation system and economic development has been studied for last decades. The economies of countries in the development process, inevitably, must go through a stage of economic growth, so this way there may be opportunities to meet the demand for products and services. Thereby establishing level of aggregate demand and supply in order to establish an economic equilibrium. Of course, these countries defined the time you reach that stability or even if this will actually occur.

At this juncture, countries undergoing development, such as Brazil, innovate in the economic focus of its territory. Thus, in Brazil, which it is considered continental country and has regions with distinct peculiarities, some governmental actions and support institutions have contributed to the implementation of new mechanisms that allow the consolidation of a renewal in various productive sectors of goods and services. Thus, since year 2000 the brazilian states and the states of the Western Amazon, adopted in their development plans to the Local Productive Arrangements - APL, which has the proposal of forming networks that enable increased competitive advantage and sustainability for small business, through integration, cooperation and coordination.

Cassiolato & Szapiro (2002) reported that the focus on clusters enables certain regions inserted in emerging countries raise their competitiveness by means of incremental innovations with specific features of the site. In case of the Western Amazon, there are several clusters of great potential, for example: beekeeping, beef and milk, cassava, wood and furniture, handicrafts, fruit extracts and regional fish farming, among others. However, the disorganization of local actors, difficulty in mobilizing factors, especially deficiencies in the infrastructure of inland waterway transport system (which is most used in the region) requires greater organizational capacity of the guidelines concerning these possibilities.

However, despite the weak dynamics mentioned above, between the actors involved in these settlements, in clusters in the study area there are elements worthy of attention, such as generating employment and income, which prove the contribution of such arrangements in the expansion of the economy Member of the Western Amazon. In this context it must be the question: What is the influence of water transport in APL for economic and social development of the Western Amazon?

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With regard to economic and social development of the region under study, a hypothesis that can be put in evidence is that the inadequate infrastructure - structured system of waterways is a limiting factor for performance of clusters and hence to economic development - in the region's social fabric.

Therefore, the general objective of this study is to analyze the system of water transportation in the discharge of the production of clusters of small and their influence on economic and social development of the Western Amazon. Therefore, the search will be conducted through literature surveys, seeking information and concepts on the subjects mentioned.

The work of this nature, even if done through literature, provides information of extreme importance for the highlighting of aspects that allow a good understanding of how does the influence of water transport with effects on social and economic development of the region investigated. Also because studies of this kind are rare, the most general non-existent, partly because, study dealing with water transportation and APL are scattered, unlike then, the scope of this work, which finally merges aspects related. Of course, another important explanation may be found in the fact that study with what is proposed, tends to help public policy in the region.

THE TRANSPORT SYSTEM AND DEVELOPMENT

One of the most significant indicators of the efficiency level of a society is the quality of its system of circulation of people and cargo, constituting the essential infrastructure - economic and social structure of any country. Specific research on the subject show that transport generates significant factors capable of bringing about the expansion in other sectors of the economy.

Transport systems have a strong contribution to the development of a country, because they facilitate the ability of a region participating in the global economy, promoting the well being of communities and their people with opportunities for access to other parts of the country. However, its efficiency is guaranteed only when there is proper integration between producing and consuming regions for inclusion of their products in foreign markets.

From what was seen in the previous paragraph it is possible that the transportation system can be considered to induce development when, in the economic, is responsible for linking production and consumption of goods, and in social work, provides some comfort conditions and well being of a society, allowing a fast and efficient exchange of goods and people.

Currently in Brazil, the situation is of increasing agricultural production and export of various products, contrasted, for example, with the inefficiency and inability to operation of ports, which represents a strong obstacle to economic growth. Moreover, the Brazilian highway system has made several critical points in various corridors. Even if you have potential for economic growth, due to national and international trade, it is necessary to have effective ways that products can be transported via a transport system efficiently and effectively (Braga, 2008).

CHARACTERIZATION GEOGRAPHIC, ECONOMIC AND SOCIAL DEVELOPMENT IN WESTERN AMAZONIA

In the Western Amazon's economy is also based, among others, in industrial activity. So that, for example, as Ana (2005), the economy of the state of Amazonas is based in industry, extraction, including oil and gas, mining and fishing. Operation of the latex during the rubber boom was the activity that drove the economy and the colonization of this region. Nowadays, the Industrial Pole of Manaus (PIM) is developing rapidly and contributes to the evolution of the GDP of the state as shown below in Table 1.

Table 1 - Evolution of GDP and GDP per capita of the Amazon

Years	GDP (real)	Industrial Participation in GDP (in reais)	GDP per capita (in dollars)
2002	21.791.162	8.034.241	7.253
2003	24.977.170	9.449.865	8.100
2004	30.313.735	11.629.078	9.658
2005	33.359.086	12.322.607	10.320
2006	39.766.086	15.076.163	11.829

Source: IBGE / SEPLAN-AM (2007)

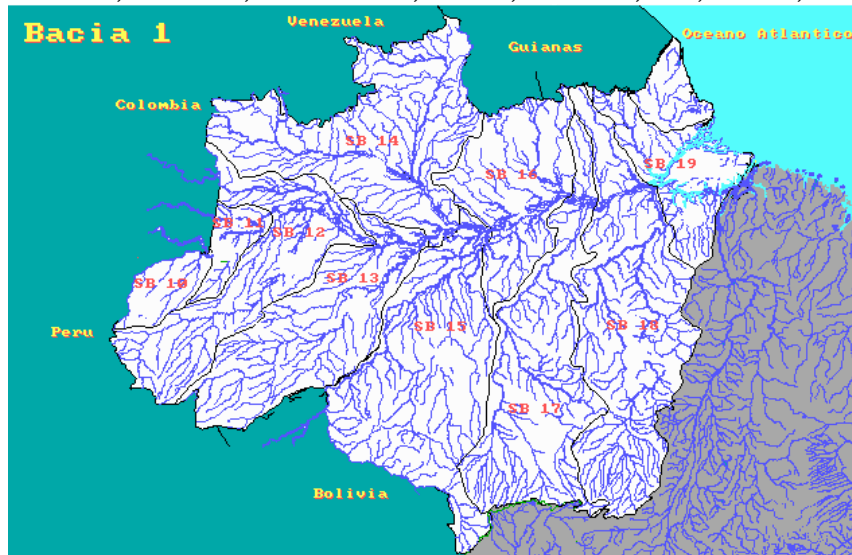
In this context it is noted that the state's economy in question is guided on PIM. However, it is worth mentioning that this rule also exist with high potential economic value for assistance in the socio - economic development regionally, such as the Local Productive Arrangements-clusters, which are present in a variety of productive sectors such as extractive, agricultural , crafts, tourism and others. However there are some obstacles that prevent the full development of these clusters, such as your logistics process, specifically in the transport of their productions.

The long distances between cities in the western Amazon, make some goals and costs are difficult to be achieved in the economic - social, due to lack of accessibility or even no other mode of waybill. It is evident therefore that the water transportation system is essential for all activities of the regional population, mainly in the socio - economic development of the region. But the services offered by the waterborne transportation system and its infrastructure as a whole still does not present itself so as to meet efficiently the traffic of cargo and passengers.

To understand the Amazon region, it is necessary a better understanding of their specificities, since it presents an extensive mesh waterways in its territory, which is inserted in the western Amazon. This extension waterway can be seen in Figure 1. In this context the majority of municipalities in the states of this region depends on the system of water transport as the predominant form of access to the development of social and economic activities as well as for transporting passengers.

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Source: National Agency of Electric Energy - ANEEL, 2010.

Figure 1 - Amazon Basin

WATER TRANSPORT IN THE WESTERN AMAZON

Just compare the economies of developed nations and other developing countries to see the role of transport in creating high level of activity in the economy. Developing nations are typically based production and consumption occurring in the same place, with much of the work force engaged in agricultural production and percentage of population living in urban areas. As cheaper transport services will be available, the economic structure starts resembling that of a developed economy: big cities are the result of strong migration to urban centers, geographic regions are limited to producing a range of smaller items and the average standard of living starts to rise. The best transport systems contribute to increased market competition, ensuring economies of scale in production and reduce prices of goods (Ballou, 2008).

In this context, Neves (2004), notes that the development model adopted by Brazil in the second half of the twentieth century opted for the road mode, using the infrastructure and its other components of the transport chain, as a factor of economic integration, social and as part of internalization in territorial occupation.

The navigation allows and enables the expansion of economic activities and agricultural frontiers. According to Lacerda apud Souza et al (2005), waterborne transport moved about 23.6 million tons in 2001, growing at rates above the national GDP growth, increasing 21% from 1998 to 2001. In the Amazon region about 700 companies and 5,000 vessels operating commercially generating 40,000 direct jobs (waterway) and indirectly 30 000 (at terminals and yards). However it is worth mentioning that the current system of water transport in this region still does not answer properly shift of passengers and cargoes in general.

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Following this, according to Almeida (2008) waterway vehicles are made of a differentiated technology, because boats are moving down a path fluid, water. There are basically three types of vehicles waterway classified according to the type of object to be transported: to craft persons, cargo ship and ship mixed. The latter being the most widely used in the Western Amazon.

DEFINITION AND ADVANTAGES OF LOCAL PRODUCTIVE ARRANGEMENTS - APL

The nomenclature APL is used to denote settlements whose productive linkages between local actors are not sufficiently developed to characterize them as systems, such as agglomerations that dominate the scene in the Amazon (SANTANA, SANTANA and FILGUEIRAS, 2005).

In a simpler definition, which bends the definition of clusters in Brazil, "the local cluster is a concentration of companies and institutions located in the same region and are part of the same productive activity" (Pietrobon, 2009). Bringing together the concepts of various authors on the subject, Cabete et al (2008) concluded that

[...] The fundamental characteristics for a particular industrial cluster is considered as an APL are: same location, interdependence and cooperation, and as a result of these processes there are the competitive characteristics, dissemination of knowledge, innovation and trust.

Competitiveness, dissemination of knowledge, innovation and trust these are all features that are nothing more than good coming of the first, same geographical location, interdependence and cooperation, and that contribute to the success of the arrangement. In this context within the clusters, because they are close together and develop a relationship of interdependence for completion and outcome of their cases, the companies now have a relationship considered more "familiar" with stronger ties of cooperation and trust between staff.

Yet when there is a more formal union between the agents and there is participation by entities of support, such as universities and centers of technological innovation, formal knowledge is also transmitted and reaches all the companies participating in the arrangement, which causes all position themselves at the same level of knowledge. This encourages companies to pursue strategies to differentiate them from other, leading thus to a healthy competition between them.

As Cabete (2009), the union of these factors is what will make these companies, usually small and medium, are able to compete with large companies in the same industry that take advantage with respect to economy of scale, more advanced technology, access to greater investment, greater ease of entering the foreign market, which is difficult barriers for smaller firms transpose. In addition, LPAs also have the advantages related to the ease and cost of

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transporting inputs and products that are handled within the network. The following Table 2 presents the advantages and benefits of APLs second vision of three authors:

Table 2 - Advantages and benefits of APLs

ADVANTAGES AND BENEFITS OF THREE DIFFERENT AUTHORS APLs		
Teixeira e Nascimento Filho (2007)	Cunha (2002)	Amato Neto (2000)
Actions directed to the local, national and international levels;	Reduced costs of external economies of scale or increasing returns derived from sub-additive costs;	The combination of skills and expertise of other companies;
Search for activities that may be sustainable in the region;	Better coping and management of the uncertainties inherent in the competition and the advancement of new technologies;	The division of the costs of carrying out technological research;
Greater bargaining power between firms and those with customers, as competitors become allies in search of common interest;	Changes in relative factor prices and changes in the cost structure of firms;	The sharing of risks and costs of new opportunities;
Greater prospect of entering into credit programs and targeted incentives.	Demand for goods offered individual is affected by changes in demand from other production units.	Increased pressure on the market.

Santana, et al (2005) states that the performance of clusters is related, in addition to the aforementioned factors as: the same location, interaction between agents, human capital formation and stocks of technology and innovation, the fact there is a productive infrastructure and commercial in operation on site, involving roads, transport, ports, storage facilities and processing units and distribution, or logistics market.

Cardoza et al (2005) highlights that in developing an APL, and to promote the growth of productive centers, industrial economies are decentralized in a country as well as stimulate their social development. Santos et al (2004) claims that this is the path that APLs do not lose the market to other regions and do not fall into decay. This is the challenge of APLs.

PRODUCTIVE ACTIVITY OF TRANSPORTATION SYSTEM AND LPAS PRODUCTION OF ARRANGEMENTS

How kind of means of transport almost exclusively in the state of Amazonas, water transport has a significant meaning for its population, since the river has always been the natural path from the exploratory penetrations. Until today the flow of goods and people follow, with rare

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exceptions, the intricate network of dendritic regional hydrography, because almost all the settlements are established margins of several rivers that form the Amazon basin. (Nogueira, 1999). In this context, the state of Western Amazonia and in their states and municipalities, there are various types of vessels, from boats to use private boats that carry passengers and cargo transfer.

Within this juncture, it is known that improvements in transport infrastructure improves accessibility when measured in terms of travel time or cost of transportation, accessibility is an important determinant of regional economic development. The interface between transportation infrastructure and economic development has broad ramifications that go beyond the basic proposal of transportation to move goods and people (FERRAZ, 2008).

We know, too, that Brazil is a country of continental dimensions with areas with peculiar characteristics, which require plans and transport infrastructure specifically promote the development of such regions. Among these peculiarities stands the Amazon region, which is the object of this study, with rivers and waterways in large part. Thus, according to Souza et al (2005) on these routes pass millions of products, wealth and people, so how water transport is a major integration of the links between the regions of the country.

In accordance with Fleet (2008), in the Western Amazon, the water transportation has the distinct peculiarities exercised in the rest of the country. Due to the lack of roads and an abundance of navigable rivers, such transportation in the state in question is of great economic and social importance. The positioning of urban areas along the rivers gives the activity a leading role in front of other modes, especially in the process of penetration, integration and development of the region.

In this scenario a portion of the state of Amazonas, mainly the municipalities heartlanders, which has as its economic mainstay logging, oil and gas, agricultural production and extretivista, which refers to the displacement of production of these productive sectors the service is performed by poor transport system, mainly by inadequate modal focus to the detriment of others, such as water transportation of such municipalities heartlanders. Once these have low transport costs, lower environmental impact, which makes them more viable, attractive and competitive.

Whereas the essential transport in the operation of a market economy, much still needs to be understood about the ways in which a transportation system can improve productivity in the economy, reducing regional inequalities in income as both employment and, consequently, produce regional economic development. Therefore, it is necessary to know the relationship between transport, especially its infrastructure, and economic development, (FERRAZ, 2008).

According to the norms of the Ministry of Defence (2006), passengers should not stay in the same deck that is being used to transport cargo. But in Figures 2 and 3 is showing a contradictory situation. This situation breaks down in value delivery to the final destination of

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the production, which is not transported reliably in many cases part of that cargo is lost due to lack of security..

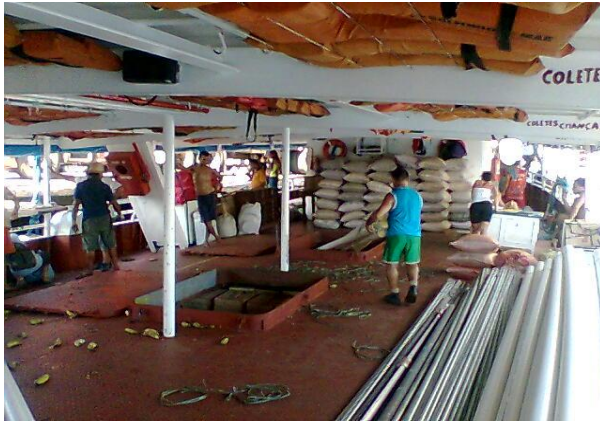


Figure 2 – Deck weak security.

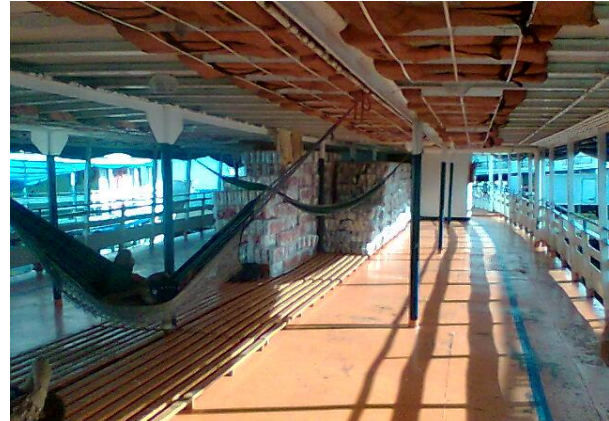


Figure 3 – Cargo and passenger in the same deck

Vessels larger existing predominant are the "Playground," indicated in Figures 4 and 5, which permits the transport of general cargo and passengers between the capitals of states and municipalities heartlanders. To date, there is no development of boats or trains default type, specific for the rivers of the Western Amazonia, due to the typical regional characteristics of loads and passengers. That is, the use of medium-sized vessels - cargo capacity between 5 and 10 tons, and large - capacity less than 10 tons (ANA, 2005).



Figure 4 - Disembarkation of regional product



Figure 5 – Typical ship in Amazon

With regard to charges of APLs with final destination at the Port of Manaus, specifically floating Roadway, it appears that despite this being the main public port of Amazonas State, this port does not have an infrastructure that meets the basic and necessary conditions for the transfer of such loads, as well as passengers. It is noteworthy that the port in question is responsible to meet the boats that bring products that supply the capital Manaus, returning with supplies of goods and supplies to municipalities with Inner APLs. However it is still far from having a port with adequate infrastructure.

CHARACTERIZATION OF CLUSTERS AND THEIR INFLUENCE ON THE ECONOMIC AND SOCIAL DEVELOPMENT OF THE WESTERN AMAZON

The states of the Western Amazon are identified by the uniqueness of their ecosystems, mineral and water resources, but with strong intra-regional inequality in the economic and socio-cultural, as well as their alternative processes of economic development. It can be said that your strategy should be the internalization of the economy, based on the potential of natural resources from them.

With respect to economic growth in the region studied, as previously exemplified the state of Amazonas, it is worth noting that it had always results in a concentration of capital, due to the PIM. However there is a tendency for greater participation within the economy of this state, the new public policy actions that the government has deployed as economic model for the state. The government also expanded the policy of incentives for PIM and heated the economy of the Interior with the program, called "Zona Franca Verde", providing opportunities and opening new horizons for the man resident among forest, contributing to employment generation and income. But such a state needs to go beyond expectations and promote spread economy for all territory.

In this context it is noteworthy economic internalization of the LPA, which since 2000 have become part of everyday public and private agencies. The arrangements are known agglomerations of enterprises of the same activity, which together can reproduce the form of operating efficiency of large companies, ie, organizing themselves in this format, small can generate economies of scale, invest in productive innovation and managerial.

Thus the states of the Western Amazon, specifically, Acre, Amazonas, Rondônia and Roraima, have been identified some potential sites, but weak against the dynamism of local actors, difficulty in mobilizing factors and particularly the lack of infrastructure - transport system structure loads of these productive arrangements require greater organizational capacity of the guidelines focused on its deployment as a way to overcome these bottlenecks in the region. To overcome these limitations and improve performance is not only necessary to identify the clusters, but rather the bottleneck that prevents them from obtaining the necessary effectiveness at the time of implementation of policies for internalization.

It is clear that provide clusters of regional development and mobilization of local economies. In fact, in the region concerned, is recognized the potential of APLs to generate jobs and income moving the economy, contributing to improved income distribution and, thereby counteracting the regional economic imbalances. In this way, then it can be seen in a succinct manner the participation of productive arrangements on the economy of the state of Amazonas.

The economy is centered on the rule quoted in the PIM with a stake in National Gross Domestic Product - GDP 2.0%, and the state GDP is composed of the agricultural sector: 3.6% Industry: 69.9% and Provision Services: 26.5% (Portal Brazil, 2009). According to

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Pimentel (2006) to conduct a comparative analysis of the economic model of the PIM and the economic model of Local Productive Arrangements, Note that the clusters have the advantage with regard to regional development, as they have a great influence on the entire state's economy. Because it is the largest in area is hard to be a centralized economy in which there are only developing a portion of the state in case of Manaus, PIM, and still there are other municipalities to develop. Accordingly, several clusters have been highlighted in the Amazon, where the main ones are: cassava, crafts, fruit, pineapple, Wood & Furniture, Fish Farming and Pharmacology / herbal medicines.

Thus we can see the importance of participation of the State GDP analyzed, both at the state, regional, as well as National. When considering the indices cited notes that the arrangements in their various production segments are strategic tools undoubtedly shown to promote the state's economy in question, as well as generating income, direct and indirect jobs said, among other economic development actions take into consideration local aspects in which they live.

CONCLUDING REMARKS

Note the importance of the transport system for regional economic development, as well as countries. In this segment the object of study was focused on water transport, emphasizing the process of disposing of clusters of states of the Western Amazon, for its extension into waterways. Considering the factors mentioned, the mesh of the States of the Amazon waterways will be progressively structured. The current development of this modal is incipient. The appropriateness of this depends on the dynamism of the regional economy in terms of section and spatial. Demands for use of this system already exist. The deficiency of water transportation in the region studied is strongly limiting the onset of economic and social development of municipalities that have Inner APLs.

According to the economy of the Western Amazon, contact the importance of clusters, aiming to raise the local economy and increase its share in GDP of the states. It appears also that clusters of such are fundamental to the process of local economic development in relation to agricultural sectors, and extractive industries. Therefore, this segment is promising for development and economic growth in the region concerned, making it necessary to further consolidation of actions involving the arrangements as well as those responsible to organize the sector.

In that sense, so that clusters do better in disposing of its production, it is clear that the mode of water transportation, used in this process, is efficient, requiring adequate infrastructure. However, unfortunately, this scenario is lacking when it comes to water transport in this region. Although it is known from several advantages that this modal features, the fundamental importance of the role of waterways in the transport of general cargo, such as, low added value, being more economical, more efficient in terms of cargo transportation in large volumes and not deteriorate.

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It is public knowledge the barriers, technical, political and environmental factors that do not leave the water transportation Amazon to develop and compete in the domestic market, but actually is much more cultural, in the case of the Amazon region as a whole. Thus the inadequate system of water transportation in the Western Amazon requires urgent interventions. The current conditions of the system components that serve municipalities with APLs impede economic and social development of countries in the region studied. In this system identifies problems such as port infrastructure non-existent, craft project unfit to carry passengers and cargo, discontinuity and unpredictability of time and route of travel, among others.

The solution to the problems of the sector depends mostly on the conduct of state and federal public administration. With regard to ports, has been the installation of these inputs depends on federal and state levels. Already with regard to vessels, the adoption of appropriate models should only occur with the creation of credit lines and specific requirement for building standard. Associated with this is that signing the grant and supervision of the lines. These measures should provide the basic conditions for the establishment of the professional system.

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