



**Analysis of the impact of road
infrastructure for the transport of goods
in the Department of Antioquia and the
impact on international trade in the region**

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University Institution Esumer
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Medellín, Colombia

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Analysis of the impact of road infrastructure for the transport of goods in the Department of Antioquia and the impact on international trade in the region

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(Dedication or catchword)

I dedicate this work, which represents the latest effort in this learning cycle and foremost to God and my family, who with their efforts and support have made this achievement possible.

Gratefulness

First of all thank God for giving me the opportunity and the means to study, similarly like to thank all those teachers who with his explanations helped forge my knowledge, my advisor and my family for all their support, their commitment and dedication, which in some way or another helped me in the development of this monograph.

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Abstract

The Department of Antioquia through the years has been growing economy and expanding its business throughout the country, so their paths require a road infrastructure that allows them to sell different products in less time, besides the development of a good road infrastructure it generates strong growth for the Department of Antioquia and the other municipalities that are part of the economic, social and cultural development of the region. Antioquia also be more competitive in different areas of trade nationally and internationally.

This paper aims to show how the Government of Antioquia and its partners have structured a plan on the development of road infrastructure in the Department, which shows that the creation of new transport routes for connecting a flexible and timely manner to other departments for marketing products, generating economic growth of a country and reducing costs in everything related to transportation, the company also generates savings for resources and markets become more integrated and in turn will cause the economy scale, reduce the differential in prices between different regions and promote trade both internally and externally.

The development of road infrastructure enables economic growth in sectors such as construction and maintenance; also, it encourages foreign investment and generates benefits to the Department, regions, municipalities, businesses and carriers.

Keywords:

Road Infrastructure, Foreign Trade, Competitiveness, Foreign Investment, Planning, Economic Development.

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Introduction

This degree work focuses on performing a detailed analysis of road infrastructure to transport goods in the Department of Antioquia, for which an investigation that evaluated by an interpretation of data, graphs and news is made, as secondary sources that allowed to know how has been the evolution of the infrastructure for trade and economic development of the Department.

Investment in road infrastructure leads to make an analysis of the economic and social implications that could result in the Department of Antioquia in terms of regional competitiveness and foreign trade for entrepreneurs, investors, transporters and state.

In the Department for its part, the characteristics of road infrastructure in the different regions have deficient states due to not having proper handling of money allocated for building and maintaining the public order situation and the lack of coordinated management.

At work history and current conditions of road infrastructure of the Department are identified. This will analyze the impact that infrastructure as an indicator of competitiveness and the importance of the relationship between foreign investment, economic growth and development.

Finally, this monograph will see which projects current infrastructure planning for the Department for economic growth and internationalization of entrepreneurs, investors, transporters and state are.

1. Project Formulation

1.1 Background

Know the development of roads in Antioquia is to highlight the pragmatic and progressive character of its inhabitants, for whom their engineering works were the images of their dreams of progress. These works symbolize the struggle to overcome the constraints of geography, as well as shortcomings that, at times, have suffered, in technical and economic matters. On this topography of mountains and rivers the road map was constructed and many of the routes we follow today were laid out on the roads of the Indian tribes that inhabited the arrival of the Spaniards. Existing routes were extended to communicate mining areas, allowing access to gold and, at the same time, the mobilization of the same by the slopes of the Cauca River and on to the Caribbean coast, which thus became the main road network in colonial Antioquia until the eighteenth century. (Universidad EAFIT, 2015).

This route, known as the Holy Spirit, was losing its importance when the roads looked the Magdalena river. By travelers going in and out, ideas and goods, which were sold after long journeys on the backs of mules freighters and the region. But the most important trigger for road development in the fourteenth century was the railroad symbol of modernity in Antioquia. With prosperity, Bankruptcy tunnel became the new common purpose, which would help the progress of mining, coffee and industrial economies. (Universidad EAFIT, 2015).

Roadwork projects and maintained its character as the ideal image that mobilized people of Antioquia. In 1920, the drivable roads and then seemed to be the preferred option. They began to look for alternate routes and projected communicate to Medellín on the Gulf of Urabá. In those years the first airport built in Medellín. In the following periods there have been different viable, such as communicate with Bogotá highway projects, and with it came a boom in tourism. More roads to the Choco and Rionegro airport was once projected the image of a shared purpose. (Universidad EAFIT, 2015).

In more recent times, and as expected by setting Medellín as a city region, metro and metrocable that have taken place. These road infrastructure exemplified dreams, however, the new vision not only integrates the colossal works of engineering, but also considers local roadworks and all management system that incorporates the social adds. (Universidad EAFIT, 2015).

Going through the paths of Antioquia (Universidad EAFIT, 2015), It makes possible a constructive view of the past, to assess continuities and change mean incorporating engineering works the sense of humanity.

A fragment of new dream shared by Antioquia are the highways to prosperity. This plan emerged in the 80s, at the gateway to economic openness. With them has sought to support economic growth in producer goods entrepreneurs located for the Department and new ones would be installed. Therefore, this project should dramatically reduce costs and transportation time. The highways to prosperity will cross to be connected to other ports and land routes. (Universidad EAFIT, 2015).

These works will maintain an average speed of 80 kilometers per hour, even for commercial vehicles. This enables greater savings in fuel and other inputs. In their general characteristics, highways to prosperity will be similar to what is the road that goes from Guarne to José María Cordova Airport, and from there to Llanogrande and a number of bridges and tunnels will. This work is planned in 4 sections: One to Urabá, the two to the north, three to the east and the Magdalena River and four south. The highways have a length of 1,160 kilometers and will have 696 viaducts, covering 63 kilometers and 131 tunnels, which together have 90 kilometers. The layout of highways allow connections between Colombian ports on the Atlantic and Pacific. (Universidad EAFIT, 2015).

The highway will take the form of corridors that connect production centers with ports of exit for domestic and foreign markets; if this project evoking the look of the railway work, you can understand how at different times thought of the integration of roads crossing - railway and highways - that communicate with municipalities to promote regional development. That was in the late nineteenth century, when the roads came to railway stations, and so is expected to be in the XXI century. The plot of local roads that communicate Antioquia, and close to highways to prosperity, demand maintenance and adjustments, as well as construction of new works, to match local needs and conditions of the terrain. Precisely because of this, the local roads are part of the shared vision of Antioquia who inhabit the 125 municipalities, while support for strengthening the social fabric, in order to help overcome the regional economic inequality. (Universidad EAFIT, 2015).

To achieve this dream has involved the entire road network in the region, coordinating efforts of the national, departmental and local governments and with the support of multilateral organizations. Certainly, geographical conditions, as well as the number of paths that make up the Antiochian territory, require efforts that are beyond the capabilities and scope of isolated actions. In terms of local roads, the challenge is immense: The 11,204 kilometers has the tertiary road network are inventoried, regardless of other levels, offering an image that becomes a great common purpose.

For what they mean for prosperity highways and local roads, it is understood that the management system is based on that part of the shared vision of Antioquia in road matter with its purposes opportunity, legality and peace. In this view, the intervention system consists of 4 activities, resulting in works that promote movement of people; "Plan well, socialize well, hire good and well run", according to technical specifications has good planning studies, designs, budgets, environmental licensing and relationship with communities to recognize the problems and risks, that is, it must involve the community in planning.

Hire it has to do with issues of transparency, in models that are implemented; It is to give value to the way we do things and that begins to strengthen the social fabric and citizenship.(Universidad EAFIT, 2015).

Current management understands that infrastructure is a means of social transformation. Behind the work there is a great potential to promote the mobilization of a community. This has been evident in recent projects.

The history of Antioquia in road material favors an approach to the social and cultural formation and identifies the role played megaprojects and engineering in the construction of regional purpose. It also allows to understand the economic, political and technical challenges that have faced this society, to intervene in the natural landscape and achieve mobility, not only nationally but also with other countries. At the present time, the great dreams on transport go hand in hand with management processes, with which it seeks to promote coexistence. Forward as possible avizorarlos new symbols that promote the development of mobility, as works that allow the use of hydropower, as well as projects to enable navigation of the Cauca River in its passage through the northern Antioquia. (Universidad EAFIT, 2015).

In previous years the road connectivity of Antioquia had moderate isolation inside and outside the State, due to topographic, demographic, cultural and geographic limitations that had instability across subregions. (Isaza Velásquez, 2007).

The departmental road system's main function is to link the sub Aburrá Valley and at the same time supply them goods produced there. “The Antioquia Development Plan estimates that invest in road infrastructure is crucial for the country to be more competitive nationally and internationally, it is essential to focus on the creation and modification of new and existing roads”.

The largest project that has been done in the country and in Antioquia has been the Highways for Prosperity has received critical support in infrastructure investment by the Government.

The first concessions announced that entered the prequalification process for the first half of 2013 and had an estimated 6.4 billion pesos for investment are:

- 1. North Concession Highway Connection:** Includes journeys Remedios-Zaragoza; Zaragoza-Caucasia (including Caucaasia and connection variant North Group 4).
- 2. Magdalena River Highway Concession 2:** Includes the remedies-Alto Alto de Dolores and Dolores-Puerto Berrio trips and wireless Ruta del Sol Investment of approximately \$ 1.32 billion, total road length of 150 km with 74 bridges and six tunnels.
- 3. Pacific Highway Concession 1 Connection:** Includes journey Ancon South Camilo CE-Bolombolo. It is about \$ 1.94 trillion for investment, with a total length of 46 km with 20 bridges and 2 tunnels.
- 4. Pacific Highway Concession 2 Connection:** Includes Bolombolo-La Pintada, La Pintada-Primavera and routes. Conto with an approximate investment of \$ 940,000 million, with a total length of 95 kilometers. There are 33 bridges and a tunnel.
- 5. Pacific Highway Concession 3 Connection:** Includes journeys La Pintada-La Felisa; Felisa-Irra; Felisa-Asia; Asia-La Virginia; Thessaly variant; and Irra-Three Doors (including connection with Autopistas del Café. This concession counted with an approximate investment of \$ 1.18 trillion and has 231 km with 26 bridges and 3 tunnels. (Vargas, Fajardo & Mena, 2015).

For a territory to reach success must be present recommendations for internationalization:

- The heavy infrastructure (related to transport and communications), according (Universidad EAFIT, 2015) the existence of an appropriate geographic accessibility, a system of cities without extreme firsts, a first-class communications system.

- On the side of the light infrastructure (associated with production services and structural conditions of the territorial system in question), the existence of a well-equipped small and medium enterprises and qualified human resources productive. This is complemented by two important sociopolitical conditions: political and territorial autonomy in regional government and local governments; a favorable social climate and the existence of an associative culture. (Universidad EAFIT, 2015).

For Medellín and Antioquia is fundamental to have a coupling shaft Bolombolo Cauca River, through roads in optimal conditions, which replace the old road through the Alto de Minas. (López A.).

The cross The Metropolitan Area of the Aburrá Valley-Rio Cauca possible future union with cargo transfer center with Bolombolo Pacific train. The operation of this train will likely only as a coal-mixed container train. (López A.).

The role of concessions in the infrastructure has been central to the existence of new and conditioning on routes to connect the country. It is also essential to change and adapt an optimal method of investment, construction and operation of many of the roads that need the Department for its competitiveness at national and international level.(López A., pág. 3).

1.2 State of the Art

In late 2014 the maintenance and restoration projects incorporate:

* Tasidó-roads and Dabeiba Dabeiba-Santa Fe de Antioquia, Route 62, sections 6202 and 6203, relatively, which direct to the Urabá, displacement will benefit through Medellín and Apartadó through the municipalities of Santa Fe de Antioquia, Cañasgordas, Dabeiba and Mutatá. The roads will favor the carriers that perform mobility of goods and tourists who want to move in and out of the Gulf of Urabá. (INVIAS, 2013).

* La Pintada-Medellín highway; Hatillo (Rich Hole) -The Llanos-Tarazá-Caucasia Route 25; section 2510, industry Hoyo Rico-Los Llanos; Plains stretch 2511 industry-Yarumal and Taraza and Valdivia-Section Tarazá-Caucasia 2512, projects to improve the movement of goods transporters and tourists from southern Antioquia and the coffee-growing country, connecting with northern Colombia and entering seaports Caribbean. (INVIAS, 2013).

* The maintenance and restoration plan is linked to Santa Fe de Antioquia Bolomboloway linking to hit the Urabá and is part of the road axis that connects this region with the Gulf of Urabá and the Atlantic coast. (INVIAS, 2013).

Develop Multimodal Mobility Plan of Antioquia seeking to generate economic growth and development department. In this plan a methodology for prioritizing infrastructure projects will be developed. Making a connection of Antioquia at national and international level. Comprehensively perform the most significant Antioquia Road project, the Autopistas de la Montaña, proceeding to outcomes approach and establishing improvements in the Department and surrounding municipalities. No momentous aside projects for Antioquia, which should be executed or be closely monitored, as the Transversal de las Américas, the Ruta del Sol, the Medellin-Quibdo Cross and Crescent Cross fertile valleys. An appropriate plan for addressing and support in tertiary and secondary roads will also complement. (Codesarrollo, 2012-2015, pág. 18).

This project of the Government of Antioquia allow the marketing of products and services between the Department and the municipalities that are part of the development of road infrastructure in Antioquia (road to prosperity), contribute to economic and social growth of the country, on the other hand generate benefits to both employers and carriers in reducing costs involved in marketing products and services.

It also encourages foreign investors who want to invest in our department, regions and municipalities, either by creating companies generating additional revenue to the state and self-opening door to new jobs or injecting capital into companies that require an equity partner.

Check carefully and complete the agreed road projects and initiated by the recent management, managing the national government to end the obligation acquired as the growth of the roads in the south of Valley of Aburrá: Road connection Aburrá-Cauca River, the South-Primavera- Ancon Camilocé route the dual carriageway Bello-Barbosa, the North Road development Barbosa-Cisneros, the Ancon South-Spring dual carriageway and the East Tunnel.

With this it will run and organize the collaboration of the national government in the huge road projects. Organize and create clear methods for developing projects with public and private participation as road projects, the port of Urabá, repairing roads railways Puerto Berrio to Barbosa Bolombolo and Multi-ferrous System Medellín. (Codesarrollo, 2012-2015, pág. 18).

Finally the appropriate structure for the navigability of the Magdalena plans, logistics port in Puerto Berrio, Mountain Highway, Ruta del Sol and Transversal Crescent fertile valleys.

Antioquia does not have an adequate road network to help sustain economic growth Department. Many of the roads are in poor condition, do not have adequate paving and do not have a railway network to help the mobility of goods, river development is not a factor that can have for economic growth and the port of Urabá still in plans. Antioquia to count on an optimal connection with the other municipalities and departments at the national level is still far from achieving an adequate development due to lack of road capacity. The Department of Antioquia is not able to meet the transportation needs required by today's world and that this is becoming increasingly competitive. By failing to make action plans to improve the road infrastructure of the Department several subregions will be affected economic growth, causing difficulties for social, environmental and increasing poverty level. (Codesarrollo, 2012-2015).

Antioquia's economic development has always been generated by the mining and agricultural sectors, performing several times inappropriately. The environment has been greatly affected by the misuse that has been given to soils, risking the health of the community and nature. To achieve greater competitiveness at the enterprise level is critical Department to help implement strategies to environmental improvement, through productions that do not compromise or affect the environmental and social environment, seeking to reduce consequences that do not provide the adequate production and sustainable consumption in the country. (Codesarrollo, 2012-2015).

The mobility of Antioquia plan implemented by the Government seeks to structure various road infrastructure projects that will allow the Department of Antioquia more competitive with other cities of the country and the world and its economic growth conducive not only to the state but to the citizens and entrepreneurs.

The development of the mobility plan should be monitored by institutions that are part of the project so that these are complied with in the stipulated time and resources invested by the State as well as by private companies are properly used and monies are not diverted to other projects.

The Government and its working group involved in road development both in primary, secondary and tertiary roads are always implementing improvements in road projects so that the roads are built with quality materials that allow a better route to conveyors.

1.3 Problem Statement (Diagnosis)

Access roads to ports where entering and leaving the products in the country are not the most appropriate because the roads of Antioquia are not in good condition and do not have the right design to expedite mobility goods in less time.

Problem Formulation

To make the problem statement we make a diagnosis through a matrix involved, which is a tool of the logical framework methodology that allows us to target research environment that is the road infrastructure of the Department of Antioquia, where they identify a stakeholders such as: State, business (M and X), investors and carriers, including evaluating a common problem, which is the decline in the competitiveness of Antioquia which directly affects business development giving priority entry and exit of goods directly affecting trade balance and PIB market.

In addition variables such as strikes, insecurity on the roads, increased unemployment, negative trade balance thus identified would not be attractive to foreign investors.

Employers would be affected by high freight costs, deterioration of the goods and not have the ability to do business.

For investors there would be a high risk and would face a decrease in the movement of goods which would not be profitable for them.

Conveyors assume high operating costs and decrease in the movement of goods.

The figures presented above the level registered in the department of Antioquia investments demonstrate how little importance the region has as recipient of capital, both domestic and foreign, despite its productive potential, which unfortunately has not been identified for promotion due. The future is not as flattering as an interest from large companies Antioquia is hinted to be located in closer to the raw materials and supplies parts, and machinery and equipment they require, and obviously to its export markets. (Ospina Trejos & Velasquez, pág. 12).

Where Pymes barriers when opening new markets internationally have one bears in mind; Some of these are: A productive capacity where it can have superiority in transport costs and thus to achieve business abroad, improper administration, poor infrastructure and inappropriate technology. (Ospina Trejos & Velasquez, pág. 13).

For finding an effective entry into third markets it runs through: Entrance to foreign markets, quality and cost of human resources, quality and cost of physical infrastructure (ports, roads, telecommunications), logistics services, quality and cost of local suppliers, alliances with other countries and protection of foreign investment. (Ospina Trejos & Velasquez, pág. 13).

To increase exports of manufactured goods, transfer and isolation technology, optimum preparation of human resources, innovation, productivity, internal business growth, transforming the manufacturing center. (Ospina Trejos & Velasquez, pág. 24).

It is notable that many actors effort being made to the international promotion of our companies and region. Many entities, public and private, national and regional programs define and create specific mechanisms for their work in this field, in response, some, fashion theme, and others, to the requirement to act in the global, national development and regional. But unfortunately, the truth is that many of these efforts Antioquia develop in isolation, if not wrong in not real but from generalized assumptions that do not consult truth in the region. (Ospina Trejos & Velasquez, pág. 27).

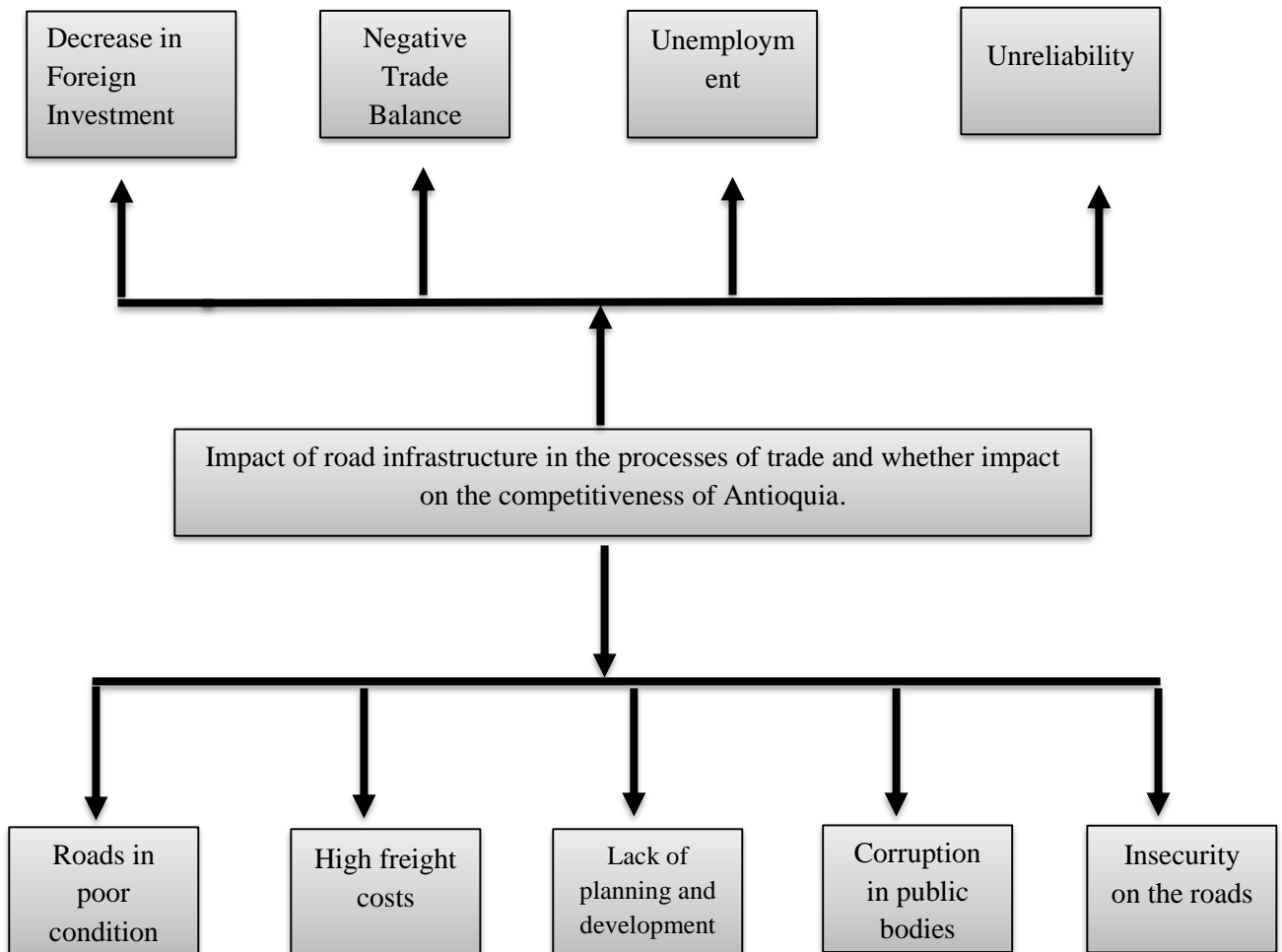
More than 60 players, including major and minor, acting on foreign trade in the department of Antioquia, not including the amount of support and advisory companies, with very different criteria and dissimilar experiences, also they have some interference in the development of programs related to business and regional internationalization in our department. (Ospina Trejos & Velasquez, pág. 28).

The internationalization of Antioquia then requires not only a strategy that includes various instruments of support to achieve goals that go beyond the mere promotion of exports, which has historically been acting and trusting, but also to articulate a comprehensive work that adds the areas that together determine the purpose of internationalization, involving different actors, both internally and outside the Department. (Ospina Trejos & Velasquez, pág. 31).

Problem Tree

It is a tool of the logical framework methodology where a focus which is the common problem of the matrix involved where all stakeholders should concentrate for solution for this is identified and a causal relationship is generated where they are the variables that determine the intervention process development research project.

Graph # 1. Problem Tree



SOURCE: Own Construction.

1.4 Justification

This research is structured in order to analyze the economic variables that affect the growth and development of the competitiveness of the Department of Antioquia, its impact on the state, its impact at the enterprise level and the active role that investors and conveyors in the process of economic growth articulation Department.

The state is interested in creating conditions to attract foreign investment and competitiveness in the country, entrepreneurs are focused on reducing costs in order to achieve better market positioning, so you can have any credibility for entrepreneurs and investors. Also it wants to have a good infrastructure to achieve better accessibility of goods on the roads of the Department of Antioquia.

Investors seeking lower risk and freight for greater profitability and confidence to do business.

For transporters it is essential that the Department's road infrastructure is in good condition because the delivery time would be more efficient when the transfer of goods and thus minimize fixed costs achieved.

If Antioquia wants to be more competitive at regional, national and international level in the road infrastructure, it should focus on how to structure a land development plan that allows you to expand those sections that hinder transportation to other regions and departments; as to the ports where such goods and products entering or leaving the Department to download.

Also present should have more secondary and tertiary roads that are used by small farmers in the villages and regions to market products that are grown in the field and which in turn are exported.

The Government should seek strategies with the private sector for the development of road infrastructure, as this will allow more growth in the economy not only of the Department if not the country, entrepreneurs also benefit because their products can be transported in a child time.

For the development of this road infrastructure plan, the Government must have qualified human resources and a vision as large-scale expand outlets across the country to allow better movement of the conveyors.

Social Justification

Awareness is generated about the current state of the roads department, as this affects the trade in products causing high costs in the mobility of goods by the weaknesses in the way due to the lack of dual carriageways and stretches too long, providing information as a tool to help domestic and foreign investors, generating knowledge to become increasingly competitive in the market, implementing strategies for decision-making and encourage better road development.

Personal Justification

This work leaves me personally the ability of critical thinking against the state in which they are the tracks of Antioquia and possible strategies that can be taken to address weaknesses that may arise in the development of the Department for road improvement trade of products at national and international level.

It helps to provide optimal solutions for carriers and businesses that are affected by the high costs in terms of the mobility of goods in and out of the country by the poor state of the roads Department.

It is important to seek alliances to help promote economic growth of the Department for trade at national and international levels to create a better development in our country.

1.5 Objectives

1.5.1 General Objective

Analyze the impact of road infrastructure in the processes of foreign trade and its impact on competitiveness in the Department of Antioquia for increased foreign investment.

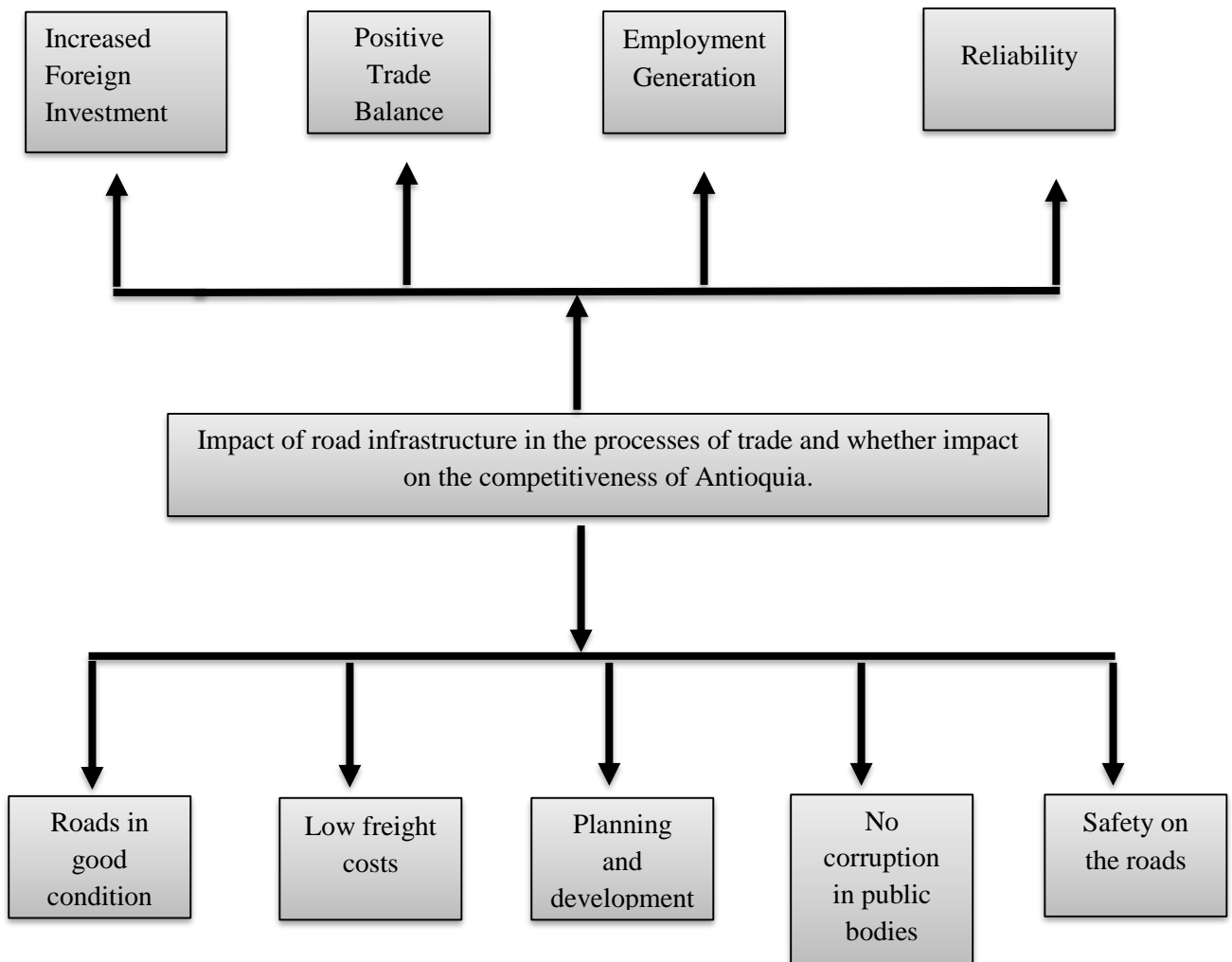
1.5.2 Specific Objectives

- * Check the planning and development of road infrastructure of the Department of Antioquia for generating optimal conditions that impact on reducing freight.
- * Identify foreign trade activities taking place in the Department of Antioquia and the strengthening of the Trade Balance.
- * Investigate the variables that affect the attraction of foreign investment in the Department of Antioquia, its impact on economic and social development.

Objectives Tree

The objective tree is also part of the logical framework methodology which allows to take the whole issue of interest groups to desired situation where the focus becomes the overall objective causes in media and effects purposes, ie, finally leading to the formulation of the overall objective and specific objectives - an average ratio here is generated.

Graph # 2. Objectives tree



Source: Own Construction.

1.6 Methodological Framework

The shortcomings to be challenged by the Department which require optimal conditions for the improvement, monitoring, construction of new roads, should be relevant when intervening in a good road infrastructure to the Department of Antioquia, achieving also encourage better and extensive connectivity for entry and exit of goods nationally and internationally; plans are carried out in compliance with the required environmental standards. (Gobernación de Antioquia, s.f.).

The problem would be solved by means of strategic plans implemented by the Government of Antioquia, generating growth in road and transport network exceed achieving isolation between production and consumer areas within the Department with internal and external spaces. (Gobernación de Antioquia, 2010).

1.6.1 Method

The method used to address the object of study will be through research, interpretation and news, allowing an analysis of the outcome in road infrastructure for better development of internationalization for foreign investment and its impact on competitiveness Antioquia Department.

This research is aimed at the collection, interpretation and analysis of external information, which can be used to make a smart decision, similarly to support strategic plans developed. It is to this end that uses the application of market research, technical analysis and organizational analysis.

To take as soon raised to an analytical study shows that will take place during this process that the information collected through the collection instruments depth information will be filtered, analyzed and converted by tables or graphs used the investigator for analysis and well complete the objectives.

1.6.2 Methodology

Secondary information collection: Because this work is purely analytical, secondary sources of information to be treated as a bibliography of road infrastructure, internet, government publications, news, in order to develop the study object to help prioritizing information.

The short- and long-term impact of economic development and competitiveness that is generated by the creation of new ways to improve the road infrastructure of the Department of Antioquia generating better connectivity to regional and national level will be reflected.

It carries out research that combines some of the essential elements of qualitative and quantitative type; but also have a fundamentally descriptive.

It should initially considered that any qualitative research experience significantly favors who is investigating; It can be said that people have an analytical orientation.

The main objective of this methodology is then seek the analysis of impact that broadly aims to carry out a joint investigation I agreed some of the essential elements of the qualitative and quantitative research type; but also have a fundamentally descriptive.

1.7 Scopes

This research seeks to show how the Department of Antioquia has been growing in developing road infrastructure through projects that have been developed in recent years and which have been a springboard for competitiveness in economic growth and foreign investment.

In the business world road infrastructure is a process associated almost automatically generating costs. This feeling is fulfilled in part when we talk about management theories for the development of the department of Antioquia to achieve continuous improvement and innovation, thus impacting positively the country's trade balance.

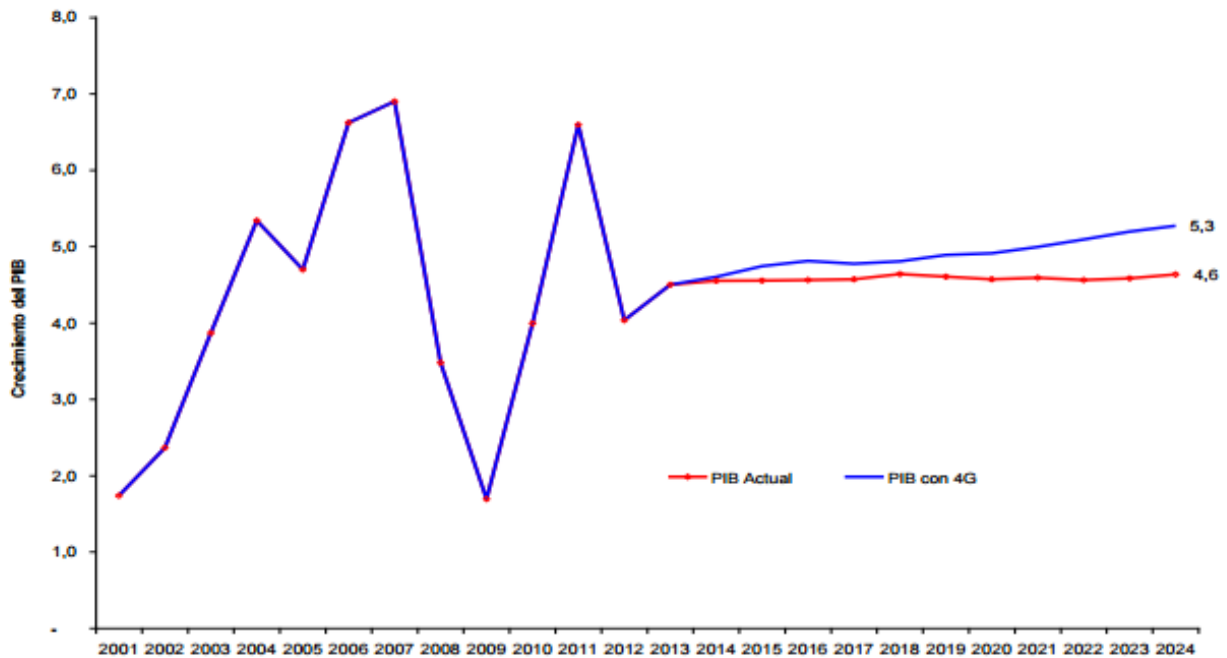
2. Project Execution

2.1 Theoretical Framework

2.1.1 Impact of infrastructure investment on growth 4G.

Infrastructure investment 4G economic growth for the country, because of the fixed capital that has causes increases in investment from the current scene to assist the development in the PTF will be generated as the optimal way to generate a significant reduction in times each way for the movement of goods, helping the growth of trade in goods and services inside and outside the Department.(Ministerio de Hacienda, 2013, pág. 26).

Figure 3: Effect of 4G infrastructure investment in the potential growth of the economy in the medium term.



Fuente: DNP-DEE

Figure 1 shows a significant increase in the country's economy due to the 4G infrastructure investment. This would generate an increase in PIB due to economic production on a large scale to improve internal and external. (Ministerio de Hacienda, 2013, pág. 26).

In Table 1, you can see two scenarios, the current and 4G infrastructure investment that has been presented, by reference to the year 2010 to 2024 with respect to the PTF, unemployment, rate of investment and growth potential.

In the current scenario is evidence that TFP growth has been less than 1%, while on stage with 4G from 2019 until 2024 it has a steady increase of 1%. Verifying the unemployment rate shows equal in both scenarios taking the years 2010 through 2014, with new investments open a fall from 2015 onwards, because these projects require manpower to achieve approximately complete these roads decreasing 1%. The investment rate increased by 2% in relation to PIB between 2017 and 2018 comparing the two scenarios and from 2021 forward is reflected in a decrease of 1% which is equal for all years. (Ministerio de Hacienda, 2013, pág. 27).

Tabla 1 efecto de la inversión en infraestructura en la productividad, empleo y la inversión

Escenario Actual					Escenario con 4G				
Año	PTF	Tasa de desempleo	Tasa de inversión	Crecimiento Potencial	Año	PTF	Tasa de desempleo	Tasa de inversión	Crecimiento Potencial
2010	0,7	11,8	24,6	4,5	2010	0,7	11,8	24,6	4,5
2011	1,1	10,8	25,2	6,6	2011	1,1	10,8	25,2	6,6
2012	-0,2	10,4	25,8	4	2012	-0,2	10,4	25,8	4,0
2013	0,3	9,7	27,8	4,5	2013	0,3	9,7	27,8	4,5
2014	0,4	8,9	28,6	4,6	2014	0,4	8,9	28,6	4,6
2015	0,5	8,9	29,3	4,6	2015	0,5	8,8	29,3	4,7
2016	0,5	8,9	29,5	4,6	2016	0,5	8,6	31,0	4,8
2017	0,6	8,8	29,7	4,6	2017	0,6	8,5	32,7	4,8
2018	0,7	8,8	29,7	4,6	2018	0,7	8,4	32,0	4,8
2019	0,7	8,8	29,7	4,6	2019	0,9	8,3	31,7	4,9
2020	0,7	8,8	29,8	4,6	2020	1,0	8,1	31,2	4,9
2021	0,7	8,8	29,9	4,6	2021	1,1	8,0	31,1	5,0
2022	0,7	8,7	30	4,6	2022	1,2	7,9	31,1	5,1
2023	0,8	8,7	30,1	4,6	2023	1,3	7,7	31,1	5,2
2024	0,8	8,7	30,1	4,6	2024	1,3	7,6	31,1	5,3

Fuente: DNP-DEE

2.1.2 Impact of investment in infrastructure under the concession model 4G.

The movement in the development of 4G infrastructure is evident that in the years 2014-2020 there is no effective investment, the project shows a great development since 2015 which achieved an increase of 0.5% in 2016-2017 and investment will decrease by 0.2% between 2017-2018 relative to PIB. (Ministerio de Hacienda, 2013, pág. 25).

Figure 4: Profile of infrastructure investments under the program 4G (% of PIB).



Fuente: Agencia Nacional de Infraestructura

The development of future years was established in the medium term for having a share investments APP, generating an increase in the annual PIB of 0.05% between 2015 and 2016. As the years pass an improvement in PIB growth is. (Ministerio de Hacienda, 2013, pág. 25).

2.1.3 How to improve the state of the road network in Antioquia?

The physical infrastructure secretary explained the impact of alternative flooring and double irrigation, which provides an economical and durable surface with granular basis for roads with light traffic and medium volume, preventing surface water penetration, restore skid resistance of pavements and alleviate deterioraors dust, among other features. This alternative has been implemented on roads in regions such as Magdalena Medio, Urabá, West, East and North of Antioquia, with investments of around 54,000 million pesos. (Valencia, 2014).

Also they stressed the importance of ensuring for the terms 2014-2015 investment that will improve the investment of secondary roads, and suggested that irrigation was done twice by all passages at the Antiochian territory because it is the way ensure the durability and sustainability of investments. (Valencia, 2014).

Antioquia is a department that has grown through the years and its road infrastructure is not in optimal conditions for the displacement of many carriers to other regions and country Departments, so the Government has been obliged to start improving the roads that communicate Antioquia with the entire national territory for the improvement of these pathways is important to begin to pave double irrigation, thus enabling an economical and durable surface with high-quality materials for those roads where their bases are regular, where the traffic is light and medium volume.

If this improvement made on the tracks, can be avoided that water also penetrates restructurara sliding resistance of those floors that are damaged. If the double risk of flooring is used throughout the Antiochian territory, this will allow freight transporters can travel more safely and in less time.

It is important for the Government to focus on areas of greatest development and consider those departments, municipalities, regions and rural helmets that are part of the economic, social and structural development of the country, in order to reduce the distance between them, therefore it is required that the access roads are restructured in its immediate neighborhood, to facilitate better communication between the region and surrounding areas. (Departamento Nacional de Planeación, 2011).

According to Vice President Vargas Lleras mentioned that within the projects it has implemented the Government of Antioquia for the development of road infrastructure, has made great progress with the projects to be carried out in the Department such as: The Pacific Connection 1, Free Wi Pacific Pacific 2 and 3. The other 2, Connecting North and Magdalena 2. As the Second Wave - 4G, the Highway 1 and Highway Mar Mar 2 projects already have a schedule defined for award. (Vargas, Fajardo & Mena, 2015).

Projects to boost the Transversal de las Americas, has agreed a new timetable which stipulates that in 2015 must be delivered 50% of the works in 2016 and the other 50%. For sector Tigre - Arboletes, who had a long delay, has signed a otrosí also redefining the work schedule and this year will have to deliver 50% of it, he said Vargas Lleras.

In public works, the Vice President stressed that in this department have advanced two major sections: Vegachí-Remedios, which was made with an investment of 124 billion pesos; Medellín - Quibdó which a first tranche of 115 billion pesos was built, and is running a second contract for 265 billion pesos, which is 35% advance. (Vargas, Fajardo & Mena, 2015).

He also reiterated the commitment of the Santos government funding for the 40 kilometers that are pending for that Medellín has full connectivity with the city of Quibdó.

Likewise, the Vice President announced that in October this year plans to finish work on the section of the Via Aburrá - Cauca River, comprising 4.1 kilometers and provides access to the tunnel of the West, which has an advance in its execution greater than 60%.

Among other road infrastructure works underway in Antioquia stands:
*Primavera – Camilocé

- *Primavera – Ancón Sur
- *Dabeiba – Santa Fe
- *Donmatías – Yarumal
- * Tertiary Network in Antioquia have invested more than 180 billion pesos.

2.1.4 Impact of road infrastructure in the process of internationalization

The development of road infrastructure in Antioquia can achieve growth and development levels in line with the dynamic market demands, entry and exit of products that are made through the roads to different departments and regions of Antioquia, whereas increasingly we faced with the challenge of a more demanding and competitive globalization, as well as many new faster trade opening with different commercial companies. (Ospina Trejos & Velasquez, pág. 5).

The Government of Antioquia in conjunction with the Mayor of Medellín and in collaboration with the Chamber of Commerce have argued that the internationalization of the Department of Antioquia bring a competitive advantage to other cities and countries interested in making investments which in turn generate economic growth and open doors to new jobs in the Department. (Ospina Trejos & Velasquez, pág. 6).

With the strategies that has implemented the Government of Antioquia for internationalization include Regional:

- Implement a stable framework for cooperation between the public and private sectors.
- To promote the attraction of foreign investment flows, by developing a good related offer favorable conditions for investors, which is attractive to such investment in a given territory, reaching change relatively visible benefits in the short term, and thus avoid the redirection of investment flows into other areas that offer better conditions. (Ospina Trejos & Velasquez, pág. 8).

- Increase the competitiveness of the territory, from the promotion of innovation (I+D) centers of technological development and advanced training to human resources and to achieve a more just and equitable distribution of productivity gains between investors and local players. (Ospina Trejos & Velasquez, pág. 8).

For the Department of Antioquia can be more competitive nationally and internationally, Governmental Entities Department through the development of road infrastructure, they have made foreign investors find a better investment opportunity using his access not only through maritime transport, but also the land for the mobility of their products for optimal road conditions found in the Department.

Antioquia not only thinking of their economic and social growth, structured and planned the construction of a new tunnel that will allow the swift and safe movement of those high load carriers (containers).

2.1.5 Short- and long-term impact of economic development

In relation to countries like Ecuador and Guatemala, Colombia presents a delay with regard to road infrastructure, generating little economic growth and very low per capita income for the country. Ecuador has meanwhile Panamerican Highway that helps better mobility of carriers significantly reducing the time on the way.

The roads connecting markets with production centers and the population, ports and airports are defined by the country's competitiveness. Colombia has been directed on a road infrastructure project 4G assist the economic, social and cultural growth at national and international level, which will generate new business for the Department. The road infrastructure projects, will be held in Antioquia for connecting the metropolitan area with Urabá, with the Atlantic coast, to the south and the Pacific. (Alviar Ramirez, 2015).

The road infrastructure is designed not only to connect with the outside Department but also to attract trade at municipal and regional level especially in the roads surrounding municipalities to be undertaken. It is important to strengthen the secondary and tertiary roads that growth is strengthening our country. The creation of these road infrastructure projects will create jobs and help the society and institutions to increase the Departmental Development. (Alviar Ramirez, 2015).

The effects in the short term

Significant growth in PIB would arise by 2.5 percentage points to the Department logando reach increased rate of 7%.

Even in less optimistic scenarios as above, where the ability to absorb the Antiochian economy two-thirds or one-third of the demand generated by the construction, the growth rate of PIB would rise by an additional 2 to 1.2 percentage points, reaching rates of around 6.5 percent and 5.5 percent, respectively.

Investment in infrastructure projects such as road, ports, airports and others, promote economic growth in the short term when it is carried out whenever the construction aggregate demand and some traders increases. (Alviar Ramirez, 2015).

The Effect of long-term

A positive effect on the growth of the Department for the transport of goods and passengers is generated, which are determined by:

1. A reduction in the time to mobilize people and goods.
2. A decrease in the cost of transport because roads will be easier to circulate.

With the roads in good condition increased per capita income was achieved by increasing the restructuring on the tracks. The expectation is that demand and supply in the trade department increases, because the infrastructure is managed to reduce transport costs and time in moving goods. (Alviar Ramirez, 2015).

2.1.6 Growth in developing road infrastructure in recent years

Antioquia is currently recognized as a Department of innovation and competitiveness.

The Government of Antioquia in conjunction with its partners who are part of the development of road infrastructure and the private sector, through its strategic plan have managed to involve every municipality or region in projects that are part of territorial development, the purpose of these new ideas to provide a better approach for compliance and effectiveness in implementing the secundarias and tertiary roads that are part of the marketing of different products that are sold both internally and externally.

Within the development plan for the Department of Antioquia is to increase the pace of investment in roads dual carriageway allowing connectivity to improve conditions in the country.

It also seeks to develop road infrastructure in the Department of Antioquia, allow access to the various Municipality and Regions will bring a better mobility throughout Colombia, generating it more attractive to foreign investors, which not only promote the economic growth of the Department, but also to generate employment opportunities and better social environment.

Antioquia has become a very attractive sector because of its social and structural development that has taken in recent years, has also designed various road infrastructure projects that respond to the challenges of free trade.

Colombia is characterized by the way they have there are many weaknesses for the connection between production centers and markets. These projects you help trade products more competitive with countries which have a free trade agreement, because it would have roads in good condition would help growth in the country's PIB. (Universidad de Antioquia, s.f.).

Cargo transportation in a developing country like Colombia, must be more efficient logistics. Not only in rural roads, but also the cities. (Universidad de Antioquia, s.f.).

The Government of Antioquia has designed a projected road development plan until 2030, which seeks to contribute to building a sustainable model in the development of infrastructure and mobility to identify the needs investment and maintenance of the road network of roads required for better access to Colombian territory to each municipality and region that they are part of its territorial structure. (Secretaría de Infraestructura, 2015).

It should be noted that the Government of Antioquia and other partners have developed large projects aimed at growth of a road infrastructure for Despeamiento of Antioquia, within which we can mention:

- Girardot - Honda - Puerto Salgar.
- Concession Cartagena - Barranquilla and Prosperity Circunvalar.
- Perimeter east Corridor (You will pass Cundinamarca, the Eastern Plains, Boyaca and the Midwest).
- Ocaña – Gamarra – Puerto Capulco (Adding Ruta del Sol – Sector 2).
- Mulaló-Loboguerrero.

- Highway Mar 2: Cañas Gordas – Uramita – Mutata – El Tigre. Construction of 17 km on single carriageway, upgrading and rehabilitation of 118 km.
- Highway **Mar 1**: Tunnel West - San Jeronimo - Santafé de Antioquia - Bolombolo. Construction of 110 km of dual carriageway.
- **Sisga – The Secret**: Sisga - Guateque - The Secret. Connect with Casanare Cundinamarca. Improvement of the road corridor.
- **Santana - Mocoa – Neiva**: Neiva - Campoalegre - Gigante - Garzón - San Juan de Villalobos - Mocoa - Santana. Construction of 22 km of dual carriageway, over 32 km of new single carriageway and rehabilitation of 422 km.
- **Iron Gate - Cruz del Viso - Palmar de Varela**: Uerta Iron (Sucre) – Carreto (Magdalena) - Palmar de Varela (Atlantic); Carreto - Cruz del Viso (Bolívar). Improvement of 175 km of track.
- **Santander de Quilichao – Popayan**: Santander de Quilichao - Popayán. Construction of 76 km of dual carriageway and improvement.
- **Villavicencio – Yopal**: Villavicencio – Connection Ring Road - Cumaral-Paratebuena - Villanueva - Monterrey - Tauramena - Aguazul - Yopal. Construction of 48 km of dual carriageway and upgrading and rehabilitation of 212 km.
- **Rumichaca – Pasto**: Rumichaca - Tangua - Pasto. Construction of 80 km of dual carriageway.
- **Barrancabermeja – Bucaramanga**: Bucaramanga – Barrancabermeja - Yondó. Construction of 66 km of dual carriageway. (Vargas, Fajardo & Mena, 2015).

All road infrastructure projects that the Department is developing are enormous and as generate significant economic, social and environmental growth throughout the Antiochian territory also will be more attractive to those foreign investors who want to implement projects in our region.

Antioquia has always been known for being a Department of thrust, entrepreneurship and sustainability.

In a report of the ANI, state that any country is highly competitive if it has adequate and safe road infrastructure development in various internal and external agreements to the municipality also allows economic growth of a country.

For lack of a robust and sustained investment, Colombia presents a lower rate of road infrastructure development compared to other countries. Colombia is ranked 18 in Latin America, affecting efficient connectivity with major cities, centers of production and consumption, border and port areas. (Andrade, 2015).

With these projects the economy and competitiveness will benefit greatly. Today, logistics costs can represent between 15% and 20% of the total cost of producing in Colombia. It has been estimated that the reduction in travel time with the Fourth Generation reaches 30 percent on average, while vehicle operating costs are reduced by 20 percent, better designed roads, new roads second, tunnels and viaducts. That's gain to compete in international trade. To reduce logistics costs in this proportion, we estimate that exports could grow between 5% and 10%. (Andrade, 2015).

Achieving these projects can improve competitiveness and industrialization of the sectors closely related to the construction of road infrastructure such as asphalt technology, value chain concrete and steel (1300 intervention viaducts and tunnels); management and technological advancement of road safety and automation of operations 135 road tunnels, among many others. (Andrade, 2015).

It's a real production chain. It has been estimated that the production of asphalt technology will expand in more than 12 million m³; the concrete in more than 12 million m³; the steel for special works in almost one million tonnes; geo installing the meshes and geosynthetics in more than 44 million m². The preparation of 18 thousand tons of high explosives performance will also be required, as well as 70 million tons of rock aggregates. (Andrade, 2015).

2.2 Information analysis

2.2.1 Planning road in Antioquia

The Government of Antioquia has implemented road development program for the Department for the purpose of this have better connectivity with other departments, municipalities, regions and urban areas adjacent to it, the programs can be highlighted:

Program 1: Gateways to competitiveness in Antioquia

To develop this plan only took into account the subregions Aburrá Valley, East, West and Urabá which seeks its main land routes at national and regional level have a better development in their corridors both technically and in its paving, therefore includes improving the dual carriageway to the primary road network, this project is being implemented in the medium and long term. (Gobernación de Antioquia, s.f.).

Ongoing Projects

Northern Aburrá Highway Development: Is scheduled for the next four years to build and improve 20.5 km 8 km in the following works:

- Double Calzada Niquía – Hatillo.
- Double Calzada Hatillo – Barbosa.
- Intersection Girardota.
- Access to Northern Copacabana
- Improvement section Acevedo – Copacabana.

Rehabilitation stretch hotspots in Hatillo – Donmatías.

Road connection Aburrá - Cauca River: Includes the following works:

- Construction stretch between the junction 80 with the Iguana race ravine to the junction with the access road east tunnel (4.1 km).
- Operate and maintain the connection Vial Aburrá - Cauca River (39 Km).

Road connection Aburrá - East: Contains sections:

- Double Calzada Las Palmas Country Club Section- Chuscalito (2.7 Km).
- Double Calzada stretch Saxony - Airport (1.3 Km).
- Operation and maintenance of roads Santa Elena (22 Km) Description Palmas (16.7 Km).

Projects Management and Support:

To carry out road infrastructure projects to allow more competitive Antioquia, together with the Government Departments, municipalities and regions are developing strategies that promote activities and other projects that are being implemented in order that people and entities involved commit to do them on schedule and have all the technical and financial structure required for execution. (Gobernación de Antioquia, s.f.).

Projects Management and support Aburra Connection Road - East:
East Tunnel construction, expansion, modification and paving the way Marinilla - El Penol, resurfacing the road El Penol - Guatapé, Circunvalar Guarne.

Projects Management and support Aburrá Valley Corridor - Gulf of Urabá, will begin with the structuring and management to execute the project, which includes the following works and sections: Double Calzada Medellín - Santa Fe de Antioquia, Santa Fe de Antioquia variant, variant Tonusco variant Fuemia variant Dabeiba variant Chever - Mutatá, Double Calzada Chigorodó - Turbo, Apartadó variants, Chigorodó, Carepa and Turbo Currulao, Second Tunnel Fernando Gomez Martinez, Toyo tunnel, Operation and Maintenance of the corridor Medellín - Santa Fe de Antioquia-Turbo, Rehabilitation and Maintenance section Bolombolo - Santa Fe de Antioquia, Operation and Maintenance via Antigua Medellín - Rio Aurra, access to ports Zungo and New Cologne. The concession would total 497.7 km on track. (Gobernación de Antioquia, s.f.).

Other Projects: South Aburrá Highway Development (Spring - Sabaneta (FLA), Transversal Caribbean Sections Turbo-Necoclí-San Juan-Arboletes, Construction Road dual carriageway Cisneros - Puerto Berrio, Double Calzada Sanctuary - Puerto Triunfo, Improvement Turbo - Necoclí - (paving), Improvement and construction Bolombolo - Quibdo, Improving Core of Peace (Bodegas) - Yondó Improvement via Puerto Berrio - Zaragoza - Cauca (Route 41), Panamericana Road Construction, Improvement and construction via Cauca - Nechí Double Calzada Pintada - Caldas - Itagui (for Bolombolo), Double Calzada Avenue Las Vegas between Majorca - Most, Managing continuity Medellín River corridor western side Solla - Tercentenary via Spring-Poblanco-La Pintada. (Gobernación de Antioquia, s.f.).

Program 2: Paving, upgrading and / or construction of roads and bridges in Antioquia

The Government has taken into account the municipalities to improve their way in the construction and improvement of bridges that require their intervention. Also they will present those secondary roads where deterioration of these is found on a larger scale and therefore support of funding instruments and the implementation of a system of valuation as feasibility studies carried out in relation to its infrastructure. (Gobernación de Antioquia, s.f.).

In paving projects will continue running, it will monitor projects 2500 National Plan and other projects will be launched in "Paving Antioquia for All", in which the following means are partially attend:

Trunk Termination Northeast, sections Vegachí-Segovia-Remedios, Access Yolombo-Yalí-Vegachí, Colorado-Nechí, Zaragoza, Core of Peace, Remedios-Zaragoza section variant Core of Peace in Caucasia, The Three San Pedro de Uraba, Liborina- Sabanalarga, Frontino-La Herradura-La Balsa, Puente Pescadero-Ituango, Algeria Bankruptcy, bankruptcy Nariño, La Piñuela-San Francisco, Enlargement, rectification and paving Marinilla-Peñol-Guatapé, Urrao-El Bréchon-Concordia-Betulia, Tarsus Pueblorrico, Circunvalar Andes, San Carlos-Granada, Barbosa-Conception Alexandria, The Chuscal-Armenia, El Chuscal-Heliconia, access Ebéjico, Andes-Garden, ANDES-San Jose-Pueblorrico, roads Salgar-Concordia- by Morelia, rehabilitation via colfrutas - Florida among other projects to be defined. (Gobernación de Antioquia, s.f.).

In bridges, will be held the design and construction of the bridge El Bagre, on Nechí River, among others.

Program 3: Conservation of the road network in Antioquia

For this program do not consider those routes having a paving process and those that are concession. The Government seeks to improve those roads have damage in some sections and do periodic maintenance for roads that require.

The secondary roads also come into maintenance processes through multi-year projects that the Government runs according to service levels or obligation of results that are stipulated.

The three projects being implemented by the Government of Antioquia will be financed in part by implementing tolls at strategic points where the road mobility is a larger scale. (Gobernación de Antioquia, s.f.).

2.2.2 Removals in Antioquia

Land transport is the most commonly used mechanism for the mobility of goods. Therefore it is essential to agree the cost of the services being able to be competitive in the market domestically and external. To agree these costs is essential to have adequate road infrastructure to help the distribution of goods, leading to a reduction in prices for the optimal conditions found the roads, thus helping increase the country's economic development.

Table 2. Freight established by the Ministry of Transport. (Ministerio de Transporte, s.f.).

DESTINO:	ARMENIA	B/QUILLA	BOGOTA	B/MANGA	B/VENTURA	CALI	C/GENA	CUCUTA	DUITAMA	IBAGUE	IPIALES	MANIZALES	MEDELLIN	NEIVA	PASTO	PEREIRA	POPAYAN	STA. MARTA	V/VICENCIO	YOPAL	TUMACO	
ORIGEN:																						
Armenia		107.151	57.580	78.908	45.325	34.303	105.667	103.153	71.991	32.109	89.952	27.215	55.839	44.999	77.291	23.415	47.231	109.333	76.230	95.296	96.632	
B/quilla	116.671		123.723	91.090	135.204	137.657	33.665	102.989	119.954	126.383	158.318	118.157	98.633	139.815	153.611	122.844	144.960	25.483	141.572	151.129	170.565	
Bogotá	51.875	81.214		57.715	68.115	66.296	61.214	76.934	34.623	39.341	119.976	59.973	62.168	49.383	110.429	56.259	79.274	81.214	38.790	535.358	128.174	
B/manga	80.491	70.868	71.005		106.987	100.983	79.580	41.560	67.649	72.069	149.448	80.933	66.121	50.469	140.174	79.377	117.326	68.690	89.979	98.008	153.208	
B/ventura	49.039	139.537	91.513	109.532		39.000	136.658	134.066	100.778	67.329	90.866	55.899	86.133	66.278	81.204	52.314	51.913	139.559	101.956	118.839	106.479	
Cali	35.074	118.850	73.897	101.422	39.000		118.850	125.363	69.257	53.919	71.267	47.232	67.474	67.577	61.962	39.341	35.273	125.441	90.544	107.604	104.100	
C/gena	118.839	29.992	127.089	93.730	142.144	136.406		106.233	122.661	119.860	157.318	113.065	94.938	135.571	152.886	113.085	149.085	35.562	146.847	153.741	170.565	
Cúcuta	99.395	79.159	85.031	43.276	120.466	118.850	85.640		84.324	90.459	157.319	97.003	99.801	99.201	143.697	98.735	127.146	76.934	101.240	113.680	157.570	
Duitama	73.425	81.214	36.852	55.431	87.963	83.880	90.350	83.880		58.385	136.052	74.063	84.637	72.126	125.455	74.063	94.747	88.066	53.717	40.493	139.023	
Ibague	42.207	101.755	40.861	71.977	55.917	50.725	99.201	93.639	58.750		99.212	50.099	65.449	35.399	97.351	45.623	74.611	99.074	53.093	77.621	124.120	
Ipiales	85.783	163.767	119.976	143.021	86.512	73.747	163.767	159.546	118.918	98.895		93.159	117.781	100.580	25.400	86.765	70.252	170.565	135.933	145.218	56.644	
M/zales	36.398	97.559	70.952	82.143	50.345	45.913	95.343	100.670	78.931	50.247	98.570		46.346	74.364	88.123	36.398	62.375	100.765	76.288	98.558	106.479	
Medellín	48.601	68028	65.042	71.296	54.097	58.357	66.598	98.374	75.690	65.449	102.666	47.557		75.508	101.273	47.778	65.800	68.730	83.122	111.257	117.326	
Neiva	59.299	120.466	56.103	90.053	72.069	61.870	120.466	116.831	74.934	36.852	104.565	65.879	74.760		97.933	55.401	84.932	124.313	64.502	87.275	129.822	
Pasto	75.917	150.097	108.343	127.641	76.726	65.975	153.208	143.697	113.409	93.842	24.756	96.002	104.100	97.906		80.995	52.375	159.717	121.933	137.381	50.651	
Pereira	31.878	103.470	68.309	81.375	48.375	37.366	101.273	108.615	78.931	50.747	94.892	33.665	51.959	69.038	81.140		59.166	108.837	81.838	99.010	124.302	
Sta. Marta	124.577	28.541	118.018	85.000	134.231	133.025	35.562	101.115	112.828	120.050	153.206	117.842	103.737	135.408	148.870	125.760	142.734		136.697	149.102	170.802	
V/cencio	62.331	103.063	38.790	69.651	76.934	78.215	103.053	82.779	49.896	51.623	123.836	64.213	80.615	64.950	122.136	69.895	85.783	100.427		67.329	148.870	

2.2.3 ACI role in Antioquia:

It is important that the Government has created the institution to generate international cooperation and foreign direct investment to the city such as the ICA, because this helps expand Department restructuring and strengthening the Union externally to raise awareness the city as an example of addressing the public sector covering.

ACI believes in the capacity of development of the Department and supports that this is recognized by different areas of road and communication infrastructure to achieve growth and positioning for the realization of new business.

Currently the ACI is a key factor for the expansion of Medellín and the Department, achieving strengthen international links that help innovation and growth of our region. It is very important to have these public entities that help to attract new foreign investment and increasing new business development. (ACI, s.f.).

2.2.4 Antioquia trade balance in 2014

The trade balance in the department of Antioquia, was evident in different sectors of the economy that affected foreign trade in the first quarter of 2014 significantly, because inflation had a downward trend and sometimes was stable; This phenomenon is reflected in the results of the real sector.

Demand in sales, including domestic trade presented a better performance in the economy compared to the year 2013, as more volume is evident in the sector. (Dinero, 2014).

The marketing of new vehicles had an upward trend, as imports of consumer goods, this was a breakthrough, but we can see that imports of capital goods and intermediate goods

they used in industry showed a moderate decline for the investment of working capital; in the case of appropriations made by companies to develop their activities it increased with respect to 2013. (Dinero, 2014).

The offer presents an improvement relative to demand in terms of production and industrial sales, which include the construction sector grew significantly which meant an increase in sales of gray cement; and with respect to mining and exploitation of precious metals he followed in a stalemate that had been presenting since 2013. (Dinero, 2014).

The agricultural sector in terms of pork production, its growth was too lenient, and other products that are part of its expansion did not show further growth.

In conclusion we can show that the balance of the trade balance continued to deteriorate to the weak increase in imports and falling exports to be affected mainly by the sale of gold and industrial products. (Dinero, 2014).

2.2.5 Because foreign investment is given in Antioquia?

Antioquia is a department goes a step ahead of other cities in terms of growth, strengthening and economic development, this is because both the public and private sectors have come together in order to find strategies that will allow the department to be a attractive place for foreign investment. (Procolombia, 2011).

There are departments that do not have the support of the public and private sectors for the strengthening and development is needed, because they do not have strategic alliances to help the Departmental growth or not they have projects to help the trade of goods and services, not taken into story that this would generate more competitiveness both internally and externally, helping the population growth and increasing employment is a major factor for the productivity and increase the country's PIB.

Among the variables or elements that strengthen foreign investment include the transformation, optimism, education, modernity, conviviality, innovation, entrepreneurship and culture paisa.

These variables make outsiders see an investment opportunity in different sectors of the department such as tourism, telecommunications, technology, cosmetics, software, digital content for film and tv, IT services and textiles.

Significantly, the platform that each year the Department of Antioquia done with Colombia Fashion event, which assists investors in several countries, offering opportunity for growth and recognition not only the department but for small and medium enterprises that get into exports or who want to expand their products to other countries. (Procolombia, 2011).

Antioquia ranks second in the departments where foreigners want to invest because their products in different sectors provide a high-quality production, and a highly skilled workforce.

Among the most recent projects of foreign investment are the new center of the Chinese company Huawei Technologies to develop software applications and technology designed to consolidate products and services. (Procolombia, 2011).

Another company that has made investment in Antioquia is the Radiotrans from Spain, which specializes in engineering, supply and installation of telecommunications equipment.

The impact causing foreign investment in Antioquia as to their economic and social development is highly significant because it increases the growth of the trade balance and PIB, also strengthens many of the sectors that are entering most recognized and be internationally competitive and allows the generation of new jobs. (Procolombia, 2011).

Regarding social relationships generate both entrepreneurial and entrepreneurs with innovative new development initiatives for the department.

2.2.6 Entities that promote and support international negotiations:

Analdex - Andi - BANCOLDEX - Chamber of Commerce, Chamber of Commerce of South Aburrá - Fiducoldex - Inexmoda - Ministry of Commerce, Industry and Tourism and Proexport of Colombia SA Segurexpo.

All these entities are an important part in the process of Antioquia road since each provides a different service according to the needs they have for economic and structural development of Department, some provide advice on structuring and planning of projects related to road infrastructure of a country and other finance these projects.

2.2.7 Group Road Infrastructure for Competitiveness

It is currently composed of the Ministry of Transport, the National Infrastructure Agency - ANI-, the Government of Antioquia, Medellin Mayor's Office, Departmental Assembly of Antioquia, Medellin Council, Chamber of Commerce of Medellin for Antioquia, Chamber of Commerce Aburrá Sur Chamber of Commerce of Eastern Antioquia, Urabá Chamber of Commerce, Chamber of Commerce of the Middle Magdalena and Antioquia Northeast Chamber of Commerce by Caldas Manizales, the Antioquia Society of Engineers and Architects -SAI-, Proantioquia ANDI, Fenalco Intergremial Committee of Antioquia and the Colombian Chamber of Infrastructure. (Cámara de Comercio de Medellín para Antioquia, 2014).

These entities are of great importance because the growth and road development in the Department is encouraged, looking for strategies to generate competitiveness internally and externally, generating greater connectivity with the municipality and neighboring countries to contribute to trade in products and generating better mobility for goods, helping to reduce costs to carriers. These bodies study, analyze and identify alternatives to help grow not only trade but also the country's PIB.

2.2.8 Strategies for internationalization of Antioquia

- Identify the main strengths of the Department as attractive for foreign investment: infrastructure, trade agreements, governments support, legal certainty, etc.
- Analyze the different factors and selection criteria leading to foreign businesses to the Department of Antioquia: socioeconomic environment and location.
- Define strategic sectors that the Department intends to promote new investments or expansion of existing.
- Regionalizing programs support the export sector to increase the volume of foreign sales.
 - Create a stable framework for cooperation between public and private actors.
 - Promote the attraction of foreign investment flows, by offering investors favorable conditions, so as to be attractive to such investment in a given territory, obtaining in return a relatively visible benefits in the short term, or to avoid redirecting investment flows into other territories that offer better conditions. (Ospina Trejos & Velasquez, págs. 37, 38).
 - Increase the competitiveness of the territory, from the promotion of innovation, technology development centers and advanced training to human resources and to achieve a more just and equitable distribution of productivity gains between investors and local players. (Ospina Trejos & Velasquez, pág. 37. 38).

3. Findings

- With foreign investment to create new jobs and participation in national and international level it is generated. It also allows a country's economy grow significantly. If a department has adequate and sustainable ways of access allows the marketing of products entering and leaving the country arrive in optimal conditions to its final destination.
- The government has action plans for road infrastructure problems, given the importance this has for economic growth in the Department of Antioquia, for that reason developed road infrastructure projects in the different roads connecting to Antioch with other departments, regions and rural helmets.
- Transporters businessmen (importer and exporter), investors and the state benefit from the lower costs would be to mobilize the goods that would be generated by the development of a new road infrastructure.
- Foreign investment has been growing favorably to the Department, so it is necessary that the access roads are assessed in some sectors that require a change in the road structure, in order to enable easy and timely entry to carriers loads that bring containers too high.
- The Government of Antioquia is studying in different sectors of the Department for the construction of a new tunnel that allows a better mobility in the entry and exit of goods to other countries, since the current tunnel west, it does not have the appropriate structure for those carriers that move with containers of greater magnitude.

- For all these projects that the Government of Antioquia related to road infrastructure worth mentioning that account using associates as mayor of Medellin, Medellin Public Enterprises, The Metropolitan Area of the Aburrá Valley, Varia Enterprises Medellin, Ministry of Transportation, Secretary of infrastructure, among others that provide not only advice but also financial resources to implement these.
- The weather is a factor that affects those routes that do not have a suitable structure for the mobility of carriers, so that the Government has implemented action plans for the adequacy of these pathways, doing work fills that help these are safer for mobility.
- Antioquia has become a competitive and innovative department to investors seeking to create companies or inject capital to get high returns, so the Government has found it necessary to seek strategic alliances in the private sector for the development of a adequate and optimal road infrastructure for the mobility of different carriers that sell their products within and outside the country.

4. Conclusions and Recommendations

4.1 Conclusions

- The transport of goods has high land costs when mobilizing products because they do not have adequate road infrastructure, for that reason should seek alliances that help to improve roads.
- Generate more foreign investment with a road infrastructure that is better and therefore transport costs would be reduced.
- The state is a fundamental entity to promote strategies and investments that help the development road of Antioquia.
- For businessmen and carriers it is of great importance that the roads are in good condition, because it would generate more business and thus would ensure that the Department is internationalized.
- Investors would benefit, because the risk would be reduced and a reduction in freight rates.
- If you do not invest in infrastructure of the Department, a decrease would have on competitiveness and foreign investment.
- To achieve higher economic growth of the Department, it is needed to support the entities highway development in the different municipalities and regions, so as to become more competitive at national and international level.

4.2 Recommendations

- Regular monitoring where it is verified whether the entities that support the growth on the roads have made investment strategies for better development of the Department of Antioquia and foreign investment.
- Generate strengthening processes for entrepreneurs, investors, state and conveyors, allowing develop skills through training processes that provide tools for efficient management against the risk that may arise having inadequate infrastructure for the mobility of goods.
- Perform road infrastructure programs to assist the growth of new investors inside and outside the country so we can achieve greater market position.
- Hiring qualified and suitable staff to carry out road infrastructure plans that allow these are made with quality and in less time, in order to provide better access to our Department and its surroundings.
- The state must ensure that the materials used in road development is of high quality services and generate agreement on the delivery of the works in time as stipulated in the realization of the same.
- Road studies do have other countries in order to have a clearer idea in the development of these in the Department of Antioquia.

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ATTACHMENTS

Annex: Analysis Matrix Involved (Logic Frame)

ROAD INFRASTRUCTURE IN ANTIOQUIA				
Interest Groups	GOVERNMENT	ENTREPRENEURS (M and X)	INVESTORS	TRANSPORT
Interests in Common	*Growth, economic development and competitiveness of Antioquia.	*Growth, economic development and competitiveness of Antioquia.	*Growth, economic development and competitiveness of Antioquia.	*Growth, economic development and competitiveness of Antioquia.
Individual Interests	*Attract foreign investment and competitiveness in the country.	*Cost reduction *positioning *Accessibility	*Risk reduction. *Freight reduction.	*Time efficient delivery of goods. *Reduction in fixed costs.
Common Problems	*Decline in the competitiveness of Antioquia.	*Decline in the competitiveness of Antioquia.	*Decline in the competitiveness of Antioquia.	*Decline in the competitiveness of Antioquia.
Individual Problems	*Paros generated *Insecurity *Rising unemployment *Negative Trade Balance *It is not attractive for foreign investment.	*High freight costs *Insecurity *Deterioration of goods *No business capacity.	*High Risk *Decrease in the movement of goods.	*High operating costs. *Decreased transfer of goods.
Resources	*Invias *Ministry of Foreign Affairs *Planning departments.	*Proexport *Guilds *Associations.	*ACI (Internal Cooperation Agencies) *Proexport.	*Ministry of Transport *Associations conveyors.

SOURCE: Own Construction.