Opportunities and Strategies for the North Border Logistics Network´s development in Ecuador

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ABSTRACT

Many opportunities have been missed, such as taking advantage of available resources or making strategic investments in considerably less amounts than those arranged in crazy studies instead of promoting truly relevant projects, so this situation will continue to be a drag on our country and will keep us relegated from a leading role wich is accompanied by long-term benefits. If we do not take an accurate and timely turn towards a fixed north, by defining and implementing policies and enough resources in logistics, we will continue to be the buyers of services and openning ways for other countries to continue establishing the rules of the game, prices, conditions and restrictions within the area considered since three decades (and for the future) in the cornerstone and countries' survival factor: a strong Supply Chain structure. The so called "Northern Border Logistics Network" in Ecuador, has the ideal characteristics to connect at least 3 continental regions in the southern hemisphere, becoming a real alternative to fully explore other commercial and tourist benefits of the region, also linking 4 countries in South America indeed. Let's analyze this case, from which interesting conclusions will be gotten. This article aims to verify the current situation of the network structure and contextualize it in a new scenario to contribute to the development of a country and a region, in a comprehensive supply chain concept.

Key words: Supply Chain, Logistics, Multimodal transport, Logístics corridor, Port draft, Distribution Center, Cross Docking, Transit time, Logistics infrastructure.

Introduction

The solutions offered by the Manta (Ecuador) – Manaos (Brazil) logistics corridor, also known as The Bioceanic Multimodal Logistics Hub of Ecuador to connect the cargo movement, by promoting commercial and service flows, between the southern part of the Pacific and Atlantic oceans, it has been commented, analyzed and speculated much time before, by considering an important participation of the three Ecuadorian regions plus the jungle areas of Colombia, Peru and Brazil (into the continental part of South America).

This proposal has considered other benefits from a relegated area of commerce, showing better conditions, greater opportunities and comparative advantage as well for complete integration of 4 northern provinces of the country (with their potential exportation of products and services) and offering alternatives of commercial trading to the southern area of the neighboring country of Colombia, where the juncture of insecurity and adversities has returned because a interrupted peace process over there. Although, this mentioned threat could reach us in the referred network, it will depend on the concrete implemented policies and actions from Ecuador to provide integral "in-house" security conditions for this Border Network and shows its best business conditions from the beginning.

The map N.1 shows the international route from Manta (Ecuador) to Manaus (Brazil), both by the traditional (maritime) and multimodal route (land and river connections). Although there is an obvious difference in distance and consequent reduction in transit time, the details of the new route or suggested corridor will allow to get less distance and estimated time by the land route that crosses the Ecuadorian territory; but, by departuring from the province of Esmeraldas.

Tradicional marine route

Land route from Manta port (EC) to Providencia port (EC)

River route from Providencia port (EC) to Manaos port (BR)

Performed by Luis Luna Osorio (2012)

Current resources available in the North Border Logistcs Network (NBLN)

An inventory of the resources available in the NBLN, by considering the provinces of direct influence, as well as structure for 4 types of transport, which will allow to connect the needs of movement and commercialization between the most distant points within Ecuador and its subsequent land connection to the center of the country and southern Colombia, port departures, as well as airway stops for other national and international connections, is shown in Chart N.1 as follows:

Chart N.1

Current available resources

	Quantity and detail	Status
Direct influence zones	4 provinces: Esmeraldas, Carchi, Imbabura y Sucumbíos	Available
Main maritime structure	1 (Esmeraldas port)	Available
Main air transport structure	2 (Airports in Esmeraldas and Tulcán)	Available
Main river transport structure	1 (Providencia River port)	Available
Mian land transport structure	Cross border freeway E15+E10+E35+E45	Partially available, 68% in good conditions
Direct support of logistics structure	1 maritime port (San Lorenzo) 1 international airport (Quito) 2 River ports (Tierras Orientales and Pompeya) 3 land freeways (E15, E35 and E45 plus connections E10 and E20)	Available

Performed by LogisBusiness Group (2019)

Additionally, it is important to analyze in the following tables another comparative characteristics, for instance: dimensions, distances, capacities, main and support logistics structure, in order to obtain conclusive conclusions about the aforementioned benefits of the NBLN:

Chart N.2

Ecuadorian Maritime Structure

Port Name and dimension	Draught Depth
Esmeraldas port (42 he)	11,5 meters
San Lorenzo port (29 he)	9,5 meters
Guayaquil port – Contecon (79 he)	9,0 meters
Manta port (31 he)	13,0 meters
Posorja port – DP World (100 he)	16,0 meters

Chart N.3

Ecuadorian Airports Structure

Airport location	Landing path
Esmeraldas	2400 x 45 meters
Tulcán	2400 x 30 meters
El Tena	2600 x 70 meters
El Coca	2060 x 27 meters
Quito (International airport)	4098 x n/a meters
Manta	2860 x 46 meters

Chart N.4

Ecuadorian land transport Structure

Routes and Codes	Distances
Border route Esmeraldas – Providencia port (E15+E10+E35+E45)	421 km
Direct route Manta – Providencia port (E30+E35+E20+E45)	519 km (+23,27%)
Traditional route Esmeraldas – Providencia port (E20+E35+E45)	716 km (+70,07%)
Traditional route Manta – Providencia port (E30+E25+E20+E35+E45)	874 km (+107,6%)

Chart N.5

Ecuadorian River transport Structure

River Port name and location	Characteristics
Providencia port (Sucumbíos province)	Operations openning 2018, located at Napo river´ banks
Tierras Orientales port (Sucumbíos province)	Further than 15 years of operation, located at Aguarico river´ banks
Itaya and Pompeya ports (Orellana province)	Used by Oil industry, primarily

All charts performed by LogisBusiness Group (2019)

As can be seen in Chart N.2, the draft difference between the port of Esmeraldas and Manta is 1.5 meters in favor of the latter. The port of San Lorenzo (located in the same province of Esmeraldas) is also mentioned because two reasons: a) it is an alternate port connected to the NBLN, and b) it has been used in emergency situations when the maritime port of Guayaquil (main commercial port until the appearance of the DP World terminal in Posorja, since last quarter of 2019) has not been able to receive vessels for unloading operations due to problems of increased sediments and rocks on the surface of the continental shelf of Guayaquil Gulf.

Regarding Chart N.3 it shows the comparative data of the airport structure, including two medium capacity terminals that are presented as connection points for the air cargo transportation from and towards the foreing countries; thus, it is important to refine the local legislation that allows to include this transportation way into the international multimodal structure as well. Furthermore, the differences in land distances (Chart N.4) between the border alternative, support routes to the same network (which are part of the first-order road structure) and the road corridor from Manta city to Ecuadorian river port, by confirming the benefits in an optimization of time and resources, into unused complete capacity corridor.

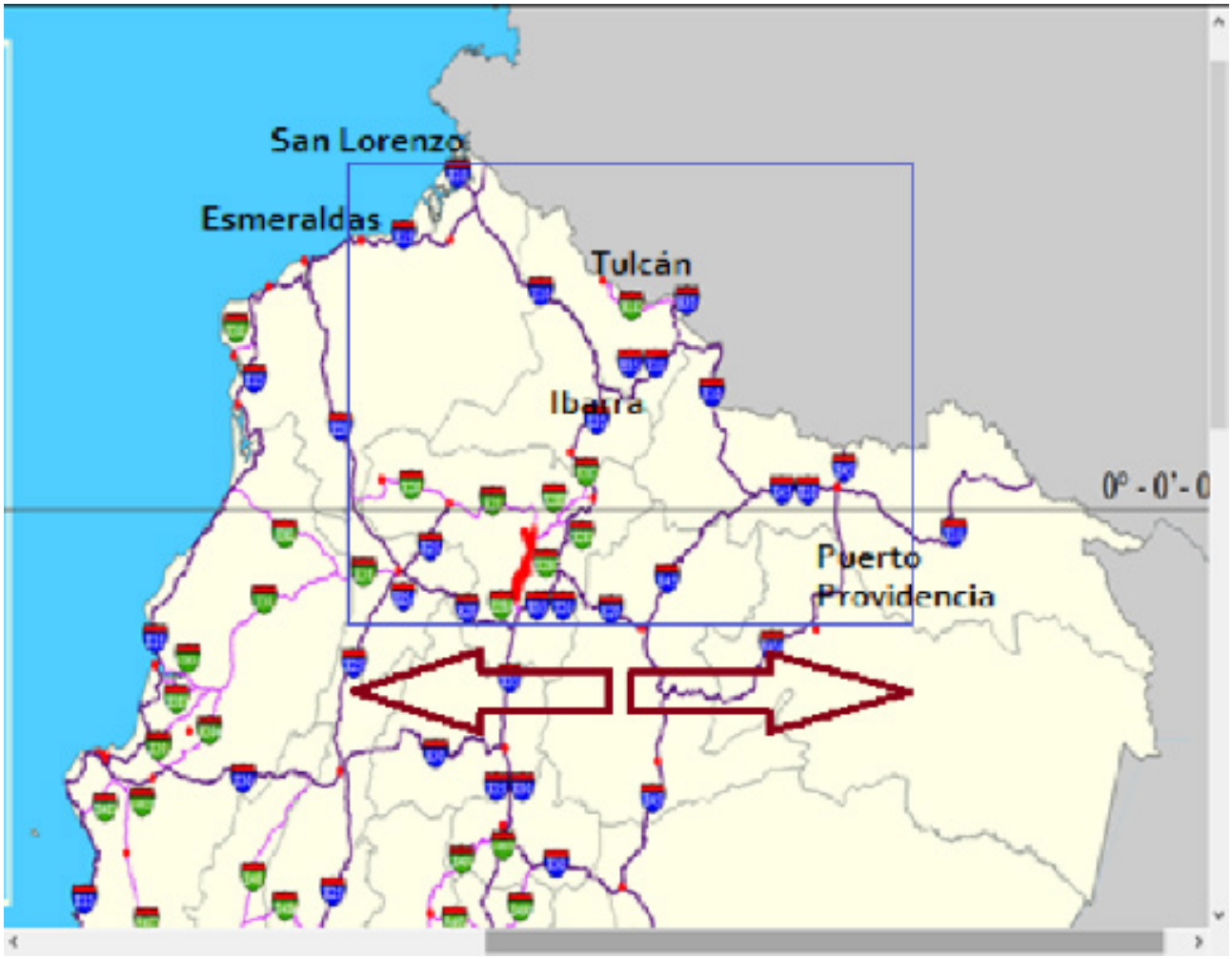
Opportunities

Horizontal and Vertical Distribution Logistics:

It is abosolutely relevant to mention an idea from a reconized professor in 1993 in General Economics university class (Econ. Honorato Paredes), concerning the Ecuadorian territory division; but, 25 years after this idea taking force and strong sense: “Is it possible to think horizontally about the political division of Ecuadorian provinces?” In fact, horizontal planning and logistics execution would allow the NBLN to be strategically projected, including a fast connection infrastructure (in the style of the “Cross Docking” processes) over each land, air, maritime and river terminal, in order to manage transits, receptions and cargo shipments in competitive costs and time.

Regarding vertical planning, Ecuador has better road conditions than Colombian situation, allowing more connections and timeless with the central provinces of the country, by opening greater possibilities of commercial exchange and reach the desired level service on referred Network .

Map N.2

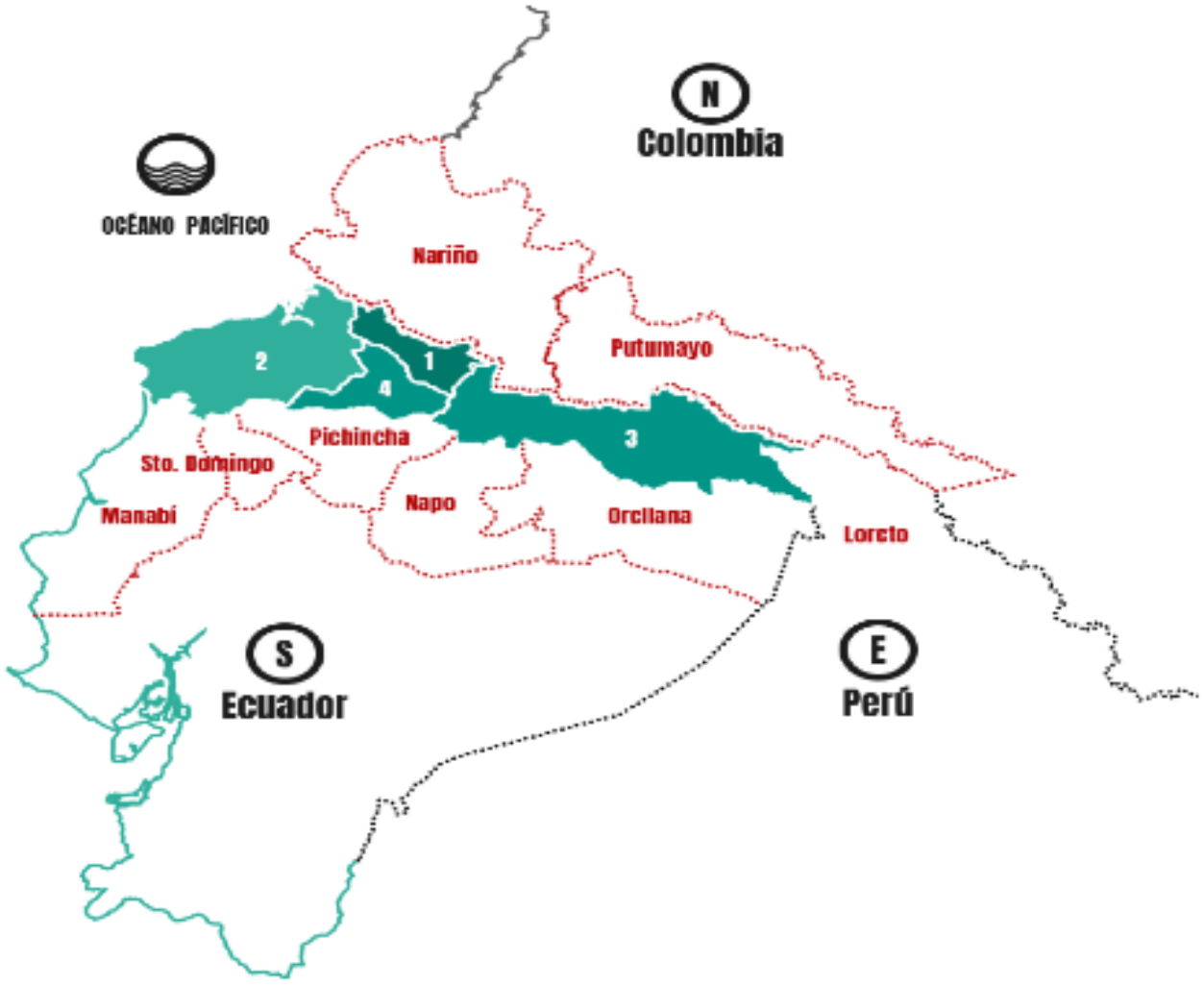


Performed by Public Works Ministry of Ecuador (MTOP – 2019)

Influence for a second group of Ecuadorian provinces and Colombian departments:

As above mentioned in the vertical planning of the NBLN, the commercial and service projections of the Ecuadorian provinces such as Manabí, Pichincha, Santo Domingo de los Tsáchilas, Napo and Orellana can get direct benefits from this new logistics corridor, including additional benefits of exchange and transit of merchandise coming from the southest Colombian departments: Nariño and Putumayo.

Map N.3



Performed by El Comercio.Data (2018)

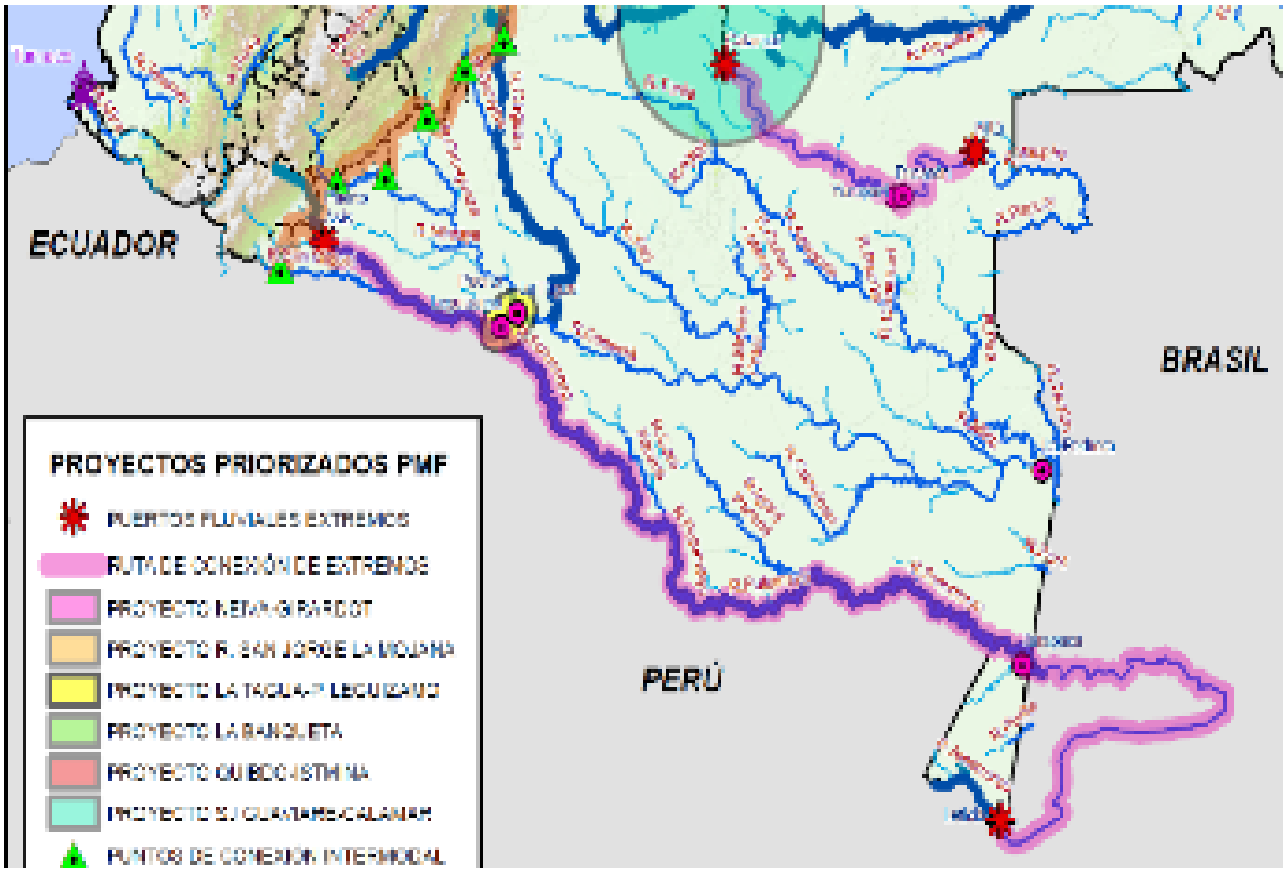
Talking about Colombian case, lets mention the security advantages in the supply chain provided by the NBLN from the Ecuadorian side and other weaknesses of the Colombian structure concerning its river logistics conditions, in order to support now this proposal applied to new multimodal corridor:

a) Complex land access to Asis river port (Putumayo department).

b) Difficult navigability conditions through 13 to18 kilometers of distance (near of Leguizamo town)

c) Additional 300 kilometers of transit, into Brazilian territory, for connecting Tarapacá and Leticia locations and then assuring the Amazonas river transit.

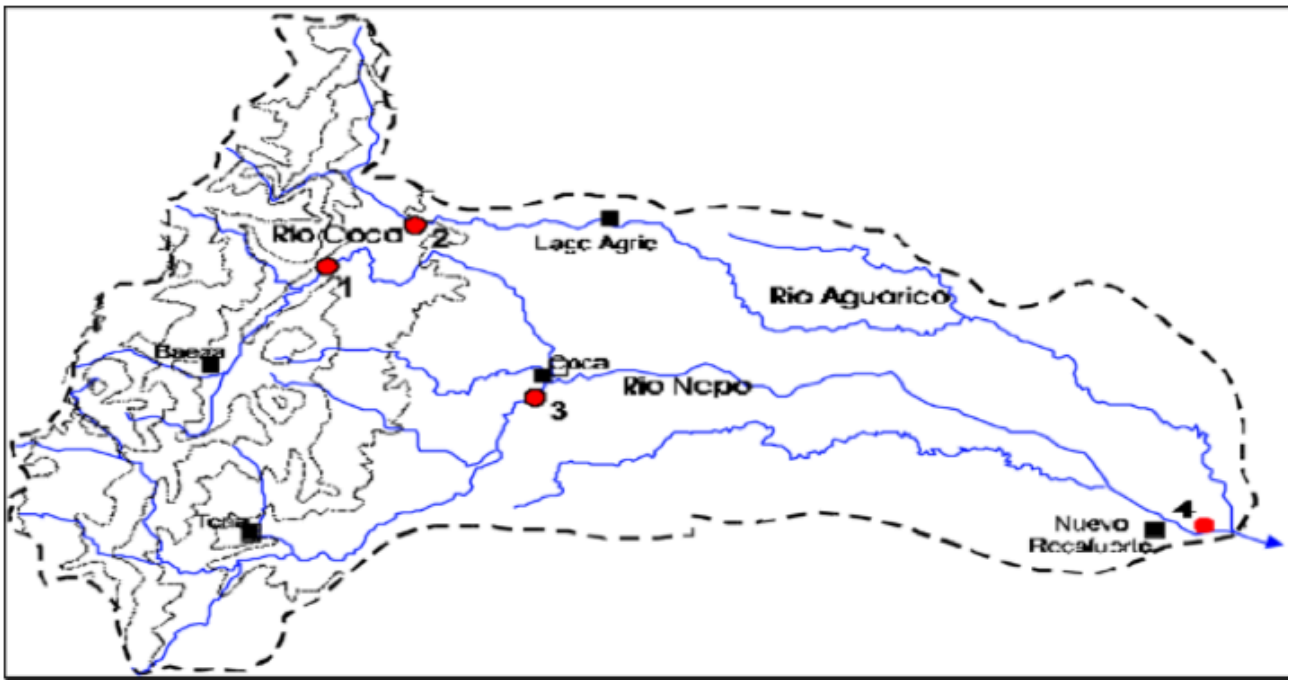
Map N.4



Performed by Plan Maestro Fluvial de Colombia (2015)

Based on operation references, the draught variation of Aguarico and Napo rivers (within the Ecuadorian territory) could change between 1.5 and 8.0 meters, so this condition allows navigability of medium and high capacity barges during 9 to 10 months per year (depends on of weather and navigability conditions), thus by adding another strength for the NBLN because of Amazonas river connection by two river affluents to reach Peruvian territory and at last taking Manaus as final destination.

Map N.5



Performed by ResearchGate.com (2016)

Competitive transit times:

Keeping the seaport of Esmeraldas (Ecuador) as a starting point and the rivert port of Manaus (Brazil) as destination point, lets see a comparison chart the land and river traffic into the networok, as well as another maritime transits to connect different origin and destination point between commercial ports from the Pacific ocean to the Atlantic region and vice versa:

Chart N.6

Transit time details

Route	Approx transit time
Esmeraldas – Manaus (including land voyage)	11-12 days
Manta – Manaus (incluyendo land voyage)	13-14 days (+18,1%)
Callao (PE) – Valencia (ES) – maritime	31 days
Callao (PE) – Valencia (ES) – NBLN	27 days (-12,9%)
Arica (CL) – Valencia (ES) – maritime	40 days
Arica (CL) – Valencia (ES) – NBLN	36 days (-10,0%)
Guayaquil (EC) – Manaos (BR) – maritime	19 days
Guayaquil (EC) – Manaos (BR) – NBLN	13 days (-31,5%)
Guayaquil (EC) – Valencia (ES) – maritime	29 days

Route	Approx transit time
Guayaquil (EC) – Valencia (ES) – NBLN	26 days (-10,3%)
Sao Paolo (BR) – Los Angeles (US) – maritime	35 days
Sao Paolo (BR) – Los Angeles (US) – NBLN	32 days (-8,5%)

Performed by LogisBusiness Group (2019)

If we get a simple average among 5 mentioned cases (excluding the comparison from Esmeraldas and Manta), the result is 14.6% of reduction in transit times (4 days approximately). This benefit means a optimization of transport costs and storage too. Additionally, the possibility of establishing the connection with African ports (at Pacific coast) is also feasible, by opening the portfolio of opportunities to explore emerging markets.

3.4 Improving of Logistics Performance Indicators (LPI):

According to most recent bi-annual study issued by the World Bank in 2018 and applied to Logistics Performance Indicators (IDL as acronym in Spanish), Ecuador is in 62nd place ranking among 161 countries and located in 7th place in the group of 20 Latin American countries. At the moment, within World and Latin American rankings, our country shows the best ranking position of the last 10 years; however, the average improvement of the indicators into same period of time does not exceed 2.02% every 2 years, giving us an average rating of 2.74 (2.88 for 2018) over 5.00 .

A lot and hard work is pending right now in order to get the index rises considerably in the next two or three evaluation periods (6 years), because there are Latin American countries located on leading positions (top 40 of the ranking, i.e: Chile and Panama) showing results that exceed 3.25-3.43 over 5.00 points in their logistics indexes (18.6% to 25.1% of difference). For that reason, a better and more competitive infrastructure is needed for achieving the main goal: offering the NBLN as a viable alternative for national and international trade.

3.5 Economic development of the region:

The direct and indirect influence of the NBLN in 9 provinces of Ecuador and potentially 2 southern departments of Colombia has been widely explained; however, we must add the benefits that the logistics will offer to different locations found out on the Napo river banks. We can mention about 22 populations, within Ecuadorian territory, another similar record within Peruvian territory before flowing into the Amazon River and another important number of locations from Iquitos (Peru), passing through Leticia (Colombia), until reaching Manaus (Brazil).

Map N.6

Performed by Transportation analysis of Manta-Manaos logistics corridor (2015)

Potential Tourism:

There are currently tourist offers from Colombia to cross the Putumayo River, the same situation also in Peru to explore the natural landscapes along the Napo River. Definitely, Ecuador can increase its offer to travel from the Pacific Ocean to the Amazon rainforest heart in Manaus and reach the Atlantic coasts, by creating an unconventional alternative and adventure tourism within a safe territory for thousands of local and foreign tourists as well.

Key strategies

Investments:

There is a NBLN infrastructure ready to work in logistics strategy (for instance: the Providencia river port, Esmeraldas port, airports and freeeways) as well as another must to be created, expanded or improved (roads, maritime port, distribution center) in order to use them to highest capacity. The following chart details a list of works and their budget for that purpose, by considering updated amount based on similar infrastructure located in countries of the region:

Chart N.7

Investments

Infraestructure	Budget and estimated building time
Road Esmeraldas – Puerto Providencia, expansion and improvement (421 km)	$210,000,000.00 (4 years)
Esmeraldas port, expansion and dredging	$18,000,000.00 (2 years)
San Lorenzo maritime port (for international cargo operation)	$141,600,000.00 (3 years)
Imbabura-Carchi Distribution Center (90.000m2)	$35,700,000.00 (2 years)

Performed by LogisBusiness Group (2019)

According to logistics projects built in Latin America (last decade), the average ROI is between 12% to 15% per year . The minimum investment would be $ 263.7 million dollars and maximum total investment would reach $ 405.3 million dollars, both of them paradoxically represent 10% and 16% accordingly of the corrupted amounts detected in the international report issued by the UN at the beginning of the year 2019 applied to 5 "emblematic" projects presented by the Ecuadorian government on duty between the 2008 to 2016 years. If we put aside this embarrassing reference for a few moments, it is feasible to grant the operation to the national and / or international private companies, as an option that allows to realize a short term plan.

Legislation, Alliances and Security

Regarding Ecuadorian legislation, there is a Main law of Production, which regulates the transit of goods in the country and the creation of Free Development Zones. If authorities could adapt a more dynamic legislation, it is possible to leverage the planned management for the NBLN with a strong, flexible and visionary legal framework, since the logistical needs are evolving faster, added to the international commercial alliances among 4 South American countries, creating logistics services for other continental regions and introducing enough technology to provide traceability in all traffic options.

This entire structure would not be viable without the security factor, by promoting the 4 countries integration also in that area through permanent military-police collaboration, information exchange, cybersecurity and implementation of physical surveillance supported by new technology that allows resources optimization in access to areas of recognized complexity. The economic dynamics of the entire region will generate the necessary taxes to maintain a reliable and permanent security structure for all interested parties.

Supply Chain Synchronization

The NBLN will allow the movement of a regional supply chain, being part of the global trend that is not only ruled by the best prices, today the real competition is between supply chains, thus demanding synchronization of: time, processes, resources, infrastructure and information. These factors make the difference for arriving faster and better towards other points, or simply the industry will offer just better prices without optimal delivery times. The

goal is to ensure the connection to other places or markets where the demand for end users for products and services is concentrated, thus reaching long-term benefits.

Direct benefits as result of Network development

There are several actual cases of logistics corridors, their operationy has allowed the sustained development of cities, locations, regions, countries, continents and large-scale commercial organizations, as follows:

- Horizontal and 4 Vertical Logistics corridors located at United States of Noth America, by connecting the Pacific and Atlantic oceans, plus north and south frontiers, through multimodal transportation as air, railroad, river and land ways.
- Land corridor betweem Arica (CL) and Sao Paolo (BR), including transit through Angentina and Paraguay, allowing permanent passing of full loaded trucks.
- Land corridor Asia-Europe, via Russia.
- European railroad services.

Below, a summary of direct benefits provided by the NBLN for Ecuador country is detailed as follows:

1. More exportation alternatives from northern border area of Ecuador.
2. Improvement of Logistics Performance Index (LPI)
3. Opportunities for local investments, especially applied to logistics service market.
4. Optimization of key resources, time and costs, increasing the regional competitiveness indexes.
5. Opening for commercial exchange with alternative and emerging markets (Africa, Midle East, etc).
6. Strengthen a multimodal connection with Far East, Australia, South America and Central-Southern Africa.
7. Improve the foreign participation through International Logistics Service Center (ILSC)
8. To accelerate the presence of Ecuador as a leading and strategic partner of the regional block "Alliance of the Pacific", passing from an associated country (projected at the end of 2019) to a member country of an organization that covers a population of more than 200 million and approximately 35% of the GDP of Latin America and the Caribbean.

Conclusions

We have been witnesses of missed opportunities due to a selfish Politics and the bad or untimely decisions taken indeed. The North Border Logistics Network may represent a strong base to align strategies within the international stage which already begun, with vertiginous changes in commercial, technological, transportation and integration matters.

Unfortunately, we have allowed that potential places such as San Lorenzo (maritime port of strategic location) and the border valleys between Imbabura and Carchi provinces are relegated to the background, in the shadow of Ecuadorian main cities where their structure already collapsed due to lack of planning and unjustifiably monopolizing the country's logistics administration.

The national strategic plans can no longer be established for 3 or 4 years only. We must look urgently (in fact, we are late) towards real priority projects that allow us to survive the next 30 to 50 years, at least. We must remember that reality is changing much faster than expected, including the incresing demand of goods and services that will require a challenging and innovative offer. We could remain as simple buyers of finished products and services or take advantage of our own resources (location, geography, infrastructure, etc.) to create a sustainable NBLN, in order to be ready for the new global competition announced by Michael Porter almost 30 years ago: "between supply chains strategies".

The investment is needed as above proved. The project may be financed through local and international alliances and 20,000 direct jobs could be required for the NBLN operation (with its respective contribution of indirect jobs, plus the estimated benefits by commercial dinamization). If Ecuador wants to be part of leading roles, we must work and strengthen the 5 factors that make the difference between governments, societies and the relationship between people: innovation, perseverance, security, trust and velocity of Supply Chains.

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