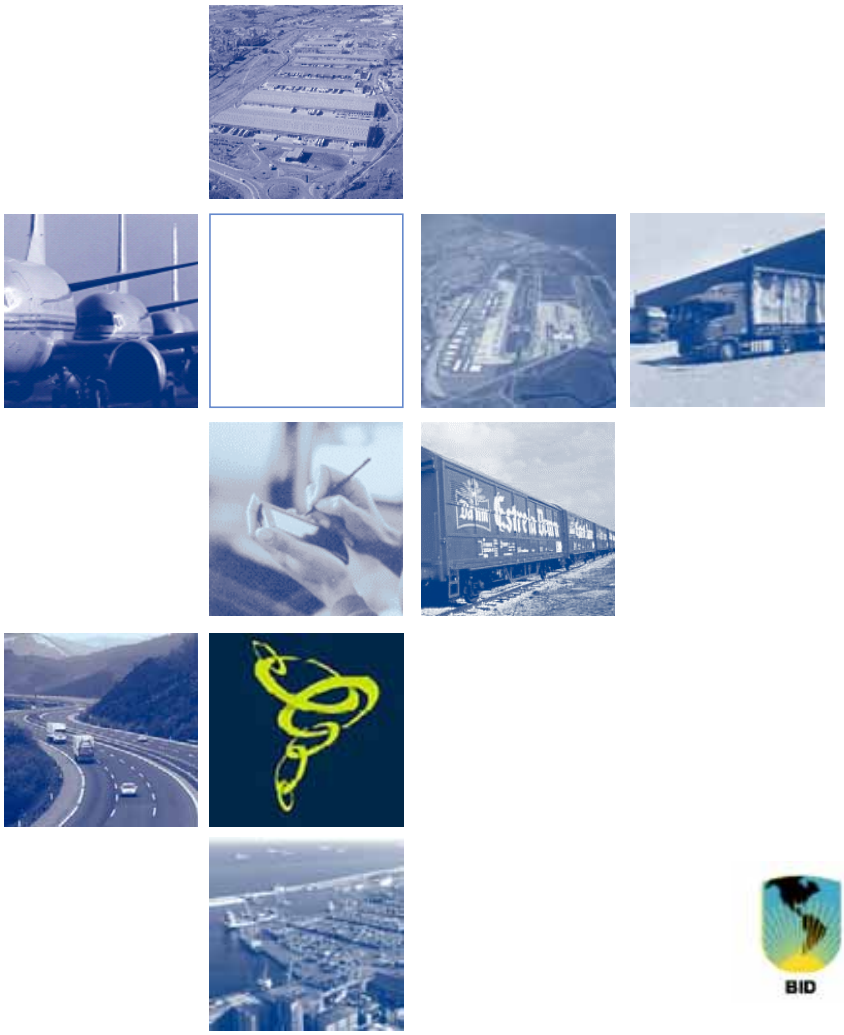
Volume 3 – Appendix I

Methodology for the analysis of the SLVAs potential in IIRSA hubs

(SLVA methodology – Original version)



Methodology for the promotion of the development of Value Added Logistics Services in IIRSA corridors

Agreement PMR.5.277.00-F

Final report

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ADVANCED LOGISTICS GROUP

Barcelona · Madrid
Caracas · Lima

GENERAL CONTENT

PART I: INTRODUCTORY ASPECTS

As a result of the meeting of the Executive Steering Committee (CDE, in Spanish) carried out within the framework of the Initiative for the Integration of the Regional South American Infrastructure (IIRSA, in Spanish), held in the city of Asunción, Paraguay, on December 02nd, 2005; the CDE agreed on the development of a methodology applicable to the IIRSA groups of projects as part of the actions to be taken in order to implement the 2006-2010 IIRSA objectives, aiming at analyzing the performance of the logistics chains (or in an added sense, the logistics families) that are users of a group of projects, as well as identifying actions (some of which are typically rated in the Sectoral Processes corresponding to the transportation sector) aimed at promoting the development and diversification of value added services for said logistics chains within the integration and development hubs (EIDs, in Spanish). It is within this framework that a methodology is hereinafter proposed for supporting the logistics development of the IIRSA.

Therefore, this document develops a methodological proposal prepared on request of the BID and the CAF about the method for directing the second stage of the IIRSA planning within the Logistics area. Within said context, the report submitted is organized in three parts:

i. The proposal related to scopes and objectives, as well as the general approach of the work in order to deal with the logistics issue within the IIRSA.

ii. A methodological proposal created specifically for the management of the development of the logistics within the IIRSA groups of projects.

iii. A preliminary application of the methodology on two IIRSA groups of projects.

I.1 Objectives and scope of the methodology

The general objective that is pursued is to generate an instrument that shall make it possible for the key public or private participants involved in the Initiative for the Regional South American Integration (IIRSA) to analyze, in a structured way, the logistics practices of the different productive sectors that are present in a group of projects or corridor, previous segmentation of the corresponding logistics chains or families, with the ultimate aim of identifying opportunities for the diversification of logistics services that shall promote the efficiency and/or adding of value for the *target* segments identified, as well as defining the proper incentives from the public and/or private sectors for the provision of said offer.

The resulting methodology will have to be applicable to the set of the groups of projects defined within the IIRSA, in such a way that, in each case, the following items must be taken into consideration: the particular conditions of the market, operations, planning, structure of the chains, agents, and territory. The mentioned items affect the performance of the logistics activities and that determine the opportunities of improvement as well as the needs for related investment.

Among the specific objectives considered, the following ones are included:

a. To design a general framework for the evaluation of the degree of maturity and performance of a specific logistics network, from a structured process for obtaining information based on contrasted data and on the opinion of the involved agents.

b. To cooperate with BID and CAF in the identification of two IIRSA groups of projects where analyzing the logistics operation is considered pertinent;

c. To conceptualize the logistics topics to be included in both groups of projects;

d. To prepare a working plan that includes site visits, interviews to key agents in each group of project, gathering of secondary information in the corridors and discussion of the results with the BID and CAF team;

e. To prepare a conceptual analysis in the selected groups of projects, as well as to prepare a set of recommendations that shall make it possible to include the logistics topics in the IIRSA Initiative, with the purpose of extending the benefits to other countries in the region.

According to these objectives, the scopes planned include a first applicability test of the methodology to two groups of projects that shall have objective conditions for being selected as pilot hubs. The selection of these corridors will ultimately depend on the secondary information currently available, and it is expected that they shall work as a model for the validation of the methodology in a second analysis stage, where the gathering of the required data directly from the information sources can be possible.

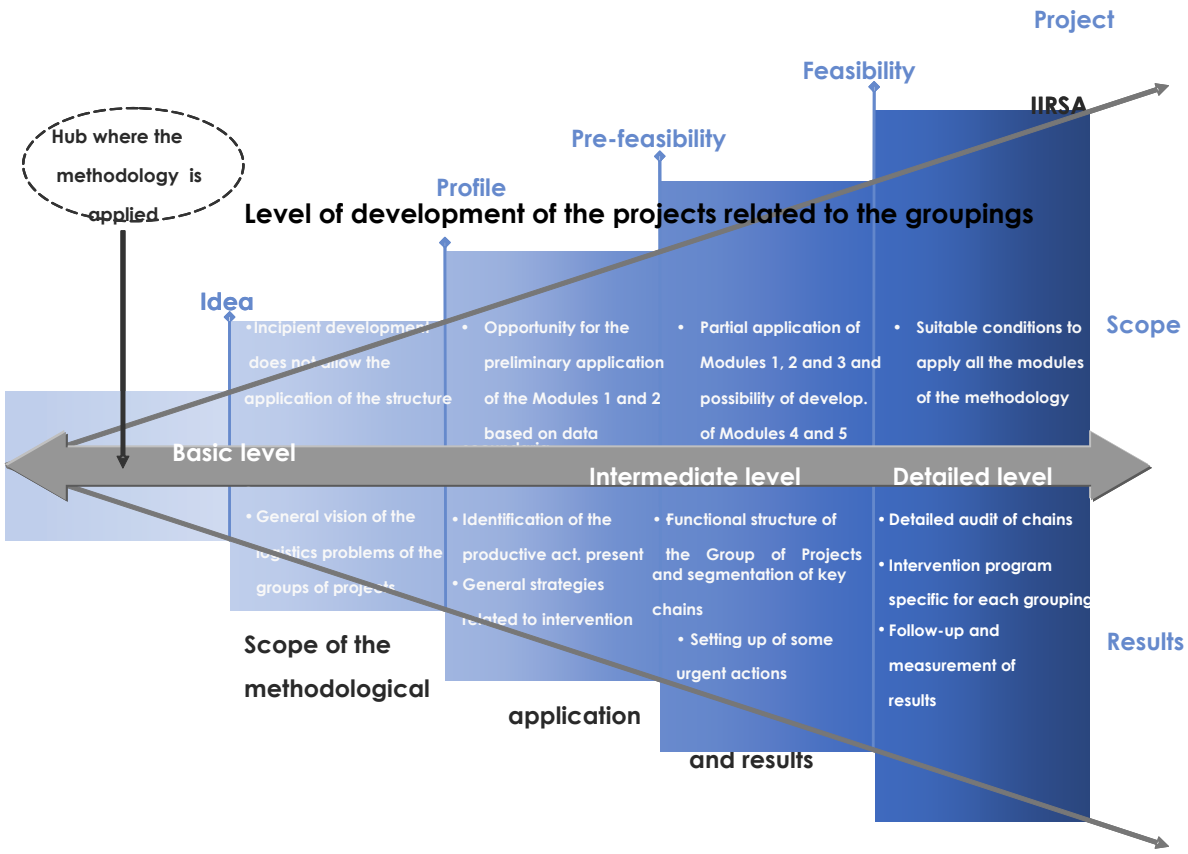
I.2 Premises for the methodological development

Just as it has been previously mentioned, before the conceptual development of the methodology, it becomes necessary to carry out some basic precisions, which integrate the general framework followed for its definition:

- First, it is convenient to highlight that this document illustrates a methodology, not a method. In such sense, it is flexible in its application, allowing the user to define the degree of depth.
- The methodology has been developed for the IIRSA, which is where the terminology applied comes from (integration and development hubs, anchor projects, group of projects, etc.); however, it has been widely conceptualized in order to be able to be applied in the analysis of a transportation corridor.
- The methodology is applied to the macro analysis of networks and not to the micro logistics focused on an industry, which is the reason for the importance given to the components of strategic, functional, and planning nature.
- The depth and precision in the application of the methodology will vary according to the information available and the level of development of the projects related to the group of projects. It is recommended that the level of precision of the information is consistent with the stage of the Life Cycle where the key projects considered are, within a specific group of projects, i.e., Idea, Profile, Pre-feasibility, Feasibility, Design, Investment, Operation. This aspect will be specifically dealt with in step 1.2 of Module 1, where the scope of an application for a specific corridor is determined.

According to the last premise indicated, the following graph illustrates the opportunities of application of the methodology according to the development stage where the projects that integrate a specific IIRSA group are. Correspondingly, in the figure it can be observed that at the idea and profile level, the expected results of the methodology do not allow to reach an audit of the current situation or to define concrete actions, which will only be able to be properly specified if there is a development level that is higher than the feasibility one.

Figure I.1. Relationship between the life cycle of the projects and the scope of the methodology



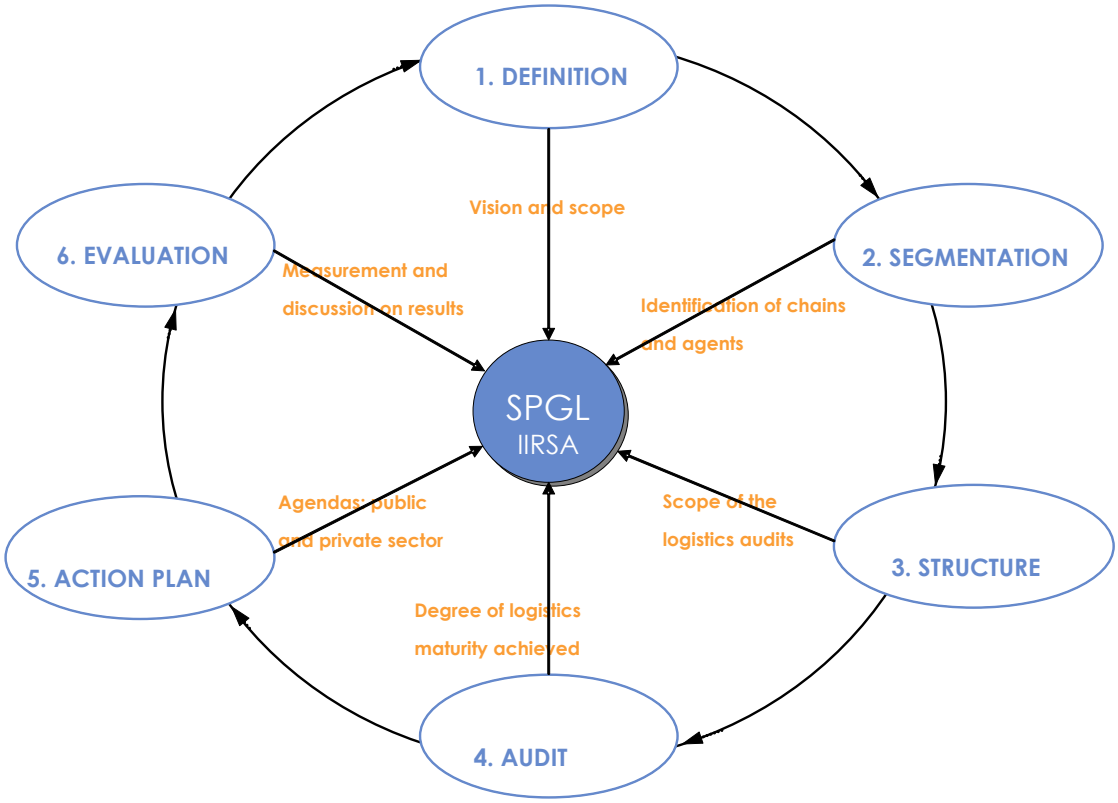
PART II: METHODOLOGY FOR THE MANAGEMENT OF LOGISTICS DEVELOPMENT

II.1 Development of the general methodology

The general methodology is structures in sequences and is composed of six stages created around the Sistema de Planificación y Gestión Logística (SPGL, in Spanish, or System of Logistics Planning and Management) of IIRSA. This SPGL integrates, in a coherent way, the concrete results obtained from each methodological stage.

Figure II.1 shows the methodological cycle and the way in which each stage provides information for the SPGL. This will allow the decision-making process aimed at conducting the logistics development in relation to the different territorial zones of the IIRSA hubs and groups of projects.

Figure II.1. General methodological cycle for the management of the logistics development



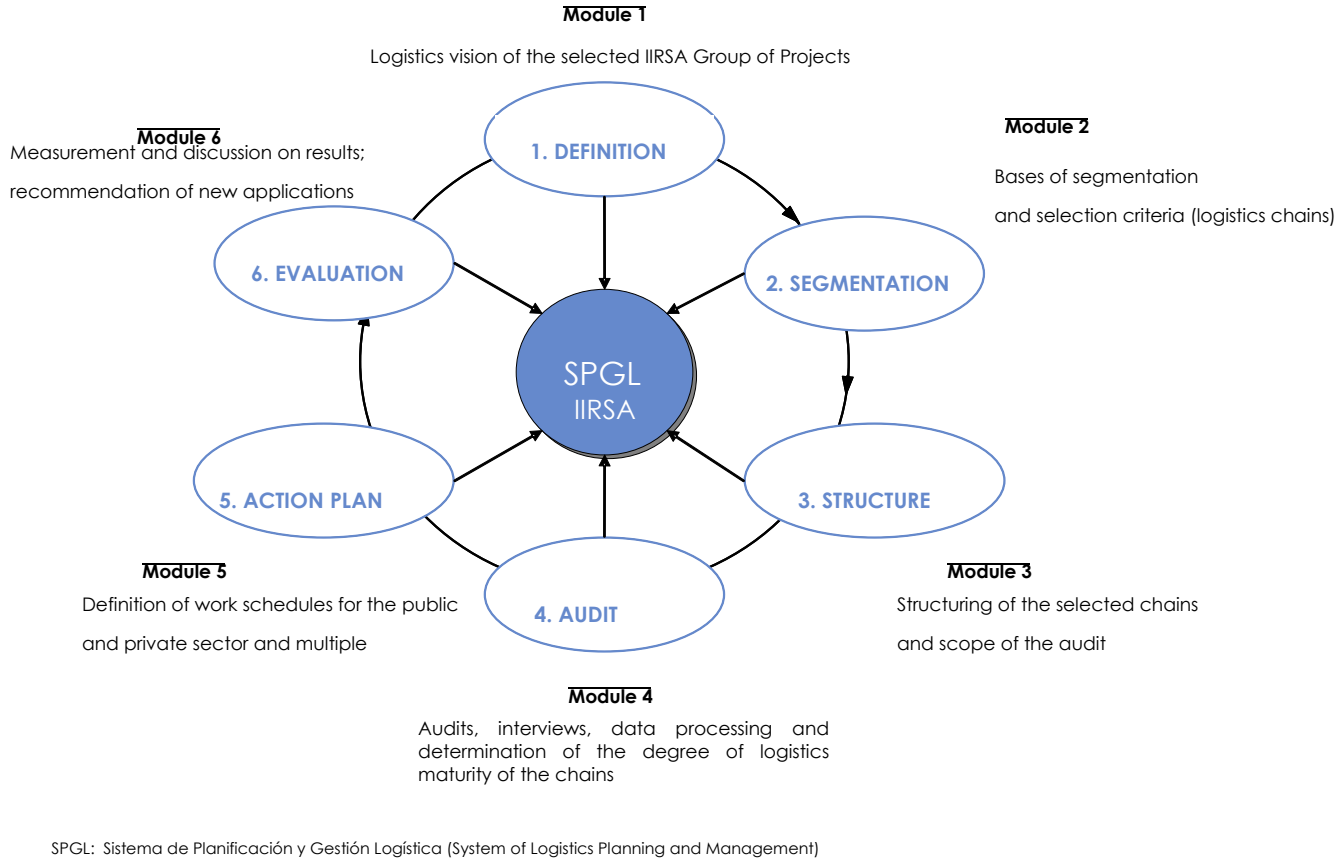
SPGL : SISTEMA DE PLANIFICACIÓN Y GESTIÓN LOGÍSTICA (SYSTEM OF LOGISTICS PLANNING AND MANAGEMENT

The methodological cycle started with the definition stage and follows with a continuous process and with relationships linked to precedence among stages. Nevertheless, its modular structure provides enough flexibility to obtain partial results and formulate preliminary recommendations at the end of each stage, according to the progress of the information available in each Group of Projects.

II.2 Synthesis of objectives and results by module

The process of logistics study and analysis of a group of projects starts with Module 1 (logistics vision) and ends with Module 5 (introduction of an Intervention Program with work schedules specific for the public and private sectors). Module 6 is a complement that allows the measurement of results and the generation of a learning process that may be used in the logistics analysis of other groups of projects.

Figure II.2. Methodology modules and content



SPGL: Sistema de Planificación y Gestión Logística (System of Logistics Planning and Management)

Each module has its own activities or its methodology steps to be carried out. As a consequence, two modular circuits are formed. Here, the ordered study of the logistics aspects related to each selected IIRSA group of projects is developed. In each module, a set of development activities is taken into consideration, which adds up to 17 steps.

The analysis that corresponds to modules 2 and 3 is carried out simultaneously since the structure of the chain is decisive for the segmentation or identification of the respective logistics family.

In order to obtain a global vision of the methodology, below there is a table with the following information: objectives, tasks to be carried out, tools that the methodology offer to support the development of the respective module, products expected for each of the different modules and steps:

Table II.1. Synthesis of modules and methodological steps

N°	Module	Steps	Objectives	Activities / Tasks	Tools	Products
1	Functional definition	Appropriateness of the logistics analysis	To verify logistics interest of the GP	Gathering of preliminary information available and validation of indicators	Eligibility criteria. List of relevant information to be gathered	Interest of the GP for the evaluation of the logistics potential
		Evaluation of the functional scheme	To set functional and territorial limits of the GP and area of influence	To determine networks and flows between production-consumption spaces	Demarcation criteria and structuring of the system of territorial centers	Functional and territorial limits of the GP
		Scope of the evaluation	To focus the level of analysis on the following modules	Link between the GP with the life cycle of the projects	Guide for the determination of the level of analysis depth (*)	Recommendations related to scope and entities to be contacted
2	Segmentation	Identification of the productive activities and the relevant agents associated	To determine the sources of information available	To prepare a list of agents according to typology and contact them	List of typology of agents to be consulted	Work program and list of agents to be interviewed
		Interviews to the agents	To obtain basic information to carry out segmentation	Application of questionnaires	Guide for the preparation of interviews and questionnaire model (*)	Answers to the questionnaires
		Determination of logistics segments	To identify homogeneous patterns and similar demands. To identify relevant agents to be deepened in following stages	Application of segmentation criteria	Criteria or guidelines for segmentation	Priority list of segments to be analyzed
3	Structure of the logistics chains	Identification of the particular and/or local agents	To deepen the study of the participation degree in relation to the agents, at a particular and local level	Second interview to the general-level agents and list of particular and/or local agents	List of the typology of agents to be consulted (*)	Work program and list of agents to be interviewed
		Interviews to the agents	To gather detailed information of the structure and dynamics of each logistics chain	Application of questionnaires	Guide for the preparation of interviews and questionnaire model (*)	Answers to the questionnaires
		Determination of the organization and structure of the chains	To determine the logistics typologies and structures that are present in the GP	Sequential process to build the logistics chains	Example for the construction of the structure of the chains	Detailed graphing of the logistics chains and agents involved

Nº	Module	Steps	Objectives	Activities / Tasks	Tools	Products
4	Logistics audit	Scope of the application of the audit by chain	To determine the audit. Parameters applicable to each corridor	To define the particular conditions of the corridor and the suitable parameters for the evaluation	Criteria and indicators of the evaluation of maturity and logistics performance (*)	List of parameters to be evaluated in each logistics chain and agents to be interviewed
		Application of questionnaires	To know the agents' perception regarding the degree of logistics maturity and performance of each chain	Perception interviews for the agents involved in the different chains	Model of perception survey and interviews to the agents (*)	Opinion of the people consulted and scores obtained in each parameter
		Results of the audit by corridor	To set the degree of logistics maturity of the different chains and their requirements	Identification of sectoral problems and operational requirements by chain	Average result matrixes and graphs related to positioning according to the areas of each chain	Result matrixes and requirements for the logistics strengthening of the chains
5	Execution program	Preparation of recommendations related to action	To recommend actions to increase logistics maturity and fulfill infra-structural needs	Analysis of the audit results and development of action proposals	List of regular actions aimed at the operational and functional improvement of the logistics chains (*)	Proposal of concrete actions for the corridor
		Work agendas based upon consensus	To agree on work areas and agents involved	Convergence of results with national and regional investment programs	Work meetings in the countries and the CCT	Execution program and agents responsible by corridor
		Definition of pilot projects and proposals for technical and operational support	To identify priority projects and financing needs	To give priority to pilot projects and the work sequence and schedule within the Action Plan of the Corridor	Work meetings in the countries and the CCT	Concrete list of projects and action needs
6	Follow-up and evaluation	Logistics data base	To keep the IIRSA follow-up system for projects updated	Supplying to the project base (Central IIRSA and by country)	Integrated IIRSA data base platform	Information of projects by corridor in the data base
		Measurement and monitoring of results	To evaluate the progress of the execution program designed as a result of the application of the methodology	Inclusion of the project in the project monitoring system of IIRSA. Measurement of the degree of progress of the actions planned	List of the evaluation indicators	Reports on the progress of the action plans by corridor

II.3 Detailed description of the methodological modules and steps

After having presented the general methodological framework, as well as the expected purposes and results, the sections that follow in this document describe, in detail, each of the

(*) to be defined

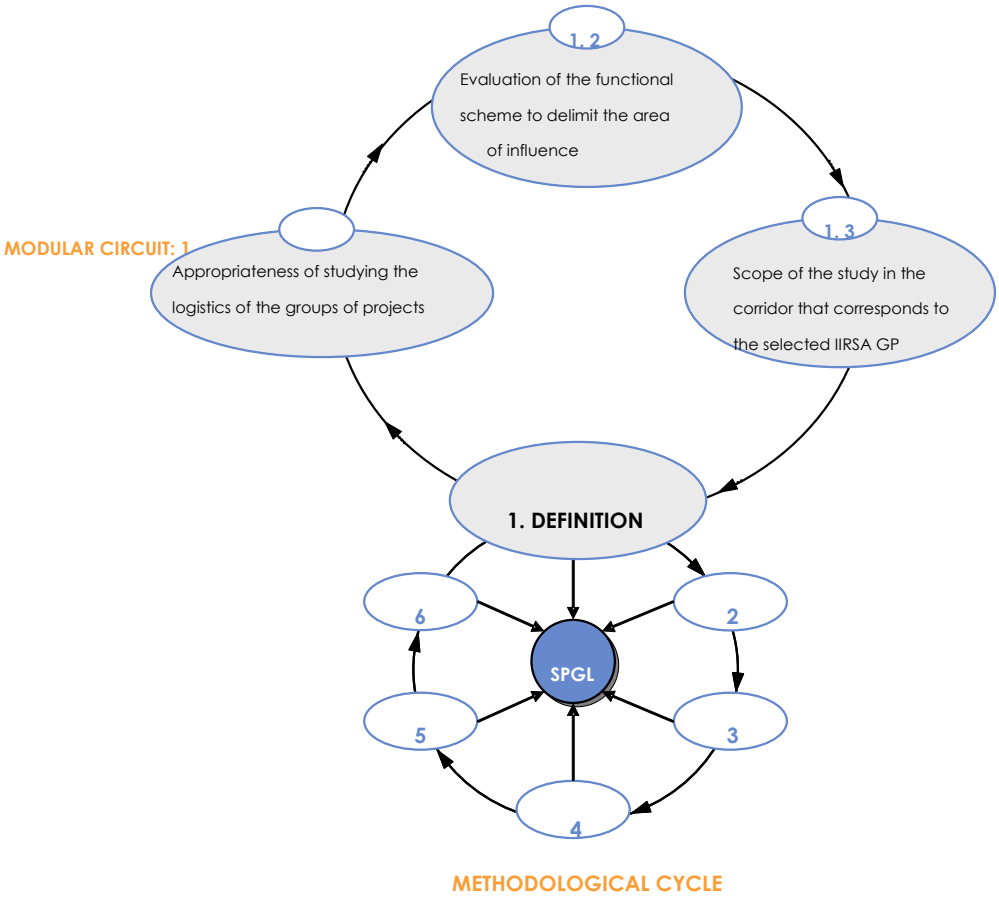
modules and steps that must be orderly undertaken in order to complete the analysis, identification, and programming of actions about the logistics chains that operate in the territorial space related to an IIRSA group of projects (Logistics Corridor).

II.3.1 MODULE 1 - Functional definition

The objectives of this first module are to be able to define the functional and territorial scope of the Group of Projects subject to the analysis, as well as to determine if said evaluation is appropriate and convenient according to the inherent features of the GP and of its potential for the development of value added logistics services. With these two elements, it will be possible to establish the scope of the appropriate evaluation for the particular features of a specific corridor.

Consequently with the aforementioned purposes, there have been considered three essential tasks for carrying them out, which are illustrated in figure II.3 and are hereinafter described:

Figure II.3. First modular circuit (3 Steps)



M1/Step 1.1. Appropriateness of the logistics analysis of the group of projects

As starting point, it must be taken into account that not every IIRSA Group of Projects can be rated *a priori* as a corridor where logistics chains or families operate and, consequently, be subject to the methodological application that is hereinafter developed.

Regarding the aforementioned, it is considered essential to verify the logistic interest of the corridor and the convenience of applying the methodology, based on a series of eligibility criteria that can be verified from the general information available in each case.

The justification of this first analysis filter is conceptual, as the logistics applied to networks must be understood as a differential value added contribution to a product or groups of products, and not as an element inherent of the production chain of a certain segment of goods. In this sense, the methodological application differentiates the **individualized** logistics of those raw materials, semi-manufactured products, and even finished products of mineral origin (iron, carbon, aluminum, cement, etc.) or vegetal origin (soy, cereals, wood, etc.) that are

moved in bulk or semi-bulk, from the **diversified** logistics where the operations carried out are those that add commercial value and that go beyond transportation and storage of products.

Thus, in the first group it is considered that it exists a logistics treatment that is dedicated and that has a relatively simple chain structure (see Module 3 for the definition of the structure of a specific chain), with few participants along its development, and scarce integrations with other chains; in which case, the chain entirely coincides with the logistics family. In these cases, the logistics is consubstantial with the production chain, irrespective of the fact that in the same corridor several producing agents or those transforming the product participate. On the contrary, in the case of the diversified logistics, it is possible that within a corridor there is one or there are many producers, but the relevant fact is that the logistics function is independent from the production and that it constitutes an interest business for specialized operators. The examples in this latter case can be extremely varied. Due to their complexity, remarkable cases are the chains related to the textile and footwear segments, as well as the ones related to cars, food, and perishable products in general, chemicals, mass consumption products and home products, and paper, among others.

According to the aforementioned premises, the methodology defines a filter of eligibility criteria, applicable to a concrete group of project, which can be used as measurement of their aptitude for the analysis. The information required for validating these criteria is of general nature and will have to be obtained from publications and official statistics of common use.

Hereinafter there is a list of the criteria considered for valuating the applicability of the methodology to a concrete Group of Projects, as well as the information required and the operational indicators applicable in this case. Correspondingly, it is expected that during the evaluation of a Group of Projects, this shall have the following features:

a) That it constitutes a consolidated transportation hub where there exists basic infrastructure, being it desirable the presence of top-level nodal elements such as ports, airports, load transference centers, etc.

b) That it presents a high consumption/production capacity, with an important flow of value added goods capable of supporting investment and operation costs of advanced logistics activities.

c) That it includes a high potential of development of the IIRSA intra-communitarian commercial component. However, that does not exclude the possibility that the logistics corridors shall be able to canalize importation/exportation flows for certain logistics families with limited reach to one or several countries.

d) That it offers real opportunities for the financing of some concrete infrastructure projects or projects that strengthen the logistics activity (value added logistics services).

e) That it presents a functional complexity level that is centered on products or product families that shall fulfill the previous definition of diversified logistics, where the logistics activity shall constitute an interest business for specialized operators.

As from these general criteria, in the following table it is proposed a list of indicators that will have to be verified in order to determine the logistics aptitude of the analysis. Each of these indicators has a valuation range that will make it possible to determine if the Group of Projects fulfills the minimum level required to be considered as a candidate for the methodological application:

Table II.2. Criteria and operational values

Criteria	Indicator	Operational value	Required information
a. Existing infrastructure	a.1. At least, there must be a first-class port and airport (10 pts.) a2. There must be a first-class port or airport (5 pts.) a3. There must be a provincial port or airport (2 pts.)	a1 y a2. First-class nodal infrastructure: ports with flows > 100,000 TEUs o 1 MTMA, or airports with flows > 10,000 tons or 1 Mpax/year a3. Provincial nodal infrastructure: at least 20% of the expected flows for the first level	Annual statistics related to port goods traffic or airport-port load or passenger traffic
b. Consumption/ production capacity	b1. At least, there must be two primary-rank cities or 5 medium-rank cities (10 pts.) b2. At least, there must be 5 secondary-rank cities in the GP (5 pts.)	b1 y b2. Superior-rank cities: 500,000 inhab., medium-rank cities: 200,000 inhab., lower-rank cities: 100,000 inhab.	Official census and spatial distribution of the main cities in the corridor
c. Intra-community potential	Medium annual growth of imports and exports among the countries in the corridor. c1: For high growth in, at least, 3 diversified logistics segments 10 pts. will be assigned. c2: If growth is limited to only one segment, 5 pts. will be assigned	A sustained mean of 3% (inter-annual), during the last 5 years, will be considered as high growth	Statistics of the goods flow among the countries or regions of the GP (tons or value)
d. Financing opportunities	Evaluation of the people responsible for the technical matters in each country (10 to 5 pts, according to the importance and expected impact of the project	The impact of the projects on the improvement of the logistics function must be defined in specific documents	Pre-investment programs developed by the entities involved. Economic and social impact studies
e. Logistics complexity	e1. At least, there must be 3 productive segments of diversified logistics (10 pts.) e2. At least, there must be one diversified logistics family (6 pts.)	In e1 y e2, there must be present at least some of the families of the following segments: mass consumption, textile and footwear, car industry, food products and perishable products, chemicals and/or paper. For each additional family, two points will be added to the required minimum in e1 or e2	Industry or commerce chambers according to product families.

Once the results of the evaluation are obtained, and the points acquired for the corridor in each of the criteria are added up, it becomes possible to determine the appropriateness of

the logistics analysis. It is expected that the Groups of Projects that are candidates for the methodological application reach, as a minimum, 20 points out of the 50 ones available.

M1/Step 1.2. Evaluation of the functional –territorial scheme

As from the results of the previous step, it is understood that a Group of Projects has enough logistics potential in order to be considered a candidate for the performance of the methodological analysis.

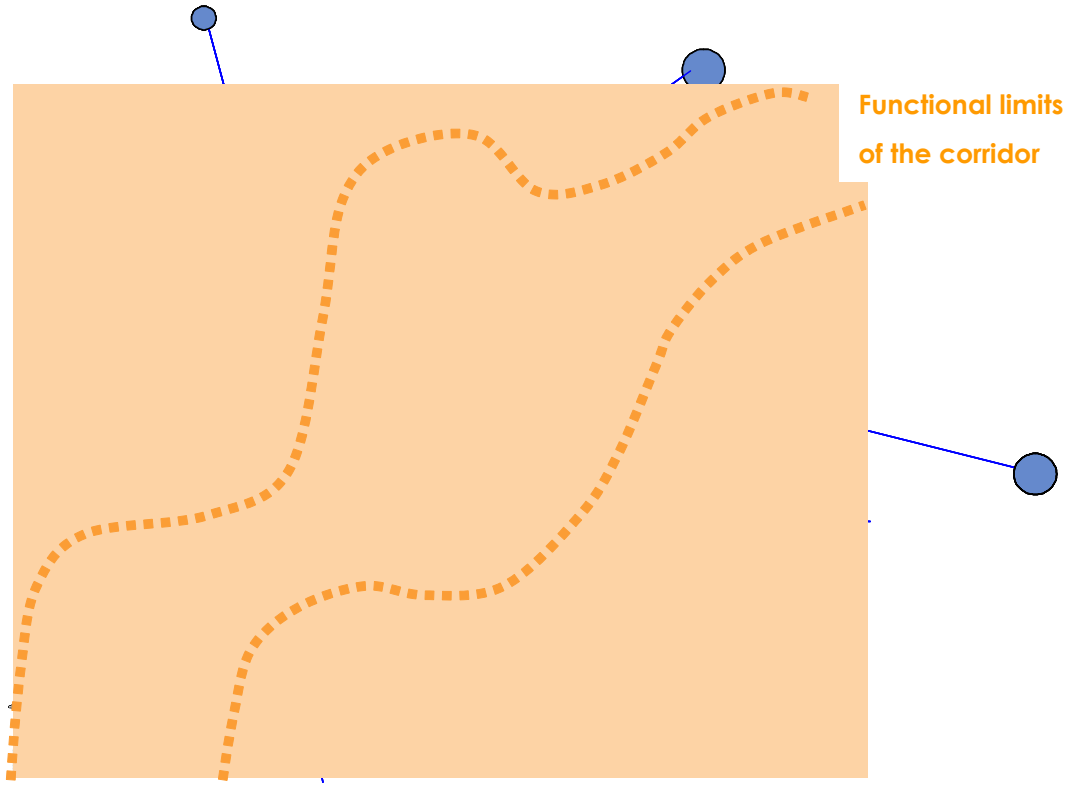
In the previous context, the first step of the application of the methodology consists of establishing the functional and territorial limits of the Group of Projects or logistics corridor selected and its area of influence. This analysis is based on the classical approach of the networks or systems of cities, through which it becomes possible to identify those productive and consumption areas of greater logistics weight, from which a network of load and people flow is progressively built that configure an interrelated territorial space.

Thus, the first step of this task consists of establishing the specific weight of the different cities or productive zones that, *a priori*, integrate a group of projects. For the estimation of said weight, there can be used population or spatial extension data but, preferably, there must be used other data more related to the logistics sector, such as industrial production value, number of industries, load volumes, etc., all of which, as long as possible, differentiated by production segments.

From said initial data, the methodological application requires that the load flows between cities are registered through accounting entries (with secondary or primary information depending on the level of precision in the application of the methodology). This sort of information is usually obtained from very different sources, which is the reason why it is usually necessary to carry out a data homogenization. The graphical representation of these flows will make it possible to clearly identify the functional relations among the different cities and/or production centers; therefore, it becomes possible to establish the territorial scope of said relations and, consequently, the functional and spatial form of the group of projects.

One last step consists of establishing the criterion of "minimum cohesion", generally determined by the "minimum volume" that sets the limits of the territorial scope of the integrated network. This criterion can vary according to the particular conditions of each corridor or group of projects, but the most usual measurement is to detach those links where the volume observed between two centers shall be just 10% of the medium flow existing in the set of relations studied. The only relevant exception to this rule is constituted by those specialized flows of production centers with a strong dependence on a specific market or on a concrete transportation facility, as it may be the case of an exports port Terminal. The following figure illustrates a classical example of the organization of a system of cities and their territorial expression.

Figure II.4. Example of a system of cities



Usually, the gathering of information for the performance of the functional-territorial analysis must be centered in the cities of greater demographic or institutional weight, carrying out searches in information centers of public or private institutions (chambers of commerce, industrial chambers, etc.) and even performing brief interviews with the ones responsible of these entities in order to access the necessary data in the fastest possible way. This preliminary information will allow a first identification of the bodies that will have to be deeply interviewed during the development of modules 2 and 3 of the methodology.

M1/Step 1.3. Scope of the logistics study in the selected group of projects

The first methodological phase ends with the establishment of the scope of the evaluation that will have to be performed in the subsequent modules, for which it becomes essential to carry out a first valuation of the information available and of the sources to be contacted, as well as of the degree of depth that is expected to be able to be achieved for a specific logistics corridor.

The scope of the studies to be carried out will be according to the results wished to be obtained considering the complexity of the Group of Projects. In a concrete case, it can turn out to be interesting or desirable to perform general analyses in order to apply again, afterwards, the methodological cycle with greater depth.

Regarding the aforementioned, the concrete applicability of the methodological phases can be assimilated with the classical life cycle of the projects, considering that the depth or intensity of the analysis will depend on the quality of the information available and of the degree of development existing in the productive and logistics activities in a specific corridor. Thus, in case it is a scarcely structured corridor, it will be considered that it is at the "Idea" level within the projects cycle, whereas if there is only secondary information available, it could be considered to be at the "Profile" level. The methodological application at more advanced levels (Pre-feasibility, Feasibility or Design) would require detailed primary information and a level of logistics activity sufficiently developed.

The more suitable applicative scope will come, in any case, defined by the features inherent to each corridor, the resources available for the direction of the logistics analysis, the time waited for obtaining results, the availability of data, the technical appreciation of the members of each work team, and the quality of the results expected to be obtained.

II.3.2 MODULE 2 - Segmentation

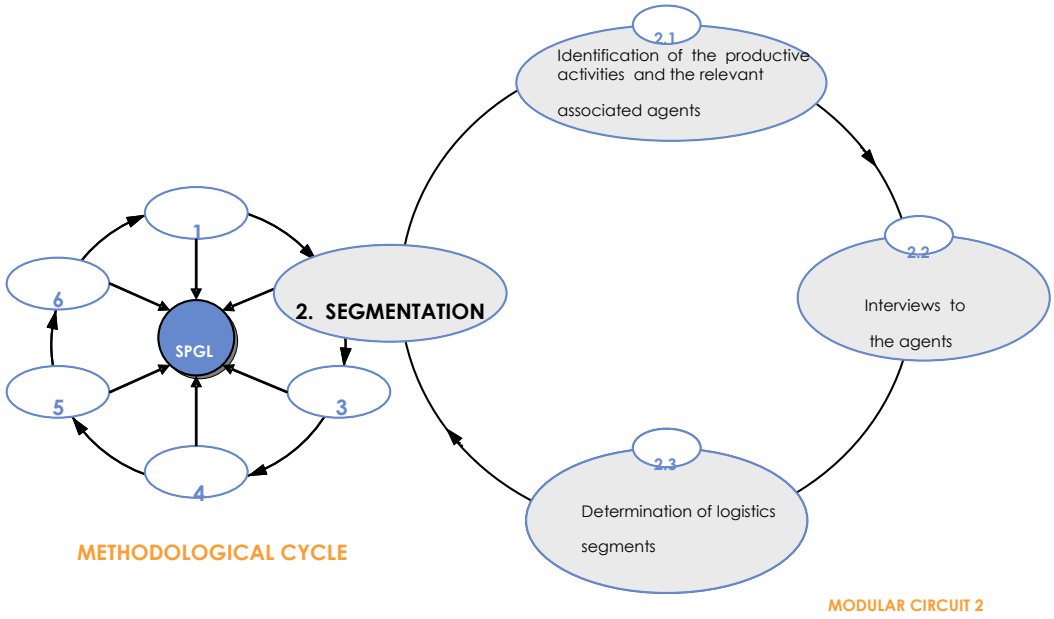
From the point of view of the logistics analysis, a corridor is conceived as a territorial platform where networks of activities of production, marketing, distribution, and consumption of goods are integrated; generating flows of goods that are functionally and organizationally expressed through different logistics chains or families.

Therefore, the first step for the analysis is to properly understand which markets and products are present in the corridor, and the logistics practices that characterize them. The purpose of the **segmentation of logistics chains** is to evaluate, in a disaggregated way, *groups logistically homogeneous* that shall be capable of a differentiated analysis, which must be translated as the identification of the **logistics families** that operate in the corridor.

It is necessary to observe that the segmentation will have to be adapted to the conditions of production and consumption that are specific of each corridor, which is the reason why it is expected a mixture of added chains (e.g. Chemicals or Textile), with others very disintegrated (e.g. Paint or Button industry) in the same space. Therefore, the segmentation process will make it possible to better understand the corridor, providing ordered data about specific topics related to markets, products, commercial flows and value, origins and destinations, logistics activities and practices, infrastructure, etc. These data will also be useful material for the two subsequent modules, which as indicated before, can be carried out almost simultaneously.

According to the aforementioned, and considering the need to have primary information in order to carry out the segmentation, modular circuit 2 is initiated with the identification of the productive activities existing in the Group of Projects and of the relevant agents related to them. From this activity, it is defined the list of agents to be interviewed as well as the concrete content of said interviews. The general result of this module will make it possible to segment the production-consumption markets existing in each corridor. The contents of the three steps considered are hereinafter detailed:

Figure II.5. Second modular circuit (3 Steps)



M2/Step 2.1. Identification of markets and relevant agents

The purpose of this section is to identify the productive activities and the relevant agents related to the Group of Projects subject to analysis. With this purpose, a first prospective work will have to be carried out, which will have to be oriented towards establishing the information sources available by means of the identification of all the union associations of industrial producers and operators of the logistics chain existing in the corridor.

As a general rule, the identification of the macro associations of producers and operators must be centered in those cities that lead the scheme of territorial centers identified in step 1.2 of the previous module, initiating the search from direct contacts with the ministries and official bodies in charge of the industrial production, commerce and/or consumption in the capital cities of each country or in the main administrative offices at regional level. Afterwards, from this first contact, there will have to be identified the chambers of commerce and industry of more added territorial level, from which it will be possible to obtain more specific data about other regional or local associations or federations that will be afterwards contacted during the performance of the activities planned in modules 3 and 4.

The result of this activity will be the preparation of a first list of unions and agents, ordered by typologies, which will be progressively filled, in a successive way, during the development of the following modules of the methodology. In a parallel way, it will be necessary to prepare a hierarchic classification of the importance of these agents for the methodological analysis, as well as a working program where the contacts and dates of the interviews to be performed shall be detailed.

M2/Step 2.2. Interviews to the agents

Once there is an interviews´ program available and the pertinent contacts are made for their performance, there must be a questionnaire of general application to the set of the agents identified in the previous step.

The questions to be included in the questionnaire will have to be adapted to the particular features inherent to the corridor, as well as to the structure of identified organizations, although its common orientation will be the segmentation of the different production-consumption markets present in the Group of Projects considered.

In general terms, the questionnaire will have to have a first part destined to knowing the structure of the interviewed organization, the number of union associations that depend upon it, the relations among them, and their territorial scope. This information becomes of particular interest for the posterior phases of the methodology, where the structure of the logistics chains and their functionality shall be deepened.

The second block of questions must be focused on establishing which are the main production segments that exist in the corridor, with data about the annual production volumes, where possible, and also data about the flows of goods that are moved among the main cities and productive centers. The obtaining of these data will allow a first quantitative approximation to the importance of the different segments within the set of each union association. However, it is important to take into account that, where possible, said volumes will have to be referred to the interest corridor.

Finally, the questionnaire will have to include a set of questions of qualitative nature, dedicated to knowing the opinion of the ones interviewed about the relative importance of each segment or logistics family within the corridor. In fact, the most suitable corresponding practice consists of making sure that, as a result of the interview, a first segmentation of logistics families existing in the corridor shall arise, which will have to be afterwards contrasted and validated with the available statistical data.

The aforementioned makes clear that, not only the segmentation process but also the rest of the methodological modules that are hereinafter presented constitute a model of successive approximations that can be progressively refined and perfected in a continuous way. In this sense, it is not essential to reach, at first, a definitive or exhaustive segmentation, being it more important that it shall be sufficiently manageable in order for the work of the subsequent modules to be able to be approached efficiently and from a practical perspective.

M2/Step 2.3. Establishment of the logistics segments

The segmentation stage finishes by identifying, in a general way and towards the interior of the industrial sectors (defined from the union associations), the homogeneous families of the logistics chains that will be subject to a detailed analysis through the process of structure of the chains (Module 3) and Logistics Audit (Module 4).

As an example, if it is considered the Group of Projects Nº 9 of the Andean Hub, which is integrated by the Lima – Arequipa – Tacna – Desaguadero – La Paz connection, it is considered advisable to start the identification of the union associations in the capital cities of Peru and Bolivia, and in a second stage, in the regional centers of Arequipa and Tacna.

In the case of Lima and La Paz, it is to be expected that the preliminary conversations with the corresponding ministries of commerce, production, or industry shall make it possible to identify the most important associations of producers that operate in said corridor (Textile, Food, Building, etc.).

From the interviews with representatives of the associations or federations of producers at national level, it will be possible to progressively identify general or more concrete segments, depending on the degree of development each case. Following the example set, within the group of food products that is moved between Peru and Bolivia, it is probable that concrete segments get to be defined from products such as oil, food for animals, or dairy products; whereas within the segment of building materials, may be only the segment of ceramic floor tiles and flagstones stands out as a separate segment, considering that the chain is

internationally generated and it uses specialized services of load service and nationalization of the goods in border centers; and in the textile group it may not be possible to identify any product specially relevant and it may have to be considered as an added segment.

The aforementioned makes it clear that the results of the analysis will combine a mixture of general and specific segments, depending on the production-consumption structure existing in each corridor. Each one of these segments must, afterwards, be able to be structured as a logistics chain during the development of the activities planned in Module 3.

Once this point is reached, it is appropriate to indicate that, due to the fact that the methodology of modules 2, 3 and 4 is based on the gathering of information through interviews, the consultations to the agents planned in modules 2, 3 and 4 can be carried out in a parallel way, thus avoiding the over-exposure of the coordinators.

Some elements that must be taken into account in order to segment chains, i.e., for identifying logistics families, are hereinafter presented:

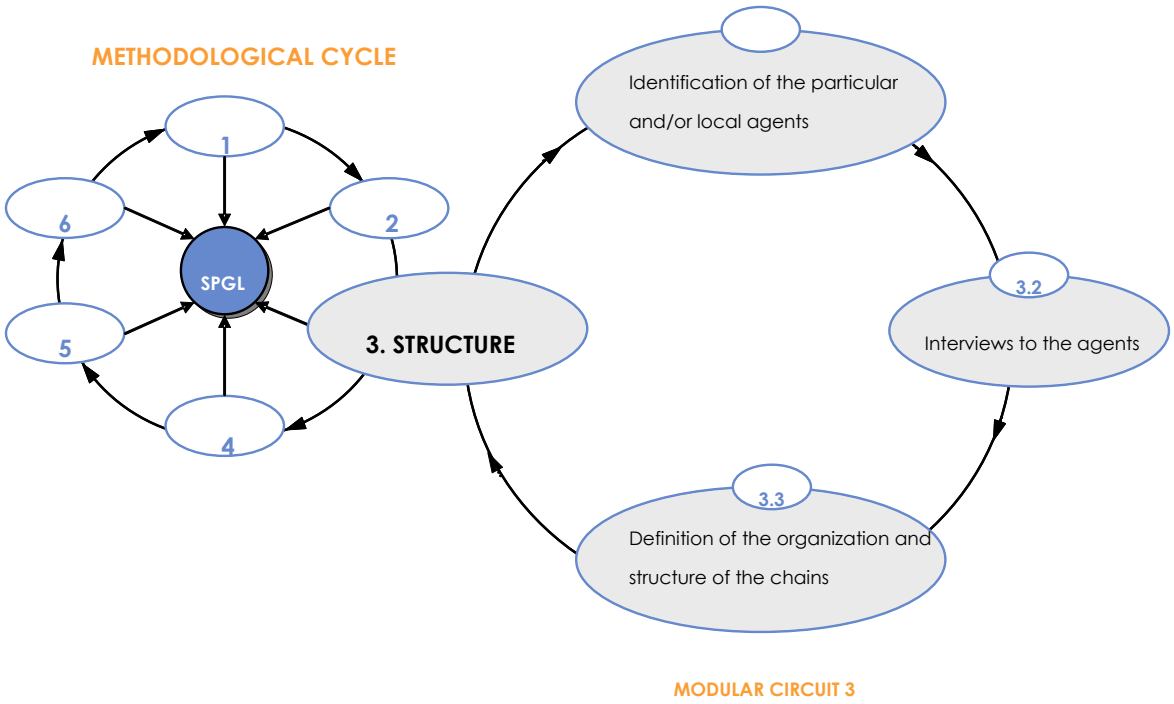
- Relative unitary weight of the goods and practices and type of unitarization
- Relative value of the goods
- Type of goods: solid or liquid bulks, general load (in containers or loose)
- Storage density
- Current (or potential) use of distribution and storage centers
- Delivery times
- Trip length
- Means of transportation, type and size of the vehicle used
- Location of the market (national or international) and use or not use of international facilities due to functional reasons or for the fulfillment of foreign commerce formalities

As it has already been mentioned in the previous step, the final definition of the segments must start from the valuation carried out by the interviewed agents, and it must be validated with the available statistical data. In this sense, even though the value and volume of commercial flow must be large enough to justify that the analysis of a specific logistics segment is considered, it must not be ruled out the possibility of analyzing segments that still do not have important values or volumes but that require to be strengthened. In any case, the relevant fact is that in each of the possible segments identified there exist some logistics practices towards their interior that shall make it possible to clearly differentiate them from the rest of the chains.

II.3.3 MODULE 3 - Structure of the logistics chains

The following stage of the methodological cycle consists of properly structuring the logistics chains that correspond to the segments identified in the previous module; which is the reason why this module can be considered as the logistics architecture phase of the production-consumption markets existing in the IIRSA corridor or Group of Projects. The following figure illustrates the content of each step of the so-called third modular circuit.

Figure II.6. Third modular circuit (3 Steps)



In general terms, the logistics chains or networks related to the different segments have three basic structural elements that must also be orderly considered: participating agents; structural horizontal/vertical dimensions of the chain and position of the focal firm; and lastly, the links among the existing processes.

It is precisely during this stage that the basic structural elements that characterize each of the segments selected in the previous module are understood and related. The third module of the methodology does not only provide structure to the analysis, but it also allows a general appreciation of the capacity of response of a logistics network in relation to the requirements of the market that it serves.

M3/Step 3.1. Identification of the particular or local agents

Once the results of the products segmentation are available, it becomes necessary to advance in a greater specialization regarding the degree of knowledge and information provided by the particular and/or local agents that participate in the constitution of the different chains existing in the Group of Projects under analysis.

The identification of this second level of agents must be carried out during the interviews to the general agents in Step 2.2, and it basically consists in preparing a list of organizations that will have to be contacted in order to obtain a description, as detailed as possible, of the logistics chains by segment.

Therefore, the result of this activity will be an interviews program to be carried out, where the different types of agents as well as the dates and places of the interview are specified. In general terms, the typologies of agents to be contacted will include not only the sub-organizations or particular agents related to the general bodies interviewed in the previous module; but also, for example, the Association of Manufacturers of Paints that integrates the Federation of Chemical Industries; as well as some local agents particularly relevant; such as

a firm that produces dyes or paints and has a significant weight within the chain, or the logistics operator in charge of consolidating and distributing the production of paints or providing manufacturers with the necessary materials for their manufacture.

M3/Step 3.2. Interviews to the agents

As it has already been previously discussed, the purpose of this activity is to obtain detailed information of the structure and dynamics of each logistics chain, by means of the application of a specific questionnaire to the different particular or local agents identified in the previous step.

The structure of the questionnaire will have to be necessarily adapted to the specific features inherent to each agent. The more general questions destined to the organizations or associations of producers, and the detail issues related to the activity of a concrete logistics producer, charger or operator should be distinguished.

In any case, the basic approach of the questionnaire will have to contain a set of concrete questions directed towards knowing, first, the steps that integrate a particular chain (sources and types of materials, stages of transformation and manufacturing of semi-finished and final products, distribution, and destination markets), as well as the most commonly used infrastructures (ports, airports, roads, railways, navigable ways), the presentation and/or unitarization of the goods, the times and costs of transportation, storage, and distribution; variations in the value of the load in its different stages, the volumes of goods moved among the different production and consumption centers, the seasonal conditions, the participating agents, the degree of logistics maturity of the chain, the most usual logistics practices, and the detected service problem, as well as the opportunity of introducing logistics practices of greater complexity.

All these elements will serve as material for the building of the structure and the understanding of the particular dynamics of each chain, and they will also make it possible to have the necessary data for the logistics audit developed in the following module.

M3/Step 3.3. Definition of the organization and structure of the chains

On the basis of all the data obtained during the consultation process to the local agents, and having the relevant segments to be studied in detail already identified, the last step of this module is to compose or build the structure of each logistic chain or network.

The structuring process begins by stating the territorial space, the productive segment, and the products that integrate the logistics chain or network that will be analyzed. Afterwards, the process goes ahead to build the logistics chain or network in three levels:

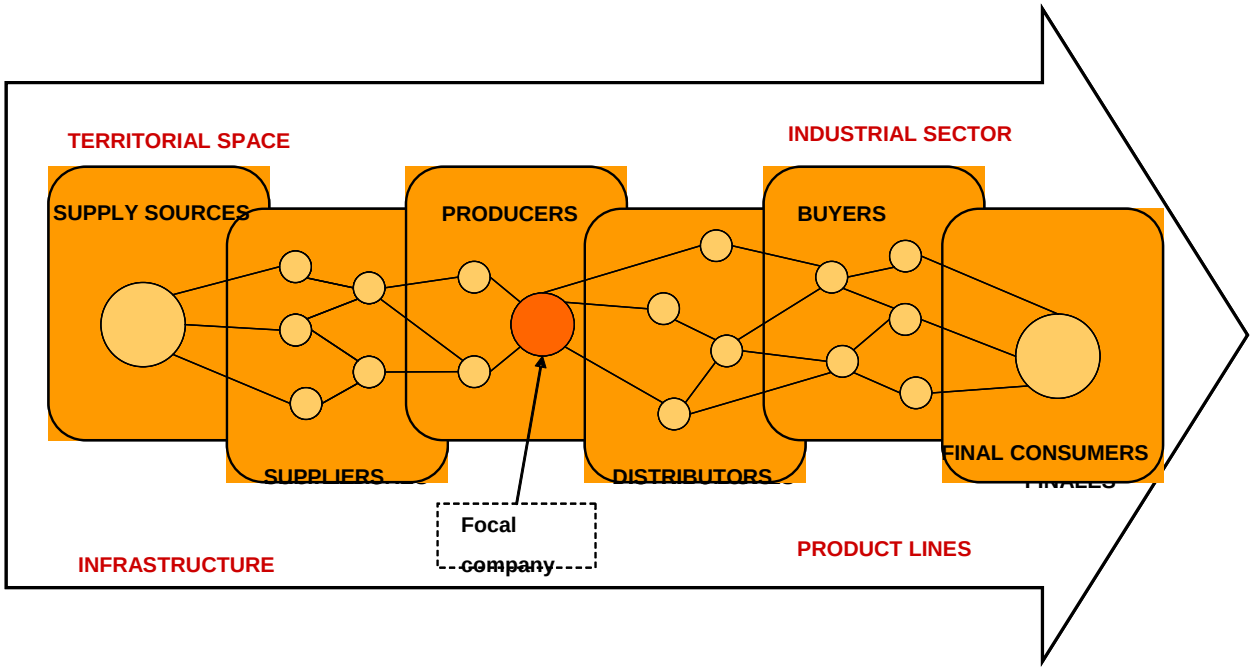
(a) identification of the main, autonomous, and support participating members

(b) structural dimensions that describe the number of phases and firms in the network

(c) types of links of the processes that require management or monitoring

Figure II.7 represents the structure of the logistics network, where the focal firm is highlighted as the most directly or indirectly influential in the activities of the rest of the members. This can be located in any of the links of the chain.

Figure II.7. General structure of a logistics chain or network



a) *The members of the network*.- The first thing is to identify the ***main member or focal firm***, who clearly is the one that strategically dominates and powerfully influences on the actions of the rest of the members. Afterwards, it is determined what members are critical for the success of the operations directly or indirectly led by the main member; here the ***autonomous members*** and the ***support members*** must be distinguished. The autonomous ones are those that carry out operations and manage activities that are translated into value added for the final customer. In contrast, the support members simply provide resources, knowledge, assets, or services for the autonomous members.

b) *The structural dimensions of the network*.- The ***horizontal structure*** can be long or short and it is referred to the number of levels that exist through the chain, from its origin to the market of final consumption; i.e., all of the phases where there exist members that carry out similar activities, for example: suppliers, producers, distributors, buyers, consumers. The ***vertical structure*** refers to the number of members in each phase or level; for example, the number of suppliers or the number of buyers. Finally, the last structural dimension is the ***position of the focal firm*** along the chain; which can be a producer, a distributor, a wholesale buyer, etc. It is worth emphasizing that it is important to identify the points of the structure where the productive process is fractioned or broken up into various agents, or where exists the potential for it; an example is the case of the cooperatives of agro-industrial products where each agent packages but the labeling and ***packing*** is carried out by a third agent that serves several producers. This will make it possible to identify concrete projects or incentives to be promoted (See Module 5).

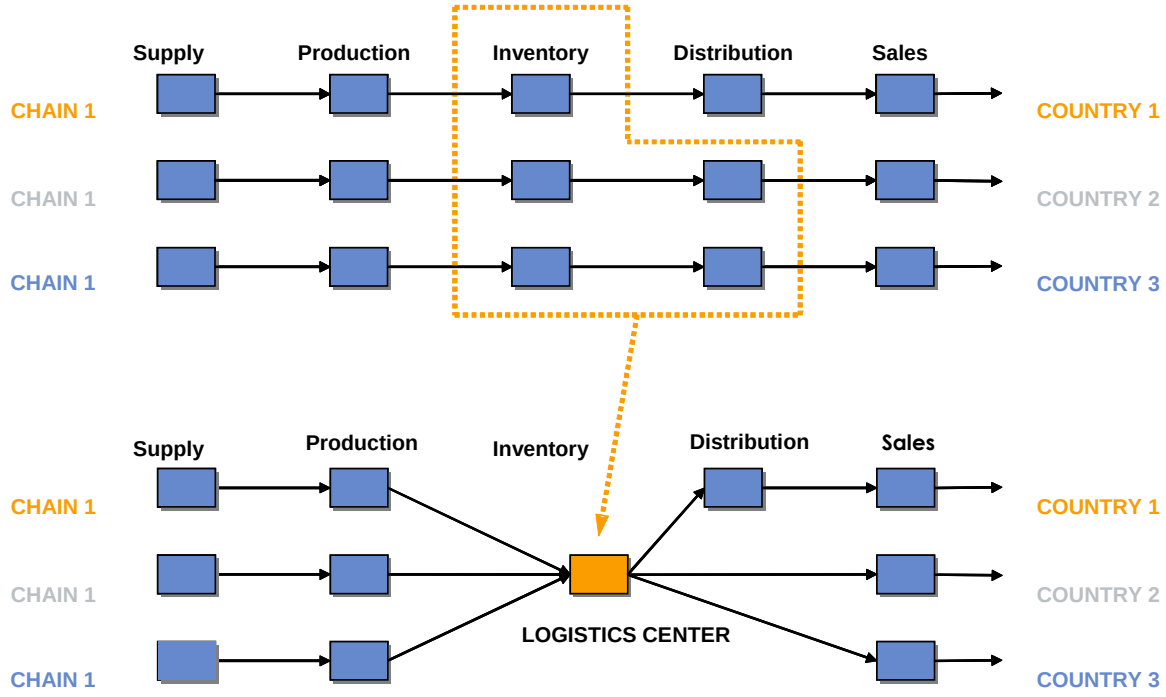
c) *The links of processes*.- It refers to the existence of three different links of processes along the logistics chain; the links under direct management of the focal firm, the links under monitoring of the focal firm, and the links not managed by the focal firm. In each of them, the relationships among the members will be subject to different formats.

It must be taken into account that the different chains associated to each segment can have very different typologies and configurations, some of which will have a very complex structure of multiple stages and agents involved, whereas in others the number of stages or agents can be significantly lower.

On the other hand, it is possible that several of the identified and structured logistics chains have features, activities, and processes that shall keep a certain complementary nature; for example, they can have the same regional destination market, the lines of products can be similar, the means of transportation can be the same, the geographical location among their members can be quite close to each other, the services hired can be analogue, the resources that they consume can be similar, the formalities and documents used can be the same, the information used can be related, etc.

In this context, an interesting option for the members of the *complementary logistics chains* is to share resources, centralize activities, share information, and synchronize operations; which can be achieved by creating *logistics centers that are polyvalent* and of shared use. Figure II.8 represents this possibility.

Figure II.8. Logistics complementary nature and possible centralization



On the other hand, as well as the evident complementary features, there usually are also differences that many times are not so evident. The demand in the destination markets can require deliveries of large or small lots, short or long service times, unique products or with differentiated formats, products with higher or lower quality and besides, the market can be more or less sensitive to the price.

This requires that each logistics chain shall provide a suitable response to the characteristics of its market; which can be analyzed in a general way once the chains are structured. Usually, serious disarrangements are found between the strategy of a logistics chain and the characteristics of its market.

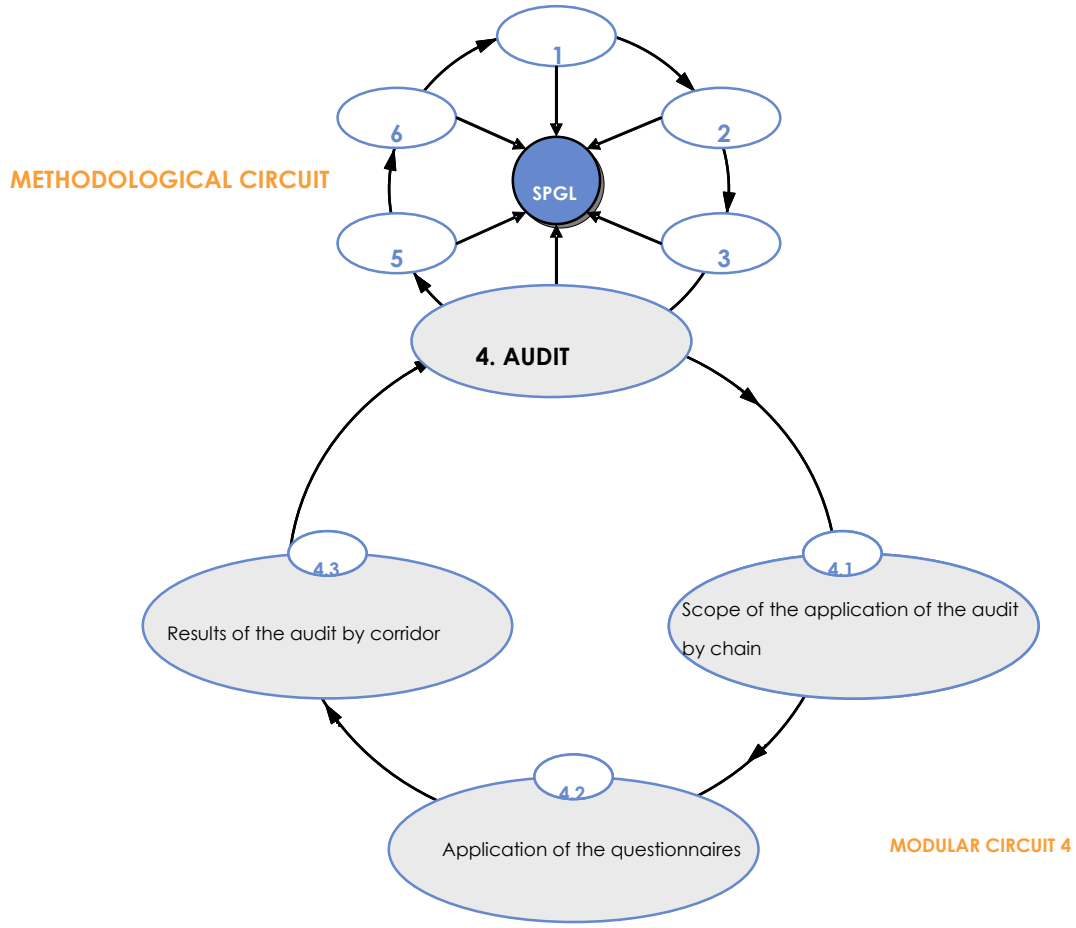
The analysis that will be developed in the following module will make it possible to observe which logistics chains serve changing markets and that must, therefore, be organized in order to respond very quickly to the needs of their customers in spite of assuming a greater cost; for example, the seasonal conditions in the case of perishable products and the fashion changes in the case of textile chains. Likewise, it makes it possible to know which chains have a stable market where changes are foreseeable or done upon request, and it is rather required an organization that shall optimize costs in each process; for example, in the case of the chemical products and also in the car industry.

II.3.4 MODULE 4 - Logistics Audit

The *audit* stage is designed for measuring the degree of maturity of the logistics chain or network, and at the same time, for knowing its performance, where its capacity of response

progresses towards its goal markets. The following figure offers a general idea of the audit stage, which modular circuit is constituted by three steps.

Figure II.9. Fourth modular circuit (3 Steps)



M4/Step 4.1. Scope of the audit application by chain

Up to this point, the methodology makes it possible for the analyst to reach a clear appreciation of the composition of the logistics chains in terms of who are their members, which are their structural dimensions, which links of processes must be managed or monitored, how their activities can be complemented and how congruent is the strategy.

As in the preceding modules, in this step it becomes necessary to define the scope of the site investigation and the inquiries that will be carried out among the members of the chain and among other relevant participants in order to know its maturity and performance conditions.

The logistics maturity is a wide concept that includes the aspects of chain structure or constitution, and the relative positioning of the different agents that participate in it, the existence and usage of the dedicated or general use infrastructures and info-structures and, finally, the cohesion and integration of the processes and agents within a service framework that tends to the formalization of common purposes and to shared risks.

Within the previous context, it is understood that the maturity is related to the level of value adding, whereas the performance concept is related to the efficiency of the processes that are produced along the chain, which is the reason why its main indicators are the service quality and the related costs.

In order to systematize the gathering of information and obtain a description (as detailed as possible) of the different chains, it is convenient to make the general concepts of maturity and logistics performance operational using five evaluation criteria. In this way, it will be possible to learn about the current situation of the different components of each chain and the importance that the interviewed people give to said components. Below, these criteria and their definitions are presented:

(1) *Situation of the infrastructure and support services* to the logistics chains. This criterion is defined by the existence and use that is given to specialized logistics infrastructures or not, regardless of whereas it is about own resources or third party ones, by the degree of integration of the information systems among the different agents, by the behavior of the different means of transportation, and by the restrictions that some auxiliary services such as the customs could present, in the case of the chains with a relevant imports/exports component.

(2) *Degree of functional integration of the chain*, which includes aspects such as its strategic vision and the planning of the operations, the degree of association capacity and coordination among the agents, its level of development as regards the links that integrate it and its functional structure; as well as other relevant indicators such as the unitarization percentage.

(3) *Level of efficiency of the operations*, which can be measured by means of some key indicators such as: the flexibility and availability of the logistics agents for adapting to changes under the service conditions, the existing practices in the management of the inventories, the existence of return logistics and its operation, the capacity of responding to the needs of internationalization of the chain, and finally, the service quality or response time.

(4) *Adaptation of the logistics agents* to the needs of the chain chargers and producers. The most significant indicators for measuring said adaptation are the reliability among the agents, defined by the percentage of operational third party hiring, the existence of medium and long term contracts, and a shared valuation of the risks; and the existing specialization levels (by segment, by type of service).

(5) *Valuation of the logistics costs*. Considering it is one of the most important objective elements of the logistics function, the valuation of the costs can be defined from indicators such as the available margin for its reduction or the importance given to said reduction, the relation between the transportation cost and the total logistics cost, the existence of penalizations due to delays in the service, as well as other quantifiable measures such as the valuation of the logistics cost as regards the value of the product, and the ratio between cost and perceived quality.

For each one of these criteria, it is contemplated that the ones interviewed shall carry out a double valuation: stating, firstly, the importance that they give to the different indicators that define them and, secondly, the real situation they are undergoing as regards the needs of the chain.

Table II.3 shows a detailed list of the different indicators that define each criterion, adding up a total of 25 for which a score of 1 to 5 would be obtained, stating an average from the results of all the interviews carried out. Likewise, it is possible that some of these indicators shall not be applicable in a concrete chain, which is the reason why their valuation would be null (e.g.: those cases where there is no internationalization).

As a result, it will be obtained a double subjective valuation for each indicator, even though the measurement of the current situation could be "turned objective" by means of the incorporation of quantifiable parameters in all the cases. It is considered that this quantification would make sense exclusively in those chains and groups of projects where a high logistics development level is appreciated.

Table II.3. Criteria and indicators of the logistics audits

Topics	Indicators
1. Situation of the infrastructure and support services	1.1. Specialized logistics platforms
	1.2. SSII shared among agents
	1.3. Storage facilities and deposits
	1.4. Functionality of the means of transportation
	1.5. Presence of customs restrictions
2. Degree of functional integration of the chain	2.1. Strategic vision of the chain
	2.2. Planning of operations
	2.3. Degree of unitarization
	2.4. Association capacity along the chain
	2.5. Proper level of development
3. Level of efficiency of the operations	3.1. Flexibility under operation conditions
	3.2. Practices in the Management of inventories
	3.3. Return logistics
	3.4. Capacity of internationalization (FOB, CIF)
	3.5. Service quality (response time)
4. Adaptation of the logistics agents	4.1. Degree of third party hiring (reliability)
	4.2. Shared risks and benefits
	4.3. Existence of MT and LT contracts
	4.4. Specialization by segment
	4.5. Specialization by service
5. Valuation of the logistics costs	5.1. Margin for reduction of logistics costs
	5.2. % Transportation cost / total logistics cost
	5.3. Penalizations due to delays
	5.4. Valuation logistics cost / product value
	5.5. Cost / quality relation

M4/Step 4.2. Application of the questionnaires

Starting from the logistics chains or networks that have been selected and structured, the process goes ahead to define to which members inside and outside the chain will the audits be applied and which will be also interviewed; preferably, the focal firm must always be interviewed at its highest level, besides applying the audit to its intermediate levels.

The members to be audited and interviewed outside the network include public institutions, academic ones, experts, associations, among others; which opinion is important as regards each criteria and logistics indicators presented in the previous step. For example, the authorities from transportation, communications, foreign trade, customs, research centers, exporters associations, chambers of commerce, etc.

According to the aforementioned, the questionnaires should contain three types of basic questions:

Type 1 Questions - IMPORTANCE: They evaluate the perception of the interviewed person regarding the importance of a logistics indicator. A scale of 1 to 5 will be applied; where 1 = it is not important and 5 = it is very important.

Type 2 Questions – CURRENT LEVEL OF MATURITY AND PERFORMANCE: They evaluate the degree of maturity and performance reached by a chain according to the five-criterion evaluation. The scale of 1 to 5 will be applied; according to the degree of adaptation of each indicator to the operation needs of the chain.

Type 3 Questions – OPPORTUNITIES: They take up the opinion regarding which is the expected evolution for a certain criterion or logistics indicator under analysis. Namely, having consulted on the degree of maturity and current performance, a question is asked about the degree that is expected to be reached in years to come. For example, location planned in 2 years time. It makes it possible to identify opportunities in order to promote value added logistics solutions.

A list of questions will be prepared for the interviews, which will serve as general guide to be used by a specialized interviewer. During the interview, the following results will be sought:

That the interviewer shall describe, in detail, aspects of management and operation of the network where he/she is inserted; expressing the level of importance perceived for each topic.

a) That he/she shall give an opinion about its performance and shall compare it with the performance of its local or regional competitors.
b) That he/she shall mention which are the factors of access and of success in the market (*critical* success factors) where it competes; such as for example: quality, cost, time, flexibility, availability, etc.
c) That he/she shall state which are its local, regional, and world success references.
d) That he/she shall express which the main problems are for reaching a better performance or for evolving in maturity, and if the solution depends on an action performed by itself or by third parties.
e) That he/she shall propose solutions that according to his/her opinion could improve the performance of the logistics network and that he/she shall identify who must be the ones that may develop actions for introducing the solution.
f) That he/she shall give his/her opinion about generic logistics solutions and the possibility of adopting them.

The applicative part of the logistics audit must be subject to certain fulfillment terms and consider that not all the interviewed ones will answer, and many of them will do it with a certain twist. One of the ways for raising the probabilities of success in this stage is to develop and apply a questionnaire and interview in an experimental way to some few participants, as well as to carry out adjustments in the design, style, instructions and order. Afterwards, the process can go ahead to the complete application.

It is insisted on the fact that, in case of application of the methodology within the IIRSA context, the interest for identifying the degree of maturity and performance of a segment of logistics chains or family lies in glimpsing opportunities for the development of value added logistics services and the role of the public sector in their promotion.

The collected data will have to be systematized and processed in an ordered way, and they must produce classified data by each studied chain, by interviewed entity, and must group

them in the five-criterion evaluation (infrastructure, integration, efficiency, agents, and costs). Likewise, the scores (1 to 5 scale) must be clearly organized separated by category of perceived importance and current situation of the indicator and criterion.

M4/Step 4.3. Results of the audit by corridor

The final phase of the audit process has to present the results in such a way so as to be able to be easily analyzed. These results jointly present the importance that each logistics element has for each interviewed person as well as the degree of maturity and current performance.

Within this context, it is recommended that the results obtained from the interviews are represented in a set of matrixes where, on one side (vertical), the analyzed logistics indicators shall be listed, and on the other side (horizontal), the qualities presented by said indicators shall be described as well as the importance given to them.

Table II.6. Matrix of average results for a studied logistics chain

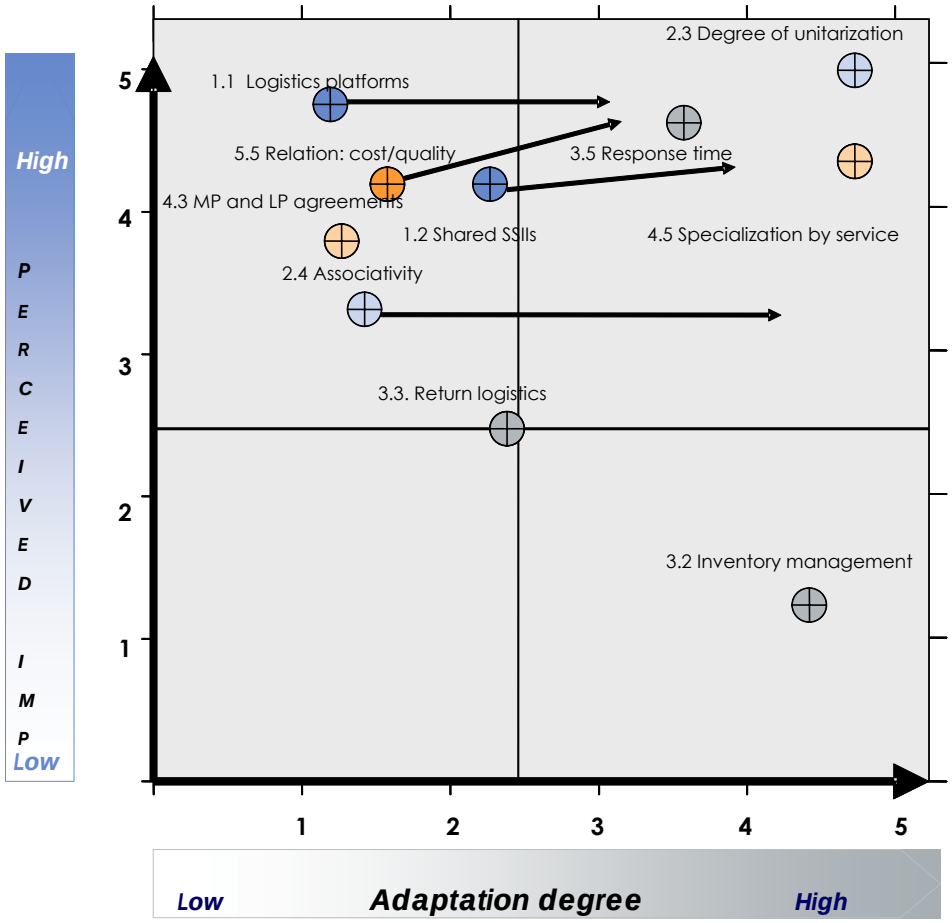
Topics	Indicators	Valuation	
		Situation	Importance
1. Situation of the infrastructure and support services	1.1. Specialized logistics platforms	1,2	4,8
	1.2. SSII shared among agents	2,2	4,2
	1.3. Warehouses and deposits	3,8	3,6
	1.4. Functionality of the jeans of transportation	3,9	3,5
	1.5. Customs restrictions	0	0
	Subtotal	**2,22**	**3,22**
2. Degree of functional integration of the chain	2.1. Strategic vision of the chain	3,3	4,2
	2.2. Planning of the operations	4,1	4,5
	2.3. Degree of unitarization	4,6	5
	2.4. Associativity along the chain	1,4	3,3
	2.5. Appropriate level of development	3,3	2,3
	Subtotal	**3,34**	**3,86**

Topics	Indicators	Valuation	
		Situation	Importance
3. Level of efficiency of the operations	3.1. Flexibility under operation conditions	4,5	4,4
	3.2. Practices in the Inventory Management	4,3	1,2
	3.3. Returns logistics	2,3	2,5
	3.4. Capacity of internationalization (FOB, CIF)	0	0
	3.5. Quality of the service (response time)	3,5	4,6
	Subtotal	**2,92**	**2,54**
4. Adaptation of the logistics agents	4.1. Degree of outsourcing (trust)	2,5	4,1
	4.2. Shared risks and benefits	2,6	4,9
	4.3. MP and LP agreements	1,2	3,8
	4.4. Specialization by segment	3,5	3,5
	4.5. Specialization by service	4,6	4,4
	Subtotal	**2,88**	**4,14**
5. Valuation of the logistics costs	5.1. Margin for the reduction of logistics costs	4,2	3,5
	5.2. % Transportation cost / total logistics cost	2,2	4,9
	5.3. Penalties related to delays	2,1	2,5
	5.4. Valuation logistics cost / product value	3,2	4,8
	5.5. Cost / quality relation	1,6	4,2
	Subtotal	**2,66**	**3,98**

The previous table shows an example of what would be a results matrix on the average for a certain logistics chain. It can be observed there, for each evaluation area, an importance ranking of the analyzed logistics elements (first column of results) and the real situation of said elements (second column of results).

Likewise, and in order to advance in the identification of the problems and opportunities related to each chain, it becomes advisable to present the results in a coordinated axes graph such as the one that is hereinafter shown:

Figure II.11. Graphic for the relative position of the logistics elements



The graph presents the relative position for each analyzed element. Its four quadrants express different meanings:

- In the upper right quadrant, there can be seen those elements considered important for the interviewed people and, at the same time, positively valued as regards the different maturity and performance indicators. These elements will be subject to continuous improvement programs in order to maintain their position (to ***maintain / perfect***).
- In the upper left quadrant, there are located the elements that are considered important, but which current situation does not fit the needs of the chain. These elements will have to be subject to an execution program for their immediate improvement (to ***improve***).
- In the lower right quadrant, there are located the elements that have a degree of maturity and performance relatively high, but are not perceived as important. It is possible that this under-valuation is precisely due to their good performance in relation to other elements that take the current attention of the agents. However, it

may be necessary to encourage a revaluation of these aspects, because if their performance is reduced, the set of the chain could be affected (to ***maintain / revaluate***).

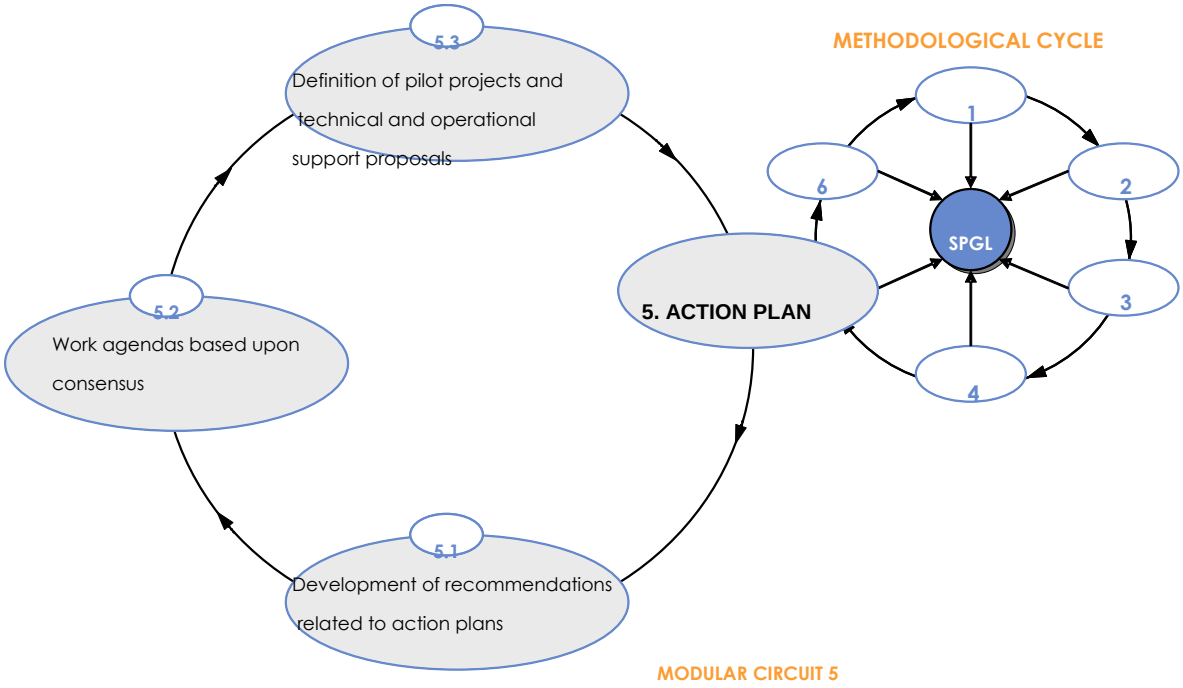
- In the lower left quadrant, there are located the elements considered of little importance and which current situation does not fit the development of the chain. These elements must be carefully analyzed and discussed in order to decide if they are relevant for the performance of the logistics network or if any participation in them must be discarded (to ***decide / discard***).

Finally, the results obtained at this level will be submitted to the representatives of the countries involved in the analyzed logistics corridor. It is considered advisable that, for this kind of presentations, some representative members of the analyzed logistics chains shall participate.

II.3.5 MODULE 5 - Execution Program

The audits have the purpose of taking the real impression of the members of each logistics chain or network and they make it possible to know the current development status of the different logistics elements; however, considering that said information does not generate impacts on its own, it is essential to create an *Execution Program* from the results obtained. Figure II.12 introduces the content of this module and the steps required for its performance.

Figure II.12 Fifth modular circuit (3 Steps)



M5/Step 5.1. Preparation of action recommendations

The methodological design adopted makes it possible that, along all the modules and steps to be applied, it shall be possible to derive some conclusions and recommendations that will make it possible; on one side, that the technical study group is able to perfect the methodological application and adapt it better to each Group of Projects under study, and on the other hand, that the CCT and the countries can access to general recommendations that are partial but of immediate application to the IIRSA integration and development hubs.

Within this context, it is expected that the results of the audits shall generate systematized information that is specific according to the analysis area (strategic, structural, functional, and operational); which, together with the results of the segmentation and structuring processes, will make it possible to prepare a list of general recommendations of immediate application much sooner than having an Execution Program agreed upon consensus.

For example, during the development of the studies there can be detected bottlenecks that are particularly critical for the competitiveness of the logistics corridor or of some of its chains or transit zones. Besides, there can be identified opportunities of bilateral or multilateral cooperation among countries and among firms in order to solve said bottlenecks. Likewise, the lack of visibility and communication can become evident among the participants that meddle on a certain logistics chain or service; being it necessary to act immediately at the level of implementation of shared information systems.

Thus, in this step the intention is to recommend execution directed towards increasing the logistics maturity of the chains and fulfilling the infrastructure needs identified during the previous modules. The approach of the work consists of deriving the formulation of concrete actions from the analysis of the results of the audit carried out in the previous module.

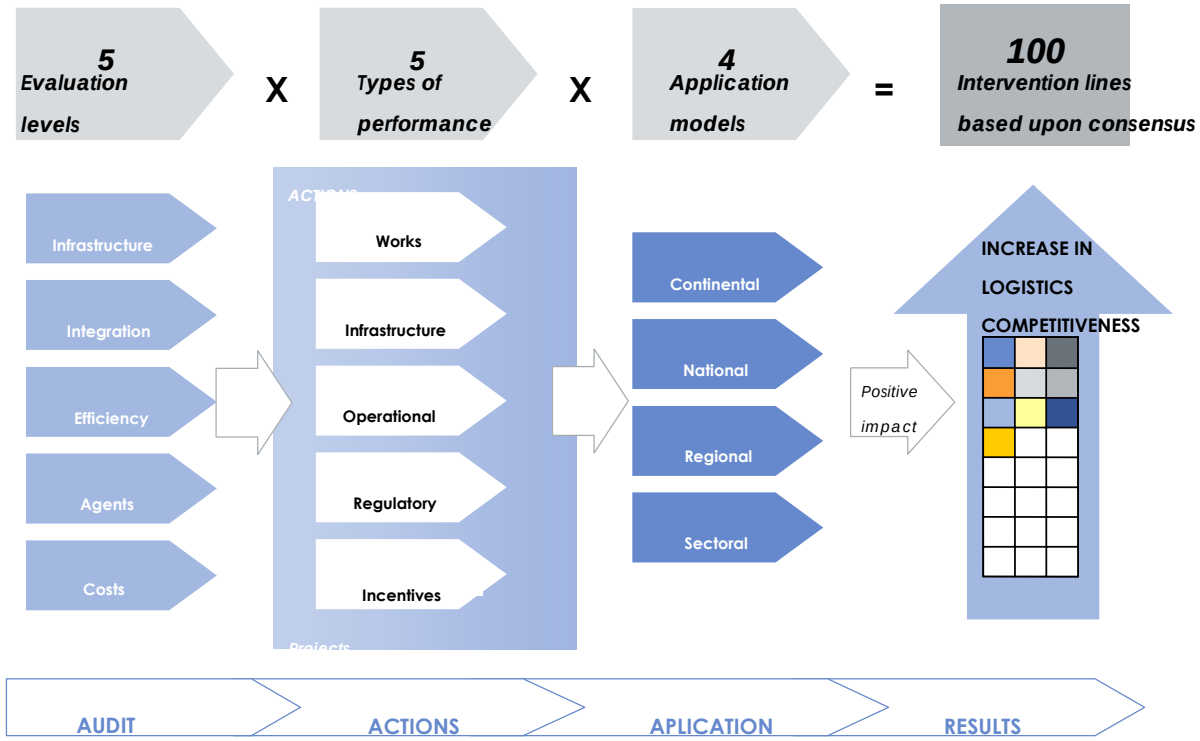
To sum up, this step aims towards the fact that once the audit process finishes (Module 4) and before preparing the detailed execution program, the technical study group shall submit a list of recommendations for the countries, the IIRSA CCT and the CDE; with the purpose of making the decision-making process about critical aspects that require immediate action easier.

M5/Step 5.2. Work agendas agreed upon consensus

The preparation of work agendas is oriented towards making convergence possible (convergence among previous analyses of segmentation, structuring, and audit and the action programs in specific areas and in differentiated application levels -continental, national, regional, and sectoral). Besides, they will make it possible to clearly establish the terms for each action, the ones responsible for their execution, the indicators for monitoring them, and the parameters for considering that the action has been correctly executed.

In figure II.13, it is seen how the public, private, and multiple work agendas constitute a bridge that connects the real situation of the logistics corridor evaluated in four areas (strategic, structural, functional and operational), with the application spaces about which it is necessary to implement actions at a different level, but answering to an effort that is unified and that seeks to promote, in an agreed way, interventions for the improvement of the logistics competitiveness in South America.

Figure II.13. Agendas of logistics actions based upon consensus



The action plan must propose not only actions, but also group them according to their complementary nature by chains or by strategic, structural, functional, and operational topics; in this way it will be possible to assign coordination and execution responsibilities to work teams *ad hoc* that shall manage related action groups.

For example, the actions of the strategic area related to politics, regulation, planning, and institutional nature can be grouped; and a coordination network can be proposed for management and monitoring. Moreover, actions of the functional area related to transportation, inventories, production, and distribution can be grouped; proposing, at the same time, who must integrate the coordination network for the management and monitoring of these actions. In the first case, there will probably be more members of the public sector, whereas in the second case there will be more members of the private sector.

M5/Step 5.3. Definition of the pilot projects and proposals of technical and operational support

As a result of having ordered work agendas in the intervention lines agreed upon consensus, it will be possible to identify which pilot projects must be executed; these projects can be of the infrastructure works type, for example:

- A polyvalent logistics platform
- An access way to a port or airport

- The building of transfer centers
- The installation of fix load equipment, etc.

The pilot projects can also adopt the form of support projects to the development of the logistics competitiveness, for example:

- Preparation of specific rules
- Creation of permanent coordination forums
- Design and establishment of integrated logistics information systems
- Development of packages for special products
- Access to information about markets in real time
- Training courses
- Improvement of the customer service
- Integration of logistics processes and operations
- Establishment of performance measurement systems
- Suppliers strengthening programs
- Creation of virtual coordination networks
- Official approval of certifications
- Homogenization of operation standards
- Unification of databases for control and official inspection
- Strengthening of alliances among members of logistics chains, etc.

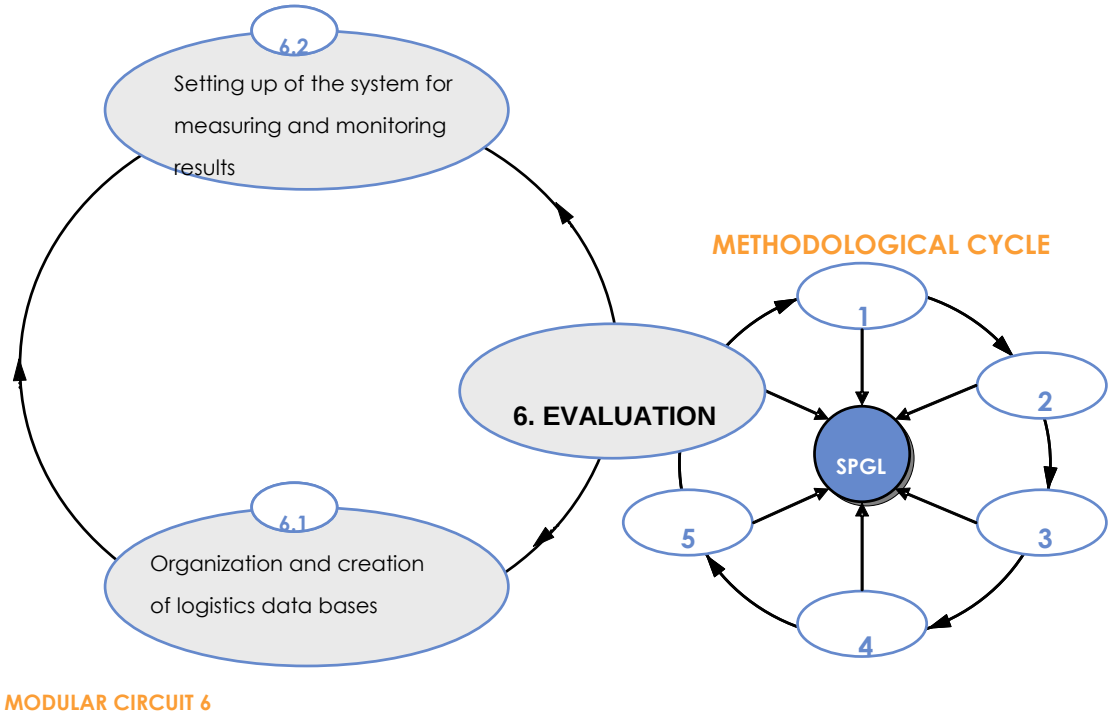
Therefore, work agendas will make it possible to structure programs of technical cooperation, whether for preparing and carrying out the pilot projects, or with the purpose of carrying out more detailed studies about some logistics elements which analysis reveals the need for expanding the study at national or continental level.

Likewise, as a result of this activity it will be possible to financially dimension the size of the effort to carry out a studied logistics chain or network, from a low to a high maturity degree. This is essential for complementing the design of the technical cooperation programs.

II.3.6 MODULE 6 - Follow-up and evaluation

The last module of the methodological cycle is the follow-up and evaluation of the Execution Program defined in the previous stage. This last module becomes necessary for the achievement of two essential purposes: firstly, the continuous contribution to a logistics database within the IIRSA System of Projects Follow-up and, secondly, the establishment of a permanent system of results and impacts measurement, as well as results monitoring. Figure II.14 represents the sixth modular circuit, which belongs to the Follow-up and Evaluation stage.

Figure II.14. Sixth modular circuit (2 Steps)



As a general result of the methodology, once the sixth module finishes, the technical work group and the decision bodies will be able to judge the level of success relative to the cycle of steps applied in an IIRSA group of projects chosen and, consequently, they will be able to create two types of concrete recommendations:

a) Whether the culmination of the methodological cycle has produced enough results, or if it is necessary to initiate a second round with the purpose of widening the results, focalizing in some particular logistics elements.

b) On which other IIRSA group of projects it is convenient to apply the methodological cycle and at what level of depth.

M6/Step 6.1. Logistics data bases

The different methodological modules of definition, segmentation, structure of the chains, and logistics audit, have a great capacity for generating and ordering useful data for many purposes, not only logistics ones, but also related to the commerce and even the development policies. All this information patrimony must be properly kept and administered.

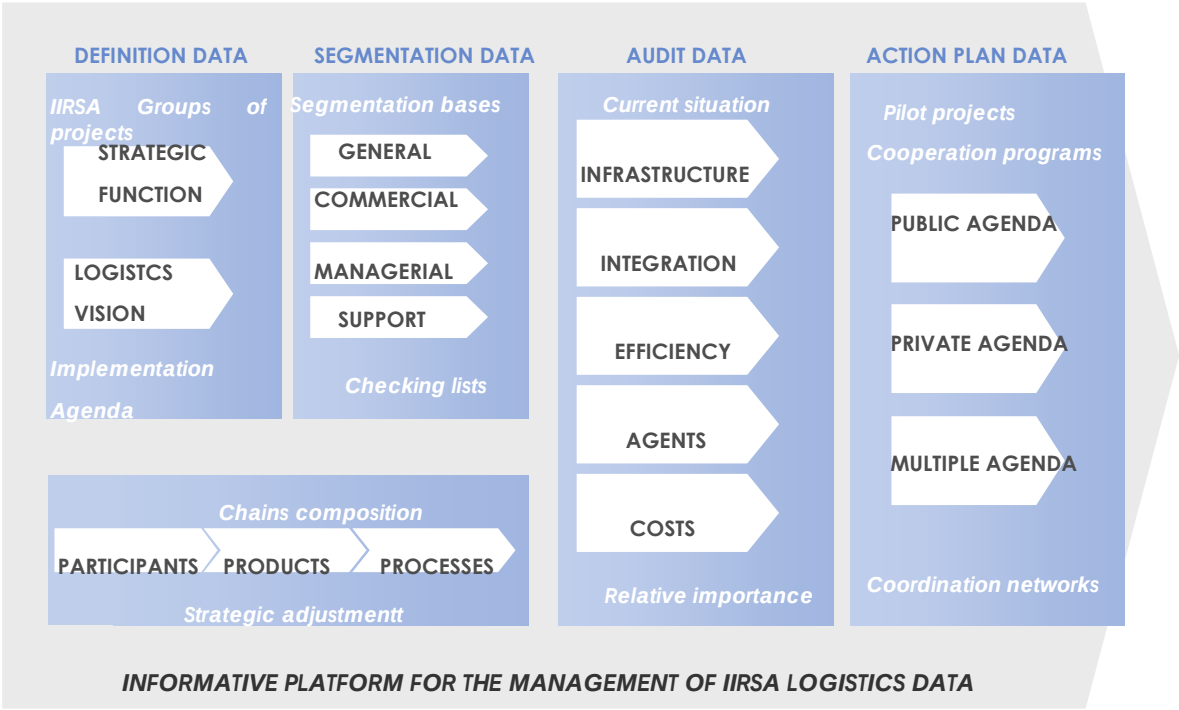
The logistics data bases are a first priority and in this step, the final task of integrating them into the interior of only one great data base must be approached. In this sense, the intention is that the information shall be systematized and codified for each IIRSA group of projects, analyzed logistics corridor, studied chain, study area, and application environment.

The most suitable information platform for these purposes is the IIRSA Projects Monitoring System, created for the implementation agenda agreed upon consensus (AIC). In this sense,

it is essential that a fast integration of the AIC data and the logistics data is conceived, both on a georeferenced information platform for South America.

Figure II.15 summarizes the organization and composition of the logistics data, which will also feed the results measurement and monitoring system. It must be observed how the different modules of the methodology have gradually provided an informative base with systematic coherence and that is afterwards easy to integrate (the data of each modular stage do not lose their own logic of immediate usefulness, if required).

Figure II.15. Data bases with integrated logistics information



M6/Step 6.2. System for measuring and monitoring results

The definition of a monitoring system will make it possible to carry out a permanent evaluation of the degree of progress of the Execution Program defined in the previous module. This analysis will be carried out through a set of evaluation indicators, with the purpose defining corrective measures or to redirect the emphasis of the effort planned. It is advised that said evaluations shall be performed at GTE or CCT level.

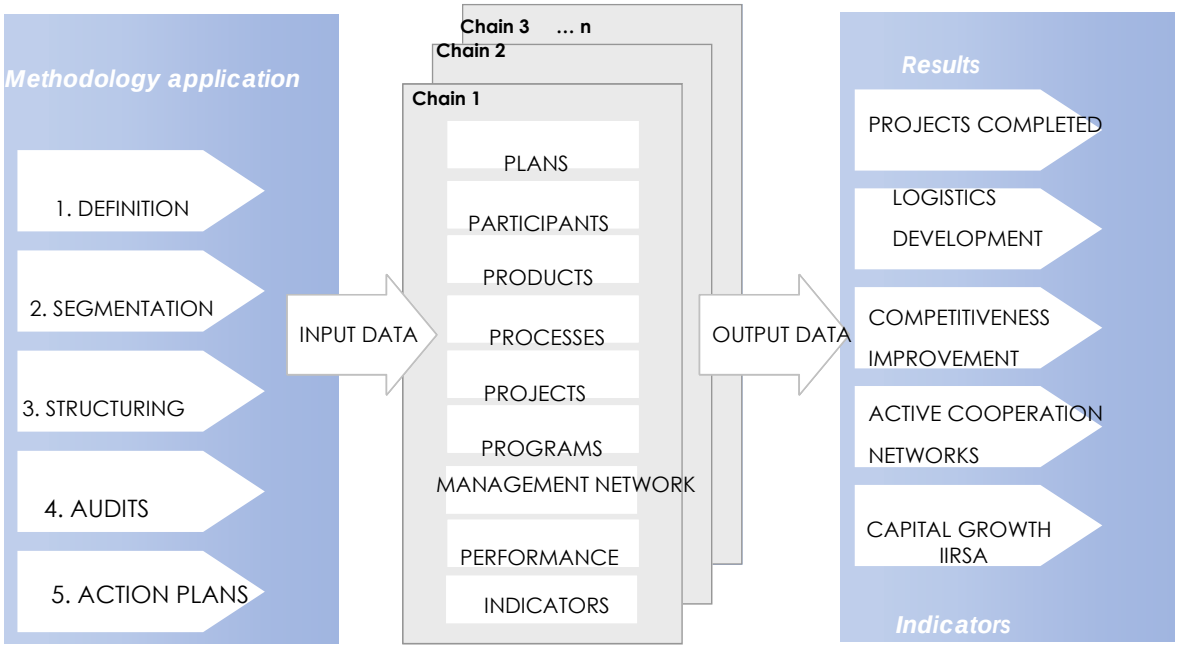
The recommended evaluation and monitoring indicators are added in five main groups: (1) relevance, (2) effectiveness, (3) efficiency, (4) impacts, and (5) sustainability of the Execution Program planned.

As it has already been mentioned, the Execution Plan for each corridor will have to be included within the IIRSA Projects Monitoring System, therefore, it will be possible to carry out, in a systematic way, the comparison of the degree of progress as regards the programmed

achievements; being able to be measured, in some cases, the speed at which progress is achieved.

Figure II.16 shows the way in which data coming from the methodological application are interrelated with the attributes of the chains that integrate a corridor and the results expected from the introduction of the Execution Program.

Figure II.16. System for measuring and monitoring results



INFORMATIVE PLATFORM FOR MEASURING AND MONITORING OF RESULTS

The introduction of the logistics data base in each corridor in the IIRSA Projects Follow-up System, and the systematic application of the evaluation indicators will make it possible to submit periodic result reports for establishing the degree of progress of the Execution Program. These reports shall feed the IIRSA systems of logistics planning and management.

PART III: APPLICATION OF THE METHODOLOGY

III. 1 IIRSA Integration Hub: MERCOSUR-Chile. Group 2: Porto Alegre - Colonia - Buenos Aires.

This exercise is based on secondary information and it constitutes a preliminary example of application of the proposed methodology. It includes the application of Modules 1, 2, and 3 of said methodology.

III.1.1. MODULE 1. Functional definition.

1.1 Appropriateness of the logistics analysis

Within Group N° 2, the sub-corridor that links the two main cities in the Brazilian state of Rio Grande do Sul and the Republic of Uruguay: Porto Alegre and Montevideo are analyzed.

Figure III.1. Group of projects N°2

The most relevant data of the territorial units studied, Rio Grande do Sul and Uruguay, are hereinafter detailed:

Table III.1. Main socio-economic variables

Region	Population (millions inhab.)	Surface (km2)	GDP (millions current US$)	GDP per capita (US$)	IDH
Rio Grande do Sul	10.6	282,000	48,800	4,604	0.81
Uruguay	3.2	176,000	13.200	4,078	0.84

Porto Alegre (1.5 millions of inhabitants) and Montevideo (1.3 millions of inhabitants) are about 870 km apart. This territory comprises a network of main cities that include:

- In Brazil
  - Canoas (330,000 inhabitants)
  - Novo Hamburgo (250,000 inhab.)

- Rio Grande (Atlantic port, 620,000 TEU - Twenty-Foot Equivalent Units - and 200,000 inhab.)
- Pelotas (350,000 inhab.)
- Santa María (250,000 inhab.)

- In Uruguay
  - Canelones (480,000 inhab.)
  - Maldonado (140,000 inhab.)

There exist consolidated transportation roads between Montevideo and Porto Alegre that go along relevant production and consumption points, going through 6 border points:

- Chui-Chuy
- Jaguarão-Río Branco
- Aceguá-Aceguá
- Santa Ana do Livramento-Rivera
- Quarai-Artigas
- Barra do Quarai-Bella Unión

The main ports of the corridor are the one from Rio Grande (618,000 TEU in 2004) and Montevideo (423,000 TEU).

As regards production and consumption capacities, related to high value added goods, the corridor comprises activities of:

- Cattle, sheep, pigs, and poultry breeding, with their corresponding agro-industries of cuts and pieces processing for exportation
- Leather and shoe manufactures
- Dairy products
- Fruit growing and wine production, tobacco
- Wood and sub-products, paper, furniture
- Metal-mechanics
- Cars production
- Electrical and information material, home electrical appliances

The corridor is capable of a more intense commercial development, recovering traffics that have currently been deviated towards other markets, among other causes due to factors such as the exchange rate, products international prices, favoring of commerce with the United States and Europe as regards intra-MERCOSUR, diseconomies of scale due to the size of the market, etc.

The product families that have experienced greater inter-annual commerce growth between Uruguay and Rio Grande do Sul (the smallest territorial division for which Customs data are available) in the last 5 years have been the following:

Table III.2. Inter-annual growth of the commercial flow (2001-2005), by product family

Product families (as per NCM, MERCOSUR common nomenclature)	% of the value of the bilateral commercial flow	Growth 2001-2005 in US$ FOB (% inter-annual)		Growth 2001-2005 in tons (% inter-annual)	
		Rio Grande do Sul → Uruguay	Uruguay → Rio Grande do Sul	Rio Grande do Sul → Uruguay	Uruguay → Rio Grande do Sul
02 Meat and food left-overs	5.6%	14%	Negative	10%	Negative
03 Fish, crustaceans	0.4%	29%	Negative	85%	Negative
08 Fruits	0.5%	Negative	58%	Negative	50%
28 Inorganic chemical products	1,7%	34%	2%	27%	8%
29 Inorganic chemical products	0.3%	3%	Negative	Negative	Negative
39 Plastic and its manufactures	13%	9%	Negative	1%	Negative
40 Rubber and its manufactures	7.3%	26%	Negative	25%	Negative
48 Paper, cardboard, cellulose paste	4.8%	3%	35%	4%	33%
71 Pearls, precious stones, precious metals	0.3%	Negative	23%	66%	15%
73 Iron or steel foundry manufactures	1.6%	18%	7%	17%	1%
84 Mechanical devices	6%	14%	Negative	9%	Negative
85 Machines, electrical devices and material	1.4%	19%	Negative	11%	Negative
87 Car and their parts	9.1%	12%	78%	14%	92%
90 Optical and photographic material	0.2%	8%	6%	4%	Negative
Weight on RGS – Uruguay bilateral commerce	**52%**				

According to the methodological development proposed, the threshold values for the acceptance of the logistics corridor arise from a favorable evaluation in the case of the Porto Alegre-Montevideo corridor:

Table III.3. Evaluation of the classification criteria

Criterion	Indicator	Operational value	Evaluation
a. Existing infrastructure	a.1. Presence of at least one top-level port and one top-level airport (10 pts.) a2. Presence of one top-level port or one top-level airport (5 pts.) a3. Presence of one port or airport of provincial level (2 pts.)	a1 and a2. Top-level nodal infrastructure: ports with flows > 100,000 TEU or 1 MTMA, or airports with flows of > 10,000 tons or 1 Mpax/year a3. Provincial nodal infrastructure: must fulfill at least 20% of the expected flows for the first level	a1 Fulfilled: ports of Rio Grande and Montevideo, airports of Porto Alegre and Montevideo *RESULT: 10 points*
b. Production / consumption capacity	b1. Presence of at least 2 superior-rank cities or 5 medium-rank cities (10 pts.) b2. Presence of at least 5 lower -rank cities in the GP (5 pts.)	b1 and b2. Superior-rank cities: 500,000 inhab., medium-rank cities: 200,000 inhab., lower-rank cities: 100,000 inhab.	b1 Fulfilled: Porto Alegre and Montevideo *RESULT: 10 points*
c. Intra-communitarian potential	Medium annual growth of imp/exp among countries of the corridor. c1: For high growths in at least 3 diversified logistic segments, 10 pts. will be assigned c2: If growths limits to one only segment, 5 pts. will be assigned	It will be considered as high growth a sustained average of 3% (inter-annual) during the last 5 years	b1. Fulfilling segments are paper and cellulose; vehicles and parts; meat (this latter one only in RGS → Uruguay sense) *RESULT: 10 points*
d. Financing opportunities	Valuation of the technical responsible people in each country (assignment of 10 or 5 pts. depending on the importance and expected impact of the project)	The impact of the projects on the improvement of the logistics function must be defined in specific documents	Not applicable
e. Logistics complexity	e1. Presence of at least 3 productive segments of diversified logistics (10 pts.) e2. Existence of at least one diversified logistics family (6 pts.)	In e1 and e2, there must be present at least some family of the segments related to mass consumption, textile, and shoes, cars, food and other perishable products, chemicals, and/or paper. For each family added to the required minimum, two points will be added in e1 or e2	e1 Fulfilled: segment of furniture, cars, shoes, textile, dairy products, meat, electrical material *RESULT: 10 points*
			GLOBAL EVALUATION: 40 points out of 40 possible ones

1.2 Evaluation of the functional scheme

The necessary information for the evaluation of the functional scheme, essentially load flows among cities, is a deeper site work that does not include this application example.

As an approximation, it is estimated that the load flows in the logistic corridor will be produced among the main production and consumption centers, which are hereinafter listed.

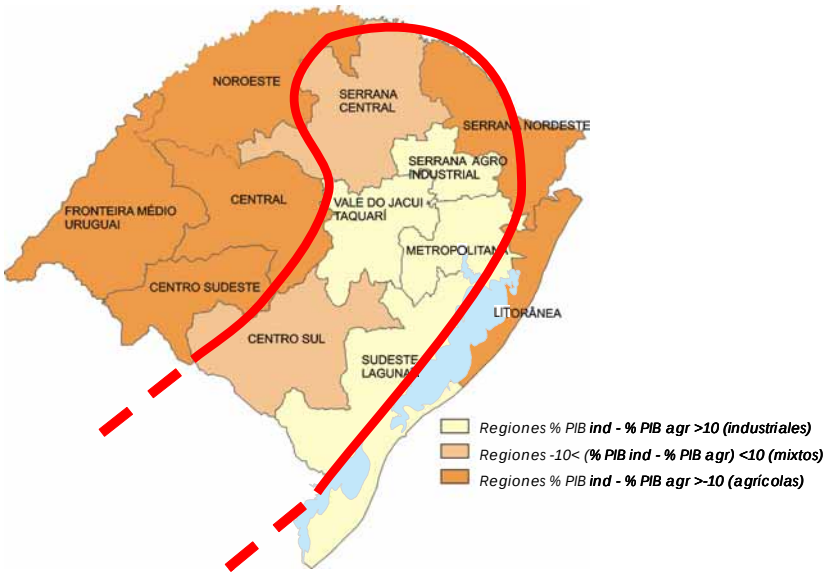
Table III.4. Production and consumption centers of the corridor

Territorial unit		City	Population	GDP 2004 (millions US$)	% industrial GDP	Main activities with logistics potential
RIO GRANDE DO SUL	Metropolitan Region of RGS	Porto Alegre	1,500,000	4,345	24%	-Consumption center -Chemical industry -Car parts -Metal-mechanics -Forest products -Tobacco -Electrical-electronic
		Canoas	330,000	2,090	62%	-Oil-chemical -Metal-mechanics -Electrical-electronic
		Novo Hamburgo	250,000	903	49%	-Shoes -Tanneries -Metal-mechanics
		Gravataí	230,000	954	67%	-Car parts -Metal-mechanics
		Sao Leopoldo	190,000	496	45%	-Metal-mechanics -Chemical -Textile
	Vale do Jacuí-Taquarí	Santa Cruz do Sul	115,000	763	66%	-Tobacco
	Lagoons Southeast Region of RS	Río Grande	200,000	793	57%	-Port -Chemical industry -Food
		Pelotas	350,000	630	31%	-Chemical industry -Food
	Central Region of RS	Santa María	250,000	471	22%	-Agro-industry
URUGUAY	Tacuarembó	Tacuarembó	90,000	327	n/a	-Cold-storage plants -Forestation, wood panels
	Maldonado	Maldonado-Punta del Este	140,000	541	n/a	-Meat and dairy products
	Canelones	Ciudad de la Costa	480,000	1.000	n/a	-Cold-storage plants -Dairy products -Fruit and vegetable growing
	Montevideo	Montevideo	1,330,000	7.311	n/a	-Consumption center -Port -Fruit and vegetable growing

The delimitation of the system of territorial centers could comprise the regions of more industrial weight, which are also the ones of greater road connectivity, in the Brazilian side:

- Metropolitan
- Vale do Jacuí-Taquari
- Highland Agro Industrial
- Southeast lagoons area
- Central Sul

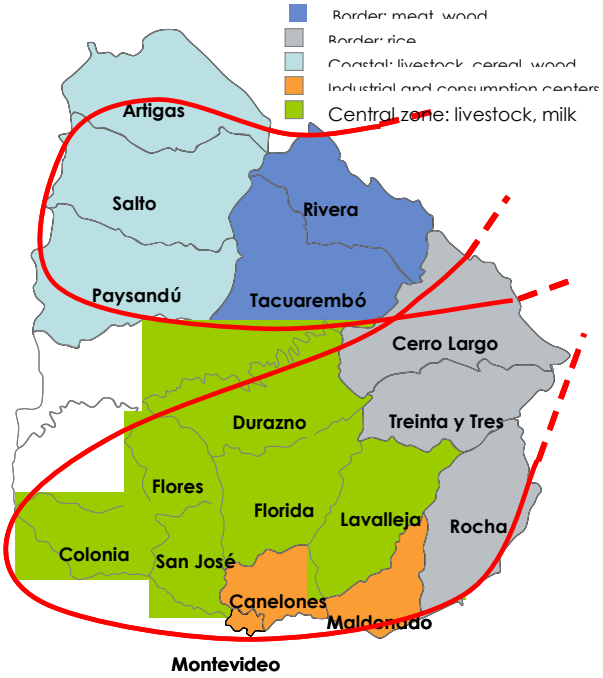
Figure III.2. Regions subject to study in Río Grande do Sul



In the Uruguayan side, the study would include:

- Border departments with farming and agro-industrial activity related to meat and wood (Rivera, Tacuarembó)
- Coastal departments (Artigas, Salto, Paysandú)
- Border rice fields through which the main road corridors go along. They are a connection to the capital city (Cerro Largo, Treinta y Tres, Rocha)
- Consumption and industrial poles (Canelones, Maldonado and Montevideo)
- Central departments with predominance of stockbreeding, milk, and cereal activity (Durazno, Flores, Florida, Lavalleja, San José and Colonia)

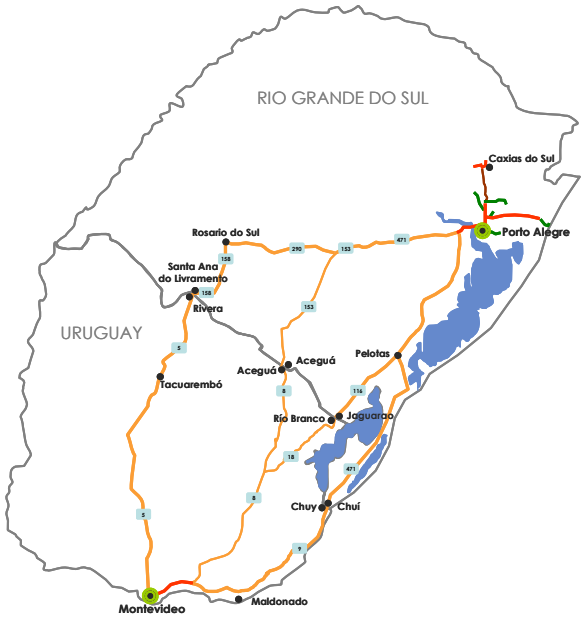
Figure III.3. Regions subject to study in Uruguay



Within the Uruguayan territory there are two corridors: one main corridor in line with the main hub Buenos Aires – Colonia – Montevideo –Brazilian border, which also comprises the central regions and the border connections: Chuy, Aceguá and Río Branco. One second subsidiary corridor would be the one connecting the coastal regions of the North with Rivera and Tacuarembó, and the Central Sul region of Río Grande do Sul.

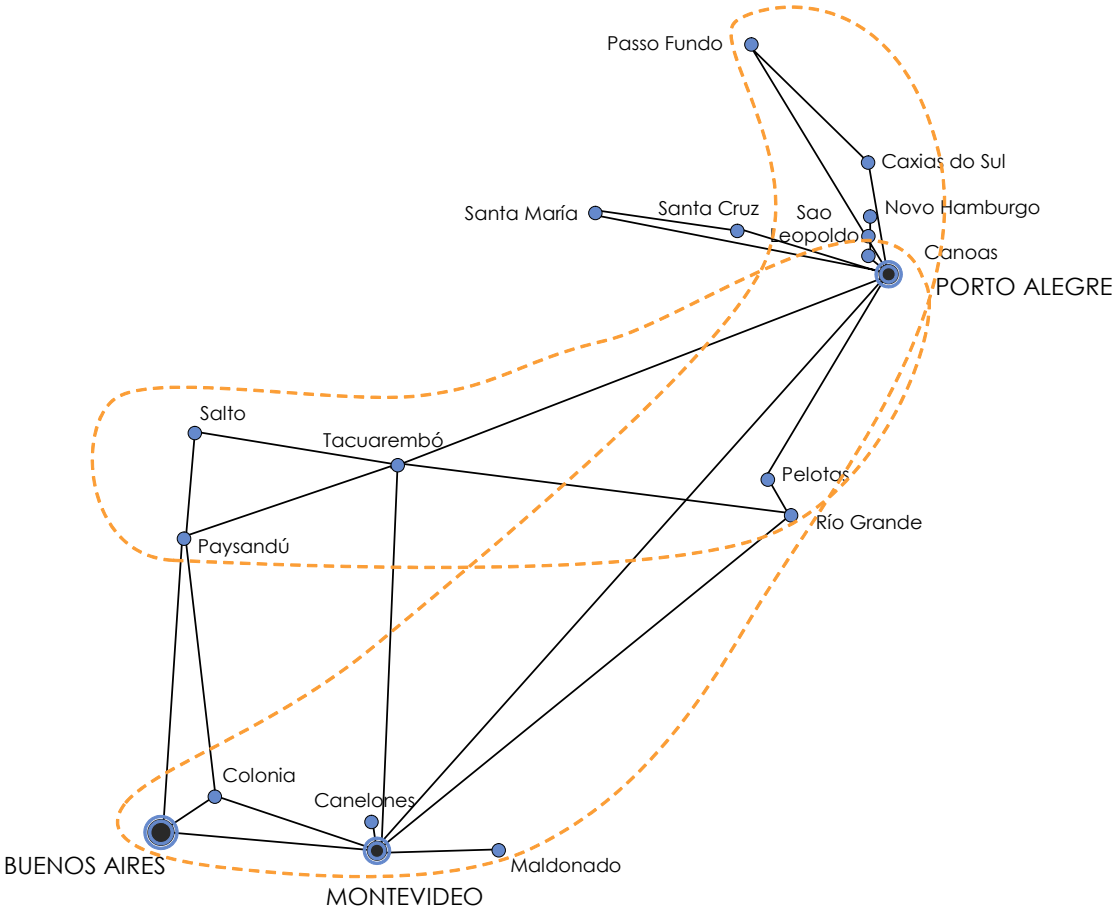
The road connectivity is guaranteed through the main road corridors that connect Montevideo and Porto Alegre. The railway connectivity is hindered by different rail widths, which make the border transfer compulsory, thus minimizing its potential.

Figure III.4. Road connectivity of the corridor



One predefinition of the logistic corridor, considering the existing structures, could be the following one:

Figure III.5 Network of cities in the logistics corridor



1.3 Scope of the evaluation

It is foreseen for that, given the logistics maturity of the corridor: Porto Alegre – Montevideo, the scope of the works shall comprise the complete development of the methodology, including modules 3, 4 and 5. This document, with the available preliminary information, reaches the application of the phases corresponding to Modules 1 and 2.

III.1.2. MODULE 2. Segmentation

The evaluation of the logistically homogeneous groups, capable of a differentiated analysis, can be carried out with primary information and interviews to the agents related to each activity sector, as well as to those agents that are more general (public and private), which can guide a first group of the chains.

The following is a preliminary list of the agents by typology:

- Related to the productive sector, private
  - Industrial
    - Industrial chambers

        - Sectoral associations
    - Commercial
        - Chambers of commerce
        - Exportation associations
    - Transportation and logistics
        - Federations of land carriers
        - Private railway operators
        - Logistics operators associations
        - Tax free zones
- Related to the governments
    - Ministry or Secretariat of Transportation
    - State railway firms
    - Ministry or Secretariat of Industries
    - Ministry or Secretariat of Foreign and Domestic Commerce
    - Bi-national chambers of commerce
    - Embassies and commercial representations abroad
    - Sectoral commission for the MERCOSUR
    - Customs Directions

The preliminary list of agents to be interviewed in Uruguay is hereinafter detailed.

As an example, it has been chosen, within the typologies of existing chains in the corridor and according to the preliminary information gathered, the ones related to **meat** and **wood as well as its related products (building materials and furniture)**, therefore, their corresponding sectoral agents are included in the list.

PRIVATE SECTOR

1. **Cámara de Industrias del Uruguay (CIU) - (Chamber of Industries of Uruguay)**

   Comisión Asesora de Comercio Exterior (Foreign Trade Advisory Committee). Mr. Rafael Sanguinetti/ Sr. César Bourdiel. e-mail: coex@ciu.com.uy. Tel. +598 2 604 0464 ext. 137

2. **Cámara Nacional de Comercio y Servicios del Uruguay (CNCS) - (National Chamber of Commerce and Services of Uruguay)**

   Departamento de Comercio Exterior (Foreign Trade Department). Ec. Dolores Benavente. Tel. +5982 916 1277

3. **Cámara Mercantil de Productos del País (CMPP) - (Mercantile Chamber of Products of the Country)**

   Mr. Gonzalo González Piedras. E-mail: gerencia@camaramercantil.com.uy . Tel. +598 2 924 0644

4. **Unión de Exportadores del Uruguay - (Union of Uruguayan Exporters)**

   Mr. Edmundo Macchi. Tel. +598 2 356 3060. E-mail: edmundomacchi@adinet.com.uy

5. **Cámara de Comercio Uruguay – Brasil - (Uruguayan-Brazilian Chamber of Commerce)**

Tacuarembó, 1401 esc. 101, Montevideo. Tel. +598 2 402 2742. E-mail camurbra@adinet.com.uy

6. **Cámara Uruguaya de logística (CALOG) – (Uruguayan Chamber of Logistics)**

   Mr. Ronald Ware, TIEMPOST S.A. Rambla 25 de Agosto 334, Montevideo. Tel. +598 2 915 8080. e-mail: rware@tiempost.com.uy

7. **Cámara de Transporte Multimodal - (Multimodal Chamber of Transportation)**

   Mr. Ernesto Berro. Rincón 454 Esc. 306. Tel. +598 2 916 7248. E-mail: eberro@adinet.com.uy / multimod@adinet.com.uy

8. **Asociación Uruguaya de Agentes de Carga – AUDACA - (Uruguayan Association of Load Agents)**

   Mr. Renzo Menotti. Zabala 1379, Montevideo.

9. **Cámara Autotransporte Terrestre Internacional del Uruguay (CATIDU) - (Chamber of International Land Auto Transportation of Uruguay)**

   Eng. Conrado Serrentino (ex–advisor MTOP). Tel. +598 2 711 80 33. Magallanes 1986, Montevideo. e-mail: catidu@adinet.com.uy Tel. +598 2 924 2618 / 929 0937

10. **Intergremial de Transporte Profesional de Carga Terrestre del Uruguay (ITPC) – (Inter-unions of Professional Load Land Transportation of Uruguay)**

    Lima 1423, Montevideo. Tel. +598 2 924 6569. itpc@intergremial.com.uy / itpc@adinet.com.uy

11. **Colombian Tax-Free Zone**

    Mr. Manuel Miyar Camblor, Honorary President of Grupo Continental Zona Franca SA. Office in Montevideo: Rincón 487 2nd floor. Tel. +598 2 917 0164. E-mail: zfc@zonafrancacolonia.com

PUBLIC SECTOR

12. **Ministerio de Relaciones Exteriores (MRREE), Dirección de Programación Comercial - (Ministry of Foreign Affairs, Bureau of Comercial Programming)**

    Colonia 1206 1st floor – Montevideo. Tel. +598 2 903 2872 / 75. E-mail: dipc41@mrree.gub.uy.

13. **Ministerio de Transporte y Obras Públicas (MTOP) – (Ministry of Transportation and Public Works)**

    Eng. Pablo Genta, National Director of Transportation. E-mail: pablo.genta@dnt.gub.uy Tel. +5982 916 2940 o 916 3197. Eng. Eliana Embid, Director of Road Transportation. E-mail: eliana.embid@dnt.gub.uy Tel. +598 2 916 1671

14. **Administración Nacional de Puertos (ANP) – (National Port Administration)**

    President Dr. Eng. Fernando Puntigliano. Tel. +598 2 915 1441 / 917 0982. E-mail: presidencia@anp.com.uy. General Manager Eng. Alberto Díaz. Tel. +598 2 1901819. E-mail: adiaz@anp.com.uy

15. **Administración de Ferrocarriles del Estado (AFE) – (State Railway Administration)**

    General Manager Mr. Alejandro Orellano. Tel. +598 2 900 3324. secretariagciagral@adinet.com.uy

16. **Instituto Nacional de Carnes (INAC) – (National Institute of Meat)**

    Mr. Luis Alfredo Fatti. Rincón 545 – Montevideo. Tel. +598 2 916 0430.

17. **Ministerio de Ganadería, Agricultura y Pesca (MGAP) – (Ministry of Livestock, Agriculture and Fisheries)**

    Dirección General Forestal. Departamento de Planeamiento (General Bureau of Forestry – Planning Department). Agr. Eng. Daniel San Román. 18 de julio 1455 6th floor, Montevideo. Tel. +598 2 401 9707. E-mail: dsanroman@mgap.gub.uy

The following is a list of agents in Río Grande do Sul (in some cases, the agents may be located in other Federal States):

PRIVATE SECTOR

18. **Associação Brasileira de Comércio Exterior (ABRACEX)**

    Dr. Primo Roberto Segatto. Alameda Joaquim Eugênio de Lima, 1467 - Jardim Paulista, São Paulo. Tel. +55 11 3051 5108. E-mail: abracex@abracex.org.br

19. **Associação de Comércio Exterior do Brasil (AEB)**

    Mr. José Augusto de Castro, Executive Director. Av. General Justo, 335 4º andar, Rio de Janeiro. Tel. +55 21 2544 0048. E-mail: aebbras@aeb.org.br

20. **Aliança Pró Modernização Logística do Comércio Exterior (PROCOMEX)**

    Mr. John Edwin Mein. Tel: +55 11 38 14 13 92. E-mail: procomex@procomex.com.br

21. Federação das Associações Comerciais e de Serviços do Rio Grande do Sul (Federasul)

President, Paulo Afonso Girardi Feijó. Largo Visconde do Cairú, 17 – 6º andar. Porto Alegre. Tel. +55 51 211 2011 E-mail: comexterior@federasul.com.br

22. Federação das Indústrias do Estado do Rio Grande do Sul (FIERGS)

President, Paulo Tigre. Av. Assis Brasil, 8787 91.140-001 - Porto Alegre. Tel. +55 51 3347 8787. E-mail: fiergs@poa.fiergs.org.br

23. Câmara Brasil-Uruguai de Comércio Exterior

Av. Cristóvão Colombo, 2999 - Porto Alegre. Tel. +55 51 3337 7234. E-mail: c.uruguaibrasil@terra.com.br

24. Associação Brasileira de Transportadores Internacionais (ABTI)

Ter. Rod. Perimetral Leste - Esq. Rua C e D- Km 718 BR.290 - Centro Administrativo Posto Auto Serviços- Sala 108/109. Uruguaiana. E-mail: abti@abti.com.br Tel. +55 3413 2828.

25. Confederação Nacional do Transporte (CNT)

Diretoria Seção do Transporte de Cargas, Sr. Flávio Benatti. e-mail: cnt@cnt.org.br Tel. +55 (0)800 728 2891.

26. Associação brasileira de Movimentação e Logística (ABML)

President Márcio Frugiuele, FIEL S.A. Av. Conselheiro Rodrigues Alves, 848 Vila Mariana-São Paulo SP. Tel. +55 11 5082 3972.

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28. Sindicato das Empresas de Transportes de Carga no Estado do Rio Grande do Sul (SETCERGS)

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29. Rede Ferroviária Federal S.A. (RFFSA) Ander concesión to ALL - América Latina Logística S.A. (ex- railway: Sul-Atlântico)

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30. **Associação Brasilera das Indústrias do Mobiliário (ABIMÓVEL), delegación RS, and Sindicato das Indústrias da Construção e do Mobiliário (SINDMÓVEIS)**

Mr. Volnei Benini. E-mail volnei@brvmoveis.com.br Tel. +55 54 34 52 30 67.

31. **Associação das Indústrias de Móveis do Estado do Rio Grande do Sul (MOVERGS)**

Mr. Luiz Attilio Troes (Móveis Tremarin Ltda) Tel. +55 54 2102 2450 - Bento Gonçalves.

32. **Associação das Indústrias de Curtume do Rio Grande do Sul (AICSUL)**

Mr. Cezar Müller, President. Rua Lucas de Oliveira, 49 sala 801 - Novo Hamburgo. Tel. +55 51 593 3833 / 594 8986.

33. **Associação Brasileira das Indústrias de Calçados**

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34. **Associação Brasileira do Vestuário (ABRAVEST)**

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35. **Associação dos Fumicultores do Brasil (AFUBRA) and Cámara Setorial da Cadeia Produtiva do Fumo**

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PUBLIC SECTOR

36. **Agencia de Promoção de Exportações e Investimentos (APEX)**

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37. **Ministério dos Transportes - Agência Nacional de Transportes Terrestres (ANTT)**

Mr. Noboru Ofugi, Diretor. Setor Bancário Norte (SBN), Quadra 2, Bloco C, Brasília. Tel. +55 61 3410 1971. E-mail: Noboru.Ofugi@antt.gov.br . Geréncia de Transporte Rodoviário de Cargas (GEROC) Mr. Wilbert Junquillo Tel. +55 61 3410 1224. E-mail Wilbert.Junquillo@antt.gov.br

38. **Secretaria dos Transportes do Governo do Rio Grande do Sul**

Secretary Mr. Alexandre Postal. Tel. +55 51 3210 5500. E-mail: postal@st.rs.gov.br

39. Secretaria do Desenvolvimento e dos Assuntos Internacionais do Rio Grande do Sul

Secretary of State Mr. Luis Roberto Ponte. Tel. +55 51 32881003 / 1006 / 1009. E-mail: gabinete@sedai.rs.gov.br

40. Superintendência do Porto de Rio Grande – SUPRG

Director Eng. Vidal Áureo Mendoça. E-mail: vidal@portoriogrande.gov.br Avenida Honório Bicalho s/n, Rio Grande. Tel. +55 53 3231 1366 / 3231 1996.

With the results of this round of interviews, it will be possible to carry out a first segmentation of logistics chains.

In a posterior instance of interviews and from the information collected through the general agents, the list of specific agents can be completed with those related to the segmented logistics chains, such as the industry of dairy products, textile, cars, chemicals, electronic, furniture, shoes, etc.

III.1.3. MODULE 3. Structure of the logistics chains

As an example, in the following figures it is described the cars logistics chain in the State of Río Grande do Sul, a segment that represents, in the bilateral commerce, 13% of the value of the flow towards Uruguay and 4% of the value received by Río Grande do Sul.

Figure III.6 Description of the RGS car sector and location

Descripción de	DESCRIPTION OF THE SECTOR LOCATION

- In Rio Grande do Sul, the car sector invoices around 5 U$S billions and includes around 600 firms (providers, systems team, and assemblers), from which 70% are small firms.
- The cars sector in RS has an important variety of production and is located in various sectors:
  - Agriculture machines (Northeast-Erechim region): 35,000 U
  - Agriculture supplies (Northeast-Erechim region): 15-20,000 U
  - Railway supplies (Serra): 25-30,000 U
  - Bus (Serra): 15,000 U
  - Cars (RM): 120,000 U
  - Car parts /Caixa/RM): Millions of units
- The sector growth has been very important during the last years (10–15%) in all products, except in agriculture machines and supplies, which have undergone a slowdown.

Figure III.7 Sequence of the value chain: stages of the supply process

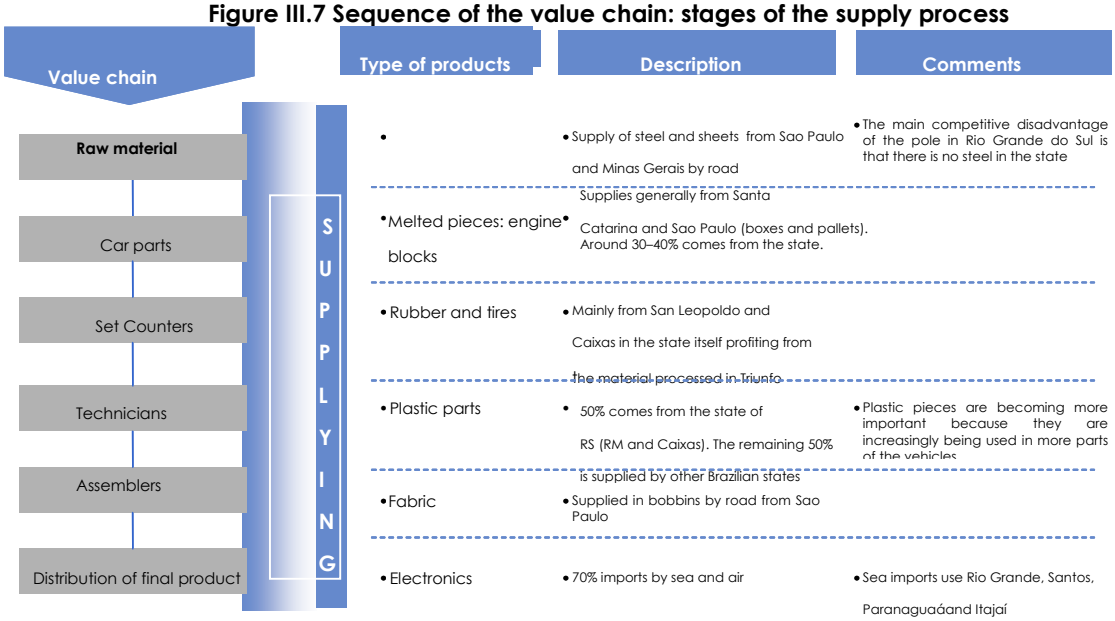


Figure III.8 Sequence of the value chain transformation stages

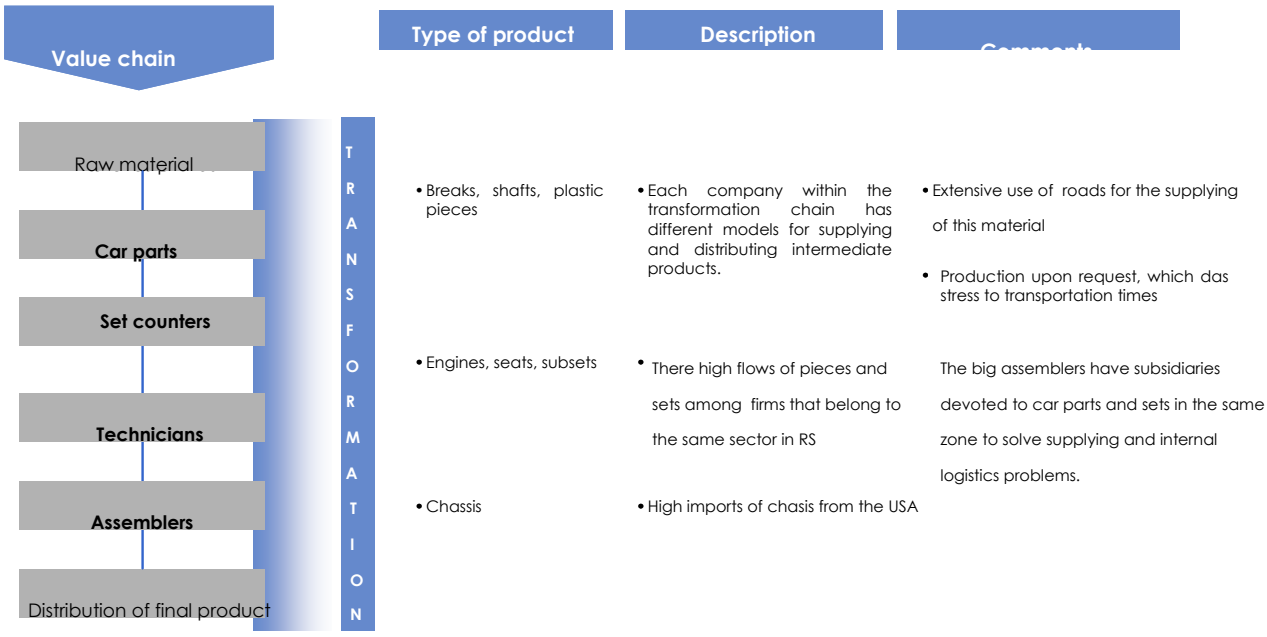
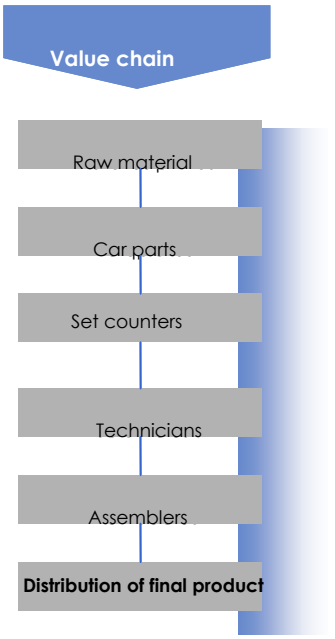


Figure III.9 Sequence of the value chain: distribution stages



DISTRIBUTION	Types of products	Description	Comments
	• Agriculture supplies (units/year)	•Main markets: 10% RS, 60% Brazil, and 30% exports to Latin America. Transportation by truck.	
	• Agriculture machines (30,00 units/year)	• Main markets: 10% Rio Grande do Sul, 40% Brazil, 15% MERCOSUR, 35% exports to the USA and EU.	• In exports, transportation is carried out by RoRo or containers (disassembled pieces). Use of the ports of Rio Grande Imbituba, depending on the routes of the Shipping carriersr
	• Road supplies (30,00 u/year)	• Main markets: MERCOSUR and Brazil. Road and rolling transportation. Only a 5% is exported to Africa and Middle East by RoRo (Itajaí and Paranaguá).	• In the future, pieces will be assembled in the destination place.
	• Buses (15,000 u/year)	• • Main markets: 50% internal Brazilian market, and 50% exports to Africa, Middle East and Latina America. For internal Brazilian market, Buses are carried through rolling.	• In exports, transportation is carried out by RoRo or containers (with or without chassis). Rio Grande is normally used, but it depends on the routes of the shipping carriers.
	• Vehicles (120,000 units)	• 10% RS, 80% Brazil, 10% MERCOSUR. Transportation is carried out by floor trucks	
	•Car parts	• Transportation in pallets and boxes for Brazil, although there is also a high level of exports by sea (FOB).	• For exports, containers are consolidated and stoved in logistics operators

Source: IGEA, ALG Analysis

With the primary information available, it has been possible to partially apply the methodology to the sub-corridor selected, within the Group of Projects of the hub Porto Alegre – Colonia – Buenos Aires. When studying in depth the gathering of specific information obtained through the successive rounds of interviews, it will be possible to carry out Module 4, Logistics Audit, to define the Execution Program within Module 5, and to focus the Follow-up and Evaluation task planned in Module 6.

III. 2 IIRSA Integration Hub: Andean. Group N° 9: Lima – La Paz.

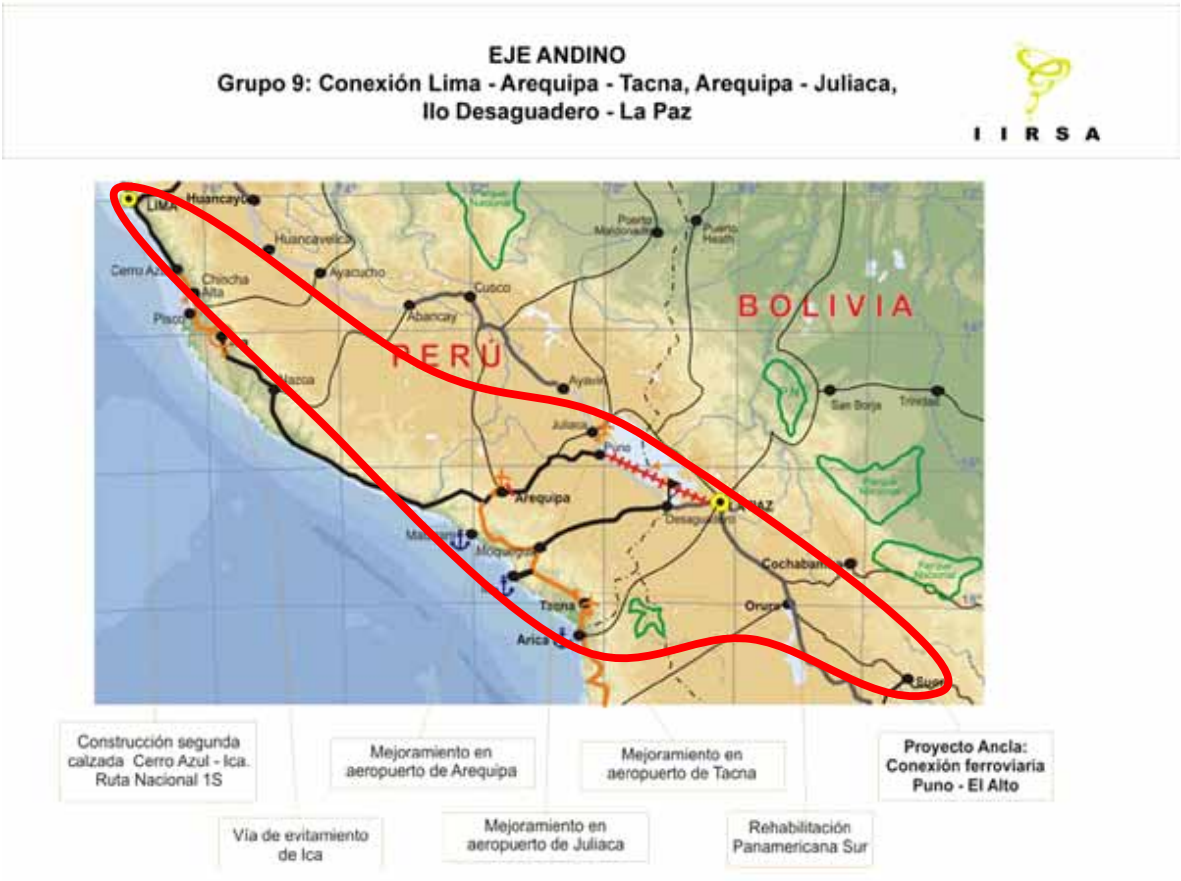
III.2.1. MODULE 1. Functional definition

1.1 Appropriateness of the logistics analysis

The strategic function of the group of projects N° 9 of the Andean Hub: Connection: Lima – Arequipa - Tacna, Arequipa – Juliaca e Ilo – Desaguadero – La Paz is to consolidate the commercial exchange among the southern coast of Peru, the southern mountain range of Peru and the Andean area of Bolivia.

The group of projects defines a logistics corridor that links two important capital cities: Lima (Peru) and La Paz (Bolivia). Among these cities and the cities in the area there is a territorial space with consolidated transportation routes, which have significant consumption capacity and production and potential to generate a greater commercial exchange with the least infrastructure. As a consequence, the study of this logistics corridor is appropriate.

Figure III.10. Group of projects N° 9



Between La Paz and Lima there is a distance of about 1,500 km; they have 6 and 1.1 millions of inhabitants, respectively, and their main cities are:

- In Peru

- Arequipa (680,000 inhabitants)
- Matarani (port)
- Moquegua (40,000 inhabitants)
- Ilo (port)
- Tacna (120,000 inhabitants)
- Arica (port)
- Juliaca (140,000 inhabitants)
- Puno (100,000 inhabitants)

- In Bolivia
  - Cochabamba (590,000 inhabitants)
  - Oruro (210,000 inhabitants)
  - Sucre (230,000 inhabitants)
  - Santa Cruz de la Sierra (1,370.000 inhabitants)

The main ports of the corridor are: Callao (887,000 TEU in 2005), Matarani (1,628.000 tons in 2005), Ilo (140,000 tons in 2005) and Arica (43,000 TEU in 2005).

As a general example within this applicative part, we will only analyze in this document the international commercial flows between the two countries that have the logistics corridor (Bolivia and Peru). In a more detailed application, the international flows with the world and the national flows that use this logistics corridor can be analyzed.

After applying a first level of analysis based on the characteristics of the bilateral commercial flows between Bolivia and Peru, there will be a short list of lines of products that are exchanged through the logistics corridor; in this way, it will be possible to carry out a second level of analysis to identify the firms related to the commercial exchange of the most important products.

Commerce between Bolivia and Peru shows a growing trend both in the bilateral exchange as well as in their exchanges with the rest of the world. During the last five years, Bolivian and Peruvian exports to the rest of the world have grown at an annual average of 30.9% and 40,4% respectively. Also, bilateral commerce between both countries has increased at an annual average of 14% in the period 2001-2005.

Table III.5. Foreign trade (Bolivia and Peru)

Country	2003	2004	2005	Aver. var. %
BOLIVIA				
Total of Exports to the world (U$S Millions)	1,633	2,254	2,791	30.9%
Total of Exports to the world (Thousand Tons)	9,854	14,503	17,158	32.7%
Average: Value / Weight (USD/Ton)	166	155	163	-0.8%
Total trade to Peru (U$S Millions)	88	138	126	23.7%
Total trade to Peru (Thousand Tons)	228	395	338	29.6%
Average: Value / Weight (USD/Ton)	388	349	373	-1.6%
PERU				
Total of Exports to the world (U$S Millions)	8,549	12,365	16,830	40.4%
Total of Exports to the world (Thousand Tons)	17,491	19,564	22,603	13.7%
Average: Value / Weight (USD/Ton)	489	632	745	23.6%
Total trade to Bolivia (U$S Millions)	103	134	155	23.0%
Total trade to Bolivia (Thousand Tons)	116	134	145	12.0%
Average: Value / Weight (USD/Ton)	889	995	1,071	9.8%

The commercial flow from Bolivia to Peru is composed of about 1,800 lines of products; however, the 80% of the commercial flow tonnage in 2005 from Bolivia to Peru was composed of only 10 lines of products and the 80% of the value of the commercial flow is represented by about 20 lines of products.

Also, the 30 main lines of products, ordered from greatest to least, according to the traded tonnage from Bolivia to Peru, represent 96% of the total tonnage traded in 2005 and 73% of the total value of the commercial exchange in 2005.

Table III.6. Commerce from Bolivia to Peru, year 2005, main products by tonnage

Ranking weight	Ranking value	Lines of Products (Exports Bolivia to Peru - year 2005)	Value (thousands US$)	Weight (Tons)
1	2	Soya beans flour (Soya)	15.649	70.985
2	4	Soya cakes (Soya), ground or in pellets	12.221	68.744
3	3	Refined cane sugar or sugar beet	12.518	42.309
4	17	Iron or steel waste	1.441	19.115
5	7	Soya beans (Soya)	4.362	18.482
6	5	Refined Soya oil	10.267	14.941
7	12	Lead minerals and their concentrates	2.225	11.996
8	14	Ceramic floor tiles and flagstones	1.814	10.851
9	6	Zinc minerals and their concentrates	5.100	8.673
10	19	Other syrups	1.266	7.507
11	20	Ethyl alcohol > 80% Vol.	1.208	5.848
12	25	Natural and concentrated sodium borates	784	4.991
13	16	Unrefined cane sugar with no aromatization	1.455	4.838
14	32	Other hard yellow corn	473	4.095
15	28	Raw wood fiber boards	702	4.057
16	15	Engine gasoline, except for aviation	1.565	3.475
17	9	Cotton with no carding or combing	3.752	3.046
18	13	Peanuts with no toasting or cooking	2.156	2.887
19	26	Uncooked food pasta	780	2.104
20	22	Base oils for lubricants	1.125	2.011
21	8	Powdered milk or other solid forms	4.134	1.864
22	99	Other bananas or fresh banana-like fruits	42	1.753
23	29	Glass bottles/containers > 0.33 Lt	665	1.517
24	36	Plywood	403	1.278
25	60	Sunflower cakes, ground or in pellets	138	1.189
26	10	Uncombed cotton threads > 85% in weight	2.736	1.125
27	11	Uncombed cotton threads > 232.56 dtex	2.402	1.120
28	65	Prefabricated elements for building	125	1.077
29	37	Propane, liquefied	400	1.058
30	33	Soya oil (Soya), raw	441	892
		ACCUMULATED: VALUE 73%; WEIGHT 96%	**92.349**	**323.828**

Also, according to the value traded in 2005 from Bolivia to Peru, it can be observed that the 30 main lines of products represent an 89% of the total value and a 93% of the total tonnage exported towards Peru.

Table III.7. Commerce from Bolivia to Peru, year 2005, main products by value

Ranking weight	Ranking value	Lines of Products (Exports Bolivia to Peru - year 2005)	Value (thousands US$)	Weight (Tons)
32	1	Silver minerals and their concentrates	16.027	843
1	2	Soya beans flour (Soya)	15.649	70.985
3	3	Refined cane sugar or sugar beet	12.518	42.309
2	4	Soya cakes (Soya), ground or in pellets	12.221	68.744
6	5	Refined Soya oil	10.267	14.941
9	6	Zinc minerals and their concentrates	5.100	8.673
5	7	Soya beans (Soya)	4.362	18.482
21	8	Powdered milk or other solid forms	4.134	1.864
17	9	Cotton with no carding or combing	3.752	3.046
26	10	Uncombed cotton threads > 85% in weight	2.736	1.125
27	11	Uncombed cotton threads > 232.56 dtex	2.402	1.120
7	12	Lead minerals and their concentrates	2.225	11.996
18	13	Peanuts with no toasting or cooking	2.156	2.887
8	14	Ceramic floor tiles and flagstones	1.814	10.851
16	15	Engine gasoline, except for aviation	1.565	3.475
13	16	Unrefined cane sugar with no aromatization	1.455	4.838
4	17	Iron or steel waste	1.441	19.115
33	18	Boned cattle meat, frozen	1.433	767
10	19	Other syrups	1.266	7.507
11	20	Ethyl alcohol > 80% Vol.	1.208	5.848
37	21	Other zip fasteners	1.147	491
20	22	Base oils for lubricants	1.125	2.011
40	23	Butter	1.049	441
74	24	Thin hair, carded or combed	845	60
12	25	Natural and concentrated sodium borates	784	4.991
19	26	Uncooked food pasta	780	2.104
68	27	Shoe with rubber, plastic, leather sole	749	90
15	28	Raw wood fiber boards	702	4.057
23	29	Glass bottles/containers > 0.33 Lt	665	1.517
90	30	Medicines for therapeutic or prophylactic use	647	32
		ACCUMULATED: VALUE 89%; WEIGHT 93%	**112.224**	**315.210**

The commerce from Peru to Bolivia is composed of 3,500 lines of products; however, 80% of the tonnage of the commercial flow of 2005 is constituted by just 45 lines of products and 80% of the value of the commercial flow is represented by approximately 100 lines of products.

Table III.8. Commerce from Peru to Bolivia, year 2005, main products by tonnage

Ranking	Ranking	Lines of Products	Value	Weight
weight	value	(Exports Peru to Bolivia - year 2005)	(thousands US$)	(Tons)
1	1	Iron or steel bars with no alloy	16.653	29.798
2	3	Surface-active cleaning preparations	7.232	9.629
3	17	Urea, even in aqueous dissolution	1.687	5.595
4	18	Mineral or chemical manure	1.485	5.277
5	29	Wheat flour and that of morcajo or tranquillón [mixture of wheat and rye]	1.041	4.473
6	11	Iron shapes or structural steel with no alloy, in "L"	2.386	4.339
7	24	Hydrogen diammonium orthophosphate	1.245	3.965
8	2	Diapers, towels, similar hygienic items	7.697	3.442
9	5	Bottles and similar containers < 18.9 liters	5.805	3.381
10	9	Evaporated milk, with no sugar	2.666	3.337
11	14	Kerosene	1.950	2.785
12	12	Toilet paper, in rolls of a width < 36 cm.	2.205	2.383
13	56	Hydrogen calcium orthophosphate	546	2.144
14	26	Steel wire rod of easy mechanization	1.143	2.078
15	7	Sweet cookies, wafers, even fillings	3.094	2.070
16	4	Other plastic plates, sheets, and foils	6.019	2.039
17	80	Ammonium sulfate	421	2.015
18	6	Acrylic or modacrylic wire ropes	3.951	1.793
19	153	Calcium carbonate	145	1.624
20	8	Cotton with no carding or combing	2.670	1.475
21	30	Iron or steel balls and similar items	1.030	1.423
22	31	Soap, surface-active organic products	1.013	1.312
23	161	Paper or cardboard waste	135	1.257
24	33	Iron or steel wire with no alloy, with zincing	998	1.163
25	188	Carbon dioxide	98	1.151
26	10	Acrylic or modacrylic discontinuous fibers	2.479	1.100
27	44	Yoghurt, even concentrated, with sugar	719	1.088
28	163	Other papers or cardboards waste	132	1.070
29	47	Sheets, bars, shapes, tubes; iron or steel	658	1.027
30	13	Polishing pastes, creams and similar preparations	2.193	922
		ACCUMULATED: VALUE 51%; WEIGHT 73%	**79.496**	**105.155**

Table III.9. Commerce from Peru to Bolivia, year 2005, main products by value

Ranking	Ranking	Lines of Products	Value	Weight
weight	value	(Exports Peru to Bolivia - year 2005)	(thousands US$)	(Tons)
1	1	Iron or steel bars with no alloy	16.653	29.798
8	2	Diapers, towels, similar hygienic items	7.697	3.442
2	3	Surface-active cleaning preparations	7.232	9.629
16	4	Other plastic plates, sheets, and foils	6.019	2.039
9	5	Bottles and similar containers < 18.9 liters	5.805	3.381
18	6	Acrylic or modacrylic wire ropes	3.951	1.793
15	7	Sweet cookies, wafers, even fillings	3.094	2.070
20	8	Cotton with no carding or combing	2.670	1,475
10	9	Evaporated milk, with no sugar	2.666	3.337
26	10	Acrylic or modacrylic discontinuous fibers	2.479	1.100
6	11	Iron shapes or structural steel with no alloy, in "L"	2.386	4.339
12	12	Toilet paper, in rolls of a width < 36 cm.	2.205	2.383
30	13	Polishing pastes, creams and similar preparations	2.193	922
11	14	Kerosene	1.950	2.785
36	15	Lids, closing devices, plastic ones	1.881	796
79	16	Perfumes and toilet water	1.829	227
3	17	Urea, even in aqueous dissolution	1.687	5.595
4	18	Mineral or chemical manure	1.485	5.277
99	19	Advertising prints, catalogues and similar items	1.461	151
63	20	Refined copper wire, section > 6 mm	1.432	368
145	21	Fulminating caps	1.367	80
133	22	Combed thin hair threads, retail	1.322	93
51	23	New rubber tires, for trucks	1.282	467
7	24	Hydrogen diammonium orthophosphate	1.245	3.965
69	25	Front-end loaders and mechanical loaders	1.144	318
14	26	Steel wire rod of easy mechanization	1.143	2.078
182	27	Imitation jewelry, except from the cufflinks and similar items	1.102	49
74	28	Other threads of discontinuous synthetic fiber	1.070	274
5	29	Wheat flour and that of morcajo or tranquillón [mixture of wheat and rye]	1.041	4.473
21	30	Balls and similar items, of iron or steel	1.030	1.423
		ACCUMULATED: VALUE 57%; WEIGHT 65%	**88.521**	**94.127**

The evolution of commerce in the last years has been remarkable in some specific products that are hereinafter detailed:

Table III.10. High-growth products in commerce from Peru to Bolivia

Group of products	Traded value 2005 (thousand US$ FOB)	Traded volume 2005 (tons)	% of the exported value	Growth 2001-2005 in US$ FOB (% inter-annual)	Growth 2001-2005 in tons (% inter-annual)
Textiles	15.552	4.699	10,0%	4%	7%
Metal mechanics	10.092	4.319	6,5%	7%	17%
Chemicals	50.967	48.931	32,8%	12%	7%
Wood and paper	9.185	13.243	8,5%	27%	30%
Total of selected products	85.796	71.192	58%	-	-
Traded TOTAL	**143.296**	**132.823**	**100%**	**11%**	**10%**

According to the methodological development proposed, the threshold values for the acceptance of the logistics corridor are favorable in the case of the corridor: Lima-La Paz:

Table III.11 Evaluation of the classification criteria

Criterion	Indicator	Operational value	Evaluation
a. Existing infrastructure	a.1. Presence of at least one top-level port and one top-level airport (10 pts.) a2. Presence of one top-level port or one top-level airport (5 pts.) a3. Presence of one port or airport of provincial level (2 pts.)	a1 and a2. Top-level nodal infrastructure: ports with flows > 100,000 TEU [Twenty-Foot Equivalent Units] or 1 MTMA, or airports with flows of > 10,000 tons or 1 Mpax/year a3. Provincial nodal infrastructure: must fulfill at least 20% of the expected flows for the first level	a1 Fulfilled: ports of Callao and Matarani, Lima airport *RESULT: 10 points*
b. Production / consumption capacity	b1. Presence of at least 2 superior-rank cities or 5 medium-rank cities (10 pts.) b2. Presence of at least 5 lower-rank cities in the GP (5 pts.)	b1 and b2. Cities of superior rank: 500,000 inhab., medium-rank cities: 200,000 inhab., lower-rank cities: 100,000 inhab.	b1 Fulfilled: Lima, Arequipa, La Paz *RESULT: 10 points*
c. Intra-communitarian potential	Medium annual growth of imp/exp among countries of the corridor. c1: For high growth rates in at least 3 diversified logistics segments, 10 pts. will be assigned c2: If growth is limited to only one segment, 5 pts. will be assigned	It will be considered as high growth a 3% inter-annual sustained average during the last 5 years	b1. Fulfilling segments are as follows: textile, metal-mechanics, chemical, wood, and paper *RESULT: 10 points*
d. Financing opportunities	Valuation of the technical responsible ones in each country (assignment of 10 or 5 pts depending on the importance and expected impact of the project)	The impact of the projects in the improvement of the logistics function must be defined in specific documents	Not applicable
e. Logistics complexity	e1. Presence of at least 3 productive segments of diversified logistics (10 pts.) e2. Existence of at least one diversified logistics family (6 pts.)	In e1 and e2, there must be present at least some family of the segments of mass consumption, textile, and shoes, cars, food and other perishable products, chemicals, and/or paper. For each family added to the required minimum, two points will be added in e1 or e2	e1 Fulfilled: segment of textile, dairy products, meat, ceramics, paper, chemicals *RESULT: 10 points*
			GLOBAL EVALUATION: 40 points out of 40 possible ones

1.2 Evaluation of the functional scheme

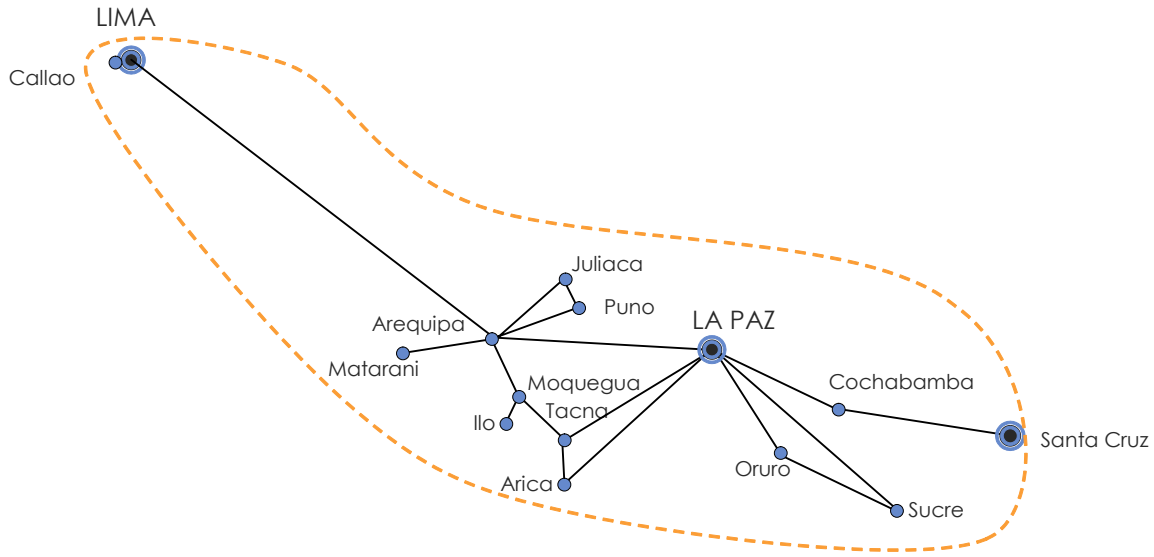
The necessary information for the evaluation of the functional scheme, essentially load flows among cities, turns out to be a deeper site work that does not include this application example.

As an approximation, it is estimated that the load flows in the logistics corridor will be produced among the main production and consumption centers. The road connectivity is effectively carried out through the main road corridors that connect La Paz and Santa Cruz with the cities in the south of Peru up to Lima.

Figure III.11. Road connectivity of the corridor

In this case, it is a relative lineal corridor, centered in the Bolivian transverse corridor: Santa Cruz – Cochabamba – Oruro – La Paz. In the Peruvian side, it is located among the southern cities and the metropolitan area of Lima. A pre-definition of the logistics corridor: Lima-La Paz could be the following:

Figure III.12. Network of cities of the logistics corridor



1.3 Scope of the evaluation

It is planned that, given the logistics maturity of the corridor: Lima – La Paz, the scope of the works shall comprise the complete development of the methodology, including modules 3, 4 and 5. This document, with the available preliminary information, reaches the application of the phases corresponding to Modules 1 and 2.

III.2.2. MODULE 2. Segmentation

The evaluation of the logistically homogeneous groups, capable of a differentiated analysis, can be carried out with primary information and interviews to the agents related to each activity sector, as well as to those agents that are more general (public and private), which can guide a first group of the chains.

The following constitutes a preliminary list of the agents by typology:

- Related to the productive sector, private
  - Industrial
    - Industrial chambers
    - Sectoral associations
  - Commercial
    - Chambers of commerce
    - Exports associations
  - Transportation and logistics
    - Federations of land transporters
    - Private railway operators
    - Logistics operators associations
    - Tax-free zones
- Related to the governments
  - Ministry or Secretariat of Transportation
  - State railway firms

- Ministry or Secretariat of Industries
- Ministry or Secretariat of Foreign and Domestic Commerce
- Bi-national chambers of commerce
- Embassies and commercial representations abroad
- Customs Directions

The preliminary list of agents to be interviewed in Peru and Bolivia is hereinafter detailed.

- **Peru**

PRIVATE SECTOR

1. **Cámara Nacional de Comercio, Producción y Servicios – (National Chamber of Commerce, Production and Services)**

   Gregorio Escobedo 396 3rd floor, Jesús Maria, Lima. Tel. 511 219 1580.

2. **Cámara de Comercio de Lima (CCL) – (Chamber of Commerce of Lima)**

   Centro de Comercio Exterior (Foreign Trade Center). Tel. +511 463 3434, ext. 775 - 776

3. **Asociación de Exportadores (ADEX) – (Exporters Association)**

   Mr. Eduardo Scerpella Robinson. Av. Javier Prado Este, 2875, San Borja, Lima. Tel. +51 1 346 24 50

4. **Sociedad de Comercio Exterior (COMEX) – (Foreign Trade Society)**

   Bartolomé Herrera, 254, Miraflores, Lima. Tel: +51 1 446 4394 / 422 57 84 / 422 57 81. E-Mail: rguadal@amauta.rcp.net.pe.

5. **Sociedad Nacional de Industrias (SNI) – (National Society of Industries)**

   Los Laureles, 365, Lima. Tel. 51 1 421 88 30 / 421 89 83. E-mail: sni@sni.org.pe . Mr. Javier Dávila / Anexos 233 y 235 E-mail: jdavila@sni.org.pe.

6. **Confederación Nacional de Instituciones Empresariales Privadas (CONFIEP) – (National Confederation of Private Business Institutions)**

   Jr. Vanderghen 595 - San Isidro, Lima. Tel: +511 440 6050. E-Mail: milos@confiep.org.pe

7. **Cámara de Comercio e Industria de Arequipa – (Chamber of Commerce and Industry of Arequipa)**

   Juan Carlos Chirinos Pepper. Calle Quezada No. 104, Yanahuara, Arequipa. Tel: +51 54 253920 E-mail: comext@camara-arequipa.org.pe

8. **Asociación Peruana de Profesionales de la Logística (APPROLOG) – (Peruvian Association of Logistics Professionals)**

   Mr. Emilio Fantozzi. Tel. +511 420 1800, ext. 6200. E-mail: efantozzit@ransa.net.

9. **Asociación Nacional del Transporte de Carga (ANATEC) – (National Association of Load Transportation)**

   Av. Arequipa 330, Office: 901-902, Lima. Tel: +511 433 1321. E-mail: anatec@ddm.com.pe

10. **Zona Franca de Tacna (ZOFRATACNA) – (Tacna Tax-Free Zone)**

    Mr. Juan de Dios Ramírez Calderón, General Manager. Tel. +51 52 31 7077. E-mail: jramirez@zofratacna.com.pe

PUBLIC SECTOR

11. **Comisión para la Promoción de Exportaciones (PROMPEX) – (Commission for Exports Promotion)**

    Mr. Juan Carlos Mathews Salazar. Av. República de Panamá 3647 - San Isidro - Lima 27 Perú. Tel. +51 1 222 1222 / 221 0880. E-mail: sae@prompex.gob.pe.

12. **Ministerio de Transporte y Comunicaciones (MTC) – (Ministry of Transportation and Communications)**

    Dirección general de circulación terrestre, Dirección general de caminos y ferrocarriles, Dirección general de transporte acuático (General Bureau of Land Traffic, General Bureau of Roads and Railways, General Bureau of Water Transportation). Jirón Zorritos 1203 / Lima 1. Tel. +51 1 3157800.

13. **Superintendencia Nacional de Administración Tributaria (SUNAT) – (National Superintendency of Tax Administration)**

    Superintendencia Nacional Adjunta de Aduanas (National Superintendency for Customs Affairs). Mr. José Armando Arteaga Quiñé.

- **Bolivia**

PRIVATE SECTOR

14. **Confederación de Empresarios Privados de Bolivia (CEPB) – (Confederation of Private Entrepreneurs of Bolivia)**

    Méndez Arcos 117 Street – Plaza España – Sopocachi, La Paz. Tel +59 1 2 242 0999

    Av. Pando No. 1185, Cochabamba. Tel. 59 1 4 428 00 12 / 428 00 15

15. Cámara Nacional de Comercio – (National Chamber of Commerce)

Mr. José Luis Valencia Aquino, General Manager. Av. Mariscal Santa Cruz, 1392, Edf. Cámara Nacional de Comercio – Floors 1 y 2, La Paz. Tel: +59 1 2 237 86 06. E-mail: cnc@BoliviaComercio.org.bo

16. Cámara Nacional de Industrias – (National Chamber of Industries)

Eng. Gerardo Velasco T, General Manager. Av. Mariscal Santa Cruz, 1392. Edf. Cámara Nacional de Comercio –14th floor, La Paz. Tel. +591 2 237 44 77

17. Cámara Nacional de Exportadores (CANEB) – (National Chamber of Exporters)

Lic. Alfonso Kreidler, President. Av. Arce esq. Calle Goitia No. 2017, La Paz. Tel. 59 1 2 244 09 43 / 211 73 94. E-mail: caneb@mail.megalink.com.

18. Instituto Boliviano de Comercio Exterior (IBCE) – (Bolivian Institute of Foreign Trade)

Av. Velarde No.131. Tel. +59 1 3 3 362230. E-mail: ibce@scbbs-bo.com.

19. Cámara de Comercio e Industria Boliviano – Peruana – (Bolivian-Peruvian Chamber of Commerce and Industry)

Av. 6 de Agosto and Fernando Guachalla, Ground Floor, No. 300, La Paz. Tel. +591 2 2330226. E-mail: cabope@mail.zuper.net

20. Cámara Boliviana de Transporte Nacional e Internacional – (Bolivian Chamber of National and International Transportation)

Cañada Strongest 1782 Street, 2nd floor, Dep.. 2A. Edf Napolis, La Paz. Tel. +59 12 2495335

21. Cámara Departamental de Transporte La Paz – (Departmental Chamber of Transportation, La Paz)

Mercado 1328 Street, Edificio Mcal. Ballivián 9th floor, Of. 902, La Paz

PUBLIC SECTOR

22. Ministerio de Obras Públicas, Servicios y Vivienda – (Ministry of Public Works, Services and Housing)

Dirección General de Transporte Terrestre (General Bureau of Land Transportation). Av. Mariscal Santa Cruz – Edif. Palacio de Comunicaciones 5th floor, La Paz. Tel. +59 12 2119999

23. Ministerio de Desarrollo Económico – (Ministry of Economic Development)

Viceministerio de Industria, Comercio y Exportaciones (Vice-ministry of Industry, Commerce and Exports). Centro de Comunicaciones La Paz, 17 floor, La Paz. Tel. +59 12 2119999

24. **Consejo Interamericano de Comercio y Producción – (Inter-American Council of Commerce and Production)**

    Av. 20 de octubre 2095, La Paz. E-mail: occidentalbolivia@entelnet.bo.

25. **Superintendencia de Transportes – (Superintendency of Transportation)**

    Calle 21 de Calacoto, Nº17, esquina José Aguirre Achá. La Paz. Tel: +59 12 2795160 / 2792333.

26. **Aduana Nacional de Bolivia – (National Customs of Bolivia)**

    Edif. Aduana, calle 20 de Octubre Nº 2038, between Juan José Pérez and Aspiazu, La Paz. Tel. +59 1 212 8008. General Management, tel. ext. 2103.

With the results of this round of interviews, it will be possible to carry out a first segmentation of logistics chains, as well as the definition of a new list of specific agents that shall include sectoral representations of the segmented logistics chains (textile, chemical, furniture, paper, metal-mechanics, etc.).

With the primary information available, it has been possible to apply, in this case, Modules 1 and 2 of the methodology to the selected GP. When studying in depth the gathering of specific information obtained through the successive rounds of interviews, it will be possible to structure the logistics chains (Module 3), to carry out the Logistics Audit (Module 4), and thus, to define the Execution Program (Module 5), ending with the Follow-up and Evaluation (Module 6).