



The  
Colombian  
Amazon.  
Urban  
Profiles  
2015



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Carlos Ariel Salazar Cardona

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**Overall Coordination**

Diana Patricia Mora Rodríguez

**Editorial Coordination**

Santiago Moreno González

**Design and Layout**

Patricia Melo González / *Typograma*

**Style Editing**

Isabel Trejos Velásquez

**Photography and Cartography**

Elizabeth Riaño Umbarila

**Printing**

Editorial Scripto S.A.S.

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# The Colombian Amazon. Urban Profiles 2015



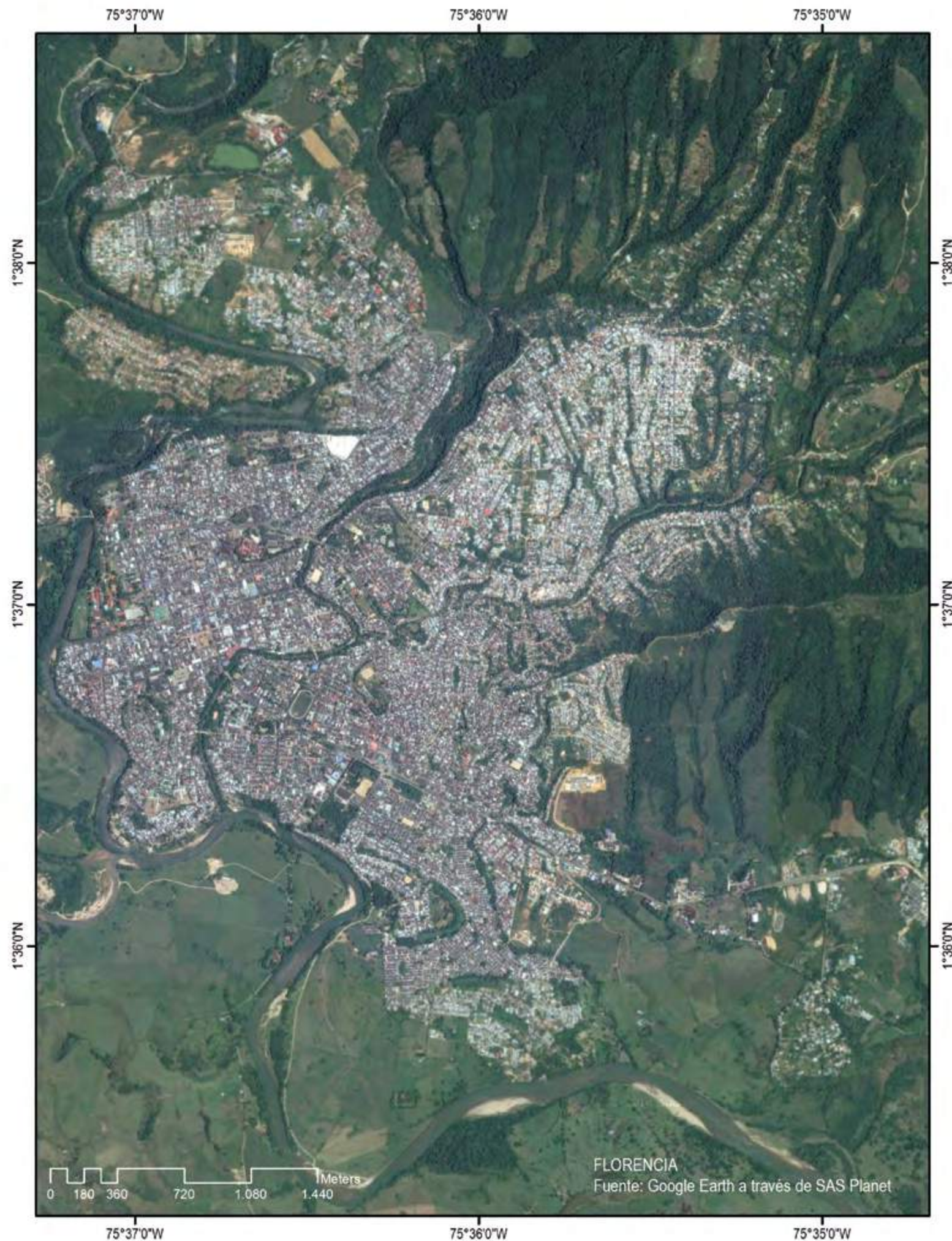
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Research institutes such as Sinchi lend an invaluable service to the national community due to its missionary management, but also for their active participation in the building of wide impact social and cultural processes. A sample of that is contained in the book *Urban Profiles of the Colombian Amazon, an Approach to Sustainable Development*<sup>1</sup>, published in 2004, and its re-edition, entitled *The Colombian Amazon. Urban Profiles 2015*, delivered in a crucial moment, when this region is the epicenter of multiple worries, due to its strategic importance.

In the first book, several approaches to the concept of Amazon region, in South America and in Colombia, were exposed. These concepts were presented with a detailed cartography: Amazon basin, Amazon jungle, Amazon Cooperation Treaty, Pan-Amazon region, and, as a synthesis of all these categories, the Great South American Amazon Region, where a wide ring of population is established.

*Urban Profiles* was a pioneer in establishing such conceptual approaches. The analysis, interpretation, and comprehension of the world's largest tropical rainforest, from a bio-geographic point of view, and it has been of major interest for the countries, not only from this region, of the whole world. Due to the importance and complexity about the extent of the South American Amazon Region, subsequent works were carried out. Among the most notable there is a paper from 2005 entitled "A proposal for a definition of the Amazon geographic boundaries", elaborated by a group of researchers from Italy's Institute of Environment and Sustainability<sup>2</sup>. Between 2005 and 2006, the UNEP and the ACTO developed the study "Perspectives

on environment in the Amazon GeoAmazonia) (2009)<sup>3</sup>. In 2012, several countries of the region had an answer about their own definition of the Amazon, and in a work published by the Network of Georeferenced Socio-Environmental Information (RAISG in Spanish), "Amazon Under Pressure", new information on the topic was collected. The need for a common point of view, built by all the countries, is a duty that has to be continued, which requires a huge political will, taking advantage of the technical capacity of the professionals and the technological resources, more and more disseminated. The new questions don't have a unique answer, since a research at continental scale and permanently updated, and in harmony with the requirements of each one of the countries is required. This huge challenge is also an opportunity to create common agreements about management and sustainability of the Amazon forest that allow the development of a good quality life for the inhabitants and for the benefit of all living beings on this planet.

The conceptual perspectives exposed at that time by the researchers in charge of *Urban Profiles* were supported by the arguments presented later on, current information that gets more and more relevant as time goes by, besides presenting the wide vision and context in which Colombia's Amazon is inserted.

The expressions Amazon, Pan-Amazon, South American Amazon, Amazon Region or Great Amazon imply different approaches, ways of thinking, and spatial representations. In general, these terms are referred to the largest tropical rain forest in the planet<sup>4</sup>, located in the North of South America, to

1. This work was published in February 2004 by Franz Gutiérrez Rey, Luis Eduardo Acosta Muñoz, and Carlos Ariel Salazar Cardona.
2. EVA, H.D., AND HUBER, O., (editores) 2005. *A proposal for defining the geographical Boundaries of Amazonia*. Synthesis of the results from an Expert Consultation Workshop organized by the European Commission in collaboration with the Amazon Cooperation Treaty Organization –JRC– Ispra, Italy.

3. PROGRAMA DE LAS NACIONES UNIDAS PARA EL MEDIO AMBIENTE UNEP. TRATADO DE COOPERACIÓN AMAZÓNICA OTCA. UNIVERSIDAD DEL PACÍFICO. 2009. Perspectivas del Medio Ambiente en la Amazonia–GEO Amazonia. Ciudad de Panamá, Panamá. <http://www.unep.org/pdf/GEOAMAZONIA.pdf>

4. The concept of jungle (from the Latin form *silva* or *sylva*) or forest (from the Latin form *boscus*) is referred to natural vegetable communities in which the trees are



the hydrographic basin of the Amazon River, to the Nations that share the territory of this region, to the States that promote the sustainable development of the Amazon through collective actions for preserving the environment and the rational use of natural resources, to the artificial boundaries of administrative and political convenience for the application of fiscal incentives in specific territories, to the people who inhabit the region, to the aquatic and terrestrial fauna. These concepts, unfortunately, cannot be easily translated into a unique cartography, since they refer to different spaces with boundaries that do not necessarily coincide.

The Amazon, as a unified entity, can only exist as an amalgam of regions. This way, it can be said that there are several Amazons that conform a bigger region, where each one of them has a different regional distribution, for instance: the Amazon tropical rain forest is smaller than the basin, so the Amazon rivers from Brazil and Bolivia extend several degrees to the South of the basin, having their origin in the pampas, marshlands, and cerrados. But in the north, in Venezuela and Colombia, the tropical rain forest extends continuously until covering an important section of the Orinoco basin; however, this jungle is considered as Amazonian and with cartography in concordance with that, due to its floral continuation and coverage expression.

The Pan-Amazon concept is referred to the political-administrative national divisions in which the whole Amazon region is segmented. Tough it is

a political construction, that indicates that the space of nine state hegemonies (Venezuela, Colombia, Peru, Bolivia, Brazil, French Guyana, Surinam and Guyana), it also encompasses regions and sub-regions that, due to the differences about the Amazonian politics of each one of the States present their own characteristics that need to be considered.

The countries that are part of the Amazon Cooperation Treaty, endorsed on July 3<sup>rd</sup> 1978 between Bolivia, Brazil, Colombia, Ecuador, Guyana, Peru, Surinam, and Venezuela, with the purpose of promoting the sustainable development of the Amazon through cooperative actions that take into account the environment preservation and the rational use of natural resources, creating thus a new vision and version of the Amazon region.

Thus, the great Amazon region, as an integration of the environmental and territorial concepts, consents and involves the aforementioned concepts.

The hydrographical basin of the Amazon river is delimited from the division of the water and comprehends the area that the river itself occupies, together with its thousands of tributaries, covering an extent of 7,352,112 km<sup>2</sup> in six countries: Brazil Bolivia, Colombia, Ecuador, Peru, and Venezuela. From this point of view, the concept of Amazon includes the territories and the Andean settlers form all the sharing countries, except for Brazil, including all the Amazonian inhabitants from all the Andean thermal floors: warm, humid, cold, and paramo, and not only those from the flatlands; besides of portions of the territory that correspond to snow-covered areas. (See [Table 1](#) and [Map 1](#))

The region of the Amazon jungle is recognized for its vegetal coverage, as a continuum of Amazonian forests of tropical rain forests that comprehend the largest forest surface of the planet with an approximate area of 7,989,004 km<sup>2</sup>. The jungle in its delimitation overflows the Amazonian basin, surpassing it in 4.2%, it means, 637,000 km<sup>2</sup> more. Guyana and Surinam don't belong to the Amazon River basin, but they have jungle coverage. (See [Table 2](#) and [Map 2](#))

The region of the Amazon Cooperation Treaty corresponds to the integration of the basin, jungle, and legal regions of the Amazon<sup>5</sup>, adjusted to the political

5. A conception of the Amazon defined by artificial boundaries of political and administrative convenience for the application of fiscal incentives, this applies specifically for Brazil and Colombia. The legal Brazilian Amazon is composed by the states of Rondonia, Acre, Amazonas,

**Table 1.** Drainage basin of the Amazon River

COUNTRY	AREA OF THE BASIN (Km <sup>2</sup> )	PERCENTAGE (%)
Bolivia	824.000	11,2
Brazil	4.989.361	67,9
Colombia	406.000	5,5
Ecuador	123.000	1,7
Peru	956.751	13,0
Venezuela	53.000	0,7
<b>TOTAL</b>	<b>7.352.112</b>	<b>100,0</b>

**Table 2.** Amazonian jungle

COUNTRY	AREA OF THE BASIN (Km <sup>2</sup> )	PERCENTAGE (%)
Bolivia	558.000	7,0
Brazil	5.144.000	64,4
Colombia	531.000	6,6
Ecuador	130.000	1,6
Guyana	164.997	2,1
French Guyana	63.700	0,8
Surinam	150.000	1,9
Peru	774.000	9,7
Venezuela	473.307	5,9
<b>TOTAL</b>	<b>7.989.004</b>	<b>100,0</b>

reasons of each one of the involved nations. Its area corresponds approximately to 7,590,083 km<sup>2</sup>. The Cooperation Treaty pays special attention to the actions that point at incorporating Amazonian territories to their corresponding national economies, to the rational use of the water resources, to the establishment of an appropriate infrastructure among the sharing countries in the areas of transportation, communications and fluvial channels. (See [Table 3](#) and [Map 3](#))

The Pan-Amazon region is composed by the countries that belong, have jurisdiction or territory in the hydrographic basin of the Amazon; they have jungle coverage or are members of the Amazon Cooperation Treaty, where this criteria is derived from; they share similar environmental, socioeconomic, and political treats, but are geographically different, since some of them share Andean territories with Amazonian

flatlands. Others, such as those from the North Atlantic strip, don't belong to the Amazon hydrographic basin, but they count in their territories with Amazonian jungle coverage, like Brazil, with 70% of its territory in the Amazonian flatlands. (See [Table 4](#) and [Map 4](#))

The Great Amazon is the region composed by the integration of the political-administrative, environmental, and geographical concepts. (See [Map 5](#))

The Great Amazon has not been excluded from the urbanization process, and, as well as in Latin America and the Caribbean<sup>6</sup>, it is an increasing and dynamic phenomenon. According to Geoamazonia data (2009), it is estimated that in the regional countries there are approximately 33.5 million of Amazonian inhabitants. From that amount, 62.8% live in urban areas, equivalent to 20.9 million inhabitants in the urban centers of the region.

Amapa, Roraima, Para, Tocantins, Mato Grosso, and Maranhão, in the Northwestern region; its area is larger than the hydrographic and jungle area. For Colombia, it is delimited from the Guaviare river (north boundary) to the international frontiers in the West, with Venezuela and Brasil and in the South with Peru and Ecuador.

6. United Nations estimate that, in 2014, the population living in cities was of 495,857,000 inhabitants, equivalent to 79.54 % of the population. In 2030, it will get up to 595,134,000 inhabitants, representing 83.04 % of the people living in urban areas. For 2050, it is expected to have a population of 673,631,000 urban inhabitants.

**Table 3.** Amazon Cooperation Treaty

COUNTRY	AREA (km <sup>2</sup> )	PERCENTAGE (%)	INCLUDED TERRITORY
Bolivia	600.000	7,9	Hydrographic basin and jungle
Brazil	5.144.800	67,8	Legal Amazon
Colombia	419.346	5,5	Legal amazon, hydrographic basin and jungle
Equator	131.000	1,7	Hydrographic basin and jungle
Guyana	215.000	2,8	Jungle
Peru	756.992	10,0	Hydrographic basin and jungle
Surinam	142.800	1,9	Jungle
Venezuela	180.145	2,4	Hydrographic Amazon
<b>TOTAL</b>	<b>7.590.083</b>	<b>100,0</b>	

\* French Guyana is not included, since it doesn't belong to the Cooperation Treaty.

**Table 4.** The Pan-Amazon

GROUP	COUNTRY
Andean-Amazonian	Bolivia, Colombia, Equator, Peru, and Venezuela
Atlantic strip	Guyana, Surinam, and French Guyana
Amazonian	Brazil

The pre-eminent natural world that has always characterized the region doesn't correspond anymore to its reality. The apparition of a wide ring of cities, villages, and hamlets that grow from the perimeter border towards the center, consolidates the urban phenomenon. The population density and the socio-cultural treats of the ring are disproportionately superior to those from the indigenous and mestizos (caboclos) from its interior.

A ring of population is a space occupied, continuous, and organized in a hierarchy that counts on a communications network and integrates the group of the different types of centers to the market economy that, at the same time, are the support of new strategies of occupation. The settlements with a urban profile are growing in number and size and not only those from ring of consolidation of the urban-countryside space, but in its interior there are metropolis such as Manaus, in Brazil, and Iquitos, in Peru, that have an important centripetal force (polarization) over large territories, creating thus geopolitical islands that move towards the center, as well as the enclave centers do with the intermediate spaces.

The urban structures, through the roads and the communications in every country, go forward and penetrate the Amazon region towards the center, supported by the regions that are already consolidated by hierarchies and urban typologies, creating a

continuous spot that closes the population ring (urban-country side consolidation), and then extends towards the rest of the Amazon, affecting protected and special management territories, as well as sedentary and nomad indigenous communities, therefore also affecting the functional structures of the natural Amazonian ecosystem, due to the hardly sustainable economic activities and productive and extractive systems practiced by the new inhabitants.

In Brazil, where there is not an Andean barrier, the ring moves forward completely united to the areas of ancient consolidation, without letting any intermediate jungle space. In the Andean-Amazonian countries, like the case of Colombia, the abrupt gradients of the Eastern mountain chain form a separating wall, cut by the access ways, before getting to the ring. (See [Map 6](#))

Since the point of view of the occupation and consolidation processes of the anthropic activity, the Great Amazon can be divided into two major sub-regions: The Amazon of the population ring (urban-country side consolidation) that corresponds to the area of continuous settling, organized in hierarchies of cities or villages, with a communications network that integrates the whole and with an economy based on goods production (productive-extractive activity for surplus generation –self consumption and merchandising–), and the central Amazon that corresponds to the main area of tropical rain forest (jungle), where

there is a disseminated population, most of them indigenous, with an economy based on the survival and with a lower ecological impact.

The advance of urban structures through market economy human settlements and a consolidated road network (population ring), without any planning or sustainable development politics, brings difficulties for the Great Amazon and its long term survival, since all the aquatic systems (springs and low and high parts of the Amazonian rivers) depend on it and are affected by anthropic activities.

This reality, impossible to deny, demands new analysis, other perspectives and, as a consequence, to reconsider the local and regional problems from points of view such as environmental and territorial zoning regarding urban, country side, and regional aspects; urban hierarchies and functions; equipment and infrastructure, as well as the creation of new economic activities of urban character that create new work opportunities and a symbiosis of environmental and territorial planners, in order to respond in terms of management public policies for the region, in a context of sustainable development.

When talking about all these items, it becomes also necessary to take into account the big contradiction between environmental and administrative policies at different levels: national, regional, and local of the different governments that exist for the Amazon, besides the absence of a clear model for the “Amazonian city”, something that has to be translated into sustainable low impact cities for the Amazon region, even when many consider that it is utopic to think in a “sustainable Amazonian city”.

Likewise, it is also important to consider that the biggest environmental problem in the immediate future of the Amazon is the non-controlled urbanization, without zoning policies or land management for these urban spaces, making necessary the apparition of new conceptions about this situation, regarding sustainable development at local and regional levels as primordial objective.

The laws concerning territorial development in the context of globalization make possible and encourage, through the territory zoning plans and the partial plans, builders, consortiums and investors to urbanize as a “new source of wealth and a new way to negotiate with the soil”, in opposition to those who claim to encourage “environmental development as a source of wealth”. Due to this, it is said that Amazonian cities were born dead from the norms and the urbanism, since nobody has considered a specific normative and physical development that harmonizes the two aforementioned situations. The so called

sustainable environmental development that is claimed for the Amazon is still lacking of normative and management tools.

Concerning the indigenous in the Amazon, it can be said that current Amazonian urban centers are absorbing them, as it is remarked by Dominguez (2001), “*These are rapidly absorbing the malocas and indigenous tribes, increasing, day by day, the difficulties for the mending of these ancient Amazonian cultures*”. Indigenous communities that are integrated to the population ring have productive processes that have not been studied and that differ from the practices of the indigenous communities from the Central Amazon.

From this outlook, there begins the apparition of Amazonian urban economies, that comprehend providing a workforce (workers) for agricultural and mining enterprises, the consolidation of the tertiary sector (services), and the formal apparition of the lumpenized sector, in the forms of prostitution and begging.

The urban centers of the peripheral ring, such as Belem do Para, Brasilia, and Cuiaba (Brazil), Santa Cruz and La Paz (Bolivia), and Florencia and Puerto Asis (Colombia) have an important influence due to their population growth, multiplying the urban networks that devours the jungle from the periphery to the center (Dominguez, 2001).

The most ancient Amazonian cities have been neglected due to the centrality problems and its repercussion in the decision making, while the new cities, thanks to their recent apparition and particular growth dynamics, lack of the necessary equipment and services. The only guarantee of urban survival lies in the market articulation, developing a continuous structure, intertwined with the communications network, without letting any gap behind. The urban centers that are not articulated to this continuum, such as Iquitos, Leticia or Manaus are geo-political enclaves that exist thanks to the transference of national wealth trough the State. (See [Map 7](#))

Thus, at what extent are we facing a new inevitable catastrophe or, on the contrary, a huge challenge that could be solved in multiple ways? The question, formulated by Dominguez, starts to have more impact in the current situation as positive prospective models, a proposal for new scenarios and a visualization process start to appear.

The expression “Save the Amazon”, so popular in the last years, with the precise meaning of saving and preserving de tropical forest, the “green”, now has incorporated a brand new ingredient: the concrete, the “grey”, or the developed jungle, as it is outlined by Bertha Becker to identify the urban settlements with an increasing concentration of population and

interlinked services in wide population voids, a situation few remarked and with no defenders.

World society doesn't know about the existence and the problem of the "urban Amazon", where the violence, the misery and the delinquency are civilized, people are huddled together, there are no available jobs, potable water is scarce, there is not enough public services coverage, diseases like hepatitis and leishmaniasis proliferate in the subnormal neighborhoods. So far, only deforested areas that will continue growing are taken into account, due the urban effect of demand or pressure on the resources.

On the other hand, scholars on environmental aspects of the Amazon coincide in affirming that migrants that arrive and stay in the Amazonian cities are harmless in comparison to those who are cutting and setting the forest on fire. What is the future of the Amazon? Is it urban? This is very likely to happen, according to Browder & Godfrey (1999).

The social exclusion goes with predator economic development processes of the Amazon; poverty in the Amazonian basin has turned into a more and more urban phenomenon. The cities are the main scenario of this poverty, since most of the population lives in the periphery. It is impossible to talk about the environment or environmental management without talking about the poor people, since they receive the negative impact of the habitat deterioration. Nevertheless, it is necessary to recognize that, despite the adverse natural conditions, poor communities are organized to develop innovative urban management activities and they contribute to inhabit those spaces that cannot be inhabited, transforming places that once were considered garbage dumps into habitable places. In this process, the role of local governments is fundamental. That is why initiatives on urban environmental management that improve the life in Amazonian cities are always recognized. With this purpose, processes of urban consultation and action plans have been developed throughout Amazonian cities such as Belem (Brazil), whose management has served to improve the conditions of urban areas in the creeks of the river. The same happened in Iquitos (Peru), where it was possible to develop a cooperative process in order to identify an environmental profile, which concluded with the creation of an action plan (PGU-ALC-IPES, 2001).

Urbanization processes are especially worrying in the Amazon region, whose natural characteristics are vulnerable to the urban expansion development impact and the presence of enterprises without environmental interests. Biodiversity in the Amazon attracts more and more pharmaceutical corporations and

biotechnology companies with non-sustainable interventions. Could it be that the biodiversity boom after rubber, oil, and electricity will leave a positive balance as a result? How will this affect the global intention of extracting mineral resources from the region?

From an economic, social, and environmental perspective, there appears another problem related to urban sustainability and governability, due to the ambivalent notion of citizenship and inhabitants (most of them immigrants), as well as the indigenous ethnic groups members, who are not generally included in the development and management of the city, a clear absence of interculturality. For all the aforementioned reasons, it is necessary to understand that the Amazon is not a never-ending space: this region has a long history of human occupation of more than 20.000 years, and nowadays has more than 34 million inhabitants.

*The Colombian Amazon. Urban Profiles 2015* applied the same conceptualization proposed for the Great Amazon in the analysis of the Colombian case, adjusting it to the national reality; for instance, there is the topic of the political-administrative division, which involves six complete departments and sections of another four, a region composed by 58 municipalities and 20 non-municipal territories. Likewise, this book presents an updated vision of the geographic, territorial, legal, occupation processes and population context until the mentioned year in Colombia's Amazon, which allowed a progressive adjustment for the whole decade. All the publications derived from this study have allowed the elaboration of a characterization of the most important socioeconomic, demographic and spatial processes that the region is experiencing. These are some of the derivative works: *Urban System of the Colombia's Amazon*<sup>7</sup>, *The Developed Colombia's Amazon*<sup>8</sup> and "Colombia's Amazon: populated and civilized"<sup>9</sup>, two books and an article that

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7. RIAÑO, E. & SALAZAR, C. 2009. *Sistema urbano en la región amazónica colombiana. Análisis de la organización e integración funcional*. Bogota, Colombia. Instituto Amazónico de Investigaciones Científicas -Sinchi-. <http://www.sinchi.org.co/images/pdf/dfpublicaciones/asentamientos%20web2.pdf>

8. ARCILA, O. 2010. *La Amazonia colombiana urbanizada: Un análisis de sus asentamientos humanos*. Bogota, Colombia. Instituto Amazónico de Investigaciones Científicas -Sinchi-. [http://www.sinchi.org.co/images/pdf/dfpublicaciones/20986\\_export%20libro%20amazonia%20urbanizada.pdf](http://www.sinchi.org.co/images/pdf/dfpublicaciones/20986_export%20libro%20amazonia%20urbanizada.pdf)

9. ARCILA, O. & SALAZAR, C. 2011. La Amazonia colombiana: poblada y urbanizada. In: *Revista Colombia Amazónica n.º 4*. Bogota, Colombia. Instituto Amazónico de

illustrate the urbanization process that this region is going through.

The reedition of this book represents the continuity of the research process of the Amazonian Scientific Research Institute (Sinchi, in Spanish) on one of the most fascinating topics of contemporary society: the transit of ethnic and country side societies to urban life. Likewise, it shows the apparition of a series of cities and settlements in an ecosystem that, like the tropical rain forest, did not have a remarkable urban agglomeration for the past century.

This work shows the changes that the Amazon has been experiencing for the last ten years and allows us to appreciate the main occupation and civilization tendencies through a settlement system that, for the Colombian case, it's deployed only there. Indeed, this region has capital cities, municipalities, villages of peasants and colonists in and outside of arborized areas; nomad and semi-nomad indigenous settlements, besides a new category that appears in the 21<sup>st</sup> century: the non-contactable and voluntarily isolated communities. This settlement system is unique for Colombia, but it follows similar patterns in the rest of the great Continental Amazon Region.

Thus, the aforementioned human settlement system represents the quintessence of the territorial construction process. Urbanites, peasants, colonists, and indigenous are building up a region of multiple contrasts that requires opportunities for a complete deployment. According to this, a process of social investigation in the Amazon is necessary, besides being an intellectual challenge and a task for interdisciplinary teams inside and outside the region.

The analysis categories for societies in transit from traditional to modern appear blurry when applied to the Amazonian reality. Several questions come to our minds, all referred to the kind of urban and country side society that result from colonization, processes that completely wasted the model in 50 years and opened up the way to societies where different kinds of extractivism, including illicit crops, produced enormous amounts of money, configuring thus an unprecedented urbanization and occupation process. How to analyze the vertiginous mix of regional groups that migrated to this place looking for life opportunities and leaving behind the violence and poverty of the interior of the country? How can the urban and country

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*Investigaciones Científicas -Sinchi-. <http://www.sinchi.org.co/images/Revista/revista2011/La%20Amazonia%20colombiana.%20Poblada%20y%20urbanizada.pdf>*

side society of this new century be characterized? Will it be possible to maintain, despite all the changes, the ethnic and linguistic diversity of the indigenous communities? What is the most convenient model for this region? How to understand the Amazon beyond the fictional character of its legal condition, full of figures that constantly overlap and collision? Seen through these figures, the Amazon will be less and less incomprehensible and manageable. All the aforementioned questions guide our research process.

We will go ahead with this assignment. By now, we present this work that has been organized according to its original structure and integrating topics that are certainly strategic for the sustainable development of the region: like the water wealth, for instance, analyzed through the last National Study on Water, the changes on forestall coverage, great contribution of the research group Sustainability and Functioning Models from Sinchi Institute. Mining, analyzed through demands and entitlement, and the prospected minerals, offers a new configuration for the region, since, despite the low current prices, it is going to be fully exploited.

One of the most relevant topics of this research is the tendency to consolidate and broaden the population ring. As it has been profusely documented, the ring represents the populated area in its widest sense: cities, roads, commerce, banks, agro-industry. This process advances continuously until the borders of the country. In fact, road, port, and fluvial infrastructure, besides the mining expectations for the eastern region, reunite towards a region more and more internally integrated and internationally projected, following the logic of the huge South American Amazon population ring.

The territorial complexity degree that this region has reached is manifested through the apparition of two new sub-regions: The Northeastern Amazon and the South Amazon. The growth of the capital cities, their higher political-administrative, services, commerce, and financial complexity has opened a new way for regionalization. Therefore, Florencia, Mocoa, and Puerto Asis are the central nodes of the region that, from now on, will be called Western Amazon; San Jose de Guaviare is the node of the Northwestern region; Puerto Inirida and Mitu are the nodes of the Northeastern region, and Leticia will be the node of the South Amazon.

Despite all the discrepancies concerning the population and demographic data for the region, in figures, for 2015 there is an almost stable population of 1,363,000 inhabitants. This responds to the armed



conflict, the crisis in the production of coca leaf and the general economic crisis that the peripheral regions of the country are experiencing.

Concerning the settlement typology, it finds in the latest technological visual resources sharp images for the comprehension and visualization of the rich nuances that evidence the contrasts in their definitions. This book is illustrated with cartography on all the mentioned topics, so the region can continue building up a meaningful heritage on its most valuable territorial manifestations.

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67°56'0"W

67°55'0"W

67°54'0"W

3°53'0"N

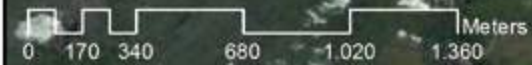
3°53'0"N

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INÍRIDA  
Fuente: Google Earth a través de SAS Planet

67°56'0"W

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# 1. THE COLOMBIAN AMAZON

It's been ten years since the publication of *Urban Profiles of the Colombian Amazon*. Due to its success, a revision and update was more than necessary. In this work there are some criteria that are still unknown, not only by the common Colombian population, but also among the National Environmental System (SINA in Spanish), something that has aroused some controversies.

This document retakes the different perspectives on the Colombian Amazon, criteria that, in the past, allowed us to establish a definition of the Colombian Amazon Region, currently recognized in international scenarios. Paradoxically, the concept is not fully known in the whole country. In Colombia, the Amazon concept refers to a delimitation of the Southeastern territory of the country, taking into account some of the following approaches: drainage basin, jungle, political-administrative division, or the integration of all these categories in a whole region.

The Amazonian territory, traditionally inhabited by indigenous communities, has suffered several colonization processes with varied origins and causes, a situation that continues nowadays with new actors. The spatial manifestation of this phenomenon is, from several decades now, the urbanization, which exposes a very different reality from the ideal prospects from the past. The changes on the use of the land are an indicator of the dynamics, an expression of the actions of the territory inhabitants. With the data provided by Sinchi Institute<sup>1</sup>, specifically by the Socio-environmental Dynamics Group, the Amazonian Population Indicator was built. This indicator reveals the harmful spatial intervention produced by urban centers, fluvial and terrestrial roads, and native forest transformations.

Occupation and urbanization processes are part of the natural dynamics of the transformation and generation processes of the region, privileged by its natural and cultural resources. Nevertheless, in such

a fragile and vulnerable ecosystem, the birth and growth of the urban centers lack of the necessary social and environmental considerations.

Yet an unsolved problem, the land occupation and organization, in terms of social and environmental sustainability and appropriate conditions for the tropical climate, the region is facing currently a new environmental thread coming from the interest to access mineral resources and hydrocarbons. Unfortunately, this thread has been underestimated; since it is possible to anticipate a serious impact on the water and the soils, whose contamination, through exploitations drainages, set in danger the local communities, including the indigenous that obtain all the nutrients for a basic diet from the forest. Deforestation, pollution and land invasion are direct consequences of this kind of activities, as it can be seen in previous experiences in other territories of the Great Amazon.

The huge amount of mining requests, and not few approved mining entitlements, coincides with the areas where the minerals of interest can be found and the area that the National Government has determined as "mining strategic area"; this also overlaps with areas of great cultural and environmental diversity, such as the Amazon Forest Reserve, indigenous reservations, and natural protected areas belonging to the Protected Areas National System (SINAP in Spanish).

The exploration carried out by oil exploiters has showed no mercy with the Amazon; it constitutes a latent thread that, barely in its production and exploration phase, is already showing remarkable negative impacts on the foothills.

Form the different perspectives on the concept of region, the level of consolidation of the population ring and the new economic interests, it becomes necessary to reflect and deepen in the analysis and knowledge about four sub-regions with the purpose of finding sustainable ways of intervention for each one of them.

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1. Environmental Information Management and Zonation: Colombian Amazon Group (GIAZT in Spanish).



## Hydrographic Amazon

It corresponds to the gradient or hydrographic<sup>2</sup> area of the Amazon River in Colombian territory. In the watersheds, there are heights higher than 4,000 AMSL. This delimitation explains the importance of the Andean-Amazonian rivers on the Amazonian foothills and flatlands ecosystems, as an ecologic function for their preservation. The *National Study on Water* (ENA in Spanish), “recognizes the water as vital element that structures the nature and as decisive in the social and productive processes” (IDEAM, 2010).

According to the Colombia’s water zonation map (IDEAM, 2010), the hydrographic gradient of the Amazon River has an estimated area of 341,994.37 km<sup>2</sup> in Colombian territory. This area is composed by nine hydrographic zones<sup>3</sup> from the following rivers, organized in decreasing order by surface percentage: Caqueta (29.23 %), Putumayo (16.94 %), Apaporis (15.65 %), Vaupes (11.02 %), Yari (10.86 %), Guainia (9.15 %), Caguan (6.07 %), Amazon (0.96 %), and Napo (0.13 %). These hydrographic zones are as well divided into sub-zones<sup>4</sup>, 57 in total for this gradient, as it can be seen in [Map 8](#) and [Annex 1](#).

The National Policy for the Integral Management of Hydrographical Resources, issued on March 2010, adopted the basin as a fundamental management unit for an integral and decentralized planning and management of the hydrographical patrimony of the country, including in this concept surface waters, but also ground waters and also maritime and coastal waters. In this management department all the environmental elements and/or strategic ecosystems

are integrated, as well as the anthropic elements that have an influence, either positive or negative, on it.

According to the National Study on Water (2010), the hydrographic area of the Amazon has an average hydrographical efficiency of 81 l/s-km<sup>2</sup> in more than 80% of the area and a low pressure on demand. Most of the demands are located in the Orteguaza, Alto Caqueta, Caguan, Putumayo, and Guayas rivers.

Despite the offer surplus, the pressure on the quality of water or urban centers such as Florencia, as well as the potential alterations in the quality of water for the pouring of chemical polluters, coming from coca processing supplies in the hydrographic zones of Putumayo, Caqueta, and Vaupes rivers, is remarkable.

The multi-scenario analysis on climate change 2011-2040 shows that there will be very similar condition to the current ones regarding hydrographical resources for the Amazon hydrologic zones. The predictions are the same for the scenario 2070-2100, with a variation between -10% and 10%.

Concerning the effects on the hydrologic regime and the runoff in extreme events, such as El Niño and La Niña, the general conditions predict no change, or a possible diminution or increase that should never overpass 10%.

About the potential of ground waters, the surface units in the whole basin are represented by clastic sequences, with a predominance of sand, silt and clay, with the potential to become aquifers with a remarkable capacity. A good hydro-geologic response in the banks of main rivers and recent terraces is expected, even though their permeability can be limited due to the presence of clay.

The alluvial terraces and river downpours are potentially good aquifers due to their porosity; high permeability can be expected from them, especially in the recognized paleochannels of the basin. For this, aquifers must have low lateral continuity and a type that oscillates from free to confined.

It is necessary to investigate in detail about the pressure on hydrographical resource, caused by the usage of polluting substances stemming from illegal mining (an activity in continuous growth) and the imminent legal mining, whose effects have not been considered yet.

The ENA (2010) points out that 157 municipalities from all over the country, with an estimated population of 12,552,470 inhabitants, show the highest values for the index of water use for the climate condition of the average year. This population represents 35% of the national urban population, which gives us an idea of the pressure that urban areas of the Colombian territory exert on the water resource, a situation

that doesn’t change much in the Amazon, where there is a high degree of vulnerability in its ecosystems.

A fraction of the Orinoco’s hydrographic area is part of the region defined as the Colombian Amazon. It is composed by the hydrographic zones of the Guaviare, Inirida, Orinoco, Vichada, and Meta rivers. Based on the IDEAM’s water zoning, it could be found that, in a decreasing order, in function of the surface, the zones of the rivers Guaviare (48.13 %), Inirida (37.70 %), direct tributaries of the Orinoco (10.62 %), Vichada (3.54 %), and Meta (0.004 %) cover an area of 142,705.41 km<sup>2</sup> of the Colombian Amazon.

Rivers that represent 56% of the hydrological offer of the country are tributaries of the whole gradient of the Orinoco River. The zones that belong to Guaviare and Meta are the most representative contributors.

65% of the Orinoquia area has moderate hydrological capacity and higher use pressure respecting the surface hydrological offer available in the sub-zones of the rivers Guatiquia, Chivor, and Negro.

From the aforementioned rivers, Guatiquia represents the sub-zone with the highest degree of vulnerability and shortage, besides the high pressure for discharges that affect the quality of water. The hydrographic zone of Guaviare River, sub-zones high and mid-Guaviare, low-Uva, and Siare, receives 13% of the discharges related to chemical substances used for coca leaf processing.

In the Orinoquia zones, in the scenario of climate change 2011-2040, the current hydrological conditions persist, according to the prediction model (between -10% and 10%). For long-term scenarios, the ENA estimates that there will be a reduction of the annual average runoff in relation to the current average, between 10% and 30% for the basin of the rivers North and South Cravo, Casanare, Cusiana, Guacavia, Guatiquia, and Guayabero. (See [Annex 2](#) and [Map 9](#))

The ENA conclusions emphasize on the planning processes, decision making, and national-regional coherence and interaction. For that purpose, basic topics that require the definition of strategies and systematic generation of information, evaluation, and analysis at a national level were identified:

- ▶ Strategic moorlands, wetlands, and ecosystems for assuring the proper supplying of water in different sectors, particularly the supplying of drinking water.
- ▶ Availability and use of ground water.
- ▶ Micro-basins that can be a providing source for aqueducts.
- ▶ Sediments transportation and erosion.
- ▶ Information about the use of water for sectors that were not considered in the ENA 2010 and defined

in the Decree 3930 of 2010<sup>5</sup>, as well as uses of water, particularly for mining, hydrocarbons, and transportation.

- ▶ Quality of water.

This strengthening process demands to obtain systematic regional information on topics such as the National Policy on Water, conceptualizing and developing methodologies for regional studies that can provide information and indicators at a detailed level for planning and managing water in the region, according to the national studies and in an articulated way, so that there can be a meaningful advance in the access to updated information about water. This implies an institutional articulation process for improving the exchange capacity and the dissemination of information (IDEAM, 2010).

## The Jungle Amazon

It makes references to the tropical rain forests from the Southeastern region of the country. This delimitation, in the North, passes the limit if the hydrographic basin of the Amazon River, since its coverage extends to Vichada River, it means, it includes part of the North Orinoco River basin and the Andean-Amazonian section comes up to 500 AMSL.

In January 2014, the Sinchi Institute<sup>6</sup> published the most recent data on land cover for the Amazonian Region for 2012, based on the interpretation of images from the period 2010-2012. According to the researchers Murcia *et al.* (2014), 404.159.81 km<sup>2</sup> of natural forests, without significant transformations, were discovered<sup>7</sup>. Fragmented forests with pastures and crops and fragmented forests with secondary vegetation amount a total of 5,993.48 km<sup>2</sup>.

2. Gradient or hydrographic area: National territory that groups great drainage systems where the water flows into the sea, the ocean, a lake or a main river. There are five hydrographic areas in Colombia: Caribbean, Magdalena-Cauca, Orinoquia, Amazon, and Pacific. (IDEAM, 2010)
3. Hydrographic zone: Natural region that groups several basins in a much bigger drainage system. Its waters run through a main affluent towards a hydrographic area. They regularly have an area bigger than 10,000 km<sup>2</sup>, currently 41 hydrographic zones have been characterized. (IDEAM, 2010)
4. Hydrographic sub-zone: it is identified as a hydrological subsystem characterized by showing homogeneous relief and drainage, integrated by the highlands, midlands, and flatlands basins of a hydrographic zone. It gets water and sediments from different order tributaries, such as springs, streams, gulches, and rivers. They are composed by drainage systems with areas bigger than 5,000 km<sup>2</sup>. Currently, there are 309 sub-zones. (IDEAM, 2010).

5. This Decree establishes all the dispositions related to the uses of hydrological resources, water zoning, and the discharges into water, soils, and sewer.
6. Sinchi Institute carries out its mission in the Colombian Amazon Region. One of its tasks consists of monitoring land coverage at a 1:100.000 scale. This activity started in 2008, with a periodicity of five years, coordinated by Sinchi and supported by National Natural Parks, an entity that produces the data on the coverage of national protected areas from the Amazon.
7. The considered coverage corresponds to: riparian forest; dense forests of low stature; floodable dense forests of low stature; heterogeneous dense forests of high stature and palms.



For establishing the area of the jungle Amazon for 2012, the data from the coverage and physiographic landscapes of the region, mountain, and flatlands maps was taken into account. It was estimated that the jungle Amazon (under the 500 m AMSL) has an extension of 390,707.6 km<sup>2</sup>, equivalent to 96.67% of all the forests of the region. The remaining 3.33%, it means, 13,452.22 km<sup>2</sup>, corresponds to Andean forest in the mountain landscape inside the regional Amazonian territory.

The area of the jungle Amazon is equal to 80.86% of the region. The permanence of this natural coverage is threatened by the constant advance of anthropic activities through its transformation into pastures, crops, urban and industrial buildings, and mining exploitations. (See [Map 10](#))

### The Political-Administrative Amazon

It englobes the complete territory of six departments: Amazonas, Caqueta, Guainia, Guaviare, Putumayo, and Vaupes, and a fraction of the following four departments: Vichada (South of Cumaribo municipality), Meta (all the territory of La Macarena and a fraction of the municipalities Mapiripan, Mesetas, Uribe, Puerto Concordia, Puerto Gaitan, Puerto Rico, San Juan de Arama, and Vistahermosa), Cauca (a fraction of San Sebastian municipality and the whole territory of Piamonte and Santa Rosa), and Nariño (a fraction the municipalities Cordoba, Funes, Ipiales, Pasto, Potosi, and Puerres). The total area of the region is 483,163 km<sup>2</sup>.

The departments with the most participation in the Colombian Amazon are, in order: Amazonas (22.5%), Caqueta (18.64%), Guainia (14.65%), Guaviare (11.40%), and Vaupes (11.01%). The departments with the least participation are: Nariño (0.60%), Cauca (1.02%), Putumayo (5.34 %), and Meta (6.09%). The municipalities with the most participation in the Colombian Amazon are: Solano (Caqueta) and Cumaribo (Vichada), and the municipalities with the least participation are Sibundoy and Colon (Putumayo).

In this region, several categories related to political-administrative planning coexist: departments (10), provincial capitals (7), municipalities (51), and the controversial departmental jurisdictions (20). (See [Annex 3](#) and [Map 11](#)).

The Political Constitution of Colombia<sup>8</sup> (PC from now on) established that departments, districts, municipalities and indigenous territories were

8. Section 286, PC 1991.

territorial entities, and promoted to the category of departments<sup>9</sup> the intendance of Putumayo and the commissionerships of Amazonas, Guaviare, Guainia, Vaupes, and Vichada.

By then, not all the new departments had defined their municipalities. Before the PC, there were the forms of intendance and curatorial jurisdictions that remained current as political-administrative divisions at a local level. Its internal division did not adjust immediately to the new territorial distribution; instead it remained in an atypical and temporary way in the old regime<sup>10</sup>.

In the Amazonian region, it was expected a territorial restructuring of the political-administrative organization. According to the 1991 PC's territorial planning system, and regarding the sociocultural traits of the region, this territory should be conformed at the local level by Indigenous Territorial Entities (ETI in Spanish), or municipalities that had a special system that made the participation of indigenous population in public management possible. The norms exposed in the Law-Decree 2274 of 1992 contained guidelines<sup>11</sup> that are considered to be in concordance with the constitutional norms as with the sociocultural reality of the Amazon, particularly in the aspects related to the political-administrative organization at a local level. However, they were not enough for its materialization (Hurtado, 2011).

In 2001, the Constitutional Court, through the sentence C-141, declared the unconstitutionality of the departmental jurisdictions and ordered to the

9. Section 309, PC 1991.

10. The territorial planning system for the intendance and curatorial jurisdictions was established in the Decree 467 of 1986, sections 49 to 51. After the Constituent Assembly, the legal system established in this Decree was preserved: (1) it was about areas that were not included in municipalities, (2) they were administrated by the Governor, through a corregidor, who was considered as the local authority, and an administrative board popularly elected.

11. The Law-Decree 2274 of 1991 determined the criteria that would allow the transformation and adjustment of the intendances and commissionerships into departments and the creation of territorial entities at a local level: Section 17. The municipalities of the new departments submitted to the ordinary municipality system. Section 41. The municipalities with indigenous population have to adjust their systems according to the Territorial Planning Organic Law or to the norms issued by the National Government based on the transitory section 56 of the PC, related to the functioning of Indigenous Territories.

Congress of the Republic, within the term of the next two legislatures, to issue a special system that would allow the progressive transformation of these areas into municipalities or to dispose its annexation to the previously existing ones. After this period, it was not possible to issue this normativity and the unconstitutionality, declared in 2003, became effective.

In order to supply the political-administrative void at the local level in the Amazonian region, it became indefectible to count on the regulation of the organic norms of territorial planning (LOOT). Particularly, the regulation that allowed the development of the transitory sections 286, 287, 288, 329, 330, and 56 of the PC, since the ordinary municipal system was not adjusted to the suitable constitutional regulations for the region, regarding the important presence of indigenous communities (Hurtado, 2011).

Despite the fact that the Territorial Planning Organic Law was issued in June 2011, it was presented as “a principles general law and, for that reason, it will be the foundation for further special regulations, such as the Municipal System and the Departmental System, that are already in process in the Congress of the Republic, and one more law on indigenous territorial entities” (LOOT, 2011).

The law 1551, issued in July 2012, presents the norms for modernizing the organization and functioning of municipalities. The article 44<sup>12</sup> ordered the creation of the special biodiverse and frontier territories, instead of the ancient departmental jurisdictions, besides conceding extraordinary faculties<sup>13</sup> to the President of the Republic to do so. However, on February 27th 2013, through the Sentence C-100, the Constitutional Court declared these two sections unenforceable.

It's been 24 years since the apparition of 1991's PC. In this period, 37.3% of the Amazonian regional territory has been deprived of a proper political-administrative planning, adjusted to the aforementioned Constitution. From 92.95% of the Amazon

12. Section 44. According to the PC section 285, create the social biodiverse and frontier territories in the non-municipalized zones corresponding to the ancient departmental jurisdiction. So that, the term of six months, the National Government can accomplish its due functions and services. Law 1551 of 2012.

13. Section 49. Extraordinary faculties. The President of the Republic is invested with certain extraordinary faculties so that, within six (6) months from the promulgation of this Law, he can proceed with the systematization, harmonization, and integration of the current legal dispositions for the organization and functioning of the municipalities. Law 1551 of 2012.

territory, 77.66% of Guainia and 44.37% of Vaupes remained without knowing if they are included in any of the disposed territorial entities: municipality, district, and indigenous territory, with the subsequent difficulties for the attention of the local population at all levels.

As it is mentioned by Hurtado, the absence of a local autonomy system in these jurisdictions has derived into a very complex panorama that is evident through the following problems:

- ▶ The population does not have the appropriate participation and representation concerning the process of conformation of a local government. As a consequence, the Governance exerts as a sectional and local authority in a very large area.
- ▶ The population is not getting any benefit from the resources delivered to the local territorial entities: general purpose resources, drinking water and basic sanitation, and food for schools, according to the norms established in the Law 715 of 2001.
- ▶ This territory does not count on legally recognized planning tools for the definition of land use and territory occupation at a local level such as development plans and territorial planning systems (Hurtado, 2011).

### Colombian Amazon Region

From the aforementioned perspective, concepts as hydrographic, bio-geographic, and political-administrative boundaries need to be incorporated for a comprehensive approach. Regionalization, seen from this point of view, comprehends the boundaries of the drainage basin in the Western section defined by the drainage divide; in the North, up to the Amazonian forest coverage; and in the South and East it corresponds to the international political frontiers. Its surface is about 483,163 km<sup>2</sup>. This equals to 5.71% of the Great Amazon (Gutierrez *et al.*, 2003), 6.4% (OTCA & PNUMA, 2009), and 42.3% of the Colombian territorial continent.

From the bio-geographic point of view, this delimitation is based on the impact of the Andean-Amazonian Rivers on the flatlands and foothills ecosystems of the region. Politically, it covers the South of Vichada, the Southeast of Meta, all the territory of Amazonas, Caqueta, Guainia, Guaviare, Putumayo, and Vaupes, the boot of Cauca, and the Amazonian gradients of Nariño (high territories of Gamuez, Sucio, San Miguel, and Aguarico rivers).

The Colombian Amazon Region, as defined by Sinchi Institute, is delimited this way: From the mouth

of Vichada River, in Orinoco, its meadow is followed along the South edge. Then, in Southeast direction, it passes through the springs of Uva, Itevaire, and Siare Rivers, up to the mouth of Jabon bayou in Guaviare River. Up through this river, it continues until finding Ariari River, and then up to the mouth of Guejar River to the Spring of Sanza River, derived from Barrialosa gulch and Peñas River. From there, it goes straight in West direction until Guatabero River, and up to its spring in Triunfo Hill. Then to the South up to the drainage divide of the Amazonian rivers until the Equator border. The polygon is completed by following the Amazonian international limits with Equator, Peru, Brazil, and Venezuela, until its closure in the mouth of Vichada River in Orinoco. (See [Map 12](#))

### Changes on Land Cover 2002-2012

The analysis on the land cover changes in the Amazonian regional territory comes from the available information that has been generated by Sinchi Institute for 2002, 2007, and 2012<sup>14</sup>.

The Amazon Region is mostly covered by native forests that have experienced a reduction of their area at a rate of 1.054.59 km<sup>2</sup> /year between 2001 and 2012. Deforestation is one of the most intense strains on the tropical rain forest, and it is caused by human action in order to promote conflict-trigger economies, since the Amazonian soils are suitable for forestall use, but extensive farming models have been installed and promoted. Likewise, illegal economies, such as illicit crops and mining<sup>15</sup> represent a serious thread for the forest. Besides the aforementioned,

deforestation is carried out to justify the land possession and the latifundium phenomenon appears; something that Arcila (2010b) has called as deforestation without peopling, it means that peopling does not grow at the same proportion the occupied areas do. On the contrary, the extension of occupied territories grows as the settlers diminish to the point of, for instance, disappearance of schools due to the total lack of children, as it happened in a rural settlement called San Juan in the municipality of Calamar. Thus, as the forests became smaller, the grass cover grew 1,138.03 km<sup>2</sup> per year in the same period for this region. Deforestation and the growth of grass cover occur not only in the Amazon, the forests are also affected by its fragmentation, estimated for this period in 138.7 km<sup>2</sup> per year.

For instance, in Guaviare, according to the settlers, an aggressive loss of forest has been reported, and in most of the cases there is no productive use the wood cutting, since it is done just for justifying the possession. Thus, the number of hectares covered with grass rises and so does the price of the land, as well as the accumulation of properties in the hands of a few owners (corrupt politicians and members of armed groups). The augmentation of pastures and animal husbandry is a way of appropriation when there is an expectation about oil and agricultural business. Peasants and colonist sell and migrate to urban zones; “When people are scared, they run, and so they sell cheaper”, remarked some Guaviare inhabitants during field work.

Displaced population, added to natural growth of the population in the region, particularly in urban areas, is also reflected in the size of the analyzed covers. This is the case of “artificialized territories”<sup>16</sup> that also grew for the studied period, with lower but sustained values equal to 2.18 km<sup>2</sup> per year. The importance of these areas will be analyzed in the chapter dedicated to the population ring. See [Table 5](#) and [Map 13](#), [Map 14](#) and [Map 15](#).

[mineria-ilegal-esta-infiltrando-sociedad-colombiana-el-articulo-517511](#). September 18<sup>th</sup> 2014.

16. Artificialized territories are composed by covers identified as: continuous urban tissue, discontinuous urban tissue, industrial or commercial zones and airports.

14. Sinchi Institute provided this information that has been spread through the works by Murcia *et al.* (2009, 2010, 2011, and 2014).  
15. The delegate defender for agricultural and land affairs from the Office of the Ombudsman, Andres Felipe Garcia, in September 2014 drew attention on the subject of illegal mining, an unattended problem in the country. During the past four or five years there has been an important growth in the linking of illegal groups to mining. Guerrillas, known as Bacrim, clearly related to drug traffic, have been getting involved more and more in mining. Unlike cocaine, gold is a legal product, but it is not the same case for its illegal exploitation. This is generating an environmental, economic, and social catastrophe in several regions of the country, the Amazon among them, particularly de border department of Guainia, with an important amount of indigenous population. <http://www.elespectador.com/noticias/nacional/>

**Table 5.** Surface and proportion of land cover in the Colombian Amazon Region, 2002-2012

COVERS	2002		2007		2012	
	Km <sup>2</sup>	%	Km <sup>2</sup>	%	Km <sup>2</sup>	%
Forests	414.705,74	85,83 %	408.787,42	84,61 %	404.159,81	83,65 %
Pastures	25.053,00	5,19 %	33.894,87	7,02 %	36.433,29	7,54 %
Grasslands	17.313,25	3,58 %	17.785,06	3,68 %	17.869,86	3,70 %
Secondary vegetation	10.733,76	2,22 %	8.285,90	1,71 %	9.547,27	1,98 %
Water surfaces	5.455,55	1,13 %	5.495,74	1,14 %	5.544,55	1,15 %
Fragmented	4.606,52	0,95 %	5.073,84	1,05 %	5.993,48	1,24 %
Shrublands	2.405,09	0,50 %	2.844,34	0,59 %	2.782,12	0,58 %
No information	1.619,63	0,34 %	-	0,00 %	-	0,00 %
Humid areas	656,13	0,14 %	373,02	0,08 %	323,60	0,07 %
Degradated lands	305,05	0,06 %	158,58	0,03 %	123,98	0,03 %
Open areas with few vegetation	238,48	0,05 %	276,51	0,06 %	205,79	0,04 %
Artificialized territories	68,78	0,01 %	85,86	0,02 %	90,59	0,02 %
Crops	2,71	0,00 %	102,58	0,02 %	89,36	0,02 %
<b>GENERAL TOTAL</b>	<b>483.163,70</b>	<b>100,00 %</b>	<b>483.163,70</b>	<b>100,00 %</b>	<b>483.163,70</b>	<b>100,00 %</b>

Source: Elaborated from the cover layers 2002, 2007, and 2012, generated in Sinchi Institute by the group Environmental Information Management and Zonation: Colombian Amazon (GIAZT in Spanish).

### Legal Condition of the Territory

In the Colombian Amazon Region there are different entities for the territory use and management. Law 2 of 1959<sup>17</sup> gave rise to the Forestall Reservation entity, creating, among others, the Amazonian Forestall Reservation. The objective was that these areas were useful for providing internal consumption water, electricity, and irrigation. Regional Autonomous Corporations, the Ministry of Environment, and Sustainable Development Corporations<sup>18</sup> are responsible for managing these areas in Colombia; the uses of these reservations are defined in the forestall ordinance plans.

In time, successive subtractions for different uses have been executed in the forestall reservation zone, giving as a result a current are of 80,195.33 km<sup>2</sup>, equal to 16.69% of the region. On the other hand, the areas for peasant and indigenous communities' settlement were of approximately 35,226.80 km<sup>2</sup> in 2013, equal to 7.29 % of the whole region.

In the area of the Amazon Forestall Reservation, indigenous reservations and natural parks were created; both are in some cases overlapped<sup>19</sup>. The overlapped area has an approximate extension of 16,903.99 km<sup>2</sup>, it means, 3.50% of the whole region.

Section 12 of the law 2 of 1959 created Natural National Parks (NNP), with the purpose of preserving national fauna and flora. In the Amazon region, there have been created 16 PNN: Alto Fragua-Indiwasi, Amacayacu, Cahuinari, Comeyafu, the Volcanic Complex Doña Juana-Cascabel, Los Picachos mountain chain, Los Guacharos, Jirijiri, La Paya, and Purace caves, Pure River, Chiribiquete mountain range, Los Churumbelos mountain range, Sierra de La Macarena, Tinigua y Yaigoje-Apaporis. They cover an extension of 57,221.87 km<sup>2</sup>, equal to 11.84% of the regional surface.

17. This law dictates norms on the Nation forestall economy and renewable natural resources.  
18. According to the established in number 16, section 31 of the Law 99 of 1993.

19. Natural National Parks Alto Fragua-Indiwasi, Volcanic Complex Doña Juana, Los Churumbelos mountain range, Yaigoje-Apaporis, La Paya, Cahuinari, Jirijiri, Pura and Amacayacu rivers are overlapped with indigenous reservations.



**Table 6.** Legal condition of the territory in the Colombian Amazon

CATEGORY	AREA Km <sup>2</sup>	PERCENTAGE
Indigenous Reservation	229,411.15	47.48 %
Forestall Reservation of the Amazon	80,195.33	16.60 %
Natural National Parks	57,22187	11.84 %
Forestall Reservation of the Amazon Sustracted Area	35,226.80	7.29 %
Other legal figures	27,156.90	5.62 %
Natural National Parks and Indigenous Reservations	16,903.99	3.50 %
Natural National Reservation and Indigenous Reservation	15,144.55	3.13 %
Renewable Natural Resources Integrated Management District	13,990.37	2.90 %
Natural National Reservation	4,682.16	0.97 %
Land and Water Conservation District	2,726.04	0.56 %
National Forestall Reservation	311.53	0.06 %
Flora Sanctuary	99.27	0.02 %
Flora Sanctuary and Indigenous Reservation	2.78	0.00 %
Santuario de Flora y Fauna	0.16	0.00 %
Inconsistencia de límites	90.90	0.02 %
<b>TOTAL GENERAL</b>	<b>483,163.79</b>	<b>100.00 %</b>

Source: Sinchi Institute. GIAZT Group. Legal condition of the territory 2013. V4\_1

There are also four Natural National Reservations (RNN)<sup>20</sup>: Mid and high basin of Inirida, Nukak, and Puinawai Rivers and Cuiari and Isana rivers. These reservations cover an area of 19,826.71 km<sup>2</sup>, equal to 4.10% of the region. In these areas there are indigenous reservations with an overlapping area equal to 15,144.55 km<sup>2</sup> (3.13% of the Amazon). Only 4,682.16 km<sup>2</sup>, equal to 0.97% of the region are RNN free from overlapping areas. (See [Map 16](#))

Until 2010, in the Amazon region there were 210 indigenous reservations<sup>21</sup>, with an approximate sur-

face of 229,411.15 km<sup>2</sup>, equal to 47.48% of the Colombian Amazon (see [Map 18](#)). Other administration and use categories for the region are the Renewable Natural Resources Integrated Management District (IMD)<sup>22</sup>, with a surface of 13,990.37 km<sup>2</sup>, equal to 2.90% of the Amazon, and the Land and Water Conservation District of Caqueta<sup>23</sup>, with a surface of 2,726.04 km<sup>2</sup>, equal to 0.56% of the Amazon. Other legal figures with a smaller surface, such as the Flora Sanctuary<sup>24</sup> and the Flora and Fauna Sanctuary<sup>25</sup>, are included in the region and are very important for the resources

20. Natural Reservation: area with primitive conditions regarding flora, fauna and natural landscape. Its purpose is to preserve, promote research and study of the natural wealth. Section 329, Law 2811 1974.

21. Section 21 of the Law 2164 of 1995 refers to the legal nature of indigenous reservations, pointing that they are a collective property of the indigenous communities and, according to sections 63 and 329 of the PC, they are inalienable, imprescriptible and guaranteed against seizure. Reservations are a legal and socio-political institution with a special character, composed by one or more indigenous communities that, entitled with the collective property can profit from the guarantees of the private property, it means they own and rule the territory through an autonomous organization, protected by the indigenous jurisdiction and their own system of rules. In the section 22 of the aforementioned law, it is noted that these areas are

to be ruled and managed by the traditional authorities of these communities, according to their practices and traditions, and the norms adopted by them. Law 2164, 1995.

22. It is a space of the biosphere that, due to environmental and socioeconomic reasons, is delimited by sustainable development criteria in order to plan and regulate the management and use of renewable natural resources and all the economic activities carried up there. Decree 1974, 1989.

23. It is a delimited area for special management, degraded or altered land recovering oriented for the prevention of phenomena that can alter or degrade the land in specially vulnerable areas due to their physical or climate conditions or the specific use. Section 324, Law 2811, 1974.

24. Medicinal plants Orito Ingi Ande (Orito, Putumayo).

25. La Corota island (La Cocha lagoon, Nariño).

conservation, besides their big impact at a local level. See [Table 6](#), [Map 17](#) and [Map 18](#).

### *The Ring of Population in the Colombian Amazon*

The ring of population of the Colombian Amazon is the extension of the national peripheral urban system to the South of the country, a phenomenon due to the social construction of the territory, which implies a consolidation of the country side-urban through the network of populated centers and road axes, the anthropic coverage (pastures and crops), the intervened areas (transformed areas) and the concentration of the population in urban areas. All is based upon the continuous construction for goods production and circulation. The ring of population is a very common scenario for the Colombian Amazon and the rest of Amazonian countries.

Urban structures, through roads, move deep into the Amazon region from the periphery towards the center, with the support of the already established regions through hierarchies and urban typologies, conforming a continuous patch that closes the population ring and the extends over the rest of the Colombian Amazon. Thus, protected territories, special management areas, and indigenous communities (reservations, ancestral territories or nomad indigenous communities' territories) are affected and, as a consequence, the Amazonian natural ecosystem functional structures are altered, due to the productive-extractive activity of surplus generation (self-consumption and merchandising).

A ring of population is a space hierarchized of continuous population with a communication network that integrates the different types of centers to the market economy, which are a support for new occupation waves. In the Colombian Amazon, the growth of urban structures (through market economy human settlements and a consolidated road network) has occurred in the Northwestern side, due to the expansion of the Andean Region population towards the East and the South of the Amazon Region.

The consolidation of urban spaces in the market economies implies a close dependence and domination relationship with the country side spaces. The urban market requires from the country side production and the forest, since they are the source of raw materials, food and buyers for their products. Likewise, the country side needs tools, materials, a market for their products and services such as education,

transportation and banks. This is why around consolidated urban spaces there is a prolongation of country side space that is actually an indissoluble part of a urban country-side whole system.

The country side joins the city thanks to a first, second and third order communications network. This network creates a continuum for the circulation of people and goods, vital for the market flow. A communications outage or too long distances mean loss of profitability and, therefore, the limit of the consolidated country side space. In other words, the profitability limit marks the point where the continuous communications and the continuous country side space extend. From this point on, it is only possible to develop subsistence economies or extractivism. Monitoring the surface of the Amazonian territory inside the population ring allows following the development and advance of the urban population and the occupation in the region. The materials for the monitoring are the cover maps provided by Sinchi Institute.

Thus, based on the cover map for 2002, 85.8% of it corresponded to forests; 6.7%, to other covers, and 7.4%, to transformed areas. In 2007, a reduction in the forests cover to 84.6% is observed and the growth in transformed areas; the rest of the cover equals to 6.6% of the regional territory for that year. In 2012, the forests reduction reaches 83.6% of the Amazonian territory, the transformed areas grow up to 9.6% of the whole surface and the rest of the cover keeps a relatively constant growth with 6.8%. See [Table 7](#).

These transformed areas constitute the core of population settlements. There, production zones and urban areas can be found, structured by a road network, both terrestrial and fluvial, conforming, as a whole, the Amazonian population ring. In order to calculate the extension of this ring, transformed areas and fluvial and terrestrial roads influence areas are taken into account, since the existence of these networks allow the flow of materials, energy, and information, as well as the development of the cultural and social life of the inhabitants.

The transformed areas are composed by layers of pastures, secondary vegetation, artificialized territories, and crops. As it can be seen in [Table 8](#), in the year 2012, the transformed area reached a surface of 46,160.51 km<sup>2</sup>, equal to 9.55% of the regional territory. In the year 2002, that area was estimated in 35,858.26 km<sup>2</sup>, and in 2007, in 42,369.21 km<sup>2</sup>. These surfaces are equal to 7.42% and 8.77% of the region, respectively, revealing the continuous advance of the destruction of Amazonian forests due to anthropic causes, with the subsequent transformation of the

**Table 7.** Forests, transformed areas, and other covers in the Colombian Amazon, 2002, 2007, and 2012

COVERS	2002		2007		2012	
	SURFACE Km <sup>2</sup>	%	SURFACE Km <sup>2</sup>	%	SURFACE Km <sup>2</sup>	%
Forests	414,705.7	85.8 %	408,787.4	84.6 %	404,159.8	83.6 %
Other covers	32,599.7	6.7 %	32,007.1	6.6 %	32,843.4	6.8 %
Transformed areas	35,858.3	7.4 %	42,369.2	8.8 %	46,160.5	9.6 %
<b>TOTAL</b>	<b>483,163.7</b>	<b>100.00 %</b>	<b>483,163.7</b>	<b>100.00 %</b>	<b>483,163.7</b>	<b>100.00 %</b>

Source: Elaborated from the cover layers 2002, 2007, and 2012, generated by Sinchi Institute. GIAZT Group.

**Table 8.** Transformed areas in the Colombian Amazon region, 2002, 2007, and 2012

TRANSFORMED AREAS	2002		2007		2012	
	SURFACE Km <sup>2</sup>	%	SURFACE Km <sup>2</sup>	%	SURFACE Km <sup>2</sup>	%
Crops	2.71	0.01 %	102.58	0.24 %	89.36	0.19 %
Pastures	25,053.00	69.87 %	33,894.87	80.00 %	36,433.29	78.93 %
Artificialized territories	68.78	0.19 %	85.86	0.20 %	90.59	0.20 %
Secondary vegetation	10,733.76	29.93 %	8,285.90	19.56 %	9,547.27	20.68 %
<b>TOTAL</b>	<b>35,858.26</b>	<b>100.00 %</b>	<b>42,369.21</b>	<b>100.00 %</b>	<b>46,160.51</b>	<b>100.00 %</b>

Source: Elaborated from the cover layers 2002, 2007, and 2012, generated by Sinchi Institute. GIAZT Group.

covers. This evinces the process of population and occupation that the region is experiencing, synthesized in the population ring, in which affected areas due to the presence of the fluvial and terrestrial road network are estimated. See [Table 8](#).

The configuration of the population ring for the years 2002, 2007, and 2012 reveals the advance of the occupation process. For 2002, the extension of the ring was calculated in 92,608.19 km<sup>2</sup>; for 2007, its surface was about 94,856.81 km<sup>2</sup> with a growth of 2% in relation to the first year of reference, and in 2012 it reached 105,557.39 km<sup>2</sup>, showing a 10% growth respecting 2007. In 2002, the extension of the ring corresponded to 19.17% of the Colombian Amazon territory; in 2007, 19.63%, and in 2012, 21.85% of the region.

The occupied and populated surface for the year 2002 is displayed in a continuous area of the Northwestern section of the region and the departments of Caqueta and Putumayo and in the North of the Amazon, in the territory of Meta and Guaviare. This area extends added to the terrestrial road network, composed by first, second, and third order roads, from dirt roads to national highways, and it continues its way through waterways, becoming more fragmented in the central section of the region, in territories in the East of Putumayo, Caqueta, Guaviare and the South of Vichada. It has some prolongations that, as tentacles,

connect with urban centers in the East of the region, known as geo-political and extractive-economical enclaves. The ring grew initially from the foothills towards the flatlands, but today it can be observed that it also grows in the opposite direction: from the Amazonian flatlands towards the center of the region, as it can be seen in the department of Vaupes.

For the year 2002, only 13 urban centers in the South of the region were still in a disseminated area, not really linked to the population ring. Here we are talking about all the main departmental jurisdictions of Amazonas department and the departmental jurisdiction of Pacoa, in Vaupes, as well as the municipal capitals in the municipalities of Leticia and Puerto Nariño, and Tararia, in Amazonas and Vaupes, respectively.

For 2007, the situation is quite similar to 2002, since the ring only grew 2%. The most meaningful changes occurred in the municipalities of La Macarena and San Vicente del Caguan, where it expanded to 465.83 km<sup>2</sup> and 460.37 km<sup>2</sup>, respectively. The changes in the municipalities of San Jose del Guaviare (325.23 km<sup>2</sup>), Calamar (298.06 km<sup>2</sup>), and Cumaribo (238.86 km<sup>2</sup>) are also remarkable. In 47 territorial entities, a minor expansion was detected: three of them stayed the same, since all their territory was already included into the ring (Valparaiso, Morelia, and Albania), and 20 showed reductions in their area, which

can be explained by forest recovery processes and optimization in the cover interpretation.

For 2012, more remarkable changes were detected; the growth of the ring in relation to 2007 was 10% for the whole region, equal to 10,700.57 km<sup>2</sup>. Nine municipalities grew more than 400 km<sup>2</sup> between 2007 and 2012: San Vicente del Caguan (891.75 km<sup>2</sup>), Cumaribo (842.99 km<sup>2</sup>), San Jose del Guaviare (764.62 km<sup>2</sup>), Miraflores (725.15 km<sup>2</sup>), La Macarena (599.67 km<sup>2</sup>), Mitu (592.33 km<sup>2</sup>), Inirida (562.20 km<sup>2</sup>), Puerto Leguizamo (552.93 km<sup>2</sup>), and El Retorno (429.44 km<sup>2</sup>). In 17 territorial entities, the growth oscillated between 100 and 400 km<sup>2</sup>. In 46 of them, it was less than 100 km<sup>2</sup>. In four of them it stayed the same and in two of them it diminished (San Miguel y Yavarate).

At a departmental level, for the period 2002-2007, the most significant growth in the surface of the ring occurred in Meta (827.07 km<sup>2</sup>) and Caqueta (607.02 km<sup>2</sup>), followed by Putumayo (480.63 km<sup>2</sup>), Guaviare (384.89 km<sup>2</sup>), Vichada (238.86 km<sup>2</sup>), Guainia (166.87 km<sup>2</sup>), Cauca (125.63 km<sup>2</sup>), Nariño (6.99 km<sup>2</sup>) and Amazonas (6.76 km<sup>2</sup>). In Vaupes, there was a reduction of 596.10 km<sup>2</sup> for the selected period.

The departmental panorama changes substantially in the period 2007-2012, since a growth for all the departments of the region was registered. Guaviare is the department with the most notorious changes, with 2,126.86 km<sup>2</sup>, followed by Meta (1,849.60 km<sup>2</sup>), Caqueta (1,655.99 km<sup>2</sup>), Putumayo (1,203.54 km<sup>2</sup>), Guainia (1,119.43 km<sup>2</sup>), and Vaupes (1,074.50 km<sup>2</sup>). Changes below 1.000 km<sup>2</sup> were detected in the departments of Vichada (842.99 km<sup>2</sup>), Amazonas (574.72 km<sup>2</sup>), Nariño (151.91 km<sup>2</sup>) and Cauca (101.04 km<sup>2</sup>).

For 2002, the department with the biggest portion of the population ring surface was Caqueta, with 27,665.66 km<sup>2</sup>, equal to 30.72% of the total surface. It was followed by Meta, Guaviare, and Putumayo, with surfaces between 12,000 and 14,550 km<sup>2</sup>. For this year, the municipalities with the biggest portion of the ring were La Macarena (6,194.18 km<sup>2</sup>) and San Vicente del Caguan (6,078.14 km<sup>2</sup>). They were followed in decreasing order by Cumaribo, San Jose del Guaviare, Cartagena del Chaira, Solano, El Retorno, Mitu, Puerto Rico (Caqueta), Miraflores, Puerto Leguizamo, Puerto Guzmán and Inirida with areas bigger than 2,000 km<sup>2</sup>.

The relation between the surface of territorial entities and their surface within the Amazonian population ring points out that, for 2002, 22 municipalities had more than 60% of their surface within the ring; 14, between 30% and 60%; and 42 territorial entities had less than 30% of their surface into the ring.

For 2007, the department with most of its surface within the ring was still Caqueta, with 28,272.69 km<sup>2</sup>, equal to 31.39 % of its whole surface. It was followed by Meta, Guaviare, and Putumayo with surfaces between 12,500 and 15,500 km<sup>2</sup>. Concerning the municipalities with most of its surface within the ring, they were, once again, La Macarena (6,660.01 km<sup>2</sup>) and San Vicente del Caguan (6,538.51 km<sup>2</sup>), followed, in decreasing order, by Cumaribo, San Jose del Guaviare, Cartagena del Chaira, Solano and El Retorno, with surfaces superior to 3,000 km<sup>2</sup>.

The relation between the surface of territorial entities and their surface within the Amazonian population ring points out that in 2007 24 municipalities had more than 60% of their surface within the ring; 14, between 30% and 60% of their surface within the ring and 40 of them, less than 30% of their surface.

During the period 2007-2012 there was a significant sustained growth of the population ring surface. For 2012, the departments with most of the population ring surface were still: Caqueta with 29,928.67 km<sup>2</sup>, equal to 33.23% of its territory; Meta with 17,201.06 km<sup>2</sup>, equal to 51.58%; Guaviare with 14,817.4 km<sup>2</sup>, 26.69%, and Putumayo with 13,760.37 km<sup>2</sup> equal to 53.33% of its territory within the ring. Even though Amazonas, Guainia, and Vaupes have the lowest amount of surface within the ring and the proportions are low as well, attention is drawn to Vaupes, since in a period of only five years it reached high change values concerning its surface. The municipalities with the bigger surface were San Vicente del Caguan (7,430.26 km<sup>2</sup>) and La Macarena (7,259.68 km<sup>2</sup>), followed by Cumaribo, San Jose del Guaviare, Cartagena del Chaira, and Puerto Leguizamo with surfaces above 3.500 km<sup>2</sup>.

The relationship between the surface of territorial entities and their surface within the Amazonian population ring points out that, in 2012, 24 municipalities had more than 60% of their surface within the ring; 16, between 30% and 60% and 38 territorial entities, less than 30% of their surface within the ring. These numbers reveal an important dynamic in the Northwestern sector of the region, due to the increase of the ring surface, and in the Eastern and South of the region due to the increase of the number of territorial entities that have been added to the ring. See [Annex 4](#), [Map 19](#), [Map 20](#), and [Map 21](#).

For 2012, 53.3% of Putumayo's territory was included in the population ring. The municipalities of Guamuez, San Miguel, and Puerto Caicedo had more than 90%; Colon, Sibundoy, Puerto Guzman, Puerto Asis, Orito, and Villagarzon, more than 50%. Meanwhile, San Francisco, Mocoa, Santiago, and Puerto



Leguizamo had more than 30% of their surface within the ring. All the 13 urban centers of Putumayo are included within the ring.

For 2012, 51.58% of Meta's Amazonian territory was included within the population ring. Concerning its municipalities, Puerto Concordia had more than 95% of its territory within the ring; Puerto Rico, San Juan de Arama, and La Macarena, more than 60%; Mesetas, Uribe, and Vistahermosa, more than 40%. Meanwhile, Mampiripan and Puerto Gaitan had more than 20%. Eight of the urban centers of these municipalities are included within the population ring. Puerto Gaitan's urban center is not included in the analysis of this document.

For 2012, 33.23% of Caqueta's territory was included within the Amazonian population ring. Concerning its municipalities, all of Albania's territory, La Montañita, Morelia, Valparaiso, and Curillo were part of it. Likewise, Solita and Milan had more than 95% of their territory within the ring. Values above 65% were found for El Pajil, Puerto Rico, El Doncello, Florencia, and Belen de los Andaquies. These municipalities still have fractions of the Andean forest inside the forest reservation area. However, there is an increasing pressure on these areas. A similar situation occurs in San Jose del Fragua's territory, with 40% of it included within the ring. San Vicente del Caguan and Cartagena del Chaira are absolutely the ones with most of their surface within the ring but, due to their huge extension, the proportion falls to 40%. This situation is even more remarkable in the municipality of Solano, with 3,500 km<sup>2</sup> within the ring that represent only 8.27% of its surface. All the 16 urban centers of this department are included within the ring.

30.21% of Cauca's Amazonian fraction is included within the population ring. Piamonte and San Sebastian municipalities have more than 50% of their territory included in it and Santa Rosa, 19.94%. The headlands of Piamonte and Santa Rosa are also included within the population ring, but San Sebastian's headlands are not considered to be immersed in the Amazonian regional territory.

The department of Nariño participates of the Amazon region with partial areas of 6 municipalities, with territories located within the population ring (Ipiales, Pasto, Puerres, Funes, Cordoba, and Potosi). Nevertheless, none of its urban centers are located within the ring. 29.59% of the Amazonian fraction of Nariño's department is located within the population ring. The municipality of Pasto is the one with most of its territory within the ring, with 40%. Cordoba, Ipiales,

Puerres and Funes had more than 20%, and Potosi, more than 15%.

The department of Guaviare is part of the population ring with 26.69% of its territory. With partial territories of the municipalities of San Jose del Guaviare, El Retorno, and Miraflores of more than 25% and Calamar, with more than 10%. For 2012, all the headlands of these municipalities were included within the population ring.

The department of Vichada, with its correspondent South fraction in the municipality of Cumaribo, is part of the Amazonian population ring in a fraction equal to 16.40% of the municipal territory, being also one of the municipalities with the highest increase for the period 2002-2012. The headlands of Cumaribo are considered to be within the area of the Amazonian population ring.

The department of Vaupes has a fraction of its territory within the population ring, equal to 14.07%. Mitu has the highest values, superior to 20% of its participation within the ring. The departmental jurisdiction of Yavarate, the municipality of Caruru and the departmental jurisdiction of Pacoa show values higher than 10%. Meanwhile, the municipality of Taraira and the departmental jurisdiction of Papunaua show values inferior to 10%. For 2012, all the headlands of this department were part of the population ring, in the foothills of the East side of the region (from the center to the periphery) and the sections coming from the so called geo-political and extractive-economical enclave (from the periphery to the center).

The department of Guainia is part of the population ring with 9.74% of its territory. The municipality with the biggest proportion within the ring is Inirida, with 19.27%. The departmental jurisdictions of Cacahual and San Felipe participate with more than 10%. On the other hand, Morichal, La Guadalupe, Barranco Mina, and Pana Pana participate with more than 5%, while Puerto Colombia and Mampiripana do it with a smaller value. It can be said that, for 2012, all the departmental jurisdictions' headlands were included within the Amazonian population ring, even though in its least consolidated fraction, from the center to the periphery and vice versa, as in the case of the department of Vaupes.

6.36% of Amazonas belongs to the population ring. The municipality with the most of its territory within the ring is Puerto Nariño, with more than 20%. The departmental jurisdictions of La Pedrera, El Encanto, La Victoria, the municipality of Leticia and the jurisdictions of Tarapaca and La Chorrera have more than 5% of their territory within the area of the ring, while Miriti-Parana, Puerto Alegria, Puerto Arica and Puerto

Santander, less than 5%. A similar situation similar to the one in Vaupes and Guainia occurs in this department, where the limits of the ring extend till the main headlands in some cases. In other cases, they extend from the geo-political and extractive-economical enclaves towards the center, in a search for a connection and integration with the interior of the region and the country.

## PERCENTAGE OF SURFACE WITHIN THE AMAZONIAN POPULATION RING

The percentage of surface within the Amazonian population ring is an indicator that represents the proportion of surface of a municipality or departmental jurisdiction within the area of continuous and hierarchized population (population ring) respecting the total surface of the ring for a due moment. Calculated data from the population maps for 2002, 2007, and 2012 can be seen in [Annex 5](#), [Map 22](#), [Map 23](#), and [Map 24](#).

Data from [Annex 5](#) was weighted to generate five groups according to the percentage of participation of every territorial entity in relation to the total surface of the Amazonian population ring for the aforementioned years. Numbers do not reveal a relevant variation between 2002, 2007, and 2012 once they were examined. For 2012, the territorial entities with the most important participation in the Amazonian population ring were San Vicente del Caguan, La Macarena, and Cumaribo.

According to the behavior of this indicator, it is possible to conclude that, for the ten years period, the tendency with the most important increase for the population ring is focused on the departments of Caqueta, Meta, Guaviare, and Putumayo. The surfaces of Vaupes and Amazonas registered lower values in 2007 compared with 2002, but they increased again in 2012. Guainia, even though it does not grow in the same proportion than the departments in the West of the region, maintained a constant increase. The departments of Vichada, Cauca, and Nariño showed the lowest values for the departmental scale.

The process of population in the ring showed a clearly organized directionality in a West-East sense until the end of the 90's, according to the course of the rivers and keeping a concentric direction in relation to the epicentral axe, composed by municipalities such as San Jose del Guaviare, Florencia, and Mocoa. Nevertheless, the analysis of the population rings for 2002, 2007, and 2012 evinces that, despite a stable

tendency and directionality, there are new occupation vectors from the periphery to the center, mainly coming from the urban centers known a decade ago as geo-political extractive-economical enclaves, in the search for a connection with the colonization spots.

Administrative decentralization, the new legal rights for minorities and ethnic groups, the mining activities boom, the trans-border integration policies, the illicit crops boom and their multiple consequences, among other, have contributed to the construction of solid cities on several fluvial and terrestrial roads of our Amazon.

The most important urban centers belonging to the Colombian Amazonian population ring, from the Northeast to the Southeast are: San Jose del Guaviare (Guaviare), San Vicente del Caguan, Puerto Rico, Florencia, Morelia, and Belen de los Andaquies (Caqueta); Mocoa, Villagarzon, Puerto Asis, and Puerto Leguizamo (Putumayo). Their importance is not always determined by the number of inhabitants, but for their relative autonomy concerning some kind of urban economy (financial and social services sector –social, public and production–).

The rest of settlements within the ring are the "peasants' populated centers" or "rural villages", whose economy depends on the land and is not produced in the center itself.

Besides the aforementioned, in the Colombian Amazon there are "geo-political enclave centers", where the economy stays active due to budget movements, and not to their internal dynamics, as it is the case for the municipalities of: Leticia and Puerto Nariño (Amazonas), Mitu (Vaupes) and Inirida (Guainia). Likewise, there are "extractive-economical enclave centers": the municipality of Taraira (Vaupes) and the departmental jurisdictions of Tarapaca, La Pedrera, El Encanto, and La Chorrera (Amazonas) and the Police Inspection of Araracuara (Solano, Caqueta).

This network of human settlements is growing without the due planning and orientation concerning urbanization, social integration, equity, and life quality processes that lack of informed criteria in relation to sustainable development and knowledge of the urban configuration conditions existing in this portion of the territory in the Colombian south border is remarkable.

The urban and demographic dynamics of the Andean Colombia are characterized by crisis in the small urban towns, urban concentration, urbanization processes deceleration, and poverty concentration in urban areas. In the Amazonian Colombia, mid and small size urban towns are in a constant increase as well as

the population in the municipalities' headlands, populated centers and rural areas. This accelerates the urbanization processes, and even though worrying levels of poverty are reported, this poverty is related to unmet basic needs and not to low income, since the economy of the coca leaf and illegal mining injects an important flow of money to the economic circuit. This occupation process in the Colombian Amazon shows that, for the last three decades, a persistent and sustained increase of population and built areas for productive use, administrative and political territorial domination, as well as a domination over housing infrastructure, roads, commercial and social services is occurring.

From the ancient enclaves that promoted extractive economy (cinchona, rubber, ivory palm, and fur) during the last years of the 19<sup>th</sup> century and the first fifty years of the 20<sup>th</sup>, such as Mocoa, Florencia, San Vicente del Caguan, Puerto Rico, Calamar, Miraflores, La Tagua, Mitú, La Chorrera, and Araracuara, a wide network of urban centers that are nowadays included in the category of departmental headlands appeared: San Jose del Guaviare, Miraflores, and El Retorno in the department of Guaviare; Puerto Leguizamo, San Miguel (La Dorada), Valle del Guamuez (La Hormiga), and Orito, among others, until having the 13 headlands that exist today in Putumayo; Solita, Solano, Cartagena del Chaira, and Albania complete the picture of the 16 municipalities of Caqueta; Leticia and Puerto Nariño, in Amazonas; Caruru, Pacoa, and Taraira, in Vaupes, and Inirida in Guainia.

Other towns have grown to the point of becoming urban centers, without being the capitals of their respective departments: Puerto Asis, Villagarzon, Orito, and Sibundoy in Putumayo; San Vicente del Caguan, Puerto Rico, and Belen de los Andaquies in Caqueta. In the last department there is an additional urban life phenomenon, conurbation between Florencia, Morelia, and La Montañita. A similar situation occurs in the border territory, between the urban centers of Leticia (Colombia) and Tabatinga (Brazil), the most remarkable, and among Leticia and Santa Rosa, in Peru.

The group of settlements classified as departmental capitals and municipal headlands is complemented by an important number of centralized towns that disperse in the Amazonian geography, even though with a clearly established directionality: West-East, following the course of the rivers, in concentric direction, regarding certain epicentral axes. The most remarkable settlements are: Cachicamo, La Carpa, El Capricho, La Libertad, and Tomachipan in the

department of Guaviare; El Venado, Siberia, Las Delicias, El Tigre, Bonanza, and Santana in Putumayo; and Nazaret, Mocagua, and Santa Sofia in Amazonas. These centers gather important population groups, around 50 and 200 houses are base of the municipal or departmental inspection, so they have become social and administrative services providers, such as schools, communications and health services, allowing the extension of the territoriality.

The process of occupation and appropriation of the territory has developed following the course of the rivers Guayabero, Ariari, and Guaviare, creating thus settlements along the basin of the last river up to the border with Venezuela. The "lock" created by El Refugio savannah and the jungle in the South of the department of Meta started to break since 1983 with the arrival of colonists through Losada River, allowing the communication between the municipalities of San Vicente del Caguan and La Macarena, in the department of Meta.

From San Vicente del Caguan, it is possible to arrive to the border with Equator following the highway that connects this municipality with San Jose del Fragua, and then until Caqueta River, crossing Mocoa and the municipality of San Miguel in the Equatorial border. Here, the ring of population is complemented by the settlements in consolidation all along Putumayo River: Puerto Asis, Puerto Ospina, Puerto Leguizamo, El Encanto, Puerto Arica, and Tarapaca, and through the same fluvial road, Leticia and Puerto Nariño, in Amazonas, along the river of the same name. It is also necessary to remark the population axe represented by Caqueta River that from Villagarzon, in Putumayo, Solita, and Solano, in Caqueta, connects the towns La Tagua, Puerto Santander, Araracuara, and La Pedrera.

It can be seen that this ring of population and urban settlements is like the umbilical cord that binds the urban development of the country to the current and future centers of the peripheral urban system of Colombia and the neighboring countries, as a consequence of the presence of peer cities that accompany the urban expansion of the Pan-Amazon: San Miguel, in Putumayo, and Lago Agrio, in Equator; in Amazonas, Leticia-Tabatinga, Tarapaca-Ipiranga, La Pedrera-Villa Betancur, in the Brazilian border; Yavarate-Iavarate, in Vaupes, with the Brazilian border too; and San Felipe-San Carlos del Rio Negro in Guainia, in the border with Venezuela. See [Map 25](#).

## Mining entitlements and requests in the Colombian Amazon

The characterization of mining activities in the Colombian Amazon region starts with the identification of the spots where this activity takes place. This section gives an account on the topic, based on the official registers of the mining authority for 2008, 2011, 2013, and 2015, using the data from Mining Registry, managed before by Ingeominas and nowadays by the National Mining Agency (ANM, in Spanish). The panorama about mining titles and requests regarding types of authorization, required materials, and areas is described. This exercise allowed establishing the first indicators that point towards the creation of a baseline on mining from the legal point of view in the region, in order to follow and monitor the potential pressure that this activity exerts on the fragile Amazonian ecosystems.

### MINING ENTITLEMENTS 2008, 2011, 2013, AND 2015

The number of mining entitlements accumulated for the Colombia Amazon region during June 2015 was 209, equal to 130,430.7 hectares. The biggest number of titles was reported in Caqueta (63), followed by Putumayo (53), and Guainia (35). However, concerning surface, the biggest amount of hectares was reached in Guainia (72,605.99 ha), followed by Putumayo (17,292.69 ha), and Vaupes (15,576.98 ha).

The proportion of entitled surface respecting the surface of each territorial entity reached its highest values in Nariño (1.36%) and Guainia (1.03%). In the first case, due to the smaller size of the surface, and in the second one, due to the bigger extension of the approved titles. Regarding the proportion of entitled surface for the region in June 2015, Guainia showed the highest values (55.67%), followed by Putumayo (13.26%), Vaupes (11.94%), and Caqueta (4.17%).

The surface of entitled polygons in the departments located in the foothills, Caqueta, and Putumayo is smaller than the ones in Guainia and Vaupes.

At a municipal level, the highest number of titles was identified in Florencia (23), Caqueta, and Pana Pana (20), Guainia. Pana Pana is also the territorial entity with the biggest entitled surface (36,697.82 ha), followed by Puerto Colombia (27,888.82 ha), and Taraira (13,529.99 ha).

The indicator of entitled territorial surface percentage<sup>26</sup> at a municipal level shows the highest values in Puerres (10.65%), Mocoa (7.54%), and Cordoba (5.69%). See [Annex 6](#) and [Map 26](#).

In the Colombian Amazon, the number of territorial entities where mining entitlements were approved during 2008 was 40, in 2011 they diminished to 29, in September 2013 there were again 40, and in June 2015 41 were found.

The departments with an increment in the number of territorial entities with mining entitlements between 2008 and 2015 were Meta, Nariño, and Putumayo. In Amazonas, one entitlement for the jurisdiction of La Pedrera was registered in 2008, and since that, no entitlement has been reported in this department.

In Caqueta, 36 entitlements were found in 2008, distributed in 11 of its 16 municipalities (Albania, Belen de los Andaquies, Curillo, El Doncello, El Paujil, Florencia, La Montañita, Morelia, Puerto Rico, San Jose del Fragua, and Solano). In 2011 the number of valid entitlements diminished to 31, and then increased to 49 in 2013, in 10 municipalities (the same of 2008, except for Curillo and Solano, plus San Vicente del Caguan), and in 2015, 63 entitlements in the same 10 first municipalities of 2008 plus San Vicente del Caguan.

In Cauca, in 2008 there were 4 mining entitlements (Piamonte and Santa Rosa). In 2011, there were 3 (Piamonte). In 2013, 11 entitlements were reported (Piamonte and Santa Rosa) and in 2015 there were 10 entitlements in the same municipalities.

In Guainia, there were three territorial entities with 9 entitlements in 2008 (Cacahual, Inirida, and Puerto Colombia). In 2011, this number increased to 33 (19 in Pana Pana, 9 in Inirida, and 5 in Puerto Colombia). In 2013, 31 entitlements were reported (one more in Pana Pana and two less in Inirida). In 2015, the 35 entitlements of the department were distributed between Pana Pana (20), Inirida (9), and Puerto Colombia (6).

In Guaviare, there have only been reported entitlements for the municipalities of El Retorno (1 in 2008 and 2 in 2015) and San Jose del Guaviare, where there were 5 entitlements in 2008, 9 in 2011, 10 in 2013, and 13 in 2015.

In Meta, where there are only nine municipalities in Amazonian territory, there were 4 entitlements for 2008 (Mesetas, San Juan de Arama, Uribe, and Vistahermosa). In 2011, only two entitlements were valid, located in Puerto Concordia. In 2013, 22 more

26. It is the relationship between the surface of the approved titles and the municipal territory surface.



entitlements were reported (La Macarena, 6; Mesetas, 4; Puerto Concordia, 2; Uribe, 3; and Vistahermosa, 9)<sup>27</sup>. In 2015, 25 entitlements were reported in the same municipalities.

In the six municipalities of Nariño that have an Amazonian fraction, 4 entitlements were reported for 2008 (Cordoba, Potosí, and Puerres). In 2001, there was only one in Ipiales. In 2013 and 2015, there were 5 (Cordoba, Ipiales, and Puerres)<sup>28</sup>.

In Putumayo, there were 35 valid entitlements in 2008 (municipalities of Colon, Mocoa, Orito, Puerto Caicedo, Puerto Guzman, San Francisco, Santiago, Sibundoy, Valle del Guamuez, and Villagarzón). In 2011, the number increased to 49, in the territory of Puerto Asis and San Miguel, besides the aforementioned municipalities. In 2013, 52 entitlements were valid, distributed in 11 from the 13 municipalities of the department: Mocoa 12, Orito 16, Puerto Asis 5, Puerto Caicedo 4, Puerto Guzman 2, San Francisco 7, San Miguel 1, Santiago 2, Sibundoy 5, Valle del Guamuez 3, and Villagarzón 3. In 2015 there were 53 entitlements reported for this department, where Mocoa stands out with 58% of the entitled surface of the department, equal to 10,029.9 ha.

In Vaupes, mining entitlements have been reported in Mitu, Papunaua, and Taraira. In 2008, 6 entitlements were valid (Mitu 3, Papunaua 1, and Taraira 2). In 2011, there were 5 entitlements (Mitu 2 and Taraira 3). In 2013, there were 8 entitlements (Mitu 4 and Taraira 4). In 2015, there were 9 entitlements, 5 in Mitu and 4 in Taraira, being these the most representative in the department.

In Vichada, in the municipality of Cumaribo, in its Amazonian fraction 4 entitlements were found in 2008 and none in 2001. For 2013, 2 entitlements were reported in the aforementioned surface and 3 in 2015, with an important increase of the entitled surface respecting 2013 measurements.

From all the entitled territory in 2008, 55.71% was located in Guainia, followed by Vaupes (11.87%) and Putumayo (11.85%). In 2011, 65.95% was located in Guainia, 19.04% in Putumayo, and 12.33% in Vaupes. In September 2013, 56.17% of the entitled surface belonged to Guainia, 16.06% to Putumayo, 12.57% to Vaupes, 4.65% to Meta, 3.61% to Nariño, 3.12% to Cauca, and 3.10% to Caqueta. Guaviare and Vichada have less than 1% and no entitlements were registered for

Amazonas. In June 2015, from all the entitled territories, 55.67% was located in Guainia, 13.26% in Putumayo, and 11.94% in Vaupes. These values contrast with the number of entitlements, since there are more in Caqueta (63) and Putumayo (53), while in Guainia (35) and Vaupes (9) there are less. This indicates that the assigned surfaces are bigger in the departments located in the East of the region and relatively smaller in the Northwestern section (Caqueta, Putumayo, Cauca, and Nariño). See [Table 9](#), [Chart 1](#) and [Chart 2](#).

### Mining requests 2011, 2013, and 2015

According to the information provided by the National Mining Agency (ANM), in June 2015, there were 444 mining requests for 58 of the 78 territorial entities<sup>29</sup> of the Colombian Amazon region. In 2011, there were 952 requests in 49 territorial entities and in September 2013, 679 requests for 61 of the 78 territorial entities<sup>30</sup> of the Colombian Amazon region. See [Table 10](#), [Chart 3](#) and [Chart 4](#).

This decreasing tendency remained until June 2015 with an important reduction in the number of requests concerning the previous years, explained by the deputation that the Mining Registry has been developing. Nevertheless, this information still needs to be deputed, due to the superposition of objects in the cartographic base.

The expectation on finding minerals of economic interest in the region is reflected on the requests presented in 2011. For this year, 3,322,799.94 ha, equal to 8.95% of the regional surface, were requested for entitlement. In 2013, 2,907,694.29 ha, equal to 6.02% of the regional surface, were requested. In 2015, this numbers changed drastically, with 818,498.66 ha, equal to 1.69% of the Amazonian territory.

In Vaupes, 41.08% of the territory was requested for mining entitlements, as well as 26.30% of Guainia's

29. In 2015, there were no entitlement mining requests in: El Encanto, La Chorrera, Leticia, Puerto Arica, Puerto Arica, Puerto Nariño, Puerto Santander and Tarapaca (Amazonas); in Cartagena del Chaira, Milan, Solano, Solita y Valparaiso (Caqueta); Miraflores (Guaviare); Puerto Concordia and Puerto Rico (Meta); Funes and Pasto (Nariño); Puerto Leguizamo in Putumayo; and Yavarate in Vaupes.

30. In 2013, there were no entitlement mining requests in: El Encanto, La Chorrera, Leticia, Puerto Arica, Puerto Nariño, Puerto Santander and Tarapaca (Amazonas); Cartagena del Chaira, Milan, Miraflores and Puerto Rico (Caqueta); Funes and Pasto in Nariño, and Colón in Putumayo.

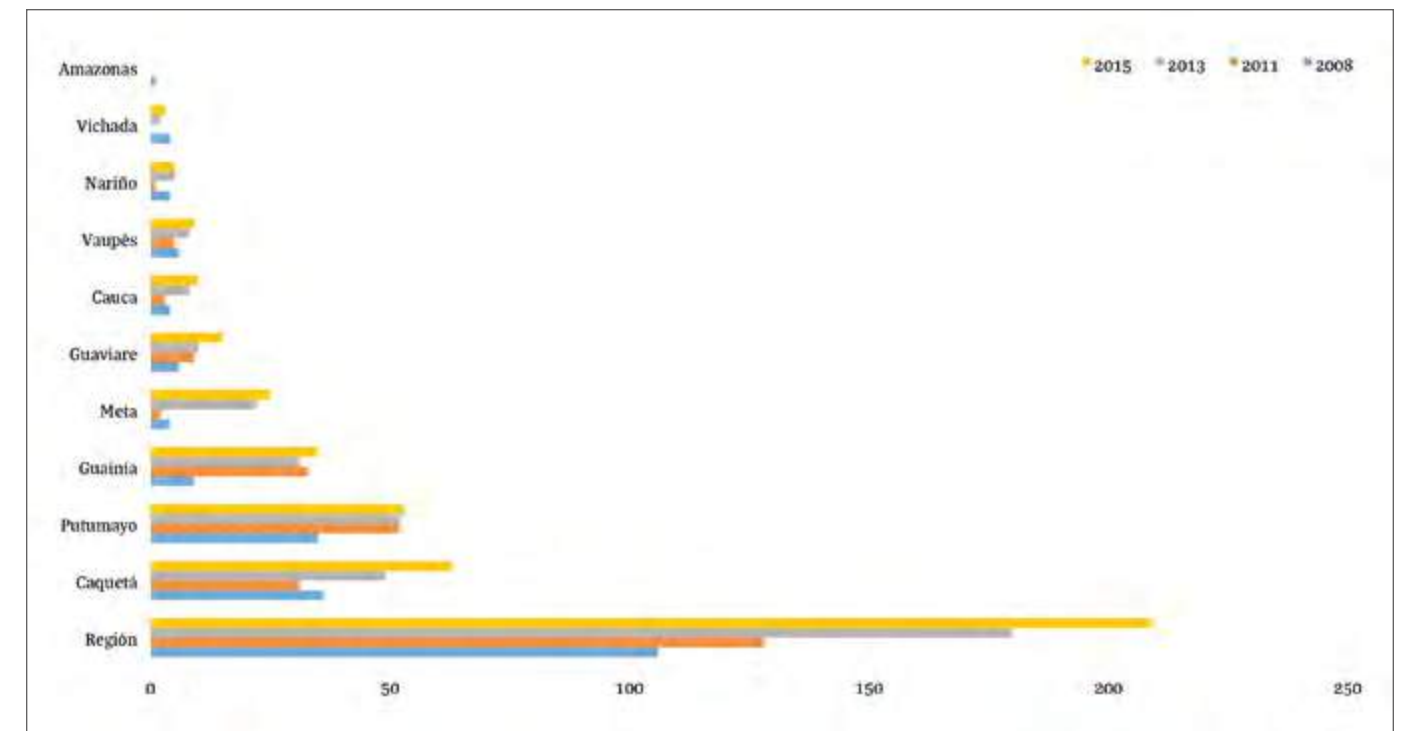
**Table 9.** Number of valid mining entitlements and their surface in the Colombian Amazon region, 2008, 2011, 2013, and 2015

DEPARTMENT	2008		2011		2013		2015	
	N.º	HA	N.º	HA	N.º	HA	N.º	HA
Amazonas	1	255.70	-	-	-	-	-	-
Caqueta	36	7,182.24	31	1,408.06	49	3,353.09	63	5,443.28
Cauca	4	191.62	3	593.39	8	3,365.95	10	4,379.28
Guainia	9	53,131.92	33	66,411.48	31	60,658.34	35	72,605.99
Guaviare	6	2,864.29	9	661.19	10	673.17	15	678.44
Meta	4	151.26	2	18.67	22	5,020.23	25	5,380.83
Nariño	4	3,897.46	1	21.39	5	3,900.22	5	3,918.84
Putumayo	35	11,297.54	52	19,169.18	52	17,346.19	53	17,292.69
Vaupés	6	11,317.57	5	12,416.26	8	13,572.96	9	15,576.98
Vichada	4	5,078.81	0		2	107.91	3	5,154.39
<b>REGION</b>	<b>106</b>	<b>95,368.41</b>	<b>128</b>	<b>100,699.62</b>	<b>180</b>	<b>107,998.06</b>	<b>209</b>	<b>130,430.73</b>

Note: The sum of the number of entitlements is not equal to the total for the region, since there are mining requests that share a jurisdiction in more than one department.

Source: Mining land-mining entitlements 2008; Ingeominas, mining entitlements 2011; National Mining Agency, mining entitlements 2013 and 2015. Information processed by the group Socio-environmental Dynamics from Sinchi Institute.

**Chart 1.** Number of mining entitlements in the Colombian Amazon region, 2008-2015

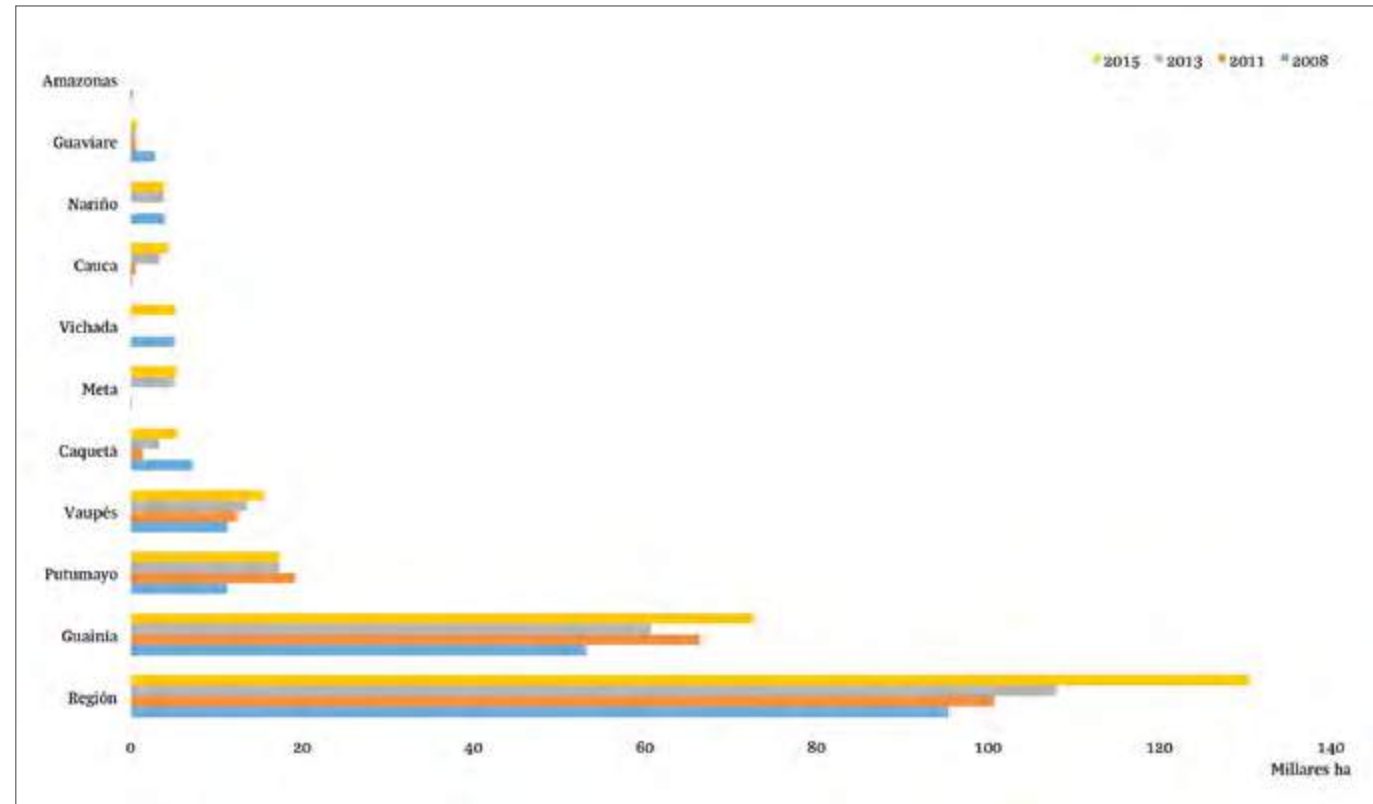


Source: Mining land-mining entitlements 2008; Ingeominas mining entitlements 2011; National Mining Agency, ANM, mining entitlements 2013 and 2015. Information processed by the Group Socio-environmental Dynamics from Sinchi Institute.

27. These values refer only to entitlements located in regional Amazonian territory, and not in the whole municipality.

28. *Idem*.

Chart 2. Surface of mining entitlements in the Colombian Amazon Region, 2008-2015



Source: Mining land-mining entitlements 2008; Ingeominas mining entitlements 2011; National Mining Agency, ANM, mining entitlements 2013 and 2015. Information processed by the Group Socio-environmental Dynamics from Sinchi Institute.

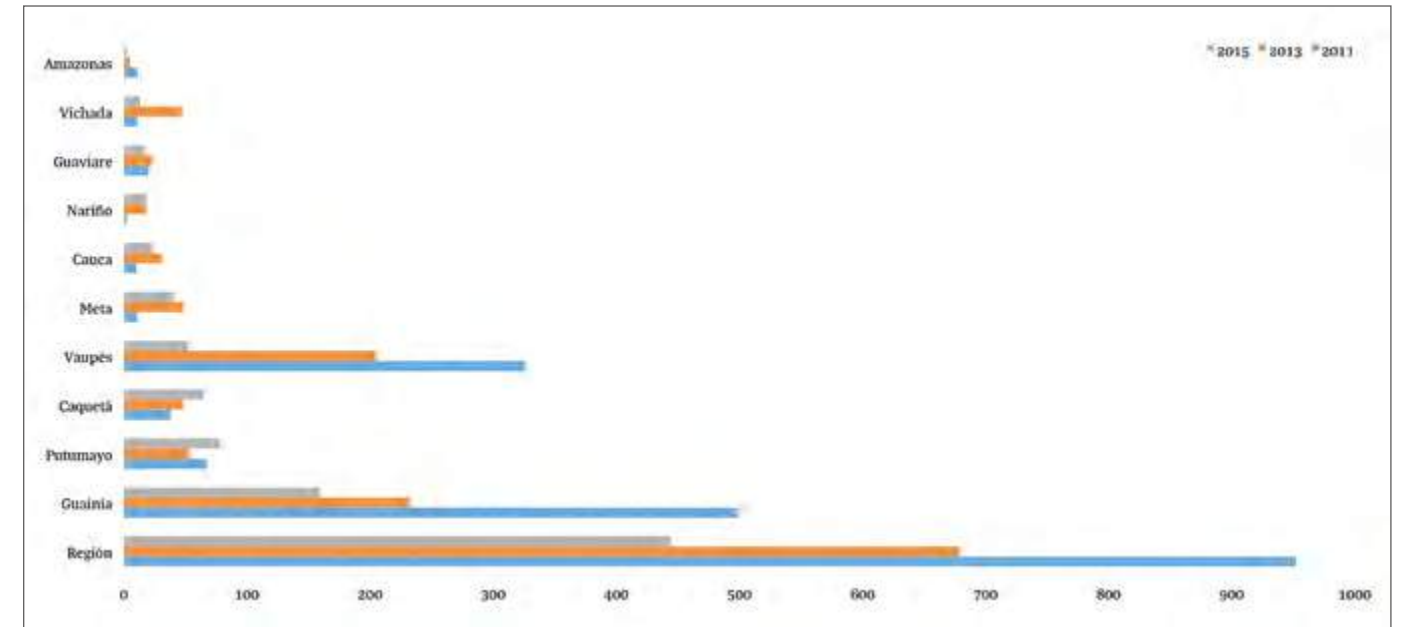
Table 10. Number of mining requests and their surface in the Colombian Amazon region, 2011, 2013, and 2015.

DEPARTMENT	NUMBER OF REQUESTS	REQUESTED AREA (HA)	NUMBER OF REQUESTS	REQUESTED AREA (HA)	NUMBER OF REQUESTS	REQUESTED AREA (HA)
	2011		2013		2015	
Amazonas	11	16.223,76	5	4.536,60	2	920,51
Caqueta	38	60.432,89	48	64.993,25	65	59.064,86
Cauca	10	27.639,48	31	55,144.28	23	37,360.79
Guainía	499	1,862,490.49	232	809,051.62	159	373,927.42
Guaviare	20	45,613.67	23	34,206.72	17	6,331.41
Meta	11	15,058.79	48	97,301.55	40	38,514.62
Nariño	2	293.25	18	32,241.37	18	23,434.25
Putumayo	67	75,786.05	53	74,885.53	78	82,975.68
Vaupés	326	2,185,942.07	205	1,530,066.16	52	162,836.57
Vichada	11	33,319.49	47	205,267.22	13	33,132.55
<b>REGION</b>	<b>952</b>	<b>4,322,799.94</b>	<b>679</b>	<b>2,907,694.29</b>	<b>444</b>	<b>818,498.66</b>

Note: The sum in the number of requests is not equal to the total for the region, since there are requests that share jurisdiction in more than one department.

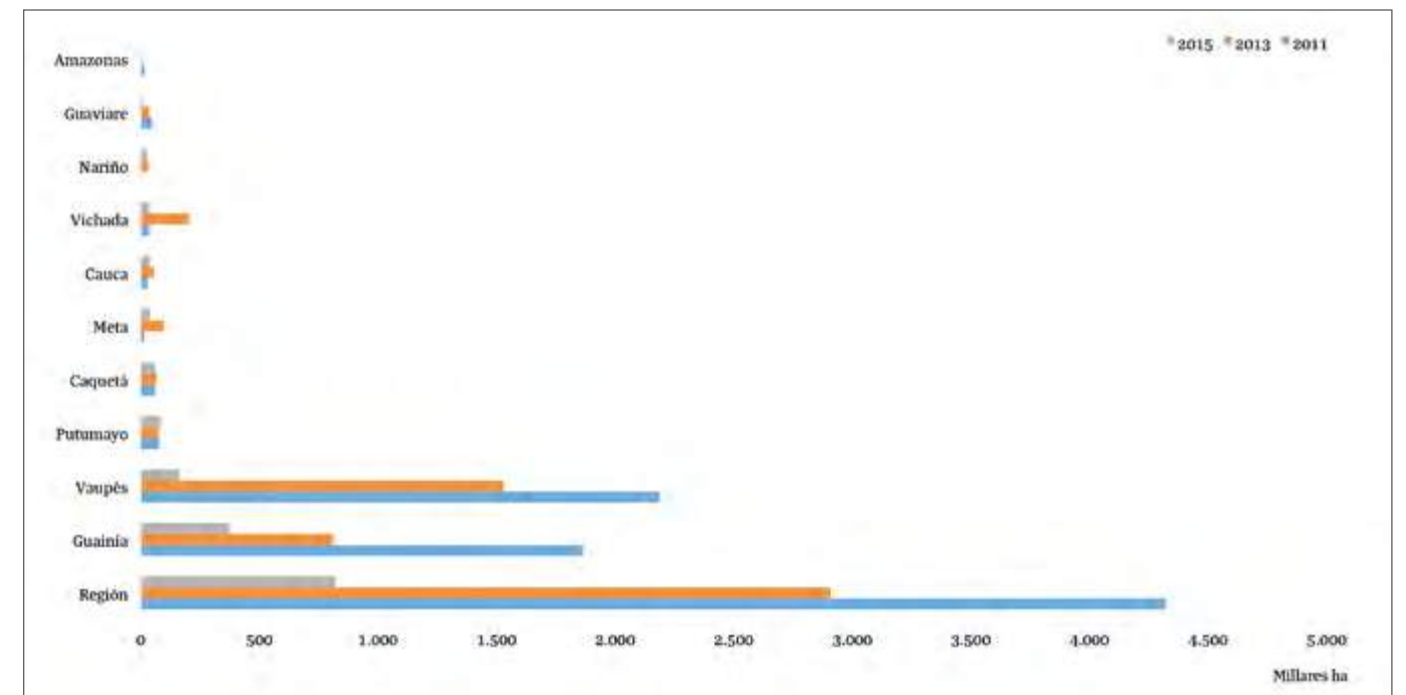
Source: National Mining Agency (ANM). Mining requests 2015. Information processed by the Group Socio-environmental Dynamics from Sinchi Institute.

Chart 3. Number of mining requests, 2011-2015



Source: National Mining Agency (ANM). Mining requests 2015. Information processed by the Group Socio-environmental Dynamics from Sinchi Institute.

Chart 4. Surface of the mining requests, 2011-2015



Source: National Mining Agency (ANM). Mining requests 2015. Information processed by the Group Socio-environmental Dynamics from Sinchi Institute.



territory, being these two departments the most requested. 5.59% of Cauca's Amazonian fraction was requested. In Putumayo, the requests were equal to 2.94% of the territory. A smaller proportion of requests, due to the wide extension of their territories, were found in Vichada, Guaviare, Caqueta, Meta, Amazonas, and Nariño.

In 2013, mining requests for Vaupes were equal to 28.75% of its territory, showing a reduction in relation to 2011. A similar situation occurred in Guainia, with 11.43%. Slight reductions were also found in Guaviare, Amazonas, and Putumayo. The opposite situation, it means, the increase of the requested percentage, occurred in Nariño, Cauca, Vichada, Meta, and Caqueta.

For 2015, the reduction remained for all the departments, except for Putumayo, with a slight increase in relation to 2011. However, the Amazonian fraction of Nariño and Cauca and the departments of Guainia, Putumayo, and Vaupes have the biggest proportion of requested territory.

At a municipal level, in 2011 the relationship between requested surface and territorial surface showed the highest values in Mitu (79.95%), La Guadalupe (77.28%), and Cacahual (64.27%). In 2013, the highest values were found in Cordoba, Nariño (71.77%), La Guadalupe (65.15%), and Mitu (53.29%). In 2015, there is a reduction for the proportions of the whole region and the entities with the highest requested percentage are: Potosi, Nariño (34.67%), La Guadalupe, Guainia (27.22%), Cordoba, Nariño (25.57%), Villagarzon (23.52%), and Mocoa (22.05%) in Putumayo. See Annex 7 and Map 27.

There are several modalities for mining requests. In 2011, there were three of them: temporal authorization<sup>31</sup>, concession contract, according to the Mining

Code<sup>32</sup> (Law 685, 2001), and exploration license<sup>33</sup>. In 2013 and 2015 two more modalities were identified, corresponding to legalization requests, according to the Mining Code of 2001<sup>34</sup> and the Law 1382 of 2010<sup>35</sup>.

In 2011, 10 temporal authorizations, 5 exploration licenses, and 937 concession contracts were requested. In 2013, 29 temporal authorizations, 3 explorations licenses, and 647 concession contracts were requested (L 685). In 2015, 9 temporal authorizations, 434 concession contracts and 1 exploration license were requested.

In 2013, there were 314 legalization requests, equal to 31.62% of all the requests. In 2015, there were only 182 requests, equal to 29.07% of all the requests. These numbers indicate the amount of unlicensed exploitations and expose the reality of an uncontrolled reality in the region, in which the reduction of the requests can also respond to the difficulties and high costs of the legalization processes with the mining authority. See Table 11.

Between 2011 and 2013, the modality temporal authorization for territorial entities increased from 10 to 29, and then diminished in 2015 to 9 requests. The number of requests has maintained a decreasing pace

32. "The mining concession contract will be celebrated between the State and a particular one in order to execute, at the peril and risk of the last one, the studies, works, and national property mineral exploitation labors that can be found within a determined zone and to exploit them according to the terms and conditions established in the Mining Code. This contract is different to the public work contract and to the public service concession contract. The concession contract conceives as an objective the technical exploration phase, economic exploitation, benefit of the minerals and risk of the concessionary and the closure or abandonment of the corresponding works". Section 45, Law 685, 2001.

33. The exploration license is the entitlement that concedes to a person the exclusive right to execute works in order to establish mineral reservoirs and reservations within a determined zone. The exploration license in no case authorizes the extraction and commercialization of minerals, and the amount of minerals extracted will be only the necessary for the laboratory studies. The exploration license can be requested in order to explore all the minerals in the requested zone that can be later on conceded by concession contract or can be limited to one or several, specifically determined. No exploration license can be requested for small mining projects in river barrages, their shores or the islands located through the flow. Colombian Geological Service: <http://www.sgc.gov.co>

34. Section 165, Law 685, 2001. Decree 2390, 2002.

35. Section 12, Law 1382, 2010. Decree 2715, 2010 and Decree 1970, 2012.

31. "Temporal authorization. The national mining authority, when requested by the interested ones, will be able to concede temporal and non-transferable authorization to the territorial entities or the contractors for construction, repair, maintenance and improvements of public national, departmental or municipal roads during the time of its execution, in order to take from rural, neighboring or adjacent plots, and with exclusive destination for them, subject to environmental regulations, the construction materials, based on the parameters established by the Public Entity that receives the work and the specific track of the road, the duration of the works, and the maximum amount of materials to be used. Such authorization will be executed within a maximum period of 30 days or it will be considered as conceded by application of the positive administrative silence" Section 116, Law 685, 2001.

Table 11. Mining request modalities in the Colombian Amazon region, 2011, 2013, and 2015

REQUEST MODALITY	2011	2013	2015
Temporal authorization	10	29	9
Concession contract (L 685)	937	647	434
Exploration license	5	3	1
Legalization request (L 685)		15	4
Legalization request (L 1382)		299	178
<b>TOTAL</b>	<b>952</b>	<b>993</b>	<b>626</b>

Source: Ingeominas-National Mining Agency. Mining requests 2011, 2013, and 2015. Information processed by the Group Socio-environmental Dynamics from Sinchi Institute.

Table 12. Mining request modalities in the departments of the Colombian Amazon region, 2015

DEPARTMENT	TEMPORAL AUTHORIZATION	CONCESSION CONTRACT (L 685)	EXPLORATION LICENSE	LEGALIZATION REQUEST	TOTAL
Amazonas		2		1	2
Caqueta	1	64		75	65
Cauca		23			23
Guainia		158	1		159
Guaviare	2	15			17
Meta	3	37			40
Nariño		18			18
Putumayo	2	76			78
Vaupes	1	51			52
Vichada		13			13
<b>REGION</b>	<b>9</b>	<b>434</b>	<b>1</b>	<b>182</b>	<b>626</b>

\* There are 444 mining requests (temporal authorization, concession contract, and exploration license) according to the code of the expedient in the Mining Registry and 182 legalization requests. When summed up by their existence in departments, the results are 467 y 193, since there are requests that share jurisdiction in two departments.

Source: National Mining Agency. Mining requests 2015. Information processed by the Group Socio-Environmental Dynamics from Sinchi Institute.

in the three analyzed moments, as well as exploration licenses. The total amount of requests between 2011 and 2015 keeps decreasing.

In 2011, Guainia had the highest amount of concession contract (L 685) requests. In 2013, it still had the highest amount of requests, but the demand fell from 497 to 227. In 2015, the number of requests keeps decreasing, but still it is the department with most requests (158), due to two main reasons: first, to the declaration of Strategic Mining Zones (Decree 045, 2012), and second, to the depuration of the Mining

Registry. It is important to say that there is still much to do, since many of the requests overlap.

In 2011, 325 concession contracts were requested in Vaupes, a number that diminished to 200 in 2013 and to 51 in 2015. These two departments had the most mining requests in 2011 and 2013, with a remarkable reduction in 2015.

The amount of concession contracts requests reported in 2015, in decreasing order, is located in Guainia, Putumayo, Caqueta, and Vaupes. See table 12.

Concerning the surface that mining activity in the Amazon region intended to legalize, in 2013 it was

**Table 13.** Mining legalization requests in the departments of the Colombian Amazon region, 2013 and 2015

DEPARTMENT	NUMBER OF REQUESTS		REQUESTED AREA HA		% TERRITORIAL SURFACE		% REQUESTED PER YEAR	
	2013	2015	2013	2015	2013	2015	2013	2015
Amazonas	1	1	323.18	323.18	0.00 %	0.00 %	0.78 %	1.62 %
Caqueta	161	75	22,882.24	8,287.76	0.25 %	0.09 %	55.29 %	41.47 %
Cauca	33	20	2,639.20	1,073.96	0.53 %	0.22 %	6.38 %	5.37 %
Guainia	6	2	691.81	323.15	0.01 %	0.00 %	1.67 %	1.62 %
Guaviare	9	8	727.45	536.27	0.01 %	0.01 %	1.76 %	2.68 %
Meta	17	6	1,941.04	1,322.45	0.06 %	0.04 %	4.69 %	6.62 %
Nariño	2	1	6.57	13.09	0.00 %	0.00 %	0.02 %	0.07 %
Putumayo	103	79	11,643.35	8,049.26	0.45 %	0.31 %	28.13 %	40.27 %
Vaupes	4	1	476.34	57.74	0.01 %	0.00 %	1.15 %	0.29 %
Vichada	1	–	54.17	–	0.00 %	–	0.13 %	–
<b>REGION</b>	<b>311</b>	<b>182</b>	<b>41,385.36</b>	<b>19,986.86</b>	<b>0.09 %</b>	<b>0.04 %</b>	<b>100.00 %</b>	<b>100.00 %</b>

Source: National Mining Agency. Mining legalization requests 2013 and 2015 (L685 and D1382). Information processed by the Group Socio-Environmental Dynamics from Sinchi Institute.

of 41,385.36 hectares, equal to 0.09% of the regional area. In June 2015, the total surface to legalize was 19,986.86 ha, equal to 0.04% of the region.

In 2013, the proportion of the requested surface for legalization purposes in Caqueta was 55.29% (161 requests), followed by Putumayo with 28.13% (103 requests), Cauca with 6.38% (33 requests), and Meta with 4.69% (17 requests). This means that it is in the small exploitations of the Amazonian foothills where there was a request for a legalization process. This contrasts with the scarce surface and number of requests in the departments located in the East of the region (Guaviare, Guainia, Vaupes, Amazonas, and Vichada), with less than 10 requests and a surface proportion smaller than 2%.

In June 2015, the proportion of requested surface for legalization in Caqueta was 41.47% (75 requests), followed by Putumayo with 40.27% (79 requests), Meta with 6.62% (6 requests), and Cauca with 5.37% (20 requests). For that date, the departments of the Eastern Amazon reported less than two requests. See [Table 13](#).

At the municipal level, San Jose del Fragua had the highest number of requests (52) and also the biggest surface to legalize (15.57%), followed by Orito (9.38 %), Puerto Rico –Caqueta– (7.40 %), El Doncello (6.18 %), Piamonte (5.88 %), Belen de los Andaquies (5.56 %), La Montañita (5.49 %), and Albania (5.33 %), with values between 5% and 10%. For the remaining 32 municipalities, the requests were equal to 39.21%. In 2015, San Jose del Fragua, Orito, and Mocoa were

the municipalities with most of the requested surface for legalization. See [Annex 8](#) and [Map 28](#).

In 2012, the Colombian Geological Center (SGC, in Spanish), implemented a study on the geological conditions of the national territory, selecting areas with the potential to host mineralization of gold, platinum, copper, coltan, potassium salts, uranium, metallurgical coal, phosphate rock, and magnesium<sup>36</sup>. According to the specialist in mining economy, such minerals are strategic to project the development of the mining sector in Colombia. According to the study, “*the identified potential areas support and nurture the National Government policies, managed by the Mining and Energy Ministry and the Colombian Geological Service, in order to promote the development of the mining sector in harmony with the environment. Likewise, they guide the minerals’ exploration in Colombia for the next years.*”

36. “The main objective was to select areas with the potential for the finding of gold minerals, platinum group elements (PGE), copper, iron, coltan, metallurgical coal, uranium, phosphate rock, magnesium, and potassium salts, based on the geological, geochemical, and geophysical knowledge and the mining inventory available at a scale of 1:100.000. The process started with the compilation of geological, geochemical, geophysical, and mineral resources information, available at a scale of 1:100.000, more detailed for the whole Colombian territory. The information analysis was executed through GIS and based on specialists’ knowledge on minerals’ exploration” (SGC, 2012).

As a result of the research work, big areas with the potential to host mineral deposits were found. The selection of each area was performed according to each mineral. The information is structured based on the minerals’ classification used by the Mining Journal (1984), according to the SGC’s study (2012):

- I. Minerals and precious and semi-precious stones: Gold (Au) and platinum (Pt).
- II. Base metals: Copper (Cu).
- III. Steel industry metals: Fe.
- IV. Special metals: Coltan (columbite and tantalite).
- V. Industrial minerals: Phosphate rock, potassium salts, and magnesium.
- VI. Energy minerals: Coal and uranium (SGC, 2012).

In the Colombian Amazon, minerals of interest are concentrated in the western and eastern ends of the region. In the western sector, they are concentrated in the Amazonian foothills departments: Cauca, Caqueta, and Putumayo. In the Amazonian fraction of the municipalities of Nariño and Meta, potential sources of coal, copper, phosphates, and gold were found. In the eastern sector, in the departments of Vichada, Guainia, Vaupes, and Amazonas, sources of gold, coltan, iron, and uranium are foreseen. The surface of the areas with mineral potential equals to 23.36% (11,192,051.97 ha) of the total regional surface.

The potential surface for gold exploitation equals to 3,433,561.02 ha, the biggest among materials of interest, equal to 7.11% of the region. It is located in the departmental jurisdiction of La Pedrera (Amazonas), Albania, Belen de los Andaquies, Curillo, Florencia, and San Jose del Fragua (Caqueta); Piamonte, San Sebastian, and Santa Rosa (Cauca); in the departmental jurisdictions of Barranco Mina, Cacahual, Morichal, Pana Pana, and Puerto Colombia and the municipality of Inirida (Guainia); in all the Amazonian municipalities of Nariño (Cordoba, Funes, Ipiales, Pasto, Potosi, and Puerres); in Colon, Mocoa, Orito, Puerto Caicedo, Puerto Guzman, San Francisco, Santiago, Sibundoy, Valle del Guamuez, and Villagarzon (Putumayo), and in Taraira (Vaupes).

In terms of extension, coltan is the second mineral of interest in the Amazon, with a surface of 2,192,888.49 ha, equal to 4.54% of the regional area. It is located in the departmental jurisdictions of Barranco Mina, Cacahual, La Guadalupe, Puerto Colombia, and San Felipe and in the municipality of Inirida, department of Guainia, and also in the municipality of Cumaribo, department of Vichada.

Uranium is the third material of interest in the region, with a surface of 2,049,754.12 ha, equal to 4.24% of the regional area. It is located in the department of Guainia, especially in the departmental jurisdiction of Puerto Colombia, where the biggest area of interest is concentrated, as well as in the municipality of Inirida and the jurisdictions of Morichal and Pana Pana, from the same department.

Iron is the fourth material of interest with a surface of 1,799,838.40 ha, equal to 3.73% of the Amazonian regional area. It is located east of the region in the department of Vaupes, in the municipality of Mitu and the departmental jurisdictions of Paoa, Papunaua, and Yavarate.

Copper is the fifth material of interest, with a surface of 1,697,746.66 ha, equal to 3.51% of the region. It is located west of the Amazon in the foothills area, specifically in the department of Caqueta in the municipalities: Albania, Belen de los Andaquies, Curillo, El Doncello, El Paujil, Florencia, La Montañita, Morelia, Puerto Rico, San Jose del Fragua, and San Vicente del Caguan. In the department of Cauca, in the municipalities of Piamonte and Santa Rosa; in Nariño, in the municipalities of Cordoba, Funes, Ipiales, Pasto, Potosi, and Puerres; and in the department of Putumayo, in the municipalities of Colon, Mocoa, Orito, San Francisco, Santiago, Sibundoy, and Villagarzon.

Coal is the sixth material of interest, with a surface of 18,135.28 ha, equal to 0.04% of the region. It is located in the municipalities of Belen de los Andaquies, Florencia, San Jose del Fragua, and San Vicente del Caguan, department of Caqueta; in the department of Cauca, in the municipalities of Piamonte and Santa Rosa; and in the department of Meta, in the municipality of Uribe.

Phosphates are the seventh material of interest with a reduced area within the Amazon region: 125.01 ha, equal to 0.0003% of the regional area, located in the municipality of San Vicente del Caguan, Caqueta.

The expectations on the Amazon region after the study of mineral potential areas are based on the existence of seven out of the ten minerals of interest within its territory (Resolution 18102, January 30th 2012): gold, copper, iron, coal, coltan, phosphate, and uranium. Platinum, potassium, and magnesium were not found in the region. Besides the varied offer of minerals, Coltan is only found in the Colombian Amazon region, a mineral with a high commercial value and international demand. Likewise, the surface of iron sources in Vaupes represents the biggest concentration of this material in the national territory. See [Annex 9](#) and [Map 29](#).



Currently, the processes of request and entitlement remain active and the national materials of interest are an important part of them. Thus, in the entitlements of 2015, the materials of the group I (minerals and precious and semi-precious stones: Au, Pt) were located in the departments of Cauca, Guainia, Nariño, Putumayo, and Vaupes. Materials of the group II (Base metals: Cu) were reported in Nariño and Putumayo. Materials of the group III (Steel industry metals: Fe) were entitled in Vichada. Materials of the group IV (special metals: coltan, columbite/tantalite) were entitled in Guainia, Vaupes, and Vichada. Likewise, entitlements with materials of the groups I and II were reported in Putumayo, and materials of the groups I and IV, in Guainia. In order to profit construction materials, entitlements were approved in: Caqueta, Cauca, Guainia, Guaviare, Meta, Nariño, Putumayo, and Vaupes. Metal minerals were entitled in Guainia and Nariño.

In 2015 requests, it can be seen a great interest on materials from the group I in all the departments of the region, except for Meta. Materials from group II are requested in Caqueta, Cauca, Nariño, and Putumayo, and from the group III, in Vaupes. Materials from group IV are requested in Guainia, Vaupes, and Vichada. Materials from group VI are requested in Cauca and Meta.

Requests that combine materials from different groups were found in all the departments of the region. This materials combination in 2015 requests is actually complex, since there are materials from two to four different groups in each one of the requests. Thus, materials from groups I and II (gold and copper) were requested in Cauca, Nariño, and Putumayo; from groups I and III (gold and iron), in Caqueta; from groups I and IV (gold and coltan), in Guainia, Guaviare, Vaupes, and Vichada; from groups I and VI (gold and coal or uranium), in Guainia; and from groups I, II, and IV (gold, copper, and coltan), in Caqueta and Nariño. A request of materials from groups I, II, III, and VI (gold, copper, iron, and coal or uranium) was found in Villagarzon, Putumayo.

Concerning construction materials, there were requests in 9 out of 10 Amazonian departments, except for Amazonas. In Guainia, metallic mineral is requested, besides another category defined as “others”.

#### CLASSIFICATION OF MINERALS IN ENTITLEMENTS AND MINING REQUESTS 2008-2015

Taking into account the classification of minerals proposed in the SGC’s study (2012), mining entitlements approved during 2008, 2011, 2013, and 2015

were revised. Depending on the material indicated in the entitlements and requests, they were organized according to the aforementioned potential interest groups.

In 2008, the groups of materials with most of the demand (reflected in the number of entitlements and surface in the Colombian Amazon) are in groups I, II, and IV, corresponding to gold, copper, and special metals, as well as the combination of them. Likewise, there are requests for construction materials. 50.65% of the entitled surface for this year corresponded to only one entitlement, without a clear definition on the requested material. 11 entitlements (19.31%) were approved for gold and materials from group I exploitation; 5 entitlements authorized gold and copper exploitation (10.32%); and 82 entitlements (9.57%), the use of construction materials. Smaller entitlements in size and number had as an objective the materials from groups II (copper), III (iron), and IV (special minerals), as well as “metallic mineral” (without specifying what kind of mineral), and black sand.

During 2011, 19 entitlements were approved, equal to 54.99% of the entitled surface, for obtaining minerals from groups I and IV. 7 entitlements, equal to 15.32%, authorized materials from group I, and 91 entitlements, with a surface equal to 9.91%, were designed for the use of construction materials. In a lower proportion, materials from groups II, III, IV, and V, or the combination of them, were requested; however, few of them have surface from 1,400 ha to 7,767 ha.

In 2013, many of the entitlements of 2011 remained valid. The highest increase was for the ones in relation to construction materials (133), equal to 17.73% of the entitled surface. 45.43% of the approved area authorized materials from groups I and IV (gold and special minerals), and 18.06% was for group I materials. With less than 4 entitlements and a surface proportion lower than 8%, materials from groups I, II, and IV were approved, as well as metallic mineral, industrial sand, and black sand.

In 2015, the entitled minerals classification was very similar to 2013’s, maintaining the increase in the entitlement for construction materials and groups I and IV. 21 entitlements were classified, equal to 45.36% of the requested surface, belonging to groups I and IV. 11 entitlements were approved for gold exploitation with a surface equal to 14.32%. For construction materials, 157 entitlements were identified, with a surface equal to 13.35%. A slight increase in the number and percentage of entitled surface in relation to groups I, III, and IV materials and metallic mineral is observed. 7 entitlements consider copper

(group II) among the materials to be exploited and represent 9.25% of the entitled surface. See [Annex 10](#) and [Map 30](#) in relation to materials in mining entitlements for 2015.

Requested materials in the mining requests for 2011, 2013, and 2015, when classified according to the groups of national interest minerals, are characterized for covering all the individual groups and also a combination of them.

Materials from group I (silver and precious stones) are the most requested. However, the most requested material is gold. In 2011, 35.25% of the total requested surface was demanded in 328 requests with materials from group I. In 2013, through 234 requests, 42.03% of the total surface with such material was requested. In 2015, a similar situation occurred, with 109 requests, equal to 30.04% of the total requested surface. Even though in the three moments of analysis gold is the most requested material, the requests have been decreasing in number and in extension as well. In 2011, as in 2013, the most requested materials groups included some of the minerals of group I.

Another of the most requested groups correspond to special minerals (columbite and tantalite-coltan), group IV, present in 40.31% of the requested surface in 2011, in 26.11% of the requested surface in 2013, and in 32.45% of the requested surface in 2015. The requests for minerals from group II (copper) appear in 2.71% of 2011 requests, in 2.57% of 2013 requests, and in 9.18% of 2015 requests.

Concerning construction materials, an increase in their demand between 2011 and 2015 is observed, with a high point in 2013 in relation to the requested surface. The number of requests increased during the whole period. In 2011, through 65 requests, 0.77% of the total surface was requested in that year. In 2013, 125 requests were requiring 3.79% of the total surface, and in 2015, 163 requests required 12.64% of the total requested area.

In 2015, the “metallic mineral” requests are remarkable, since there was no specification about the kind of metal requested. However, the number of requests (37) and the requested area is one of the highest in this year (15.73%), with a high probability of the existence of gold. See [Annex 11](#) and [Map 31](#) in relation to the materials in mining requests of 2015.

Mining activity itself implies huge social and environmental consequences in areas of very high environmental vulnerability, such as the Colombian Amazon. In this panorama, several questions emerge: is it convenient for the country to transform the great biodiversity bank of the Amazon into a strategic mining

zone? The cost-benefit of this initiative is coherent for the population and the natural environment, or is it just for the benefit of international capital? Is the country prepared to assume the challenge of the mining industry in the Colombian Amazon?

As it has been noticed, the mining legalization requests have diminished between 2013 and 2015. These requests are an indicator of the actual exploitation and the speculation that mining requests imply, at least in terms of minerals of interest. In this kind of request, by number and percentage of requested surface, the biggest volume goes to construction materials, followed by minerals from group I, it means, gold. Other construction materials that are being exploited without legalization belong to groups II, IV, and VI (coal). See [Table 14](#) and [Map 32](#) in relation to the materials in the mining legalization requests and [Map 33](#) in relation to all the requests and their materials.

#### MINING ENTITLEMENTS AND REQUESTS AND PROTECTED AREAS IN THE COLOMBIAN AMAZON REGION

*“Some regions are not completely suitable for mining, and that is why the number of departmental jurisdictions with obligatory mining moratorium has increased”.* (Goodland, 2012).

Due to their value when remaining intact, five types of social or environmental sensitive areas, vulnerable to extractive industries, have been identified from the conclusions of the Environmental National Forum. If communities potentially affected reject the project for this land category, they would be out of the reach of mining. In order to approve mining operations, a precondition is to provide all the necessary information to the community and have previous, free, and informed consent. It is important to say that in case compensations are more valuable for local communities, and even for conservation, there is an open possibility for exchange in some cases (Goodland, 2012). According to that, the following areas must remain out of the reach of the mining industry:

1. **Indigenous communities’ reservations:** areas inhabited by indigenous communities or that they depend upon. Ancestral domains, tribal communities, inhabitants of the forest, vulnerable ethnic minorities; their territories, reservations or lands in uses different from mining.

**Table 14.** Groups of materials in the mining legalization requests in the Colombian Amazon region, 2013 and 2015

GROUP OF MATERIALS	2013		2015	
	NUMBER OF REQUESTS	REQUESTED SURFACE HA	NUMBER OF REQUESTS	REQUESTED SURFACE HA
I	45	9,939.75	31	5,999.33
II	3	418.60	2	647.30
I and IV	1	144.07		
IV	2	647.30	1	149.99
VI	2	299.37	1	142.48
I, II, and IV	1	17.03	1	144.08
Construction materials	258	29,762.09	145	12,887.10
Others*	1	150.15		
No information*	1	6.99	1	16.59
<b>REGION</b>	<b>314</b>	<b>41,385.36</b>	<b>182</b>	<b>19,986.86</b>

I. Minerals and precious and semi-precious stones: Au, Pt. II. Base metals: Cu. III. Steel industry metals: Fe. IV. Special metals: coltan (columbite-tantalite). V. Industrial minerals: phosphate rock, potassium salts, and magnesium. VI. Energy Minerals: coal and uranium. \*There is no further information in this category, so the titled remained as it was initially provided.

Source: National Mining Agency. Mining legalization requests 2013 and 2015. Information processed by the group Socio-Environmental Dynamics from Sinchi Intitute.

- Conflict zones:** areas of open, latent or prone to social conflict, especially armed conflict. The world experience shows that mining in these areas would exacerbate the conflict. Land grabbing practices, deforestation, and mining illegal expansion, cattle farming and oil palm plantations are still practices nurtured by violence.
- Fragile basins:** like the ones that protect a project of a downstream gradient project. Important river-bank ecosystems in order to preserve their services; basin conservation for intensive agriculture irrigation. No mining activity is illegal at a distance of 1.000 meters from the water resource. Some nations forbid mining in all the mountain zones. The areas with earthquake and geological faults should avoid mining, given the risk of a leak or collapse of the toxic deposits and mountains of hazardous wastes. The gradients should be protected. The areas vulnerable to slips, terrains or mud slips should be out of the reach of a mining territory. No mining activity should be allowed in a wide strip next to possible hurricanes. All the basins used for irrigation need to be preserved.
- Biodiversity, habitats, and wildlife lands:** areas with high biodiversity and endemic, rare or threatened species, rare habitats, biological key spots, wetlands, mangroves, wildlife areas, according to

the International Union for Conservation of Nature (IUCN). All the conservation units are included, according to categories I to IV established by the IUCN, and in some categories it extends to V and VI, such as national parks, biological coast or province parks, United Nations biosphere reservations, heritage of humanity areas, areas prospected to be included in the national system for conservation units, protected forests, UN Ramsar Convention for wetlands, as well as their buffer area. Most of the mangroves and ancient tropical forests should be also included.

- Cultural property:** For instance, a religious spot for indigenous communities; sacred caves, battle fields, archeological places, petroglyphs, geoglyphs or fossil richness spots. There can be exceptions, for instance, when the offering miner buys a reservation with funds in perpetuity, whose size and richness is bigger than what is contained within the area requested for mining (Goodland, 2012).

In the Colombian Amazon, several environmental and territorial planning figures come together. Among them, we can mention:

- ▶ Forestall Reservation of the Amazon Zone (ZRF, in Spanish), according to Law 2, 1959.

**Table 15.** Mining entitlements and requests in relation to the legal condition of the territory, 2015

PLANNING CATEGORY	ENTITLEMENTS 2015		REQUESTS 2015		LEGALIZATION REQUESTS 2015	
	N.º	HA	N.º	HA	N.º	HA
Water and Land Conservation District	30	2,268.49	43	35,166.43	43	3,142.98
Integrated Management District	29	5,511.87	35	35,032.12	7	343.22
Borders inconsistency	2	8.41	11	116.46		
Other figures	38	19,674.37	86	115,294.00	30	3,302.63
National Natural Parks	1	2,009.97	12	3,604.39		
National Natural Parks and indigenous reservation			3	0.03		
Forestall Reservation of the Amazon	4	11,458.39	65	38,137.57	10	2,071.14
National Forestall Reservation	1	10.00				
National Nature Reservation			1	190.41		
National Nature Reservation and indigenous reservation			10	0.24		
Indigenous reservation	45	80,675.35	221	536,030.14	19	1,041.45
Subtraction	89	8,813.99	96	55,585.81	122	11,281.46

Source: Group Socio-Environmental Dynamics from the layers of mining entitlements and requests 2015. National Mining Agency. Mining Registry. Legal condition of the territory 2013 V4. SIGSR Laboratory, Sinchi Intitute.

- ▶ Areas sustracted from the Forestall Reservation Zone.
- ▶ National Natural Parks.
- ▶ National Natural Reservations.
- ▶ Indigenous Reservations.
- ▶ La Macarena Special Management Area.
- ▶ Water and Land Conservation District.

When crossing the cartographic information of these planning figures with the mining entitlements and requests for 2015, it was found that some of them are located in protected areas, such as parks, reservations, indigenous reservations, among others.

In 2015, within Natural Parks Alto Fragua-Indiwasi, Volcanic Complex Doña Juana-Cascabel, Los Churumbelos mountain range, and Yaigoje-Apaporis, 12 mining requests were identified. In this last one, that is also an indigenous reservation, there is a sued mining entitlement (IGH-15001X concession contract for gold exploitation). In the National Nature Reservation Nukak there is a mining request. In addition, in 14 indigenous reservations there were 45 mining entitlements in 2015, described in Annex 12.

Concerning mining requests, 221 were identified in 30 of the reservations of the region. Likewise, 19 mining legalization requests in 12 indigenous reservations were found. In the area of the National Park Puinawai and the indigenous reservations of the mid

and high basin of Inirida River 10 mining requests were found for 2015.

In the Water and Land Conservation District 30 mining entitlements, 26 mining requests, and 90 mining legalization requests were found. In the Integrated Management District, 29 mining entitlements, 35 mining requests, and 7 mining legalization requests were found. See Table 15, Map 39 and Map 35.

As it can be observed, the protection figures themselves are not enough for stopping the rush of mining requests, and the entitlement within protected areas shows that there is no articulation between the mining and environmental sectors. Protection figures at a local level go unnoticed for the national mining authority.

#### ¿STRATEGIC MINING AREAS IN THE AMAZON?

On June 20<sup>th</sup> 2012, the National Mining Agency issued the Resolution 0045 that “declared and delimited strategic mining areas and adopted other dispositions”, with the same arguments used by the Resolution 180241, and using the same base of the study developed by SGC, delimiting and declaring strategic areas equal to 22,262,646.81 ha, from which 17,570,198.92 ha correspond to 202 polygons in the departments of Amazonas, Guainia, Guaviare, Vaupes, Vichada, and Choco.

**Table 16.** Indigenous Mining Zones in the Colombian Amazon Region

DEPARTAMENT	MUNICIPALITY	RESERVATION	ETHNIC GROUP	RESOLUTION	AREA (HA)
Guainia	Inirida	Remanso-Chorrobocon	Puinaves y curripacos	32634 of December 17 <sup>th</sup> 1992	47,769
Vaupes	Mitu	Vaupes	Several	181529 of September 11 <sup>th</sup> 2008	6,909

Source: Ombudsman Office, 2010.

This new resolution allowed the mining authority to define the reference terms and the requirements to choose the proponent with the best conditions and benefits for the State for a term of ten years, as well as the additional profit to the monetary compensation. According to Fajardo (2012), it is necessary to “ask why the decision to declare Strategic Mining Areas was not consulted and concerted with other sectors of the national economy, due that it is a decision that clearly affects many interests apart from the mining sector. It is evident that by now there is a clear disarticulation inside the government, besides a noticeable discomfort of the civil society and corporations and the apparent overlapping of public utility and national interest goods, where it seems that ones are above the others”. See Annex 13 and Map 36.

**INDIGENOUS MINING ZONES**

According to the Mining Code, the declaration of these mining zones does not constitute or concede any right to the community for exploring or exploiting minerals within them. The beneficiary communities will have the right to explore and exploit the mineral resources existing in the mining zones, through the mining concession contract granted by Ingeominas, and properly registered in the National Mining Registry. On the other hand, the Ombudsman Office has found that, in some cases, the mining authorities have gratuitously delayed the declaration of these mining areas, as the case of the Puinave community request, from the Inirida River mid and high basin, located in the jurisdiction of the municipality of Inirida, Guainia<sup>37</sup>, that, since 1994, requested the declaration

of the Indigenous Mining Zones in the Mining and Energy Ministry<sup>38</sup>, yet unsolved (Ombudsman Office, 2010). See Table 16 and Map 37.

**VALID MINING ENTITLEMENTS AND ENVIRONMENTAL LICENSES**

From 209 valid entitlements in 2015, only 9 of them, equal to 4.3%, count with environmental feasibility, according to SGC. 6 are located in Caqueta and the other 3, In Guainia, Meta, and Putumayo, respectively. The surface of these entitlements corresponds to 302.85 ha, equal to 0.23% of the total entitled territory, which means that 99.77% of the surface to explore and exploit lacks of environmental licenses.

6 of these entitlements are concession contracts and three, temporary authorizations. Concerning the materials of exploitation, endorsed by these entitlements with environmental feasibility, they are all construction materials. See Table 17.

The revision of the mining entitlements and requests between 2008 and 2015 in the Colombian Amazon region points out that:

- ▶ The increase in annual entitlement was of 5008.9 ha between 2008 and 2015, at the rate of 4.1 entitlements per year.
- ▶ The depuration of the Colombian Mining Registry allowed filing some requests, producing a reduction between 2011 and 2015. In 2015, 70.93% of the requests were for entitlement and 29.07%, for legalization; this indicates an informal activity of big proportion and difficult to quantify.
- ▶ The requested surface for legalization is distributed in 64.48% for construction materials, 30.02%

38. Reservation of Inirida River Mid and High Basin. Office from April 22<sup>nd</sup> 2009, addressed to the Ministry of Interior and Justice, with copy to the Ombudsman Office. Expedient 19018 of Ingeominas.

37. Here, there are 16 communities (Morroco Nuevo, Danta, Sabanita Nueva, Caño Wiña, Piedra Alto, Matraca, Zancudo, Puerto Valencia, Punta Pava, Guacamaya, Laguna Mure, Garza Morichal, Punta Ratón, Baquiro, Caño Negro, and Bella Vista).

**Table 17.** Entitlements with Environmental Feasibility 2015

DEPARTMENT-MUNICIPALITY	NUMBER OF ENTITLEMENTS	AREA HA
Caqueta	6	253.30
Florencia	5	219.63
Puerto Rico	1	33.67
Guainia	1	8.95
Inirida	1	8.95
Meta	1	11.76
Mesetas	1	11.76
Putumayo	1	28.84
Villagarzon	1	28.84
Region	9	302.85

Source: National Mining Agency. Mining Entitlements 2015. Geological Service of Colombia. Mining Service Direction. Mining entitlements in the exploitation stage with environmental feasibility 2012. Information Processed by the Group Socio-Environmental Dynamics from Sinchi Institute.

- ▶ for gold, and 5.51% combines other materials of economic interest (gold, copper, coltn).
- ▶ In 2015, 30.04% of the requested surface was for materials from group I (precious stones, gold and silver); 15.73%, for metallic mineral, and 15.34%, materials from group I and IV (gold and coltan); 12.64% for construction materials, and 25.32% requests materials from other groups combination of them.
- ▶ Most of the mining entitlements in 2015 were for Caqueta, Putumayo, and Guainia.
- ▶ Most if the entitled surface and most of the requested surface in 2015 was for Guainia.
- ▶ Only 9 of the issued entitlements valid today were environmental feasible in 2012.

*Oil exploration blocks*

In Colombia, 23 sedimentary basins have been identified. Two of them are located within the Amazon (Caguan-Putumayo and Vaupes-Amazonas), as well as a fraction of the eastern flatlands basin and the High Magdalena valley basin. In the last document about sedimentary basins in Colombia, the National Agency of Hydrocarbons, ANH in Spanish, (2007) proposed to group three basins of the south of the country into two prospective areas, separated by a structural

height with direction north-northeast: The Caguan-Putumayo basin in the West and the Vaupes-Amazonas basin in the East. See Map 38.

The Caguan-Putumayo basin is the north extension of the Equator East basin. It has an extension of about 109,949 km<sup>2</sup>, and reservations of more than 365 MMBO<sup>39</sup> have been found up to date in 19 oil fields. The exploration in this basin was started by Texaco in 1948. In 1963, the company discovered the biggest oil filed in Orito, with reservations of around 250 MMBO. The existence of an oil system is backed by the discovering of several fields in the basin and its stratigraphy transforms it into an important exploration object (ANH, 2007).

The Vaupes-Amazonas basin, a new proposal of basin by the ANH (2007), corresponds to an elongated depression that extends from the east side of the Eastern Mountain Range through the Southeast until the Amazon River. The eastern and western borders of this basin correspond to high structural lands, composed by Paleozoic rocks from Chiribiquete and Las Trampa-La Mesa de Caruru, respectively. According to its morphology and gravimetric information, this basin corresponds to a rift valley that could be the north prolongation of Solimoes basin. The approximate extension of the basin is 154,570 km<sup>2</sup>.

The Eastern Flatlands basin within the Amazon Region has an extension of around 57,432 km<sup>2</sup>, and its total extension if 225,706 km<sup>2</sup>. Located in the east side of the country, the geomorphological limits of the whole basin are the border between Colombia and Venezuela in the north; Sierra de La Macarena and the arch of Vaupes in the south; the fault system of Guaicarimo in the West and the Guiana Shield in the east. More than 1,500 MMBO of recoverable oil are officially documented. Two gigantic fields (Caño-Limon and Castilla), three main fields (Rubiales, Apiay, and Tame Complex), and more than 50 fields of minor importance have been discovered. A fraction of the sedimentary basin of the High Magdalena valley, with an extension of the High Magdalena valley basin, with an extension of 3,433.80 km<sup>2</sup>, is located within the Amazon region. The whole extension of the basin is 26,200 km<sup>2</sup>. It is a peripheral basin, featured from the Neogene that evolved from a major collision related to the peripheral basin of the Paleogene that goes through the east towards the Guiana Shield. It is limited on both sides by the Precambrian until the Jurassic underlying, tectonic uplifts that define the

39. MMBO: Million Barrels of Oil.



flanks of the Eastern and Central Mountain Ranges. Currently, the basin produces 18 million barrels of oil per year, in 28 fields. Numerous oil leakages are common in the basin.

The Decree 1760 of 2003 created the National Hydrocarbons Agency (ANH) that transformed Ecopetrol, the State Company, in just another oil company, limiting its functions to exploration and production (E&P), alone or associated with other enterprises of the world. Ecopetrol was designed with the role of direct oil production enterprise in front of multinational corporations in order to look for and extract the hydrocarbon. The institutional distribution of Ecopetrol and the incentives developed by the ANH for promoting oil exploration in the country have been the main internal factors for the unparalleled current oil industry activity with more than 4 centuries of history (Arcila, 2010a).

According to one of its mission objectives that points out that it is a function of the ANH: “*To design, evaluate, and promote the investment in the exploration activities of the hydrocarbon resources*” in order to attract international and national capital, since 2007 the ANH has been performing offering rounds for assigning tasks of the national territory, so the enterprises of this sector can move on with the gas and oil search labors in the Colombian territory.

The current boom of the hydrocarbon industry in the country has been determined by external conditions, such as different political scenarios like the internal conflict in Libya and certain international military situations as the one in the Strait of Hormuz, where 30% of the world oil passes through, provoking temporary reductions of the offer for this resource. The firing of more than 20,000 employees from Oil of Venezuela (PDVSA) in 2002 by the president of this country is one of the determining factors, since at least 1,300 of them migrated to Colombia. The rise of the oil prices above 90 USD has also been one of the most notorious causes of the Colombian oil boom. This unprecedented rise of the price is caused by the decrease in the production of this material by most of its main providers. This is the case for Libya that before the conflict could produce more than one million and a half barrels per day. Not only the Arabic countries have reduced their production; the main producers from Latin America, such as Venezuela and Mexico are experiencing the same situation (Arcila, 2010a).

Likewise, the boom in the national production has contributed to the use of more efficient and precise technologies in the seismic labors, carried out by the enterprises of the sector in order to find this

hydrocarbon in the country. This external and internal determining factors derived from the fact that the signature of contracts for E&P and development of the Technical Evaluation Agreement (TEA) is multiplying in Colombia since the Decrees 1760 of 2003 was issued. There were less than 10 contracts signed in 2002, and 445 in 2011 (Arcila, 2010a).

As a consequence of the aforementioned Decree, the surfaces for oil industry in Colombia are divided into the following five categories: reserved, open round, Technical Evaluation Agreement areas (TEA), in exploration and in exploitation process.

The analysis of the lands map of July 2014, elaborated by the ANH, evinces the increasing interest of reserving areas of the Colombian Amazon for hydrocarbons exploration and exploitation. For that year, 34.6% of the regional territory was compromised within the oil exploration blocks in their different modalities, with a surface of 167,060.37 km<sup>2</sup>.

In July 2014, there were 12 areas in exploitation or production<sup>40</sup>, located in the following departments: Putumayo (with a surface of 68.78%), Nariño (16.8%), Cauca (7.27%), Meta (6.79%), and Caqueta (0.36%). The whole production area sums up 2,211.29 km<sup>2</sup>. The municipalities of Putumayo with an area involved in production are: Puerto Asis (26.57%), Orito (22.18%), Puerto Caicedo (7.38%), Valle del Guamuez (4.44%), San Miguel (4.16%), Villagarzon (2.11%), and Mocoa (1.94%). In Nariño, the municipality of Ipiales; in Cauca, the municipality of Piamonte; in Meta, the municipality of La Macarena and a small fraction of the municipality of San Vicente del Caguan, in Caqueta. These 12 areas are managed by 4 operators, being Ecopetrol responsible of 76.54% of the production area (1,692.46 km<sup>2</sup>), Grantierra Energy Colombia Ltd., of 10.87% (240.47 km<sup>2</sup>), Emerald Energy Plc Sucursal Colombia, of 7.60% (168.03 km<sup>2</sup>), and Amerisur Exploración Colombia Limitada, of 4.99% (110.31 km<sup>2</sup>). The total area in production equals to 1.3% of the oil lands in 2014 and 0.46% of the regional surface. See [Annex 14](#).

40. Areas in exploitation or production are those surfaces that have been included in the concession to the operating enterprises for, “in periods of until 24 years, renewable until the economical limit of the Commercial Field”, extracting oil from the subsoil in the case of continental areas or in the bottom of the sea in the case of maritime areas. In general, the government includes areas in the concessions, so a determined enterprise can develop E&P activities.

The area in exploration<sup>41</sup> for July 2014 was of 33,334.09 km<sup>2</sup> in the five aforementioned departments in production plus Vichada. The exploration tasks are carried out through 57 contracts distributed in 22 enterprises<sup>42</sup>.

From the surface in exploration, 46.30% is located in Caqueta and it groups 16 municipalities of a surface of 15,433.43 km<sup>2</sup>; 35.17% of the surface in exploration belongs to Putumayo, equal to 11,724.56 km<sup>2</sup>, in 10 out of its 13 municipalities (except for Colon, Santiago, and Sibundoy); 15.88% belongs to Meta in the 9 municipalities that conform the Amazon, with a surface of 5,292.54 km<sup>2</sup>; 1.5% is located in the municipality of Piamonte, Cauca, equal to 500.60 km<sup>2</sup>; 0.89% is located in Vichada in the municipality ofumaribo, with a surface of 295.43 km<sup>2</sup>; and 0.26 %, in Nariño in three of its Amazonian municipalities: Cordoba, Ipiales, and Potosí, that sum up an exploration surface of 87.52 km<sup>2</sup>. The area in exploration within the Amazon Region, in July 2014, was equal to 20% of the oil lands for that date and 6.90% of the Amazon Region surface.

As available areas<sup>43</sup>, there are 18 blocks, with a surface of 23,070.21 km<sup>2</sup> in the following departments: Caqueta (63.02%), municipalities of Belen de los Andaquies, Cartagena del Chaira, El Paujil, Florencia, La Montañita, Morelia, San Vicente del Caguan, and Solano; Meta (14.56%), municipalities of La Macarena, Mapiripán, Mesetas, Puerto Concordia, Puerto Rico,

41. Areas in exploration are those surfaces where operating enterprises, including Ecopetrol and ANH, develop seismic activities for finding oil in the subsoil. In general, the areas in concession for exploration comprehend periods of six years with a prolongation possibility.

42. CANACOL ENERGY COLOMBIA S.A.; CONSORCIO AMERISUR PLUSPETROL; CONSORCIO ÓPTIMA RANGE; ECOPEPETROL S.A.; EMERALD ENERGY PLC SUCURSAL COLOMBIA; GRANTTIERRA ENERGY COLOMBIA LTD.; GRUPO C&C ENERGÍA BARBADOS SUCURSAL COLOMBIA; GULFSANDS PETROLEUM PLC; HOCOL S.A.; HUPECOL OPERATING CO LLC; HUPECOL OPERATING, CO LLC; META PETROLEUM LTD.; META PETROLEUM CORP; PACIFIC STRATUS ENERGY COLOMBIA CORP; PETRO CARIBBEAN RESOURCES LTD.; PETRÓLEOS DEL NORTE S.A.; PETRÓLEOS SUDAMERICANOS; PETROMINERALES COLOMBIA LTD. SUCURSAL COLOMBIA; PETRONOVA COLOMBIA; TECPETROL COLOMBIA S.A.S; VAST EXPLORATION INC; VETRA EXPLORACIÓN AND PRODUCCIÓN COLOMBIA S.A.S.

43. Available areas are those that have not been object of assignment, so there is no valid contract upon them or a valid proposal. Total or partially returned areas are those that are being studied by the ANH for defining the public offer scheme.

Uribe, and Vistahermosa; Guaviare (12.95%), in the municipalities of Calamar and San Jose del Guaviare; Cauca (4.48%), in the municipalities of Piamonte and Santa Rosa; Putumayo (4.30%), in the municipalities of Puerto Leguizamo, Mocoa, Orito, Puerto Asís, Puerto Caicedo, Puerto Guzman, and Villagarzon. Finally, there are available areas in Nariño (0.69%) in the municipalities of Cordoba, Funes, Ipiales, Potosi, and Puerres. All these areas are under responsibility of ANH. The mentioned areas equal to 13.8% of the oil lands and 4.77% of the Amazon Region surface.

Another “pack” of “reserved” areas<sup>44</sup> have a surface of 34,506.84 km<sup>2</sup> and are located in the departments of Guaviare (65.45 %), in its four municipalities; Vaupes (30.15 %), in its three municipalities; Meta (2.45 %), in La Macarena, Puerto Rico, and Vistahermosa; Caqueta (1.47 %), in San Vicente del Caguan and Solano, and a fraction of the department of Amazonas (0.48 %), in La Victoria and Miriti-Parana. The surface of the reserved areas equals to 20.7% of the oil lands and 7.14% of the Amazon Region.

The open round areas<sup>45</sup> for 2014, type 1 and 3 available for 12 contracts, summed up 12,267.31 km<sup>2</sup>, located in 4 Amazonian departments: Caqueta (79.50%), in the municipalities of Albania, Belen de los Andaquies, Cartagena del Chaira, Curillo, El Doncello, El Paujil, Florencia, La Montañita, Puerto Rico, San Jose del Fragua, San Vicente del Caguan, Solano, and Valparaiso; in Meta (19.21%), in the municipality of La Macarena; in Putumayo (1.15%), in the municipalities of Puerto Asis and Puerto Caicedo, and Cauca (0.15%), in the municipality of Piamonte.

TEA<sup>46</sup> are operated by six enterprises<sup>47</sup>, through seven contracts located in the departments of:

44. Reserved areas are those defined by the ANH due to energy policies, national security or public order reasons, due to their geological, environmental, social characteristics, or for having been studied and projected or containing valuable exploratory information.

45. Open round areas are those surfaces that, through international rounds, are offered by the government to enterprises interested in technical evaluation activities in order to acquire knowledge about oil in a determined territory, with the purpose of developing E&P activities in the Colombian territory.

46. Technical Evaluation Agreement (TEA) areas are those that are offered to the oil companies in order to evaluate the hydrocarbon potential of the area and to identify prospecting areas for exploration contracts over a portion or the whole contracted area.

47. BHP BILLITON PETROLEUM COLOMBIA CORPORATION; ECOPEPETROL S.A.; META PETROLEUM CORP; TALISMAN

Vichada (60.60%), in the municipality of Cumaribo; Meta (12.62%), in the municipalities of Mapiripan, Puerto Gaitan, Puerto Rico, and Vistahermosa; Guainia (11.35%), in the departmental jurisdictions of Barranco Mina, Mapiripana, Morichal, and the municipality of Inirida; Guaviare (8.76%), in the municipality of San Jose del Guaviare; Caqueta (5.83%), in the municipalities of Curillo, El Doncello, El Paujil, La Montaña, Milan, Puerto Rico, San Vicente del Caguán, Solano, Solita, and Valparaiso; and Putumayo (0.84%), in the municipality of Puerto Guzman. The surface sums up 61,221.91 km<sup>2</sup>, equal to 36.6% of the Amazon land maps for 2014, the biggest of the existing modalities, and 12.67% of the regional surface.

Taking into account the numbers for all the areas for production, exploration, available, reserved, TEA, open round 1 and 3, and the areas in negotiation, it is clear that Caqueta is the department with most of its surface involved in present and future oil exploitation activities, with 26.22% of the 167,060.37km<sup>2</sup> included in the map of lands of the ANH for 2014 (July) within the Colombian Amazon region. The Amazonian fraction of Vichada has a participation of 22.39%; Guaviare, 18.52%; Meta, 11.81%; Putumayo, 8.92%; Vaupes, 6.23%; Guainia, 4.16%; Cauca, 1.02%; Nariño, 0.64%, and Amazonas, 0.10%. The highest values are located in the departments of the North and the West of the region and get lower in the East, establishing an approximation tendency of the oil industry from the center of the country towards the periphery of the region and the nation.

From 56 municipalities that contain an oil exploration block in the signaled modalities, Cumaribo (22.39%) is the one with most of its territory within the surfaces assigned in the land map 2014, followed by San Vicente del Caguán (8.53%), San Jose del Guaviare (6.28%), Miraflores (6.14%), Cartagena del Chaira (5.68%) and Calamar (5.33%). The other 50 municipalities have participation lower than 5% in the land map.

Concerning the proportion of territory of each municipality in the land map compared to the surface of every territorial entity, at the departmental level it can be seen that Vichada has 98.9% of its Amazonian area with oil exploration blocks. The second department is Meta, with 59.15% of its Amazonian territory intervened. The third department is Putumayo with 57.7% of its territory involved in oil exploitation activity. The fourth department is Guaviare, with 55.71% of its territory. The fifth is Caqueta, with 48.65% of its

territory in the land map. The departments of Nariño Cauca, and Vaupes have less than 40% of their territory involved in oil exploitation activities, and Guainia and Vaupes register less than 10%.

In relation to the municipalities, eight of them have 100% of their extension within the oil exploitation polygons (Puerto Caicedo, La Montaña, Valparaiso, Mapiripan, Solita, Milan, Albania, and Puerto Gaitan). Thirteen of them have more than 75%; nine, more than 50%: eleven, more than 25%, and 22 do not have oil exploitation blocks within their territory. See [Annex 15](#) and [Map 39](#).

As Arcila affirms (*op. cit.*), contrarily to what is commonly said, extractivism on natural resources, such as oil, does not encourage economic development, and quoting Bravo (2007), points out that:

*“In a recent study, developed by Fedesarrollo on the impact of oil exploitation and mining on regional development, the economists Guillermo Perry and Mauricio Olivera show how during the last decades the impact of hydrocarbons production and royalties on the departmental economic growth has been negative. Oil production shows, in general, low upwards and downwards links in the departments, so there is no high multiplying factors on the local economic development. The same study shows that it is precisely in the cases of the departments with the biggest boom of natural resources (Casanare, Guajira, and Arauca) where government savings and fiscal effort have been smaller”* (Bravo, 2007).

When observing in detail oil exploitation in the Amazon, Arcila affirms that the current treats of this activity in the Colombian Amazon, despite have been exploited since the mid-20th century, and the underdevelopment of the region, is a disastrous consequence of the Decree 1056 of 1953. Erosion of the Amazon and Orinoquia resources originated in the Section 43 of the Decree 1056, when it established that the tax for the companies operating in the East and Southeast of the Eastern Mountain Range would be of 6.5% of the gross exploited product, while for the rest of the country it would be of 8.5%. In addition, Section 26 of the same Decree took more potential financial resources from these two Colombian regions when it established that, in relation to the superfiary levy that the exploration and exploitation contractors for the terrains located in the East and Southeast of the Eastern Mountain Range submit would pay, it would be less than half of what they should pay for the same activities in the rest of the national territory (Arcila, 2010a).

Richness originated by oil exploitation activities implying productive processes that create added value for heavy and light crude is done outside the region, leaving very little or no valorization at all on the space where extractivism is carried out, and seriously affecting ecosystemic services.

Following Arcila (*op. cit.*), we do not exaggerate by affirming that extractive economy tends to impoverish the region where it is performed, since it drains the real and potential productive factors that allow regional development, at the same time that it encourages the migration from other regions, provokes intra-regional migration from the country side to the urban areas, attracts spurious employment, constitutes a breeding ground for pimps and lumpen associated to their business, and seriously affects the environment where it is produced. Dominguez and Gomez affirmed that:

*“Extractivism is the simple appropriation of natural resources. It differs from agriculture and internal flow mining in the work performed to obtain the product, which can be enormous, and is not permanently fixed in the spatial structure. Most of what remains is the trace of what has been destroyed, in the form of impoverished forests, waters or soils or the wounds of mining tunnels in the earth”* (Dominguez & Gomez, 1990).

Extractivism is a synonym of predation and plundering, based on asymmetrical relations of political, military, and cultural power between regions and countries. Oil economy is not an exception. For the case of the Colombian Amazon, oil Extractivism has tended to transform this region into a hydrocarbons plundering object instead of the subject of sustainable development, or in an economical growth factor that can benefit its inhabitants (Arcila, *op. cit.*).

Even though oil industry in the Amazon shows an increasing behavior, the areas of crude exploitation are currently marginal if compared to the rest of the national production. However, the affectation on the ecosystemic services of this small production causes big impact, since for every extracted barrel, it is necessary to bring nine barrels of water to the surface. Re-injecting and conducting these wastes to the rivers is a very delicate environmental problem. This implies region aquatic fauna affectations, as well as for the crops that require of this vital liquid for the hydration of bovine and porcine cattle and for human consumption of the settled population in country side and urban Amazonian areas.

Affectation on ecosystemic services due to oil exploitation is even more serious when the guerrilla or the lack of prevision of the operating enterprises causes the explosion of oil wells for hydrocarbons extraction, or when there are attacks against the Trans-Andean pipeline in Putumayo, polluting water and running the population out of the precious liquid. This means that oil extraction itself seriously affects provisioning services for the country and the region and Amazonian biodiversity. Given the conditions of oil exploitation nowadays, environmental sustainability in the Amazon is nothing but a contradiction, since, as hydrocarbons extraction pollutes water, it also affects the support services that biodiversity provides for the production of services such as formation of soil and minerals, atmospheric O<sub>2</sub> formation, nutrient flowing, habitat provision, cycle of water and solar energy flow in the region, contributing, besides, to exacerbate climate change.

Around 13,000 families of Puerto Asis, San Miguel, and Valle del Guamuez have had to face the consequences of river floodings. Similar situations have occurred to the inhabitants of the municipalities of Villagarzon, Puerto Guzman, and Puerto Leguizamo. In San Vicente del Caguán, hydric sources used by peasants for agriculture and cattle farming have been seriously affected and the presence of strange substances in several tributaries has been observed.

In addition, from several oil wells in the Amazon gas is extracted, gas that is not very attractive commercially for the operating enterprises, since it is not abundant. For this reason, the enterprises have opted for burning it in situ. This practice exacerbates global warming, which not only affects ecosystemic services provided by biodiversity, but also the population settled in the region, since there acid rains polluted by hydrocarbons are produced, unfortunately frequently collected for human consumption. This affects birds and insects that die incinerated, causing disequilibrium in the populations of this species and evidently in the ecosystems they are part of. Fish and hunting animals are likewise affected and, as a consequence, human population depends on them for its sustenance.

As it has been indicated, the areas of oil exploration represent 6.9% of the Amazonian regional surface, and even though the impacts of the production stage are serious and complex, the effects of exploratory activity are barely recognized. Among them, deforestation for opening paths, building camps and heliports, soil compacting derived from heavy machinery, and noise from dynamite explosions highlight. These



are the main direct consequences of the activity that imply radical changes in the covers and affectation of aquatic and terrestrial fauna and flora.

Well drilling for obtaining oil can produce a series of heavy metals such as cadmium, lead, mercury, arsenic, copper, cobalt, iron, selenium, manganese, molybdenum, antimony, barium, silver, thallium, titanium, tin, zinc, chromium, and vanadium that affect plants, animals, and human beings (Bravo, 2007).

Concerning the social dimension, there are also important consequences of oil exploitation activities. It activates migration to the municipalities where TEA and E&P fields have been assigned, since it creates false expectations about work possibilities in enterprises such as Ecopetrol. Workers applications are far more superior to what they can cover and outsourcing affects the workers conditions.

On the other hand, the oil boom has increased militarization in the country, since the presence of guerrillas and paramilitary groups in the area of influence of the wells and pipelines forces the State to reinforce the military presence around these zones.

There is a big challenge for the Ministry of Environment and Sustainable Development, and particularly for the National Authority of Environmental Licenses, as well as for the Ministry of Mining and Energy, in order to make oil exploitation friendlier on ecosystemic services provided by the Amazonian biodiversity to humanity. Up to the present, environmental policy has tended to be more reactive than preventive concerning hydrocarbons.

Current oil extractivism in the Colombian Amazon is also a bounce of the Ministry of Public Infrastructure, since road infrastructure of departments such as Putumayo has always been left behind in relation to the population needs, despite being a source of wealth for the multinationals that extract crude from its subsoil. This delay not only comes from the oil enterprises adjusting roads, even in function of their needs, but also as a consequence of the lack of capacity and governance of local authorities to accomplish the rules on the use of road infrastructure.

The oil boom that the Amazon is experiencing and will continue to experience in the future years is also a challenge for local authorities, since this phenomenon has originated considerable migrations from the rural areas to the municipal headlands, producing a disorganized development, without planning, and with a wide demand of services.

On a pair with this dynamic, it is probable that the oil boom will increase public expenses and public corruption, as it has happened in the East of the country

and in other departments. For that reason, local communities and regulatory bodies should increase their action and demand the necessary transparency in the administrations and their administrators.

To resume, Autonomous Regional Corporations, universities, Research Institutes, Ministries, Municipalities, Governorships and different regulatory bodies should assume the commitment to work jointly to procure the proper management and solution to environmental, economic, political, social, and cultural problems that derive from oil exploitation activities in the Colombian Amazon. This is maybe the only way to generate regional endogenous development.

### Projects of IIRSA (Initiative for the Integration of the Regional Infrastructure of South America)

The National Development Plan 2002-2006 exposed the need to recover navigability in the Meta River in order to consolidate fluvial transportation. This river is navigable in 850 km most of the year, but works and interventions are required for making extending its use through the whole year. This project is part of IIRSA, in the route Pacific-Bogota-Meta-Orinoco-Atlantic.

IIRSA also intends to improve navigability of Putumayo River. This project is included in the National Development Plan 2010-2014. The river has navigability issues in low waters, situation that exacerbates with the high basin deforestation. Likewise, it is necessary a recovery process in the section Amazonas-Putumayo-Pacific. Invias develops the phase II of the navigability studies, especially in La Esmeralda quay, in Puerto Asis, and Puerto Leguizamo, where currently only small boats can pass through.

In order to improve road infrastructure capacity and regional connectivity, Conpes document 3760 (August 20<sup>th</sup> 2013) was issued, establishing the guidelines for the fourth generation concessions program. This program consists of an estimated investment of 47 billion that will be executed through 47 projects in 23 departments. In the Amazon region, the intervention is focused on the Magdalena Trunk System, where it is planned to work in the road sections:

- ▶ Girardot-Honda-Puerto Salgar 277 km
- ▶ Neiva-Girardot 166 km
- ▶ Santana-Mocoa-Neiva 422 km

In the group 1, Center-South, the roadway corridor Santana-Mocoa-Neiva can be found. It went through

public bidding in September 2013, invitation attended by 16 consortia. The National Agency of Infrastructure chose in a public audience (December 10th 2013) ten prequalified groups for this project that intends the intervention of 422 kilometers, with an estimated investment of 1.2 COP billion. The concession will be granted for 25 years: 1 for the pre-operational stage, 3 for the construction stage, and 21 for operation and maintenance.

In the same direction, within the Institutional Strategic Plan of Invias, the following competitiveness corridors that directly affect the Amazon region highlight:

- ▶ South corridor: San Miguel-La Hormiga-El Yarumo-Santa Ana.
- ▶ Mocoa highway-International bridge San Miguel: Section Puerto Caicedo-Puerto Umbria-Villagarzon.
- ▶ Marginal of the Jungle: San Jose del Fragua-Belen-Morelia-Florencia; Florencia-Santuario-Montañita-La Y-Paujil-El Doncello-Puerto Rico.
- ▶ Las Palmeras-Meta corridor: Puerto Arturo-Puerto Nowen-Puerto Concordia-El Pororio-Los Almendros.
- ▶ La Macarena transversal: Section San Juan de Arama-Urbe-Colombia-Baraya.
- ▶ Trunk system Villagarzon-Saravena: Villagarzon-El Porvenir-Puerto Bello-San Jose del Fragua.
- ▶ Access to Florencia: Orrapihuasi-El Vergel Depression - Florencia.
- ▶ Neiva-San Vicente del Caguan transversal: Neiva-Balsillas-Balsillas-Mina Blanca.

Likewise, a reference is indicated to works such as construction, improvement, and maintenance of the fluvial network infrastructure, in order to recover navigability of the main waterways of the country, besides the adaptation of fluvial infrastructure, protection works, and other fluvial works necessary for a positive impact on national economy, promoting the mobilization of passengers and loads through this network and promoting inter-modality as it follows:

- ▶ Channeling works of the navigable channel for accessing Victoria Regia quay in Leticia.
- ▶ Navigability works in Meta River.
- ▶ Navigability works in Putumayo river (Peñasara-Puerto Asis, Puerto Leguizamo-Puerto Alegria).

The road Pasto-Mocoa and the Putumayo waterway are part of the intermodal corridor Tumaco-Puerto Asis-Belem do Para, and are also integrated to the multimodal axe of the Amazon, within the official projects of IIRSA.

With its construction zones that have been so far isolated from the world commerce join, but the most important reason for the existence of this way is the multimodal axe for the circulation of goods from Brazil towards the Pacific. *“This axe solves, in its own way, one of the problems of the region: the lack of connectivity, but, more than thinking in the strengthening of the inhabitants, it is proposed as a remedy for the agroindustry and mining difficulties to find a quick way out to the 21<sup>st</sup> century ocean: The Pacific”* (Florez, 2007).

The main objective of this road project in its two phases is to promote the development of the South of Colombia, the North of Equator, Peru, and Brazil, strengthening the commercial relations between the countries and facilitating the access to the Pacific Ocean. It is a project that will procure the opening of a region ecologically, culturally, and politically sensitive to investment and migrations highly risky for environmental sustainability flows possible. Pasto-Mocoa is an emblematic IIRSA project, due to the challenge that managing these risks implies (in the preparation of a project financed by the IDB), in a transparent, participative and consequent way, respecting the demands of the affected population.

The whole project is composed by the following works (Florez, 2007 and IDB, 2012):

- ▶ **Tumaco Harbor:** it consists of a 310 meters long and 25 meters width quay; it has an access channel with restricted drafts in a place known as La Barra. This harbor is an important point of consolidation and distribution of coastal freight, and there is a mobilization of goods such as hydrocarbons, oil from Putumayo, palm tree oil, and fishing products.
- ▶ **Tumaco-Pasto Road:** it is a road with good specifications that crosses a flat zone and ascends to the Andean Zone. The construction of the alternative crosses through Tuquerres and Pasto is still pending, since currently it is necessary the transit through the center of the urban areas of these localities. In addition, the improvement of the road Pedregal-Tuquerres is also pending, although it is almost finished. It has a length of 284 km. Through this road, oils and greases, wood, fish, and supplies travel to Cali.
- ▶ **Mocoa-Puerto Asis Highway:** it is a way that starts in a mountainous terrain and then arrives to a flat terrain. It is being paved.
- ▶ **Puerto Asis:** it is the harbor where the transference to fluvial mode is done. La Esmeralda floating quay is currently under construction.



- ▶ **Navigability of Putumayo River:** the corridor includes the river section from Puerto Asis until its outlet in Santo Antonio do Iça, Brazil, with a length of 1,927 km, from which 347 km belong to Brazilian territory. Putumayo River has navigability issues in low waters, between Puerto Asis and Puerto Ospina, exacerbated in the last years due to deforestation in the high basin. Insecurity and the lack of improvements in the critical passages have been the cause to the reduction of cargo transportation through the river.
- ▶ **Amazonas River:** the intermodal Colombian corridor that comes from Santo Antonio do Iça until Leticia, with a length of 365 km, covers Brazilian territory and has a good draft, allowing a proper navigation.
- ▶ **Leticia Harbor:** it has the floating quay Victoria Regia and there are several issues concerning sedimentation.

Concerning the road *Pasto-Mocoa*, the works are the following:

- ▶ **Pasto-El Encano road:** it has a length of 19.6 km of paved road with a rise for crossing the paramo and then goes down again towards El Encano, next to La Cocha Lagoon. Even though in the beginning there was the possibility of building a detour in order to connect Pasto to El Encano, in the end the decision was to recover the road.
- ▶ **El Encano-Santiago road:** its length is 28 km. in its final section there are pronounced slopes and bend radius that reach up to 12 meters. Despite Invias opted for improving the section, they are not very optimistic concerning it supporting huge amounts of cargo transportation.
- ▶ **Santiago-San Francisco road:** it has a length of 20 km and 7 meters of section that crosses the valley of Sibundoy. In some spots, there are minor cracks and alligator cracks. For this section, it was decided to adapt the road, and carry out construction and maintenance of draining works. These works imply the widening of the section of the road from 7 to 12 meters, cutting curves, the construction of viaducts and road paving.
- ▶ **Sand Francisco-Mocoa road:** its current length is 78 km. this road that, by now, does not cross the forestall reservations, summed up with Santiago-San Francisco road conforms the most dangerous section, since its width oscillates between 3 and 5 meters, its visibility is practically zero, and it has very high longitudinal and transversal slopes. It

has a very poor geometry, curves with minimum radius, a lot of hydric flows, unstable spots, and it lacks of signaling and draining works. Due to its profound abysses and abundance of hydric flows, in this section it is planned to construct a detour of 47 km, from which 31.2 km will be within the forestall reservation of the Mocoa River High Basin, located in the Northwestern end of Putumayo with an area of 34,600 ha.

This detour Project is considered to be environmental sensitive, reason why the IDB was asked for financial cooperation in order to elaborate the Basic Plan of Environmental Management and Regional Environmental Study (EAR, in Spanish) of the reservation zone.

There are several reasons to justify the construction of this detour, according to the reference terms of Invias: *“First, it is important to avoid the isolation of Pasto as main urban center and industrial producer, facing the future habilitation of the border crossing through San Miguel, between Equator and Colombia. Second, with a better infrastructure through the intermodal corridor Tumaco-Belem do Para, part of the production from Nariño (Pacific and Andean Regions) and the goods coming in from Tumaco would take the route of the corridor instead.”*

In the national context, the construction of this alternative way will facilitate inter-municipal transportation, shortening to six hours the route Bogotá-Pasto and, once the highway ready, it will allow an easy connection between Quito and Bogota.

The Protector Forestall Reserve of Mocoa River High Basin was created thanks to the requirement of the Colombian Institute of Electric Energy (ICEL, in Spanish), with the purpose of solving energy issues in the population centers of Mid Putumayo, in the context of the National Plan of Rehabilitation (PNR), with the technical feasibility of generating 11,000 kW through a small central hydroelectric located 2.5 km from Mocoa.

The hydroelectrical project was never carried out and instead a transmission line of 115kW was built up, providing electric fluid to Putumayo from Pasto, crossing through the forestall reservation in East-West sense. In October 2007, the Energy Enterprise of Bogota (EEB, in Spanish) was contracted, for sale, for the transmission line in a length of 75 km (IDB, 2013). The estimated investment for the projects of IIRSA group 1, according to Cosiplan<sup>48</sup>, that includes

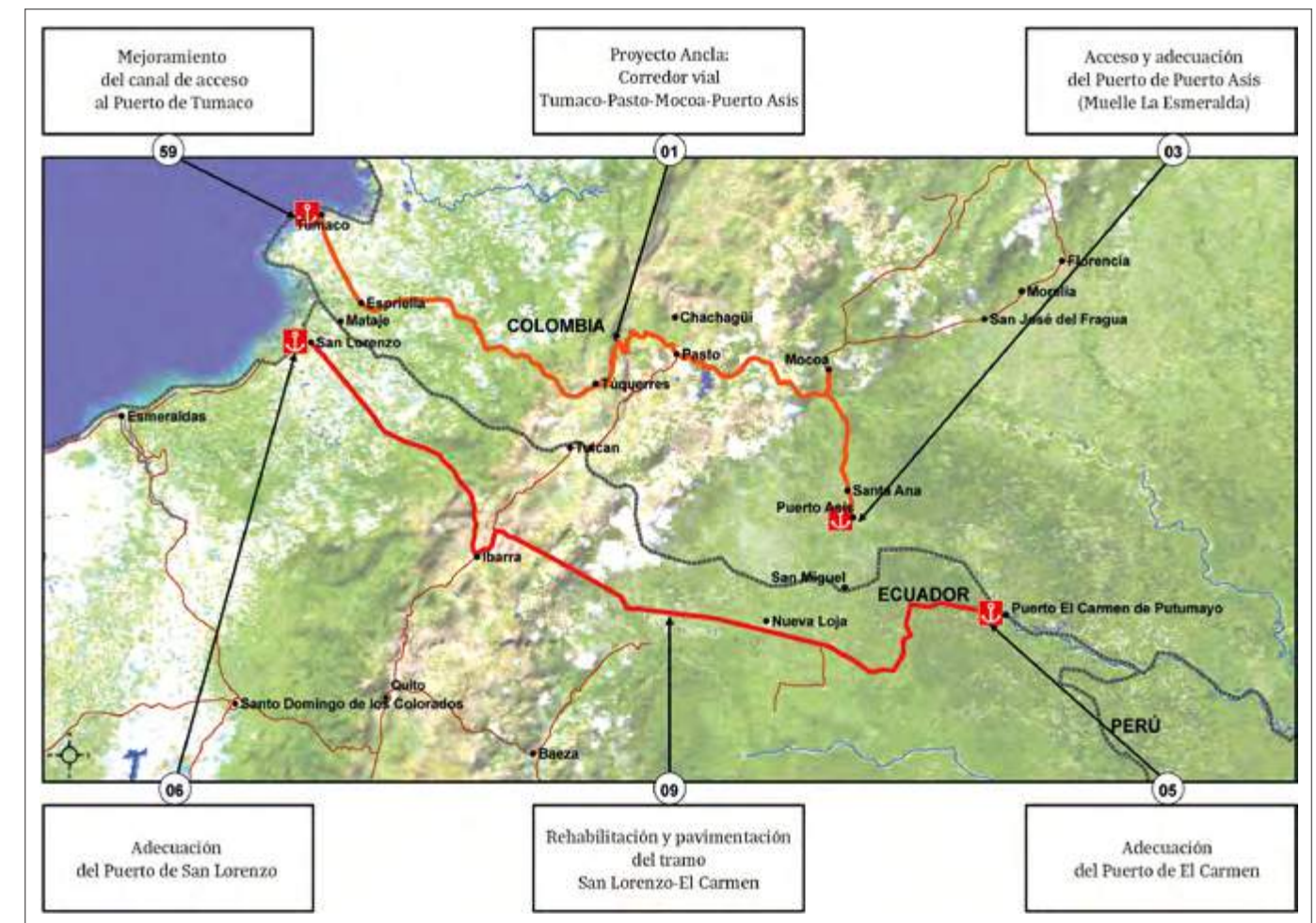
48. The South American Council of Infrastructure and Planning (Cosiplan, in Spanish) is the instance of political

Table 18. Estimated investment. Projects from group 1. Access to Putumayo waterways

GROUP CODE	PROJECT NAME	ESTIMATED INVESTMENT USD MILLION
G01AMA01	Roadway corridor Tumaco-Pasto-Mocoa-Puerto Asis (CO).	404,9
G01AMA03	Access and adaptation of Puerto Asis harbor (La Esmeralda quay) (CO).	3,0
G01AMA05	Adaptation of El Carmen harbor.	3,0
G01AMA06	Adaptation of San Lorenzo harbor.	6,0
G01AMA09	Rehabilitation and paving of the section San Lorenzo-El Carmen.	75,9
G01AMA59	Improvement of the Access channel to Tumaco harbor.	5,0
G01 AMA60	Electric interconnection Yavarate (Mitu), border with Brazil.	0,3
<b>TOTAL</b>		<b>498,1</b>

Source: Unasur/Cosiplan (2013).

Chart 5. Roadway corridor Tumaco-Pasto-Mocoa-Puerto Asis. Group 01. Access to Putumayo waterways



Source: Initiative of IIRSA. Data of the project access to Putumayo waterways.

the road Pasto-Mocoa and Putumayo waterway, is presented in [Table 18](#). See also [Chart 5](#).

As it can be observed, this road is not an isolated work for solving regional issues generated by its traditional isolation, since it integrates bigger economic ambitions for Colombia and the neighboring countries, and also for the great international capital.

The polemic about the tracing of this road in highly vulnerable ecosystemic zones, financing such a huge project and the participation of population in the decisions have been widely documented by serious studies such as the one carried out by Florez (2007), and they attract attention on the ways the territories are intervened, valid for road and mining projects.

All environmental recommendation implies a cost; therefore, it is necessary to know the way they are included in the financial budget for the works or if there will be a complementary fund with that purpose, ensuring that such resources are available.

Many of the impacts will only be seen in the mid-term, so the policies subscribed by the consultants of the studies on the certainty of their appreciations and recommendations, as well as the works constructors, should cover the measurements aimed at achieving the environmental restoration and properly mitigate impacts.

Authorities should ensure to ethnic communities the exercise of their right to participate, that should include a verifiable qualification process that can aim them to make decisions directly related to their permanence in their territories and their existence as native peoples. It is not about gifts or minimal solutions, but about ensuring that their territory keeps on providing the elements that have made their survival possible.

The right to previous consultation should be ensured in the decisions adopted in relation to natural resources exploitation in indigenous communities' territories. Studies should be performed in cooperation with the communities to evaluate social, spiritual, cultural, and environmental incidence that the development activities can bring over them. This should

be done since the preparatory stages, in environmental studies and environmental impact studies. This incidence should be reflected in the concession of environmental licenses. Participation, in all cases, should transcend the negotiation of perks and the granting of working positions.

A common situation among the inhabitants of the Amazon region is the lack of property entitlements, especially among peasants, which makes them even more vulnerable. Therefore, detailed studies on the occupation and possession situation existing should be carried out. These factors should be valued and avoid resettlements without proper compensations.

Regional environmental evaluations should give account of all the physical, environmental, and social aspects with updated quality information. The environmental analysis criteria should be centered on the ecosystemic, integral character, preserving the connectivity of ecosystems (Florez, 2007).

### *Sub-Regions in the Colombian Amazon*

The Colombian Amazon as a socially built space is understood as a group of representative forms of past and present relationships and a structure represented by social relations that manifest through processes and functions. The space is, then, a real field of sources whose acceleration is uneven (Santos, quoted by Dominguez, 1994).

The spatial forms that are created depend on the production social relations, dominant and dominated. Uneven social relations in a capitalist way are dominant, and they form as well part of the world economy. Under the domain of such system, society and its space are organized for production, circulation, and consumption of goods, and the country and the city are part of an indissoluble one, but full of contradictions, where the urban epicenters are spatial regulators for being, at the same time, the epicenters of political and economic power (Dominguez, 1994).

During the last two decades, as a result of the propagation of illicit crops, illegal mining, political-administrative decentralization, the new institutional conditions of the region, the division initially proposed as Northwestern Amazon and Southeastern Amazon has started to give into new realities, explained by the process of expansion of the population ring as an advance of the urban structures of the country that penetrate into the jungle from the periphery towards the center, and now from the denominated geo-political and economic-extractive enclaves from the ends towards

the center of the region, trying to connect with the rest of the country. The dynamics of the population support on the already consolidated regions and keep on extending with continuous spots, first closing the ring and then, advancing towards the center.

This expansion situation from the periphery to the center and vice versa is still today a tendency that will probably consolidate. However, urban settlements of the Colombian Amazon are still being part of the national urban system periphery and they're included in that simultaneous polarity of totality and fragmentation. Totality is seen in the process of social construction of the territory, organized around the economic profit that submits nature and society to produce goods and utilities, without social or environmental sustainability considerations. Fragmentation is seen from the different spaces that the process of incorporation of natural habitats into built ones. *"Human settlements are differentiated elements in the geographic landscape and have been considered as fundamental expressions of the relationship man-earth"* (IGAC, 1991).

The system of settlements of the Colombian Amazon region is understood as a social construction of the space, since there are different appropriation and use of the land and human conglomerates, segmentation and segregation logics that can be explained by the historic, political, economic, social, and cultural processes. Farms, small villages, indigenous communities settlements, municipal headlands or cities, they are all undoubtedly social constructions, identifiable through the roles or functions that they exert and let them have an identity and functionality in relation to the territory.

The result of this is territorial fragmentation, produced by socioeconomic differentiation that can be seen in sub-regions as socially constructed places and power hegemonies. As a socially constructed space, ten years ago it was possible to identify a Northwestern Amazonian sub-region, where the urban consolidation was predominant, next to the market economics and, in opposition, a Southeastern sub-region, where traditional indigenous occupation and geo-political and economic-extractive enclaves were predominant.

The Northwestern Amazon corresponded to the area of continuous population, organized into hierarchies of cities and towns, with a communications network that integrated the whole and whose economy is based on goods production. In the second sub-region, denominated Eastern or Southeastern Amazon, located from the other sub-region towards the Southeast, there lives a disperse population, mostly indigenous, whose economy is based specially on livelihood and

where the ecological impact of the population is lower. See [Map 40](#).

Economic, political, social, cultural, and environmental dynamics today give birth to new spaces that come from those originally proposed sub-regions. Ten years later, the consolidation of the Amazonian population ring with its urban centers networks and its expansion towards the East and South of the region, intense population mobility or "forced migration" as Sanchez (2012) chose to call it, the increase of pastures and the subsequent loss of forest, as well as the pressure exerted by the intention of exploiting mineral resources and hydrocarbons and the road opening towards the Pacific change the panorama for the region. Considering the occupation and anthropic intervention processes, not only from the point of view of their actors, but social, economic, and environmental relations it is possible to divide the Amazon region into four sub-regions, mutually contrasting and differentiable: Western Amazon, Northwestern Amazon, Eastern Amazon, and South Amazon. This approach is far superior to the point of view that signals regional homogeneity and shows that the Colombian Amazon as a region does not have a clear socioeconomic and environmental integration, being necessary, therefore, to talk about a territory socially constructed, where there are several domains with different singularities. Current limits for these sub-regions are traced taking into account the different environmental, social, and economic specifications determined by appropriation, occupation, and anthropic activities consolidation, due to the intensity of the intervention and transformations of the ecosystems, by economic relations and exchange with national and international markets, and by legal and judicial territory planning: territorial entities such as departments, municipalities, departmental jurisdictions, indigenous reservations, and special management areas. Regional limits will vary as the intervention processes displace. See [Map 41](#).

### **WESTERN AMAZON**

This sub-region is part of a huge intervention or population ring that surrounds the Amazonian periphery from all the countries of the basin and, in Colombia, it constitutes the most densely populated area, with high levels of population mobility. Its population ring is the most consolidated all around the region, it has a vast road network that connects its urban centers with other centers of importance in the region, like Pasto and Neiva, to finally connect with

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and strategic discussion through consultation, evaluation, cooperation, planning, and efforts coordination and programs articulation and projects to implement regional infrastructure integration in the countries that are members of the Union of South American Nations (Unasur). It was created during the third meeting of the Council of Chiefs of State of Unasur, carried out in Quito on January 28<sup>th</sup> 2009. <http://www.iirsa.org/Page/Detail?menuItem=45>.



the capital of the country, accessing to opportunities of services and commerce in the national level. There is a continuous distribution for the production and circulation of goods that has been supported by the conformation of road infrastructure networks, which allows the circulation of social and economic flows. Its occupation corresponds to ancient peasant colonization. A loss of the jungle cover and the predominance of pastures and extensive cattle farming are registered, and there has been a high incidence of coca commercial crops and illegal armed groups' presence.

It is the sub-region with the smallest extension, with 40,365.37 km<sup>2</sup>, and it corresponds to the continuous population area, organized into hierarchies of cities and towns, through the communications network that integrates the ensemble and whose economy is based on goods production. According to Dane projections up to 2015, the total population in this sub-region will be of 872,344 inhabitants, equal to 62.97% of the regional population. In the Western Amazon, 4.95% of the inhabitants are located in urban areas (the highest value in the whole region) and 50.5%, in rural areas. The population density is also the highest in the Colombian Amazon: 21.61 inhabitants per km<sup>2</sup>.

The most important urban centers are Florencia, Mocoa, and Puerto Asis, and there are 34 territorial entities that correspond to the Amazonian foothills municipalities from Caqueta (Albania, Belen de los Andaquies, El Doncello, El Paujil, Florencia, Milan, Montañita, Morelia, Puerto Rico, San Jose del Fragua, Solita, and Valparaiso) and Putumayo (Colon, Mocoa, Orito, Puerto Asis, Puerto Caicedo, Puerto Guzman, San Francisco, San Miguel, Santiago, Sibundoy, Valle del Guamuez, and Villagarzon), and the steep slopes from the Eastern side of the Andean Mountain Range in the departments of Nariño (Cordoba, Funes, Ipiales, Pasto, Potosi, and Puerres) and Cauca (Piamonte, San Sebastian, and Santa Rosa), as well as the territorial entities that compose it and are known by the relatively reduced surfaces, indigenous reservations and reduced extension protected areas.

It was in this sub-region where the oil exploitation in the Colombian Amazon began. Currently, 16 out of 18 municipalities of the sub-region are completely involved in one of the exploitation polygons of the land map for July 2014 (ANH).

The main production camps in the Amazon are located in the municipalities of: Puerto Asis, Orito, Puerto Caicedo, Valle del Guamuez, San Miguel, Villagarzon, Mocoa, Piamonte, and Ipiales. An even bigger surface is used for exploration of new extraction

areas, there are TEA zones, available areas and open round blocks were granted in 2014.

In relation to mining activities, there is artisanal gold exploitation and materials for construction are extracted from rivers. Artisanal gold exploitation is surrounded by the pressure of the authorities, since there are plenty of foreign actors that introduce heavy machinery and money from illegal activities, which change artisanal production and livelihood into a higher profitability with serious environmental consequences. Environmental authorities intervene without success in the control over illegal mining, an activity that covers armed groups, also illegal. In 2013, mining requests in this sub-region summed up 2,084.01 km<sup>2</sup>, equal to 5.16% of the sub-regional surface, and the entitled area was of 278 km<sup>2</sup>, less than 1% of its entire surface.

As it can be appreciated, economic intentions on this sub-region are increasing, despite there are sources of some of the important rivers that discharge in the Amazon, Andean forests from the Eastern Mountain Range are preserved in the eastern side and in the foothills there are still Amazonian forests. Biodiversity of this sub-region is expressed through flora, fauna and the knowledge on these resources that ancestral communities have; they take care and defend these resources from the constant increase of the pressures for obtaining their natural wealth.

In this sub-region, some of the first IIRSA projects are being developed. There is also a connection towards international markets for extracted raw materials (and still to extract) from the sub-region, and it will too be a way out for the products that travel from Brazil to the Pacific.

#### **NORTHWESTERN AMAZON**

The Northwestern Amazon has an extension of 138,893.60 km<sup>2</sup> and it is foreseen that in 2015 it will be inhabited by 305,544 people, equal to 22.06% of the whole region. 42.6% of the population of this sub-region will be located in the municipal and departmental headlands and 57.4% will be in the remaining area. The population density is calculated in 2.2 inhabitants per km<sup>2</sup>.

It is composed by 17 territorial entities that correspond to the Amazonian municipalities of the South of Meta (La Macarena, Mapiripan, Mesetas, Puerto Gaitan, Puerto Concordia, Puerto Rico, San Juan de Arama, Uribe, and Vistahermosa); the four municipalities of Guaviare (Calamar, El Retorno, Miraflores, and San

Jose del Guaviare); the municipalities of San Vicente del Caguan, Cartagena del Chaira and the western sector of the municipality of Solano in Caqueta, as well as the municipality of Puerto Leguizamo, in Putumayo. Except for some of the municipalities in the South of Meta, most of the territorial entities of this sub-region are characterized by their vast extension. There are protected areas, such as the La Macarena Special Management Area (AMEM, in Spanish), three National Nature Parks, National Nature Reservations, and indigenous reservations of extensive surface.

Its demographic density is higher than that of the Northeastern and South sub-regions. Population is continuous and traces huge spots or elongated belts that follow the main communication ways. The region constitutes an expansion of the neighboring areas of ancient incorporation to the national market, and for that reason, there is a predominance of colonists with absolute hegemony on the populations of the sub-region. The population ring has a spatial expression that has evolved from the colonization of isolated spots into the consolidation of occupied areas, not necessarily populated, with an important presence of latifundia. It is the region where the population ring will surely consolidate in the fore coming decades.

It is structured through colonization processes that have happened in the Putumayo and Caqueta foothills. These areas were the center of peasant colonization in three historic moments of the 20th century: the displacement of rural masses from the Andean mountain ranges due to political violence and prosecution to self-defense armed peasant groups from the 50's and the 60's; the colonization during the 70's and the subsequent coca colonization from the end of the 70's and its expansion to the deep jungle in areas such as Miraflores, Caruru, Charras, Tomachipan, and Remolino del Caguan. There is a predominance of extensive cattle farming with natural and improved pastures and there has been a high incidence of the commercial coca crops. It has been the scenario of the armed conflict and armed, peasant and coca occupation, and it has recently endured the effects of the war between paramilitaries and the Farc guerrilla, besides experiencing the phenomenon of the occupation without population (Arcila, 2010b), as well as a high population mobility provoked by forced migrations.

The sub-region is linked to the market of Meta and the interior of the country through waterways in the rivers Guaviare, Guayabero, and Ariari and through the road Calamar-San Jose del Guaviare, Villavicenci-Bogota. Towards the West, it is connected

to Neiva through terrestrial ways from San Vicente and by waterways through the rivers Caguan, Ortegua, and Putumayo, to arrive to the terrestrial way Puerto Asis-Mocoa, Neiva-Bogota.

In this subregion, there is hydrocarbon exploitation in the municipalities of La Macarena and San Vicente del Caguan. Around the production polygons there are exploration areas and oil exploitation blocks were assigned in 2014. Additionally, the ANH has reserved areas in Guaviare and the municipality of La Macarena. There are TEA zones in Cumaribo and in the South of Meta. In relation to mining, it was established that the area for mining requests in 2013 was of 1,503.71 km<sup>2</sup>, equal to 1.08% of the sub-regional surface, while the surface of granted entitlements for that year was of 8.3 km<sup>2</sup>.

#### **NORTHEASTERN AMAZON**

The Northeastern Amazon has an extension of 161,836.20 km<sup>2</sup>, being the biggest of the four sub-regions. In 2015, it will be the home of 109,412 people, equal to 7.9% of the region. 33.3% of the inhabitants of the sub-region will be located in the municipal and departmental headlands, while 66.7% will inhabit the remaining areas that, for the Colombian Amazon, correspond to the tropical rain forest. With the South Amazon, it registers the lowest population density values, less than ones inhabitant per square kilometer.

It is composed by 16 territorial entities belonging to the municipalities and departmental jurisdictions of Guainia and Vaupes and the municipalities of Cumaribo in Vichada. This sub-region corresponds to the predominant area of tropical rain forest, where there lives a disperse population, mostly indigenous, whose economy is mainly based on livelihood. There are administrative centers as Inirida and Mitu, and mining populated centers as Taraira that have been playing the role of geo-political and economic-extractive enclaves.

In this sub-region there is a predominance of indigenous population, and the reservation and protection areas from parks constitute most of its territory. Gold mining in Naquen and Taraira, as well as the expectation on finding new minerals such as coltan and tungsten, have been decisive regarding disorganized displacements of the population towards the territory, serious environmental damages, and occupation of ancestral territories and reservations.

The indigenous organizations and authorities have reached a high recognition at the social and political level, and concerning the interaction with the local, national, and departmental government. These departments have the shortest road and market connection with the center of the country and the neighboring countries. The region shows low levels of forest loss and peasant colonization. However, coca colonization is strong along the rivers Guaviare, Alto Inirida, Vaupes, and Apaporis and is associated with the presence of illegal armed groups. Territorial transformation processes evince that the population ring allows identifying an important pressure on the forest that starts to be strongly felt in the sub-region.

Concerning the expectations on hydrocarbons production, in almost all the municipality of Cumaribo there are TEA zones and in the west of Vaupes (municipality of Caruru and jurisdiction of Pacoa) there are polygons of reserved lands by the ANH. The remaining areas of the sub-regions are free from pretensions with the same purpose. In contrast, the interest to access mining resources is so big that the government declared a strategic mining area in the sub-region, except the two protected areas. There were mining requests in 2013 that reached an area of 25,443.85 km<sup>2</sup>, equal to 15.72% of the sub-region, the biggest requested area in the Colombian Amazon. Concerning the entitled area, 793.59 km<sup>2</sup> were granted.

## **SOUTH AMAZON**

It is composed by the department of Amazonas and the East section of the municipality of Solano, Caqueta. The South Amazon has an extension of 142,056.82 km<sup>2</sup>, being one of the sub-regions with the biggest surface. In 2015, it will be the home of 97,962 people, equal to 7.07% of the region. 29% of them will be located in the municipal and departmental headlands, while 71% will inhabit the remaining area that, for the Colombian Amazon, corresponds to tropical rain forest. With the Northeastern Amazon, it has the population density lowest values, less than 1 inhabitant per square kilometer.

It is a geo-politically strategic region; its territorial jurisdiction confirms that national sovereignty over a part of the Amazon River in the north shore and the rivers Caqueta and Putumayo.

Historically, the presence of the State has been marginal and limited for the preservation of Amazonian cultures. The integration of the area to the global market supports on extractive and enclave economies,

linked to fluvial routes of the Great Amazon. The consolidation of Leticia as economic and social epicenter of the region implies opportunities such as building a border space determined by arrangements, but also conflicts between three Amazonian countries: Brazil, Colombia, and Peru.

In the South sub-region, historical organization of the space has happened through the natural communication ways, composed by the Amazonian and Andean rivers and their main tributaries. Current settlements, a millenary heritage, are formed by indigenous groups culturally diverse. Geo-political enclaves, such as Leticia and Puerto Nariño (Amazonas) can be identified, as well as economic-extractive enclaves that correspond to the jurisdictional headlands of Tarapaca, La Pedrera, El Encanto, and La Chorrera (Amazonas) and the police inspection of Araracuara (Solano, Caqueta). Social life becomes more and more urban, including indigenous and Neo-Amazonian societies that inhabit the forest. Leticia, as the main urban center in the area, attracts and concentrates population flows coming from the interior of the region, the country and the neighboring countries. Armed conflict and coca colonization extend along the rivers Apaporis, Caqueta, Igara-Parana, and Putumayo.

In the departmental jurisdictions of La Victoria and Miriti-Parana, Amazonas, there is a fraction of a land block belonging to the ANH, marked as reserved area. For July 2014, in the remaining area of the sub-region, there were not any more pretensions concerning hydrocarbons. The interest to access mining resources has been lower in this sub-region, perhaps because until now, no economic interest materials for the “country” have been identified. The area involved in mining requests for 2013 was estimated in 45.37 km<sup>2</sup>, equal to 0.03% of the sub-regional surface, and no valid mining entitlements were found.

## *Final considerations*

As Arcila (2010b) affirms, the history of the Colombian Amazon talks about the plundering of its natural resources and a vast list of colonization processes: religious and related to coca crops; directed and spontaneous; military legal and illegally armed; from peasants and corporations; indigenous and urban; foundational and without occupation; cattle breeder, oil exploiter, and mining source. In different periods of its history, in this region extractive economy has given account of cinchona, rubber, cedar, wild fauna, gold, fish, coca and oil plundering.

Until the middle of the 80's of the 20<sup>th</sup> century, the most extended colonization in the Amazonian territory corresponded to peasants, nourished by directed, military (licit and illicit), related to coca crops, and foundational colonization, all of them creators of social wealth and builders of the territory.

All of this, coming from cattle farming, enterprises, and oil industry are socio-environmental pressures and negative influences that affect the ecosystemic services that the Amazonian biodiversity provides for the region, the country, and the planet. Even though human settlements, either from colonizers or peasants, affect the Amazonian ecosystems, their presence contributes to the increase of the population ring over the forest, and their impact tends to

be less negative than the one originated by cattle farming, oil exploitation activities, and mining, because one of the particular traits of peasant colonization is that the appropriation of the land implies the application of human work in order to adequate the space for the settlement. This work creates a wealth that is a social benefit not only for the colonizer, but to all the colony community. From this point of view, colonization builds, creates benefits and enriches the region where it happens (Arcila, 2010b).

This Amazonian population is increasing considerably, especially in the urban centers, as it will be presented in the following chapter, where the population dynamics in the region through the last thirty years are analyzed in detail.





## 2. POPULATION DYNAMIC IN THE COLOMBIAN AMAZON

Socio-demographic indicators are essential for planning, management and environmental and land management. Thus in 2009, the Socio-Environmental Dynamics Group of the Sinchi Institute produced the Spatial and Temporal Dynamics Document the Demographic Component of the Colombian Amazon region<sup>1</sup> that epitomizes, among others, the following variables: population structure, density, dynamic, natural growth, birth and fertility, mortality and migration, constructed from the data reported by the Census DANE 2005.

The data were based on the estimates and projections generated by the DANE (2011)<sup>2</sup> for the period 1985-2020. The data were adjusted for Amazon region by their percentage share in the regional territory.

### Population

In Colombia, by the year 1938, 69.1% of the population lived in the countryside and only 15% in groups of more than 10,000. In 1951, 38.7% of the population lived in urban areas. During the 70s the rural population was stagnating; in 1973 the census reported that 40.9% of the population was located in rural areas and 59.1% in urban areas.

According to estimates by DANE (2011), by the year 1985 66.5% of the Colombian population lived in urban areas and 33.5% did so in the rural sector. The increase in urban population has remained and

declining rural dwellers therefore as indicated by the 1993 census, 69.3% of the population lived in urban centers, increasing this process until the 74.4% in the census of 2005. If the trend continues it is expected that by 2020, 77.1% of the Colombian population is located in cities and urban centers, while only 22.9% do so in the so-called rest<sup>3</sup>.

During the five decades (1940-1990), in Colombia the process of urbanization of the population was developed. The vast majority was concentrated in large cities and metropolitan areas and intermediate cities.

At the end of the twentieth century, 72.8% of the national population, equivalent to 29,318,415 Colombians lived in urban areas. According to the last national census in 2005, 74.4% of the inhabitants, it means; 31,889,299 occupied urban areas, while 25.6%, equivalent to 10,999,293 settlers occupied the rest. According to the projections made by DANE, in 2015 the trend of urban population growth would remain reaching 36,846,935 inhabitants, equivalent to 76.4% of the total, and 23.6% of the Colombian population would continue located in other areas. See **Table 19**.

In census data, estimates and projections that the DANE (2011) has developed, it is observed that the population trend of the Colombian Amazon<sup>4</sup> region is also to reside in urban areas, however, significantly lower than the national proportions. Although historically the region has housed population in other areas than in urban centers, the population trend remains to urbanize growing. The 2005 census data give continuity to what was stated in the censuses of 1985 and

1. López, M. Researcher in 2009 of Socioenvironmental Dynamics Groups Sinchi Institute. Publication available in: <http://www.sinchi.org.co/index.php/centro-de-informacion-y-divulgacion/publicaciones/item/30-dinamicas>
2. Estimates 1985-2005 and projections 2005-2020. <http://www.dane.gov.co>. Data are estimated at June 30 of each year. Visit November 29, 2012. Through the "Inírida" consultation system of the Sinchi Institute.

3. Rest of the municipality: corresponds to the area that is outside the urban perimeter of the municipal head. It can be constituted by populated centers and dispersed population. (DANE, 2007).
4. Previous calculations of adjustment to the specific regional Amazon territory by the Socio-environmental Dynamics group of the Sinchi Institute.



**Table 19.** Colombian Population 1938-2020

YEAR	URBAN	PERCENTAGE (%)	REST	PERCENTAGE (%)	TOTAL
*1938	2.692.117	30,9	6.009.699	69,1	8.701.816
*1951	4.468.437	38,7	7.079.735	61,3	11.548.172
*1964	9.093.094	52,0	8.391.414	48,0	17.484.508
*1973	13.548.183	59,1	9.367.046	40,9	22.915.229
1985	20.497.678	66,5	10.304.543	33,5	30.802.221
1990	23.232.529	68,1	10.897.493	31,9	34.130.022
1993	25.086.378	69,3	11.120.730	30,7	36.207.108
2000	29.318.415	72,8	10.977.148	27,2	40.295.563
2005	31.889.299	74,4	10.999.293	25,6	42.888.592
2010	34.388.013	75,6	11.121.571	24,4	45.509.584
2011	34.883.399	75,8	11.161.202	24,2	46.044.601
2012	35.377.138	75,9	11.204.685	24,1	46.581.823
2013	35.869.246	76,1	11.251.843	23,9	47.121.089
2014	36.359.268	76,3	11.302.519	23,7	47.661.787
2015	36.846.935	76,4	11.356.470	23,6	48.203.405
2020	39.241.145	77,1	11.670.602	22,9	50.911.747

\*(Murad, 2003).

Source: DANE, 2011. Population estimates 1985-2005 and projections 2005-2020, national and areas to June 30 of each year.

**Table 20.** Population in urban areas, rest and total in the Colombian Amazon

YEAR	AREA	POPULATION	PERCENTAGE (%)
1985	Cabecera	268.359	34,1
	Rest	519.684	65,9
	<b>Total</b>	<b>788.043</b>	<b>100,0</b>
1993	Cabecera	346.556	35,7
	Rest	622.832	64,3
	<b>Total</b>	<b>969.388</b>	<b>100,0</b>
2005	Cabecera	506.278	42,2
	Rest	694.722	57,8
	<b>Total</b>	<b>1.201.000</b>	<b>100,0</b>
2015	Cabecera	626.803	46,0
	Resto	736.741	54,0
	<b>Total</b>	<b>1.363.544</b>	<b>100,0</b>

Fuente: DANE, 2011. Population estimates 1985-2005 and projections 2005-2020, national and areas to June 30 of each year. Statistics for the Amazon region by the Socio-Environmental Dynamics Group Sinchi Institute.

1993. Thus, in the last census (2005) the proportion of the urban population was 42.2% compared to the rest with 57.8%. In 2015, the projected population will be 1,363,544 people, of which 46% will be located in the headers and 54%, in the area called rest. See [Table 20](#), [Annex 16](#) and [Map 42](#).

It should be noted, however, that the development of the census DANE 2005 the population of the headers of the departmental districts<sup>5</sup> were counted in the area “rest”, which was not a good decision for the analysis of urban dynamics in the Amazon.

#### POPULATION GROWTH 1985-2015

The percentage of population change<sup>6</sup> is the average annual variation in the number of inhabitants of a territory between two time points (Sinchi Institute, 2007a). The percentages of population change were calculated for all constituent entities of the Colombian Amazon region and municipalities disaggregated data, department, region and nation, as per class (header, rest and total) are presented. See results in [Annex 17](#).

The values of percentage of population change calculated for the periods between 1985-1993, 1993-2005 and for the period 2005-2015, indicate that the total national population has been declining growth. Thus in the period 1985-1993, growth was 2.02% annually between 1993 and 2005, the national population grew 1.41% annually and is expected, according to population projections, which in 2015 will grow by 1.17% year. If the extended period 1985-2015 is reviewed, the growth was 1.49% per year in those three decades for the country. In the Amazon region it was 1.83% for that period and higher figures are observed in all periods analyzed for the total population, which means further increase in regional population compared to the national total, even if the common trend of the country remains to the decline. Analyzed by class, it notes that the national population of urban areas grew more than the rest area, which tends to decrease dramatically, even marking negative values between 1993 and 2005.

5. Departmental Districts (DD): it is a division of the department according to the Decree 2274 of October of 1991 that includes a nucleus of population. For census and transfer purposes, these departmental districts are assimilated to the category of municipality (DANE, 2007).
6. To see the details of the calculation of this indicator, consult its method sheet at: <http://www.sinchi.org.co/index.php/indicad>

In the Colombian Amazon regional populations in the rest area in front of the national rest shows higher growth values in the region, while the population of the regional capitals grew more than twice the rest regional population. The fastest growing urban areas in the region compared to the national urban area are also highlighted. See [Table 21](#) and [Chart 6](#).

Although the national population, in general, reduces their growth and this trend continues in the region, regional values are higher than the national, excellent periods 1985-1993 and 1993-2005, when the Amazonian urban areas became centers receiving people displaced by the phenomenon of armed violence in the region. This also affected other areas, but it was in the headers municipalities where that population fled. See the [Map 43](#).

The high mobility of the population as a result of forced displacement, according to the figures and the study of Lopez (2012) notes that the region has suffered displacement with much greater intensity than the national average. While nationally, in the period of 14 years (1997 to 2011), one of thirteen Colombians had been displaced (approximately 7.9% of the national population), for the region for every three inhabitants (out of the 61 Amazon municipalities with full territory in the region) one had been displaced, equivalent to approximately 36.2% (Lopez, 2012).

#### PERCENTAGE CHANGE OF THE TOTAL POPULATION FROM 1985 TO 2015

The growth trend of the regional population is decreasing as is the national one, but with higher values. The highest values of growth of the total regional population occurred between 1985 and 1993, as the urbanization of the headers of most of the municipalities in the area of colonization had a greater relative growth between 1985 and 1997; the result of historical, political, economic and cultural factors.

At the departmental level, during the period 1985-2015, the highest percentage values change in population were in the Amazon fraction of Vichada, corresponding to Cumaribo. Between 1993 and 2005 the population grew to 6.91% due to the rise of oil exploration in the area.

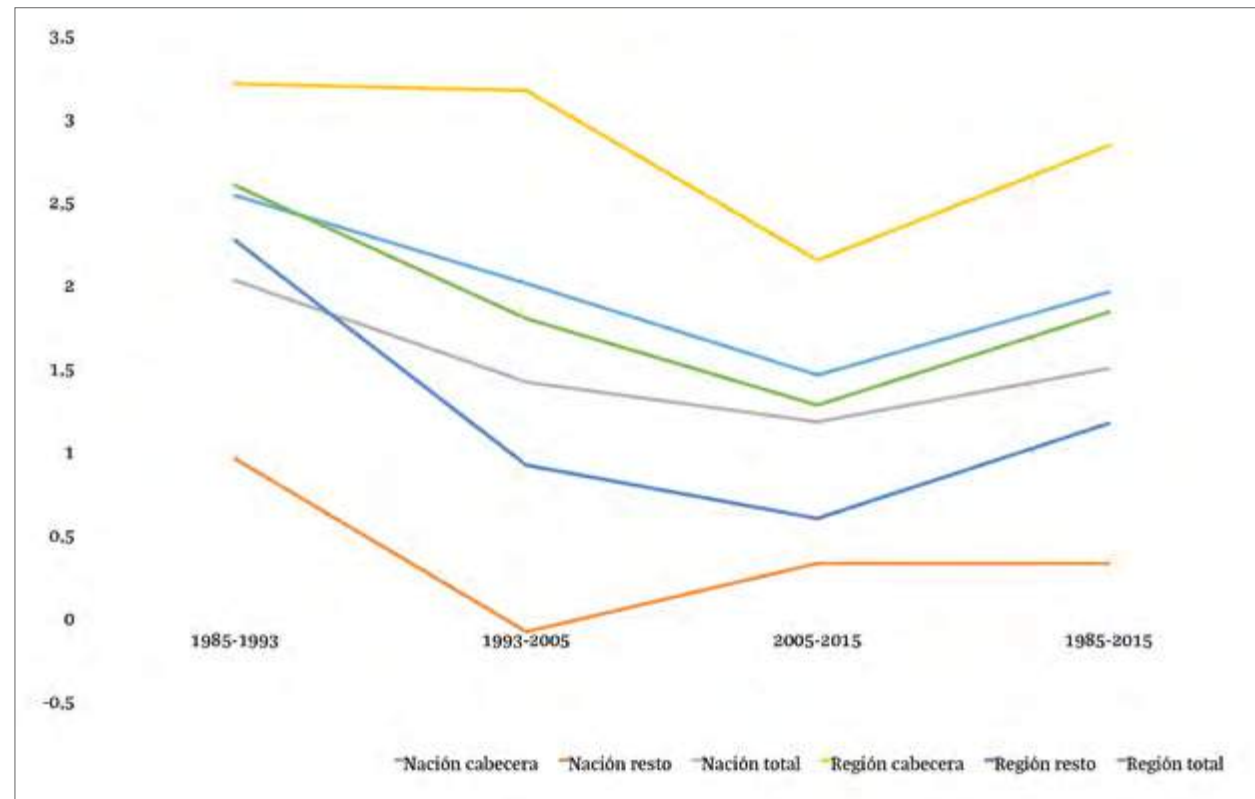
Expectations for mining in Guainía and receiving displaced population caused the increase in these three decades were 2.81%. In this department, the departmental village of Puerto Colombia was the one with fastest growing and, with the exception of Barranco Mina, the others grew more than Inirida; its capital.

**Table 21.** Percentage change of national and regional population by class, 1985-2015

CONTEXT	CLASS	1985-1993	1993-2005	2005-2015	1985-2015
NATION	Head	2,53	2,00	1,45	1,95
	Rest	0,95	-0,09	0,32	0,32
	<b>Total</b>	<b>2,02</b>	<b>1,41</b>	<b>1,17</b>	<b>1,49</b>
REGION	Head	3,20	3,16	2,14	2,83
	Rest	2,26	0,91	0,59	1,16
	<b>Total</b>	<b>2,59</b>	<b>1,79</b>	<b>1,27</b>	<b>1,83</b>

Source: Socio-Environmental Dynamics Group Sinchi Institute. Statistics for the Amazon region and Colombia DANE, 2011. Population estimates 1985-2005 and projections 2005-2020, national and areas to June 30 of each year.

**Chart 6.** Percentage of total, urban, and rest change in the region and Nation, 1985-2015.



Source: Dynamic Group Socioambientales the Sinchi Institute. Calculations for the Amazon region and Colombia from DANE, 2011. Population estimates and projections of population 1985-2005 2005-2020 national total area to June 30 of each year.

The Amazon fraction of Meta department, the department of Amazonas, the Amazon fraction of Cauca and Guaviare and Vaupés grew at rates of 2.37% to 2.17%. The municipality of La Macarena, in Meta department, had the highest growth both at the departmental and regional levels. In the department of Amazonas, the departmental village of La Pedrera was the highest growth followed by Puerto Nariño and Tarapaca. In Cauca, the municipality of San Sebastián

had the biggest change. In the department of Guaviare, the municipality of El Retorno had the highest growth during the thirty years observed, followed by Miraflores. In the department of Vaupes, Mitu and Pacoa were territorial entities that showed greater variation growing population.

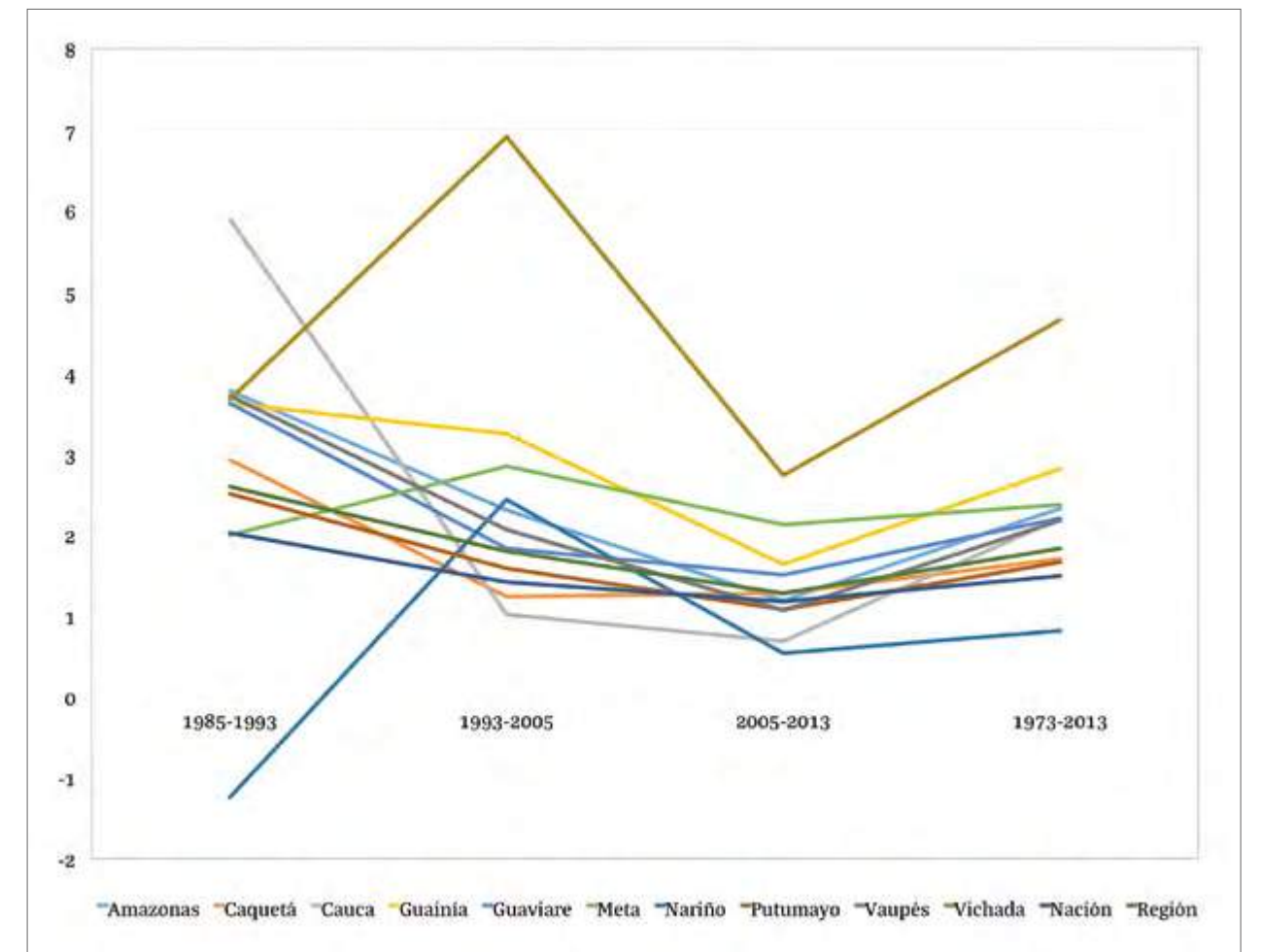
Meanwhile, Caqueta and Putumayo total population increased by 1.7% and 1.66%, respectively, higher than those of the country in the same period values.

**Table 22.** Percentage change in total departmental, regional and national population, 1985-2015

DEPARTMENT	1985-1993	1993-2005	2005-2013	1973-2013
Amazonas	3,77	2,30	1,18	2,32
Caquetá	2,92	1,23	1,27	1,70
Cauca	5,89	1,01	0,68	2,20
Guainía	3,62	3,24	1,63	2,81
Guaviare	3,62	1,83	1,50	2,20
Meta	1,99	2,84	2,12	2,37
Nariño	-1,25	2,43	0,53	0,81
Putumayo	2,50	1,58	1,07	1,66
Vaupés	3,71	2,06	1,06	2,17
Vichada	3,67	6,91	2,73	4,65
Nación	2,02	1,41	1,17	1,49
Región	2,59	1,79	1,27	1,83

Source: Socio-Environmental Dynamics Group Sinchi Institute. Statistics for the Amazon region and Colombia DANE, 2011. Population estimates 1985-2005 and projections 2005-2020, national and areas to June 30 of each year.

**Chart 7.** Total department, region and nation population change, 1985-2015



Source: Socio-Environmental Dynamics Group Sinchi Institute. Statistics for the Amazon region and Colombia DANE, 2011. Population estimates 1985-2005 and projections 2005-2020, national and areas to June 30 of each year.



In the department of Caqueta, the municipality of Cartagena del Chaira had the biggest increase in its population followed by San Jose del Fragua, this in growing terms. The opposite occurred with Albania, Belén of Andaquíes, Milan and Puerto Rico that had negative values.

The population of Nariño in the Amazon fraction had a high growth between 1993 and 2005; in other periods it was below the national growth and even reached negative figures. The biggest positive growth occurred in the municipality of Pasto and Puerres, Funes and Potosi lost population through the thirty years; a phenomenon that could be explained by the migration of the nariñense population to Tumaco where a boom in coca cultivation began. See [Table 22](#) and [Chart 7](#).

**PERCENTAGE OF POPULATION CHANGE IN THE HEADWATERS OF THE REGION FROM 1985 TO 2015**

The highest values of total population growth in the region presented above are due to the dynamics of the municipalities; recipients of people attracted by the bonanzas of marijuana and coca, and forced displacement war for control of these crops produced in and out between armed groups in the region. In recent time, invigorates urban occupation, the exploratory activity and expectation about oil exploitation, as in the case of Cumaribo (Vichada), which grew by 7.8% during the thirty years analyzed. The head of the municipality of Santa Rosa (Cauca) presents very high growth values between 1985 and 1993. Then decrease, because their territory was secreted to give rise to the new municipality Piamonte<sup>7</sup> in 1996. From there, the two headers continue to grow under similar conditions. The large population growth in Santa Rosa, between 1985 and 1993, affects the value of the indicator in the thirty years for the Amazon fraction of Cauca.

Vaupés department with an indicator of 3.93%, the department of Guaviare with 3.68%, the Putumayo and Meta with 3.15% in the Amazon fraction with 3.07%, show high values of population growth the urban area between 1985 and 2015. The highest values occurred in the period 1993-2005, one of the times of greatest population shift to Mitu, Return, Mocoa and the southern municipalities of Meta.

7. Segregated from Santa Rosa, Cauca. Ord. 24, November 18/1996.

In the Vaupes Mitu and Carurú were the fastest growing; in the department of Guaviare, headers Return, Calamar and San Jose; in urban areas of the department of Putumayo, the municipalities of Mocoa, Valle del Guamuez, Villagarzón and Orito; and in the department of Meta, the municipalities of La Macarena, San Juan de Arama and Vistahermosa.

The percentage change of the urban population in the department of Guainía has remained in decreasing order, but higher than the national header values.

In Caqueta, its heads have had very similar values to national growth, with a significant rise in the period 1993-2005. Cartagena del Chaira and San Vicente del Caguan are municipalities that grew during the thirty years analyzed, while Albania lost population in its head.

In the period 1985-1993 the growth of urban areas in the department of Amazonas was significantly higher between 1993 and 2005 fell to the lowest values of the three decades studied to continue with growth relatively lower than the national. The municipality of Puerto Nariño was the one that showed the most growth during the period 1985-2015. See [Table 23](#) and [Chart 8](#).

The municipalities that increased their population in the headers were, in descending order: Cumaribo, Return, Cartagena del Chaira, San Vicente del Caguan, Mitu, Mocoa, Santa Rosa, Squid, La Macarena, San José del Guaviare, Valle del Guamuez and Villagarzón, while municipalities that lost population in urban centers were Albania and Taraira.

In addition, we must consider the effect it could have the DANE's decision to include departmental jurisdictions headers in the area rest here, because as will be seen later, the high growth in the area rest in La Pedrera, for example, explained why the population of the small town joined the rest of the departmental jurisdictions. It is desirable that for the next census, current departmental jurisdictions headers still be considered "headers" because, in real terms, they have specific distinct urban-called dynamic "rest" that probably watch a recent trend of the indigenous population to settle in the nearby urban centers in order to access the limited benefits offered by the State in such isolated territories.

**PERCENTAGE OF POPULATION CHANGE 1985-2015 REST**

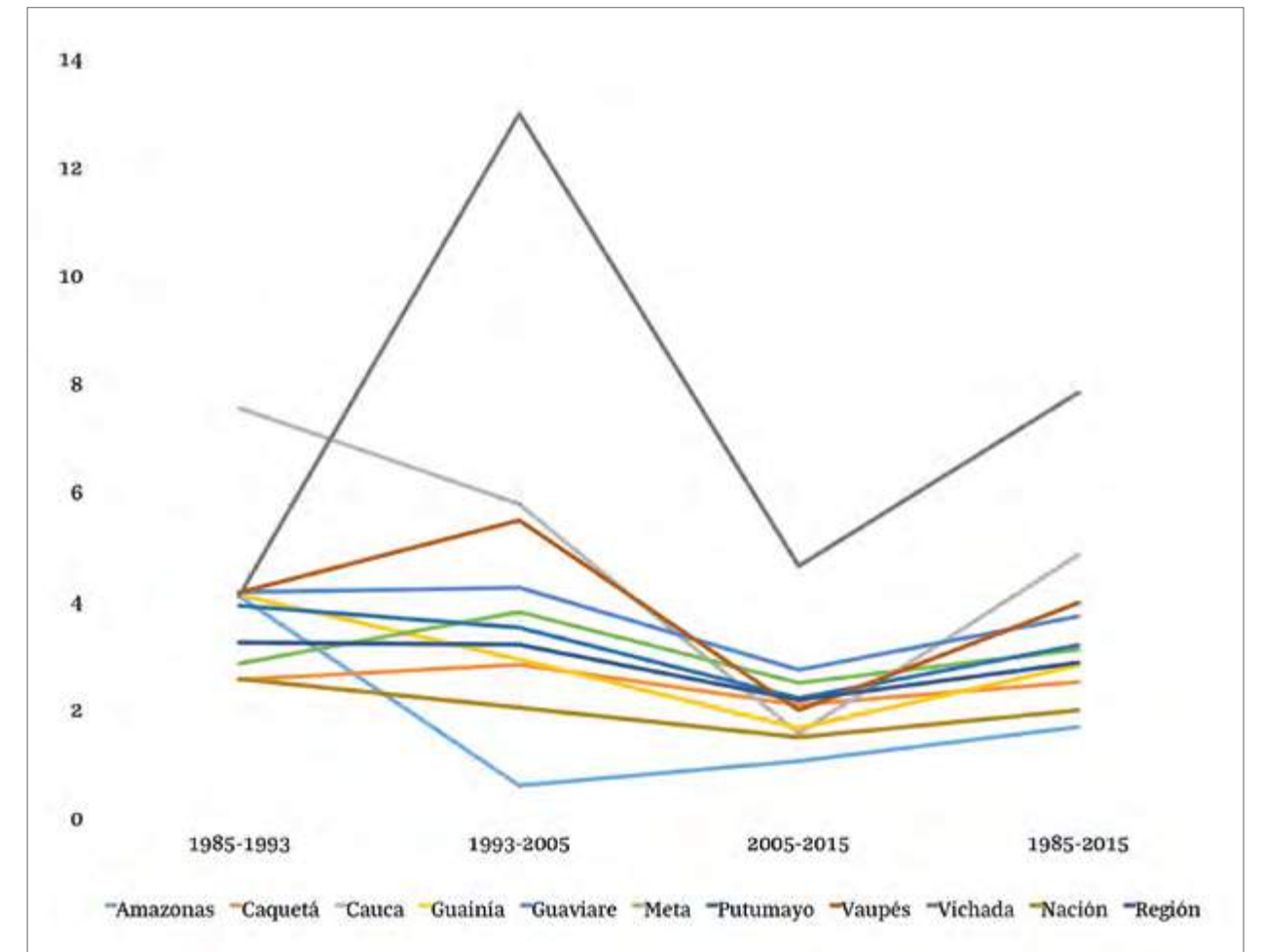
The Colombian Amazon region in the area called rest had the highest percentages of population

**Table 23.** Percentage change of departmental, regional and national urban population, 1985-2015

DEPARTMENT	1985-1993	1993-2005	2005-2015	1985-2015
Amazonas	4,05	0,56	1,01	1,64
Caquetá	2,51	2,79	2,05	2,47
Cauca	7,52	5,75	1,52	4,81
Guainía	4,08	2,88	1,62	2,78
Guaviare	4,13	4,21	2,69	3,68
Meta	2,81	3,76	2,45	3,07
Putumayo	3,88	3,47	2,17	3,15
Vaupés	4,12	5,45	1,95	3,93
Vichada	4,06	12,95	4,61	7,80
Nación	2,53	2,00	1,45	1,95
Región	3,20	3,16	2,14	2,83

Source: Socio-Environmental Dynamics Group Sinchi Institute. Statistics for the Amazon region and Colombia DANE, 2011. Population estimates 1985-2005 and projections 2005-2020, national and areas to June 30 of each year.

**Chart 8.** Percentage of change of departmental, regional and national population, 1985-2015.



Source: Socio-Environmental Dynamics Group Sinchi Institute. Statistics for the Amazon region and Colombia DANE, 2011. Population estimates 1985-2005 and projections 2005-2020, national and areas to June 30 of each year.

change between 1985 and 1993 (2.26%), falling in the following period, 1995-2005, to 0.91% and 0.59%, between 2005 and 2015. These values are higher if they are compared to national values where it tends to reduce the population of the rest area, with a value of 0.32% for the period 1985-2015.

The highest indicator values in the rest area are in Vichada, Guainía and Amazonas, followed by Cauca and Vaupes; however, all maintain the national trend to reduce its percentage change from year to year. In Guainía, departmental districts of Puerto Colombia and Pana Pana reported the highest growth; in Amazonas the highest growth in local rest were called La Pedrera, Puerto Nariño and Leticia. In Cauca, the Amazon fraction of the municipality of San Sebastián was the fastest growing. All these during 1985-2015.

Guaviare and Caqueta reached negative values in the period 1993-2005, probably by the fumigations on illicit crops, which meant that the population engaged in this activity had to migrate to urban centers within and outside the region. In the period 2005-2015, the values change to positive while still remaining very low, even below the national. In Guaviare, the fastest growing municipalities were El Retorno and Miraflores; San José del Guaviare grew just 0.29% in thirty years in the rural sector, and Calamar lost population every year (-1.56%).

The rest area of the six Nariño municipalities that are part of the Amazon area had negative growth between 1985 and 1993 (-1.25%); then there was a major change in values between 1993 and 2005 (2.43%), and it is expected that between 2005 and 2015 the percentage change is 0.53% annually. Only Ipiales, Pasto and Cordoba grew up in rural areas, while Puerres, Funes and Potosi lost population between 1985 and 2015.

Putumayo is the lowest growth in the rest area throughout the region, with 0.67% for the period 1985-2015, in contrast with the data obtained for the urban area as noted above, converted into receiving population. The municipality that increased its population in the area was Orito rest; with very low values did Colón, Santiago, Guamuez Valley and San Francisco. They lost population during three decades in the rest area, the municipalities of Mocoa, Puerto Asís, Puerto Leguizamo, Villagarzón and Sibundoy. These losses can be explained by the history of confrontation and armed conflict in the department. See [Table 24](#) and [Chart 9](#).

Departmental municipalities and districts that had the highest percentage of positive change, during the period 1985-2015, in the rest area were: San Jose del Fragua, La Macarena, Cartagena del Chaira, La Pedrera, Puerto Colombia, Pacoa and Pana Pana. In

contrast, the municipalities that lost population were (from highest to lowest) as follows: Mocoa, Belén Andaquies, Albania, Mesetas, San Juan de Arama, Squid, Puerto Asis, Mirití-Paraná, Leguizamo, Puerres, Villagarzón, Puerto Rico (Caqueta), El Doncello, Milan, Funes, Potosi, Sibundoy and Carurú.

### Population Density

The population density is defined as the number of inhabitants in a territory per unit area; understanding the need to clarify the role of this indicator, it has been formulated one for each class as follows: overall population density, density of population in the territory outside the municipalities or other (Instituto Sinchi, 2007b) and one for the urban areas (Sinchi Institute, 2010b). The calculation was made for each of the local authorities in the region. See the [Map 44](#).

### POPULATION DENSITY REST AND TOTAL

The human population generates a series of demands on the environment to meet their basic needs and achieve their economic development. The physical environment and the natural environment, depending on the resilience and capacity, can meet these requirements without showing deterioration in the long term. However, holding constant other considerations that may accelerate or decelerate the processes affected, it shows that when demands exceed a certain threshold, given the size of the population and more than this, population density, there are changes that encourage permanent deterioration of physical and natural environment (Sinchi Institute, 2007b). It is for this reason that the indicator population density contributes to the monitoring of this dynamic. It is expressed in inhabitants per square kilometer, ie number of persons on the surface (in square kilometers), where they are located.

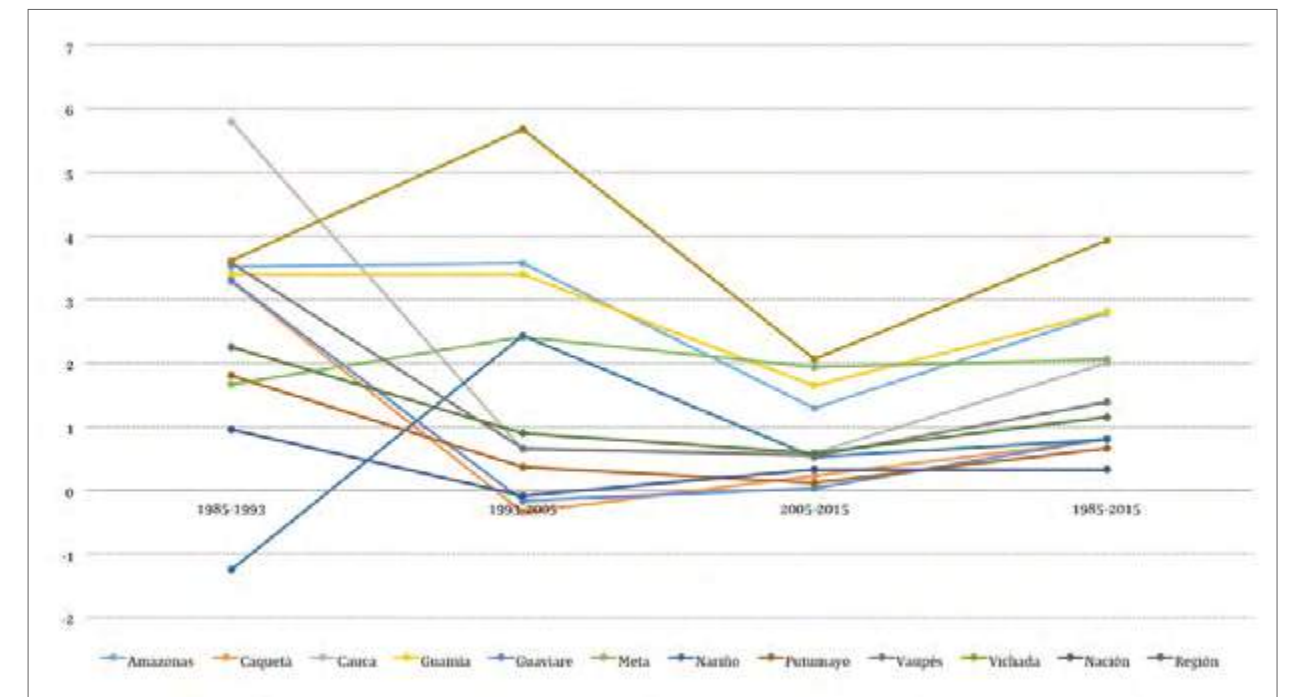
The calculation of the indicator was made for 2005, finding that the density of total population in the region was 2.49 inhab./km<sup>2</sup> and in the area called rest, 1.44 inhab./km<sup>2</sup>. The overall population density was higher in the departments of Nariño (31.91 inhab./km<sup>2</sup>) and Putumayo (12.02 inhab./km<sup>2</sup>). As for the rural density, excluding the population in urban areas, it means, they also presented the highest values Nariño and Putumayo (the same value for Nariño and 6.76 inhab./km<sup>2</sup> for Putumayo). Caqueta reported total density 4.67 inhab./km<sup>2</sup> and 2.10 inhab./km<sup>2</sup> in rural

**Table 24.** Percentage of population change rest, departmental, regional and national levels, 1985-2015

DEPARTMENT	1985-1993	1993-2005	2005-2015	1985-2015
Amazonas	3,53	3,57	1,29	2,80
Caquetá	3,28	-0,35	0,23	0,81
Cauca	5,81	0,64	0,59	2,00
Guainía	3,40	3,41	1,64	2,82
Guaviare	3,30	-0,16	0,03	0,83
Meta	1,66	2,42	1,95	2,06
Nariño	-1,25	2,43	0,53	0,81
Putumayo	1,81	0,37	0,12	0,67
Vaupés	3,58	0,66	0,54	1,40
Vichada	3,62	5,69	2,07	3,93
Nation	0,95	-0,09	0,32	0,32
Region	2,26	0,91	0,59	1,16

Source: Socio-Environmental Dynamics Group Sinchi Institute. Statistics for the Amazon region and Colombia DANE, 2011. Population estimates 1985-2005 and projections 2005-2020, national and areas to June 30 of each year.

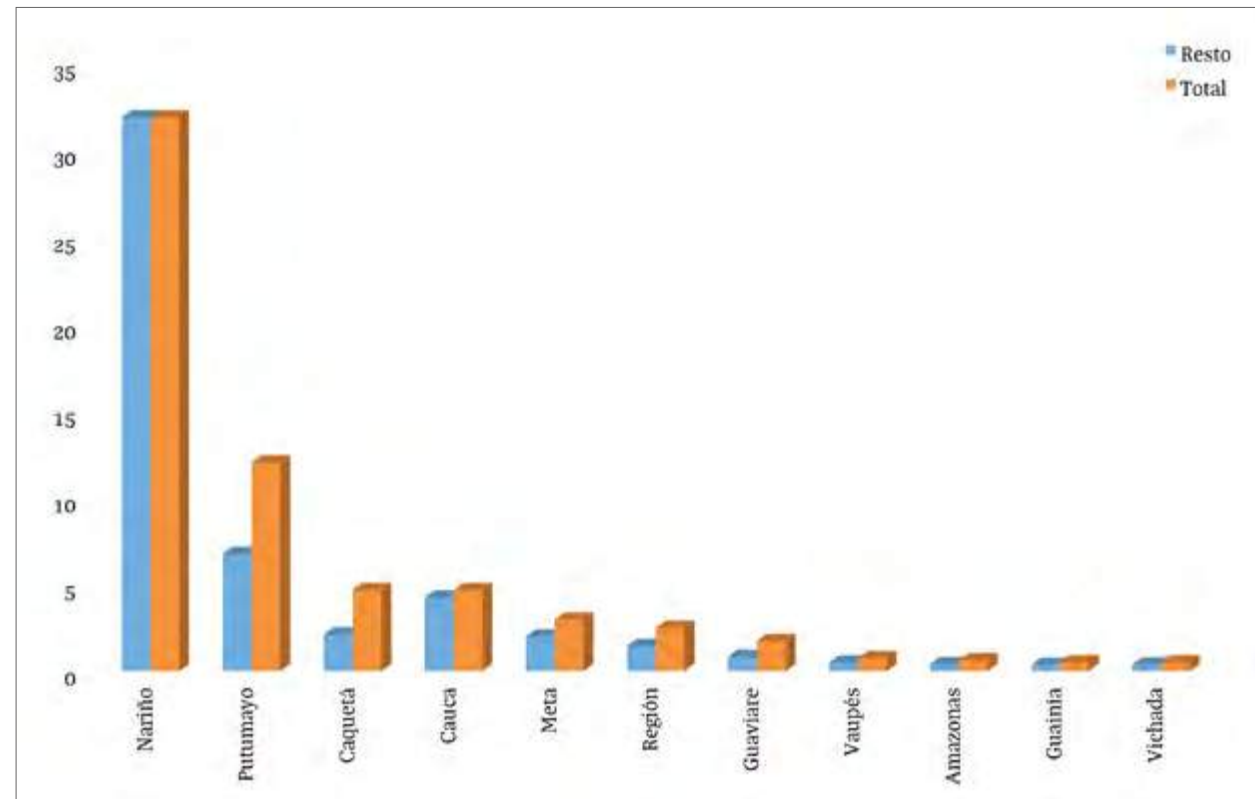
**Chart 9.** Percentage of change of rest, departmental, regional and national population, 1985-2015.



Source: Socio-Environmental Dynamics Group Sinchi Institute. Statistics for the Amazon region and Colombia DANE, 2011. Population estimates 1985-2005 and projections 2005-2020, national and areas to June 30 of each year.



Chart 10. Density total and rural population (inhab./km<sup>2</sup>) in the departments and the Amazon region, 2005.



Source: Socio-Environmental Dynamics Group Sinchi Institute. Statistics for the Amazon region and Colombia from the data of the National Administrative Department of Statistics DANE. Colombia. 2005 Census.

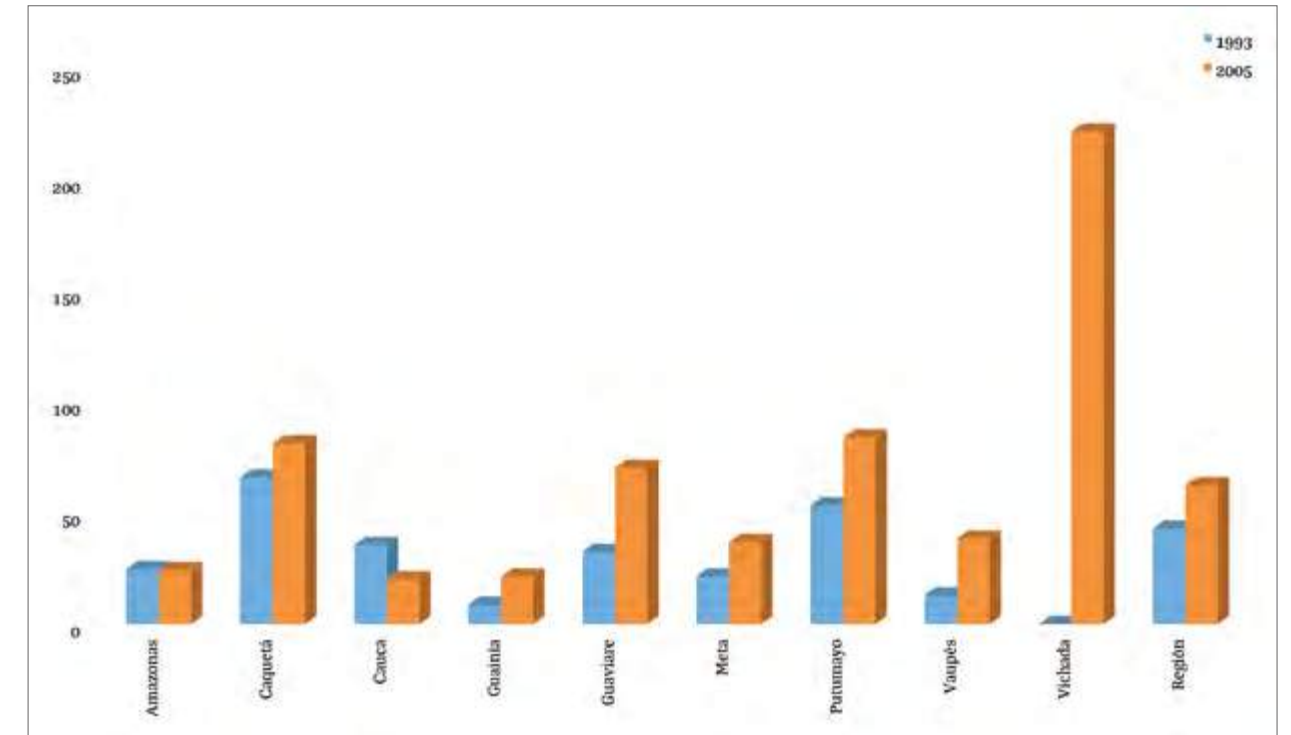
areas. Meta has a total density of 2.96 inhab./km<sup>2</sup> and 1.98 inhab./km<sup>2</sup> density in rural rest. These are the highest values at the departmental level and correspond to those departments in western Amazon near the Eastern Range. Towards the Amazon basin population densities are lower; Guaviare has a total density of 1.72 inhab./km<sup>2</sup> and rural 0.82 inhab./km<sup>2</sup>. Vaupes, in the northeastern Amazon, has a total density of 0.62 inhab./km<sup>2</sup> and rural 0.39 inhab./km<sup>2</sup>. The department of Amazonas, in the southern Amazon, reported values of total density 0.49 inhab./km<sup>2</sup> and 0.37 inhab./km<sup>2</sup> in rural areas. Guainía has 0.5 inhab./km<sup>2</sup> in the total departmental and 0.35 in rural inhab./km<sup>2</sup> rest. Vichada reported similar data Guainía: 0.49 inhab./km<sup>2</sup> for total density and density 0.37 inhab./km<sup>2</sup> for rural; these ones also in the northeastern Amazon. See [Annex 18](#).

In other words, in rural areas and tropical rainforest there are less than 7 inhab./km<sup>2</sup> in Putumayo and Cauca, less than 3 in Caquetá and Meta, and one or less in Guaviare, Vaupes, Amazonas, Vichada and Guainía. See [Chart 10](#).

Except the Amazon territory of Nariño, whose rural population density is 65.14 inhab./km<sup>2</sup>, all other territorial entities have less than 50 inhabitants in each kilometer square. In a range of 25 to 50 inhab./km<sup>2</sup> are Sibundoy, San Miguel, Córdoba, Valle del Guamuez, Potosí, Colon and San Sebastián.

In a range that goes from 10 to 25 inhab./km<sup>2</sup> are: Ipiales, Santiago, Puerres, Orito, Funes, Puerto Caicedo, La Montañita, Puerto Asís and Curillo. Between 1 and 10 inhab./km<sup>2</sup>: Albania, Solita, Florencia, Villagarzón, Milan, Valparaiso, San José del Fragua, San Francisco, Mocoa, El Doncello, El Paujil, Puerto Concordia, Piedmonte, San Juan de Arama, Belén de los Andequies, Puerto Rico (Caquetá), Morelia, Puerto Guzmán, Puerto Rico (Meta), Puerto Nariño, Mesetas, Vistahermosa, Leticia, Santa Rosa, La Macarena, Uribe, Cartagena del Chaira, San Vicente del Caguan, San José Guaviare and Mapiripán. With less than 1 inhab./km<sup>2</sup> appear: Mitu, Return, Leguizamo, Cacahual, La Victoria, Miraflores, Puerto Gaitán, Mapiripán, Calamar, Barranco Mina, San Felipe, Inírida, Solano, Tarapaca, Carurú, El Encanto, Cumaribo, Pacoa, Yavaraté, La Pedrera, La Chorrera, Puerto Colombia, Panamá Panamá,

Chart 11. Density of urban population, 1993 and 2005



Source: Institute Sinchi calculations. Socio-Environmental Dynamics data from the National Administrative Department of Statistics DANE. Colombia. Census 1993 and 2005 census data surface are generated by the Division of geostatistics DANE.

La Guadalupe, Puerto Santander, Papunaua, Puerto Alegre, Taraira, Puerto Arica, Miriti-Paraná and Morichal. It is observed, then, greater population density in the rural territory of the municipalities that are part of the western and northwestern Amazonia and significantly smaller populations in the northeastern and southern Amazon.

#### URBAN POPULATION DENSITY 1993 AND 2005

The density of urban population is defined as the number of inhabitants in the census area of the county seat, established by DANE in field when making the respective census. It has been calculated for each of the urban centers in the region.

In the Amazon the advancement of urban perimeters (artificial spaces) on natural spaces, means growth and progressive consolidation of human settlements with urban characteristics, which, without planned development in environmental and territorial, become basis for new advanced occupancy and collection centers extraction of forest products to the detriment of the environment to be preserved for

future and strategic ecosystems that ensure the survival of the territory (Gutiérrez, 2002) generations.

The population is expressed in terms of population and area in hectares, therefore, the urban population density is the number of urban inhabitants per hectare (Sinchi Institute, 2010).

During the period 1993-2005, the urban areas of the region identified in the census perimeters of the respective censuses increased its size 12.86% from 7,182.67 hectares in 1993 to 8106.34 hectares in 2005. This surface houses a growing population that reached a record 43 inhabitants per hectare in 1993 and 62.43 inhab./hectare in the most recent census. These values are relatively low compared with the capital that has 175 inhab./hectare. However, the trend growth of urban areas in the Amazon without proper planning indicates an urgent need that must be addressed by local and national entities, to stop the expansion of marginal and marginalized cities, which are now, develop in the Amazon.

In 1993, the departments of Caquetá and Putumayo harbored urban centers with the highest number of inhabitants per hectare. An unusual variation for the region happened in the department of Vichada in the Amazon fraction: the center of Cumaribo recorded in

2005 a density of 221 inhab./hectare. They were followed by Putumayo and Caquetá, with densities above 70 inhab./hectare above the regional average. Vaupes and Metá also increased their densities (>35 inhab./hectare), while Amazonas, Guainía and Cauca had the lowest values (>20 inhab./hectare). However, looking at the data of urban population density in 1993 and 2005, it notes that Vichada, Guaviare, Putumayo and Vaupés were departments with the largest increase, reflecting intense dynamics of population concentration in urban areas of the region. See [Chart 11](#) and [Annex 19](#).

According to DANE census data of 1993, the urban center of Puerto Guzman presented the highest value in the indicator of urban population density with 131.9 inhab./hectare, followed by Curillo with 113.1 inhab./hectare. The lowest value was Inirida with 9.9 inhab./hectare and Vistahermosa with 11.95 inhab./hectare.

With calculated indicator values we can form four groups of urban centers. The first integrated Puerto Guzmán and Curillo with densities above 110 inhab./hectare. In the second, with over 90 inhab./hectare values are Taraira, Albania and El Paujil. Meanwhile, the urban centers of Puerto Caicedo, Leguizamo, Puerto Asis, Mocoa, Valle del Guamuez, San Vicente del Caguán, Florencia, Villagarzón and San José del Fragua make up the third group, whose densities are less than 90 inhab./hectare and above 60 inhab./hectare. The fourth group density is above 30 inhab./hectare and below 60 inhab./hectare and comprises: El Doncello, Puerto Rico (Caquetá), Belén de los Andaquíes, Cartagena del Chairá, Morelia, Sibundoy, Solano, Miraflores, Puerto Concordia, Milán, Valparaíso, Calamar, El Retorno, Puerto Nariño, Mesetas, La Montañita, Santa Rosa and San Francisco. In the group with the lowest density of urban population are: Orito, Santiago, San José del Guaviare, Leticia, Mapiripán, Uribe, Puerto Rico (Meta), La Macarena, San Juan de Arama, Colón, Mitú, Vistahermosa and Inirida, with values below 30 inhab./hectare.

It is recalled that the heads of the current departmental jurisdictions lack of comprehensive data for the calculation of the indicator, as well as the municipalities of Carurú, Piedmonte and San Miguel.

With 2005 census data indicator urban population density was calculated, the results indicate that the highest concentration of urban population per hectare is located in the municipality of San Vicente del Caguán with 235.6 inhab./hectare, followed by Cumaribo with 221.65 inhab./hectare and Valle del Guamuez with 200.48 inhab./hectare. The lowest values were reported in Piedmonte 6.1 inhab./hectare and Colon with 17.4 inhab./hectare.

The results obtained allowed us to form four groups according to the value of urban population density high to low. The group with the highest density (greater than 185 inhab./hectare) is made up of urban centers: San Vicente del Caguán, Cumaribo, Valle del Guamuez and Puerto Guzman. The second group is headed by Villagarzón, followed by Mocoa, Puerto Caicedo, El Paujil, El Retorno and Puerto Concordia, whose urban population densities are less than 185 inhab./hectare and greater than 120 inhab./hectare. In the third group are: San Jose del Fragua, La Montañita, Leguizamo, Curillo, Cartagena del Chairá, Santa Rosa, Belén de los Andaquíes, Calamar, Solita, Sibundoy, Florencia, Albania, Taraira, El Doncello, San José del Guaviare, Puerto Asís and Milán, with over 60 inhab./hectare and less than 120 inhab./hectare. The fourth group with lower values of urban population density (less than 60 hab./h inhab./hectare) are: Orito, Puerto Nariño, Santiago, Puerto Rico (Caquetá), Solano, Valparaíso, Morelia, Uribe, San Francisco, Miraflores, Puerto Rico (Meta), Mitú, Mesetas, La Macarena, Carurú, Leticia, Vistahermosa, San Juan de Arama, Inirida, Mapiripán, Colón and Piedmonte.

In the 2005 census, the population of the headers of the departmental districts was counted in the population rest and, lacking such data, the indicator for those and for the head of the municipality of San Miguel was not calculated because of not having the data of the census perimeter.

The population of the Colombian Amazon region holds the national trend to locate in urban centers. Rural areas had a significant population growth, when Colombians from various parts of the country were attracted by the bonanza of illegal crops. The struggle of the armed groups for territorial control and trafficking of illegal substances left the population to drift to urban centers as only life option. The delayed care of all the effects generated by that dynamic is still pending, especially in terms of urban planning is concerned.

### Indigenous Population

The indigenous population in the Colombian Amazon region, according to DANE 2005 census was 122,186 people and it is estimated, according to the projections of the same entity, which in 2015 will reach the number 153,525 inhabitants. This population amounted in 2005 to 10.17% of the regional total and in 2015 their share will be 11.26%. From these data, it is considered that the growth of the indigenous population

remains constant and growing. It is desirable more accurate information, because the census does not discriminate if the population is located in populated areas or in scattered areas.

By the analysis of the presence of the indigenous population in each department for 2005, one can observe that in the department of Vichada the 98.18% of the population is indigenous, showing a reduction in the estimated projections for 2015 which would represent 89.81%. This situation can be explained by the intense mobility of the population; especially non-indigenous is coming to Cumaribo, while extractive activities which foster among the native inhabitants increased mobility processes in their territories.

In the Vaupes, the 46.76% of the population belonged to indigenous inhabitants in 2005 and estimates for 2015 no major changes are expected; it is estimated that this population equal to 46.88% of the total department.

In the department of Guainía, the indigenous population tends to decrease when compared with the total population of the department. In 2005, it amounted to 44.29% and it is estimated that by 2015 will drop to 43.05%. A similar situation to the one in Vichada, in this case by the dynamics that drive expectations about the exploitation of mining resources, where the indigenous population is relegated in number and increases the foreign population situation.

The department of Amazonas is the fourth of the departments of the region with the highest percentage of indigenous population in its territory and is the one with highest estimated growth by 2015. In the 2005 census its population amounted to 35.47% and in 2015 will be 40.50%, marking a growing trend in the number of indigenous people within the department.

In the territories of the departments of Guaviare, Putumayo, Nariño and Cauca inhabited by indigenous people whose population weight is between 5 and 10%. In Guaviare the indigenous population, according to the 2005 census, was equivalent to 8.78% and in 2015 will be 9.98% relative to the total departmental. In Putumayo, by 2005, the proportion of the departmental indigenous population was 6.96% and is expected to increase to 8.66% in 2015. Nariño also increase its indigenous population rising from 4.76% in 2005 to 7.07% in 2015. The increase in the proportion of indigenous people in Cauca is not expected to be very high; will be 6.92%.

The departments of Meta and Caquetá show the lowest proportional values of indigenous inhabitants. In the department of Meta, following the 2005 census, the urban population amounted to 3.47% and in 2015

is expected to be 3.38%. In the department of Caquetá, in 2005, 1.62% of its inhabitants were indigenous and in 2015 this proportion is expected to reach 1.85%.

In terms of absolute value; Amazonas and Putumayo are departments with the largest number of indigenous people, followed by Vichada and Vaupés. Guainía and Guaviare are located in a mid-range and, smaller number of indigenous inhabitants within the region, in decreasing order, is Caquetá, Nariño, Meta and Cauca.

At a municipal level, Mitú and Cumaribo are the entities that harbored the largest number of indigenous people in 2005. The municipalities Inirida, Puerto Nariño and Leticia are also highlighted.

As for the indigenous reserves, there are those of Vaupés with 17.109 inhabitants and Matavén Forest in Vichada, with 12,457, the biggest, according to the 2005 census. They are followed by: Predio Putumayo with 8,683 people, Sibundoy Valley with 5,908, the shelter of Puerto Nariño with 4,680 and Yaigojé-Rio Apaporis with 2,940 inhabitants, among the top five. See [Table 25](#), [Annex 20](#), [Map 45](#) and [Map 46](#).

The surface of the Indian reservations, including the areas of overlap with national parks and nature reserves, total an area of 262,655.36 km<sup>2</sup>, equivalent to 54.36% of the regional area. This area constitutes the largest reservoir of cultural diversity of the Amazon, home and livelihood of communities that have settled in the jungle from earlier times to the Spanish and Portuguese foreign arrival. The existence of indigenous people is on tenterhooks today, facing the increasing pressure for access to mineral resources and hydrocarbons in its territory.

### The Population Displacement in the Amazon

The trend of population growth in the region is higher in urban areas, even higher than the national trend in that area. This situation for the Colombian Amazon has its origin in the intense population movements or “forced migration” as called Sanchez (2012) in their case study for Mocoa and extracted document López (2012) for the entire Amazon region, analyzing the period 1997-2010 in terms of magnitude, intensity and population loss and gain for this cause.

According to the analysis of Lopez (2012), from the data of the Information System for the Displaced Population, the then Branch Attention to the Displaced Population of the Presidential Agency for Social Action and International Cooperation, 13.8% (491,878 people)



**Table 25.** Department Indigenous population in the Colombian Amazon region 2005-2015

DEPARTMENT	2005	2006	2007	2008	2009	2012	2015
Amazonas	24.020	24.593	25.186	25.793	26.321	28.769	30.878
Caquetá	6.802	6.839	6.984	7.131	7.359	8.019	8.826
Cauca	1.451	1.478	1.505	1.533	1.547	1.776	1.710
Guainía	15.604	16.217	16.360	16.510	16.404	17.039	17.858
Guaviare	8.386	8.932	9.189	9.450	9.750	10.543	11.086
Meta	3.429	3.502	3.576	3.652	3.733	3.917	4.127
Nariño	4.390	4.456	4.523	4.593	4.657	4.794	6.881
Putumayo	21.599	23.020	23.621	24.236	24.982	27.976	29.896
Vaupés	18.366	18.373	18.380	18.387	18.438	19.660	20.470
Vichada	18.139	18.709	19.298	19.905	19.404	20.479	21.793
<b>TOTAL GENERAL</b>	<b>122.186</b>	<b>126.119</b>	<b>128.622</b>	<b>131.190</b>	<b>132.595</b>	<b>142.972</b>	<b>153.525</b>

Source: DANE. Projections on Indigenous population in shelters. From 2005-2009. DANE, Census 2005. Census Agreement 2005 and Population Projections 2006. 2009. Population Projections in shelters. Valid to 2012. To December 30, 2011. Population Projections in shelters. Valid to 2015. To June 30, 2014.

of the displaced in Colombia between 1997 and 2010, were originated in towns in the Amazon region. The peak of greatest magnitude of displacement occurred in 2002 (with about 70,000 displaced people) probably associated with the ending of the demilitarized zone, since most of the displaced in that year came from the departments of Caquetá, Guaviare and southern Meta; the actions of paramilitary groups also is among the causes, because these organizations are credited with the highest number of displaced this year.

The amounts show that the departments of Caquetá and Putumayo, as well as the southern municipalities of Meta and Guaviare were the hardest hit by the magnitude of the event, averaging nearly 13,000 and over 10,000 displaced annually for the first two; departments with lower incidence of forced displacement are Amazonas, Guainía and Vaupés, all with an annual average of less than 300 displaced people. See the [Map 47](#).

In terms of intensity; defined as the ratio between the number of displaced people and the population size, López (2012) states that displacement has been more aggressive in the southern municipalities of Meta and Guaviare, with lower population than Caquetá and Putumayo, have had a higher proportion of its population affected by forced displacement.

Among the municipalities with the highest number of displaced (more than 10,000 people in the reporting period), a very important group of municipalities in Caquetá (Valparaiso, Curillo, La Montañita, Puerto Rico, Florencia, Cartagena del Chaira and San

Vicente del Caguán) and Putumayo (Puerto Caicedo, San Miguel, Orito, Puerto Guzmán, Valle del Guamuez Valley and Puerto Asís), accompanying San José del Guaviare and the municipalities Mapiripán, Puerto Rico and Vistahermosa in the department of Meta. Regarding the intensity, all municipalities in Caquetá, Cauca (except San Sebastian), Guaviare, southern Meta, and Middle and Lower Putumayo, are classified at high levels. See the [Map 48](#).

However, most of forced displacement has been caused by the guerrillas, altogether 290,128 people representing 59.0% of all displaced people in the region, higher value than the national average (38.5%); secondly, by paramilitaries, with 34,448 displaced people corresponding to 7.0%, less than half the displacement that have resulted in the country (15.7%); and in the third instance, by the police with 3,168 people (0.64%). The data show that the actions of the guerrillas and paramilitary groups, as well as its impact to cause displacement, has been permanent and spread throughout the region.

These amounts seem to undermine the territorial consolidation and democratic security that had been successful for the period 2007-2008: reported the region, or that these achievements mean for the population to remain calm in its territory without the pressure to leave it. The data show that are the same departments and municipalities the ones affected, and even records that local authorities that had never experienced the phenomenon, for those years they were having them. Similar situation is finding that did not

diminish the number of displaced people caused by paramilitary groups in the period 2005-2007, during which the Centauros demobilize, which together with the Peasant Self Defense Forces of Meta and Vichada are the groups who most offended in these departments (Lopez, *op. cit.*).

The Amazon region has also operated as a recipient of displacement; 286,688 people (8.0% of the displaced population) have reported as receiving municipality one of its 78 territorial entities, so that the net loss of population in the region is nearly 200,000 people (5.7% of the displaced population). See the [Map 49](#).

A first indicator that most of the population expelled from a municipality in the region “choose” as receptor another located in the same, is the result of the comparison of annual performance data displaced, expelled and received. This fact is confirmed at least for the period 2000-2010, in which the total number of displaced expelled from a municipality in the region was “received” by another municipality (between 52% in 2005 and 75% in 2010 ). Records of the first three years of the study period (1997-1999), show that, on the contrary, the vast majority of the population expelled was not recovered (70.8%, 71.2% and 53.6%, respectively). This behavior does not prevent to rate the region as net exporter, to the extent that throughout the period analyzed was always greater the number of expelled than the number of displaced received.

It is these details that explain urban growth in some of the centers of the region, since a greater extent the main headers of the departments in the north and west of the region were faced with the pressing need to accommodate a population size for which they were not fairly prepared, in many cases adding to existing difficulties of urban planning.

Caqueta is the department with largest number of displaced people received during the period (over 100,000 people), followed by Putumayo (nearly 80,000 people) and Nariño (over 40,000 people). The latter, is the only department which is recorded as a net recipient of people: gets much more population than the expelled (the difference is around 38,000 people).

At municipal level; Florencia, Pasto and Mocoa, are classified as large recipients of population; their size and characteristics of urban hierarchy surely provide security and anonymity that demand most of displaced, as well as the best set of opportunities for income generation for subsistence. These municipalities got net displaced population equivalent to 47,144, 32,100 and 16,861 people respectively.

On the other hand, all the municipalities of Guaviare, Meta and Vichada that have territory in the

region and most of the municipalities of Caqueta, Putumayo and Cauca, which are certainly those who have suffered this scourge, had net losses displaced population exceeding 2,000 people. Some municipalities, such as Curillo and Solita (Caquetá), Vistahermosa (Meta) and Puerto Guzman (Putumayo), reached net loss in an amount almost equivalent population to the one existed in 2010.

With respect to the type of mobility, data allow to ensure that most of the displaced who arrived in the territorial entities of Amazonas came from other departments (84.3%).

To Caquetá, most of the displaced (58.9%) came from other municipalities in the same department; a major fraction (20.8%) reached the headers from rural areas in the same municipality and 17.2% came from other departments.

The displaced population of the three municipalities of Cauca Amazon, came mostly from other departments (71.1%), or mobilized to headers from rural areas of the department (20.8%).

In Guainía, 50.1% of the displaced came from other departments and 34.3% were displaced movements between territorial entities of the same department.

In Meta and Guaviare, most of the displaced received, came to the municipalities from rural areas.

Most of the displaced who went to the Amazonian municipalities of Nariño came from other departments (48.8%) and other municipalities in the same department (43.1%).

To Putumayo, reached 40.9% of the displaced from other municipalities in the same department; 32% came from rural areas headers in the same municipality and 21.6% came from other departments.

In Vaupes, 46.2% of the displaced population came from the rural areas of their own municipalities and 20% came from municipalities in the same department.

Finally, the displaced population reached Cumariibo came mostly from rural areas (47.9%), another moved between different sectors of the rural area (28.1%) and another came from other departments (18.8%) (Lopez, 2012).

As noted, significant volumes of population found refuge in urban areas of the region contributing to invigorate the lives of these centers. In the next chapter, human settlements in the region, the regional urban system, the hierarchy of its centers, the trend towards concentration in urban areas and a range of services, facilities and infrastructure that is still not enough to meet a demand that is growing permanently, are analyzed.



70°15'0"W

70°14'0"W

1°16'0"N

1°16'0"N

1°15'0"N

1°15'0"N

1°14'0"N

1°14'0"N

0 155 310 620 930 1.240 Meters

MITU  
Fuente: Google Earth a través de SAS Planet

70°15'0"W

70°14'0"W





# 3. SYSTEMS OF HUMAN SETTLEMENTS AND DEVELOPMENT IN THE AMAZON REGION COLOMBIAN

This chapter is developed, given the profound ignorance of the conditions of urban architecture and urban dynamics of the network of settlements, corresponding to the continuum of social construction in this vast portion of the border area of southern Colombia operates.

The settlements system comprises the set of buildings and human implantations in a territory, from the simplest rural or forested habitat constructions spread to major cities and urban agglomerations. Productive and reproductive functions relate all settlements, a fact that gives the whole the notion of territorial system, especially with regard to a unit area which serve as connecting links or nodes (Zoido, *et al.*, 2000). According to these authors, speaking of “settlement system” achieves true sense when the reference field is regional or higher dimension.

In the case of the Colombian Amazon region, the Socio-Environmental Dynamics Group of the Sinchi Institute has documented for over fifteen years the processes of occupation, settlement and urbanization, in an exercise of identification and characterization of its settlement system. This development has led to the definition of regional and sub regional territory; the identification and characterization of the ring of settlement as historical and geographical expression, which allows us to understand the process of settlement and occupation and existing geopolitical and economic-extractive settlements.

The various forms of occupation and settlement transform the space, creating an amalgamation of territorial configurations that need to be understood. To this end we have identified types of settlements and characterized the regional urban system, through analysis of the urban hierarchy of urban centers departmental capitals, municipal and departmental jurisdictions.

The ring of settlement as a continuous and hierarchical surface on which the urban-rural phenomenon consolidates, generally, against the areas ancestrally inhabited by indigenous peoples, has a communications network that integrates all the different types of centers the market economy, which in turn, support new advanced occupation as have reported Dominguez (2001) and Gutiérrez *et al.* (2004).

Many settlements localized in the ring, exceeded the precarious conditions of the classic villages described by anthropologists, sociologists and economists in the seventies and eighties of the last century, as a result of various processes of national and international order: administrative decentralization, new legal rights to minorities and ethnic groups, the rise of mining activities, policies border integration, the rise of illicit crops and its many consequences, among others, managing to build true cities in several roads and river corridors of the Colombian Amazon, which are grouped into the types described below.

## *Types of Human Settlements in the Colombian Amazon*

The human settlement in the rainforest is defined as the installation adapted for social support, this functions as a stabilizing-destabilizing exchanges or as an instance of standardization and regulation of cycles of matter, energy and information. The settlement or human habitat is the product of the sedentary man; is the dialectical unity of relations between man and nature, determined by the fact of production and the location to carry out such material and cultural production (Salazar, *et al.* 2006a).

Human settlement is both the space required by an indigenous or mestizo group for their survival and

displacement, as the agrarian exploitation by holding settler and peasant comprising housing for the producer and his family, a village, a town, a medium or large city or a conurbation metropolis. They all are defined by the extension of a simple or intricate network of paths that, daily, people walk between their homes and workplaces.

Human settlement is the space of a nomadic or sedentary indigenous community, a farm, a village of peasants center of settlers –defined as to be in forest reserve area, in defense or in an area restricted for occupancy of non-indigenous– and in a higher order, the headers of municipalities and cities (Salazar, *op. cit.*).

From the point of view of the hegemonies of power, the system of settlements in the region includes the types that are described below.

#### CAPITAL CITIES DEPARTMENT

They are urban centers that concentrate the largest number of inhabitants, present the most important range of services and facilities within the department as well as higher administrative development and current income from the Nation. In the region they are: Florencia, San José del Guaviare, Leticia, Mocoa, Inírida and Mitú. See [Chart 12](#), [Chart 13](#), [Chart 14](#), [Chart 15](#), [Chart 16](#) and [Chart 17](#).

#### URBAN CENTERS MUNICIPAL HEADERS

They are areas of consolidation of colonization by joining oldest settlement spaces. There the population is concentrated, the range of economic, social, cultural and institutional services, equipment, and attempts of agro-industries formation and a strong dependence of the Central State. Greatly influence more distant agriculture areas, livestock and forestry predominance. Examples of this are Puerto Asís, San Vicente del Caguán and 44 more headers. On these centers there is constant pressure for access to services and possession of urban land, creating dynamic new fronts of rural-rural and rural-urban migration, since the expulsion of the population is common for economic reasons (cost, concentration and high land prices) and extra-economics (violence). Consequently, manifestations of urban marginality, ownership concentration and consolidation of the tertiary sector appear; low levels of productivity, employment and surplus production. See [Chart 18](#) and [Chart 19](#).

#### HEADERS DEPARTMENTAL DISTRICTS.

They represent the area of consolidation of the urban population predominantly indigenous population. They offer minimum social, economic and administrative services for the indigenous and settler-peasant who inhabit them. Among them they are: San Felipe, Puerto Colombia, La Pedrera, Tarapaca, La Chorrera and fifteen more. See [Chart 20](#) and [Chart 21](#).

#### POPULATED CENTERS PEASANTS AND SETTLERS

They are the named villages, headers inspections of police and headers of municipal districts, known as “temper” of the occupation and are villages with small dimensions that meet central roles for certain geographic areas. They have limited supply of social, economic and administrative services for the population. Its location area is considered transitional and intermediate between the consolidated settlement and colonization fronts; predominates extensive and in some cases small farms livestock and some agricultural activities of some commercial performance. Among them, they are: La Libertad, Remolino del Caguán, Río Negro, Cachicamo, La Tagua, Araracuara. See [Chart 22](#) and [Chart 23](#).

#### RURAL CENTERS PEASANT SETTLERS IN FOREST RESERVE AREAS AND AREAS SUBTRACTED FROM THESE

They constitute the germ of new settlements that can be consolidated, stagnate or disappear, depending on the economic dynamics of where they are, which is established between the perimeters of the municipalities and the boundary of the municipalities in the dispersed rural areas. See [Chart 24](#).

#### INDIGENOUS VILLAGES IN SHELTER CENTERS AND OUT OF THESE

They are cores where indigenous population, in process of contact, live, has chosen this form of settlement, in order to access the programs and services provided by State institutions, setting up housing centers with poor institutional infrastructure. For example, Villa Fátima, Nazareth, Atacuari, Palmeras, La Paya. See [Chart 25](#), [Chart 26](#) and [Chart 27](#).

Chart 12. Florencia, Caquetá.



Fuente: Google Earth.

Chart 13. Inírida, Guainía.



Fuente: Google Earth.



Chart 14. Leticia, Amazonas.



Fuente: Google Earth.

Chart 15. Mitú, Vaupés.



Fuente: Google Earth.

Chart 16. Mocoa, Putumayo.



Fuente: Google Earth.

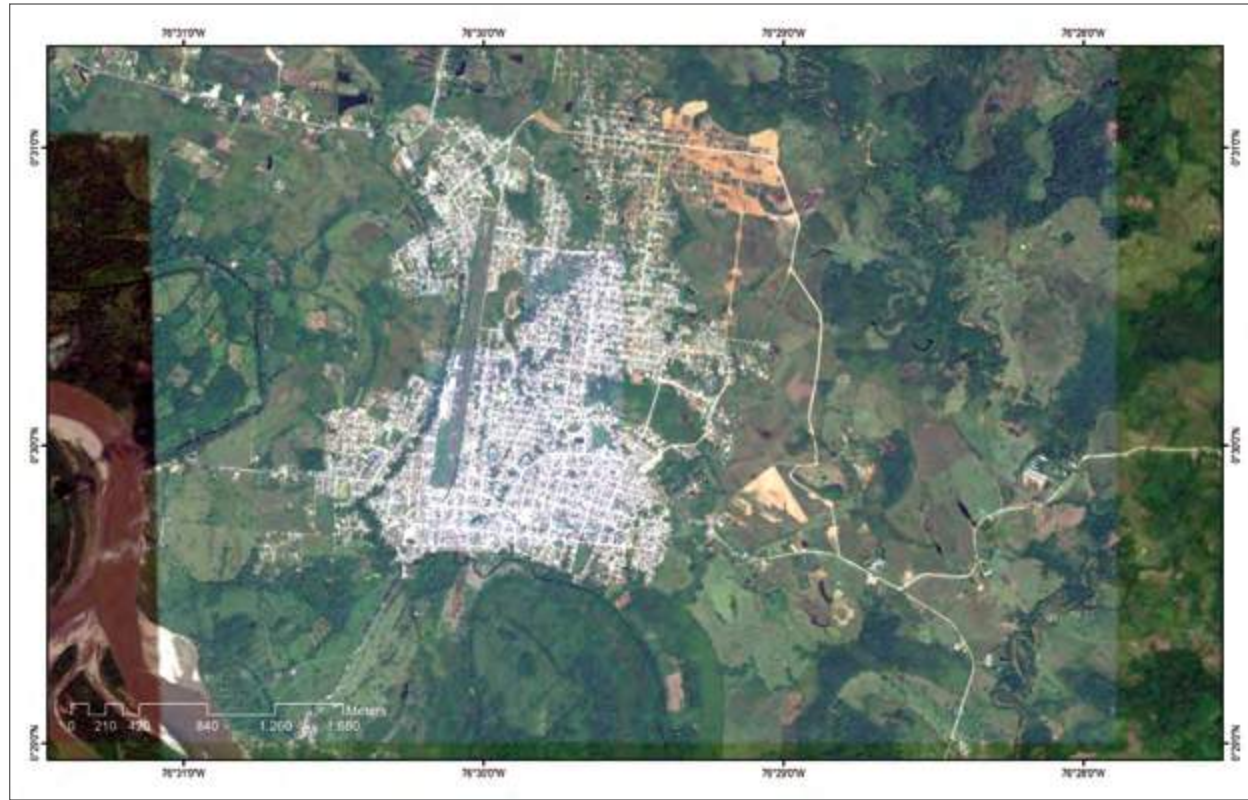
Chart 17. San José del Guaviare, Guaviare.



Fuente: Google Earth.

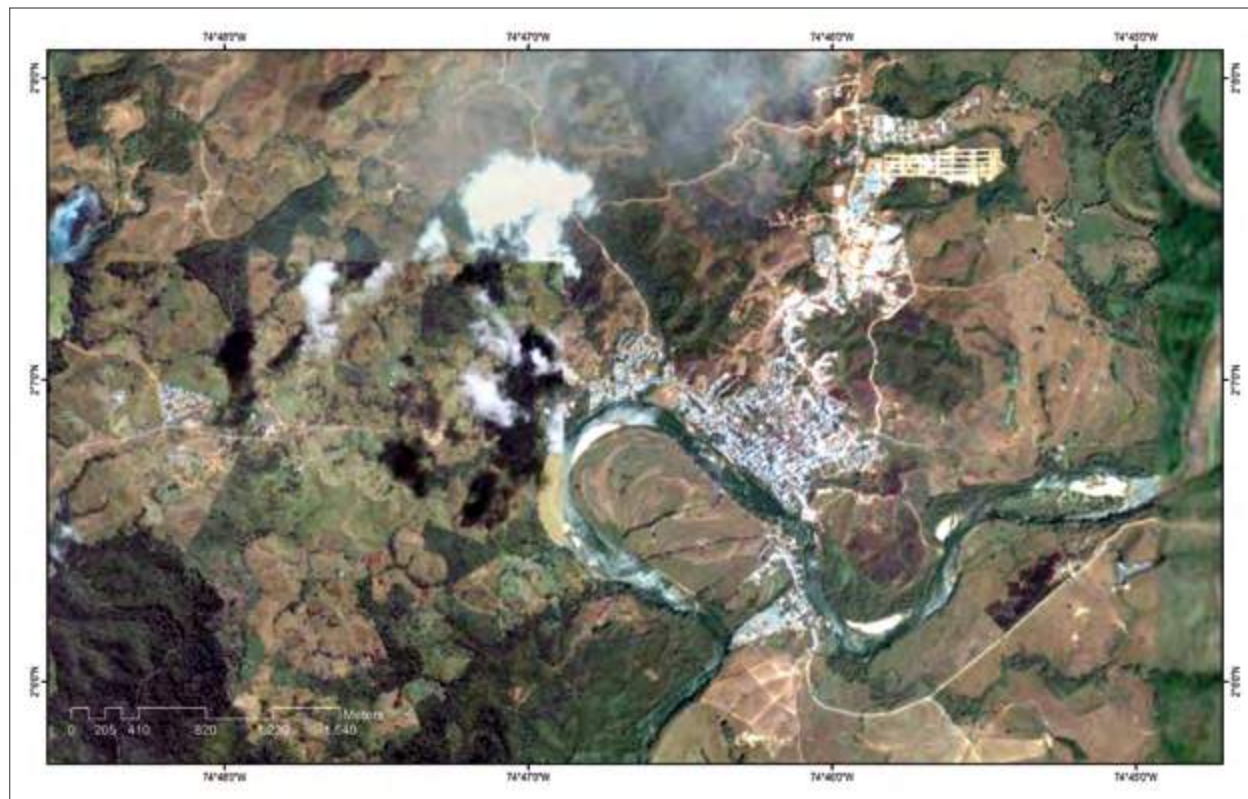


Chart 18. Puerto Asis, Putumayo.



Source: Google Earth.

Chart 19. San Vicente del Caguan, Caquetá.



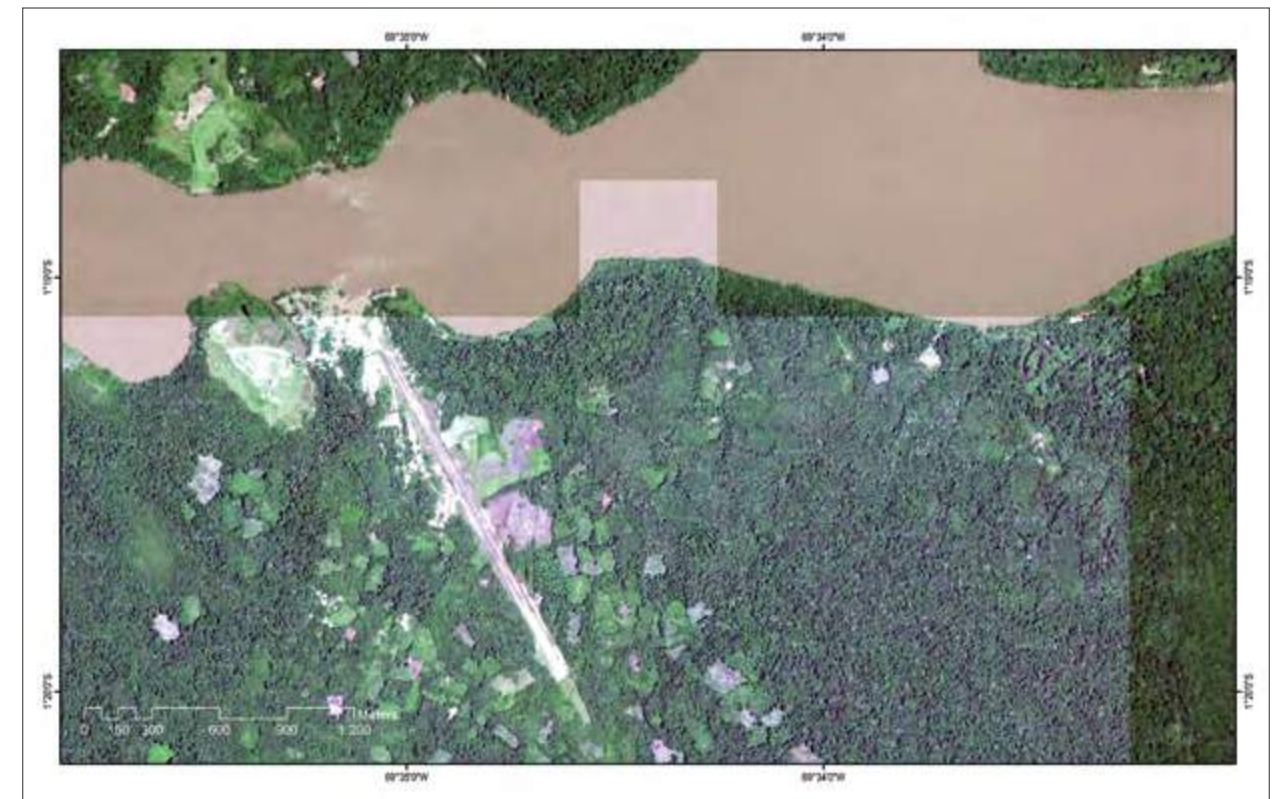
Source: Google Earth.

Chart 20. Mapiripana, Guainía.



Source: Google Earth.

Chart 21. La Pedrera, Amazonas.



Source: Google Earth.



Chart 22. La Tagua, Puerto Leguízamo, Putumayo.



Source: Google Earth.

Chart 23. La Unión Peneya, La Montañita, Caquetá.



Source: Google Earth.

Chart 24. El Vergel, peasant population center in forest reserve area, Vistahermosa, Meta.



Source: Google Earth.

Chart 25. Naranjales. Resguardo Ticuna Cocama Yagua, Puerto Nariño, Amazonas.



Source: Google Earth.



Chart 26. Community km 11, Leticia, Amazonas.



Source: Google Earth.

Chart 27. Nazareth, Leticia, Amazonas.



Source: Google Earth.

## RURAL AREAS OF FARMERS AND SETTLERS SCATTERED SETTLEMENT

It refers to rural municipalities excluding the towns. Formed by the constellation of villages and farms belonging to the municipality, they are the primary cell of the social organization of peasant rural areas. This habitat is characterized by peasant home, the dispersion of housing, building materials and its relations with the items available in the natural environment. They are also open border spaces, colonization fronts or border areas, to become sites of penetration, located on the banks of major rivers or their tributaries and on the trails and drivable roads under construction, presenting an active population movement and basically subsistence agriculture. Originate in the inequality of the structure of rural property and successive first conflict in the central areas of the country (Andean region) and then in the quite consolidated settlement areas; reproducing the pattern of exclusive rural spatial structure. Socially, these colonization fronts are driven permanently by the mass of poorer of the country or from the consolidated areas of colonization population.

This type of settlement may also be referred to as stage emerging markets. In this, connections and structure of roads are improved, as well as transport, infrastructure, security in land tenure and legal action of the institutions, resulting in improved market opportunities. Such market opportunities and better living conditions attract a second “wave” of settlers (with more capital), capable of undertaking activities that give higher returns to capital and labor, in the pioneering stage early. Those pioneer settlers who did not accumulate enough capital to meet these standards, are forced to sell the land and move to another pioneer front or to urban areas. See [Chart 28](#) and [Chart 29](#).

## INDIGENOUS TERRITORIES

They correspond to local authorities as legalized guards and reserves, as well as sacred, traditional and cultural importance territories, recognized but not legalized. Express endogenous forms of social organization and in the process of integration into society of the market economy. Its demographic base and forms of social and productive organization have endured in recent decades, a process of decay and disintegration. At present, represent a very small proportion to the total population of the region and face serious risk of

demographic and cultural extinction, because of its size, the precarious conditions of biological and social reproduction, territorial displacement resulting from the processes of colonization and occupation of their ancestral lands, the processes of acculturation of their forms of economic and social organization, depredation of natural resources and the pressure of the actors of the armed conflict, among others.

While indigenous communities are traditional occupants of the Amazon jungle regions, they have been part of the system of settlements as they have been incorporated into the commercial circuit, making use of the institutional offer of the State by way of legal recognition of territories, by the recolonizing traditional territories or occupying indigenous communities that are not in the region (the case of the Embera-Chami, arrived from Choco, the Coyaima-Natagaima, Tolima, the uitoto, Trapezium), and in general, for their struggles for social, economic and cultural perpetuation of these indigenous peoples. From establishing numerous peoples in pre-Columbian times, they have been historically supporting a process of decay and disintegration of their demographic base and its forms of social and productive organization, particularly in recent decades. See [Chart 30](#), [Chart 31](#) and [Chart 32](#).

## NOMADIC INDIGENOUS TERRITORIES

They are declared as areas where the population built temporary shelters and gets everything required environment for their livelihood. Currently, they are victims of displacement and serious challenges facing physical and cultural survival. The best known of these examples is the Nukak Maku. See [Chart 33](#).

## SETTLEMENTS PEOPLES IN ISOLATION

In the past two years, the scientific certainty of the existence of indigenous groups in isolation in the Colombian Amazon region was established. This is a decision that takes a free human group and voluntarily, to survive in accordance with traditions and customs and create a cultural identity that differs from all other human groups. This typology to all forms of inhabiting the Amazon territory is added. Indeed, and as is well documented anthropologist Roberto Franco Garcia, who died in 2014, it happened in the interfluvium of Putumayo and Caquetá, east of the Cahuarí and Bernardo rivers and both sides of Puré River, it is settled an indigenous group which has resisted contact.



Chart 28. Rural area of Miraflores, Guaviare.



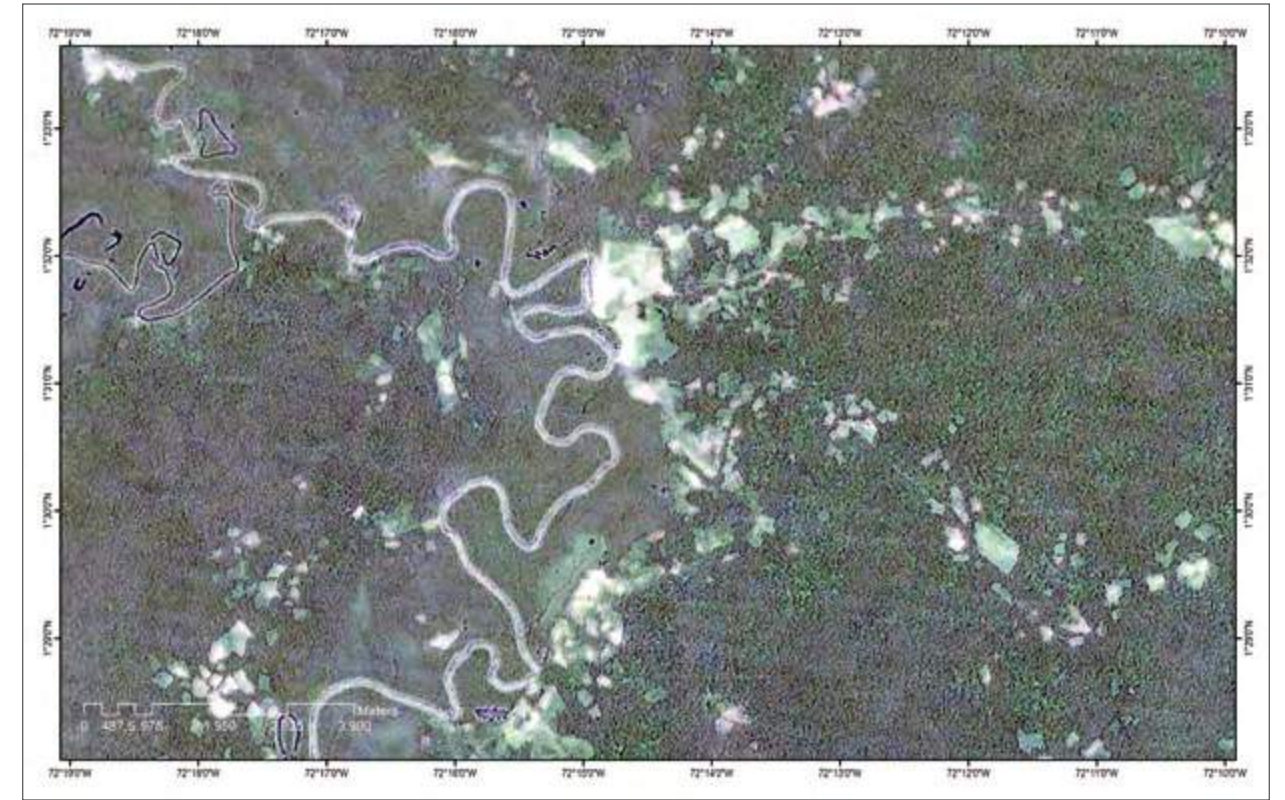
Source: Google Earth.

Chart 29. Rural area of San José del Guaviare, Guaviare.



Source: Google Earth.

Chart 30. Resguardo Barranquillita, Calamar and Miraflores, Guaviare.



Source: Google Earth.

Chart 31. Doce de Octubre, Ticuna Cocama Yagua Puerto Nariño shelter, Amazonas.



Source: Google Earth.

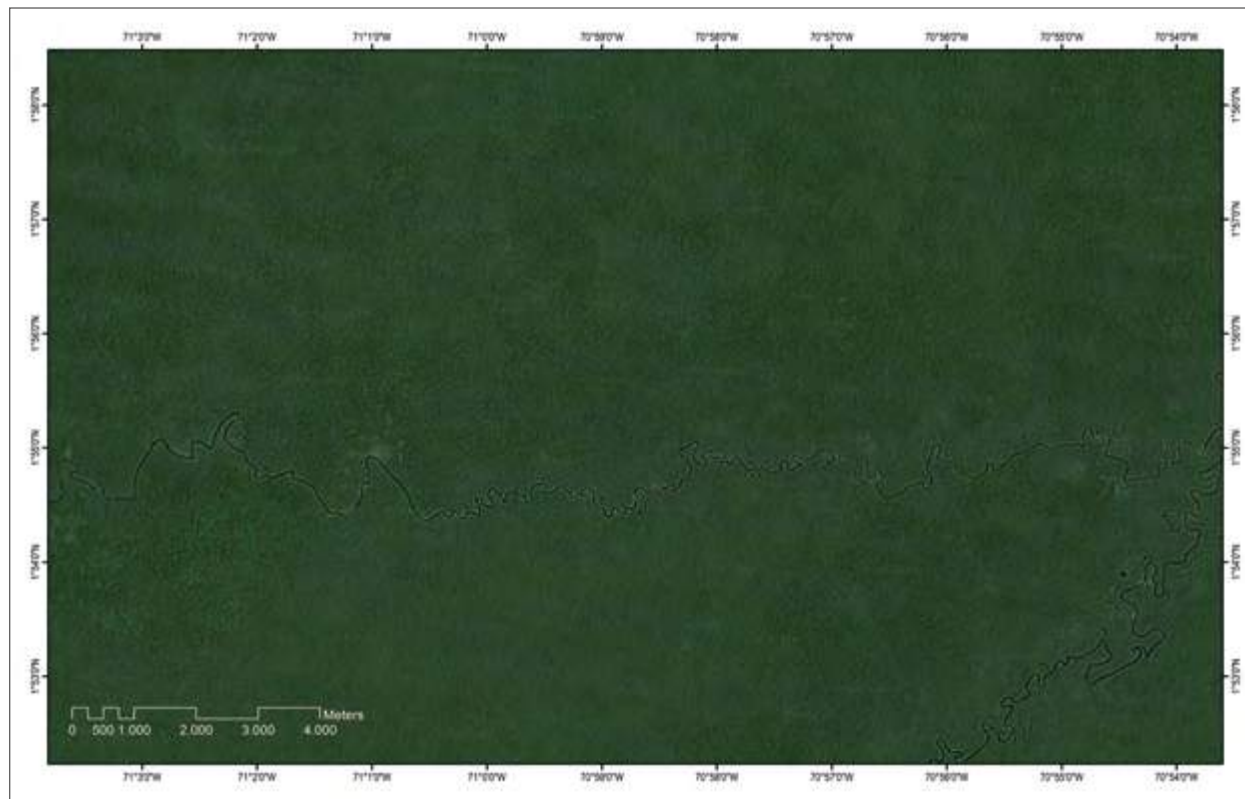


Chart 32. Resguardo Arara, Leticia, Amazonas.



Source: Google Earth.

Chart 33. Nukak Maku Shelter Sector, El Retorno, Guaviare.



Source: Google Earth.

*“In 2002 the Puré National Park River was established, with about one million hectares in the interfluvial area of Putumayo and Caquetá, with the purpose of consolidating a conservation corridor from the Amazon River to the Caquetá and mainly, protecting isolated indigenous people known locally as caraballos, called Aroje or Guama people by Mirañas Indians and referenced in the ethnographic literature as Yuri”.*

*“In South America, the continent with most isolated groups in the world, about a hundred groups would be refugees in the greatest jungle basin of all rivers, the Amazon [...] usually located on the borders of the Amazonian states, more remote sections of roads and agricultural developments [...]. In Colombia, there are serious indications of the existence still about ten or more indigenous peoples in isolation in the territory” (Franco, 2012).*

### Urban System

In this network of nodes and relationships, a series of flows between urban centers departmental capitals, municipal and jurisdictions is established, giving rise to a structure called urban system.

The urban system is a part or a subset of the system of settlements, attributed to urban characteristics, either formal or physical characteristics, or by its functionality. The idea connected to the city system exceeds the mere sum or addition of urban places and involves its unit operating in some sense. The urban system is therefore the set of corresponding settlements functions as a space understood unit. These functions attract or generate flows that exceed local administrative boundaries of each element of the system. The urban system generally follows a pattern of internal organization that structure in rank or hierarchical levels, which according to their position in the set are progressively more specialized urban functions, serving areas of influence of increasing extension (Zoido, *et al.*, *op. cit.*).

The urban system is structured by one or more urban networks and urban network hierarchy is determined according to the nature and structure of services which give rise to different steps or urban levels. The insertion of the industry in the network is a factor of demographic and economic change, which in turn transforms the tertiary hierarchies. The analysis of the urban system can be considered a form of

approach to the study of territorial organization and its activities, where cities (or urban centers) are considered as the focus of production, distribution, consumption and organization system (Ferrer, 1992).

The network elements are the urban centers and links, flows and relationships among them. Among the elements (urban centers or cities) of the urban network flows are created links and relationships of people, trade, money and information.

In the Amazonian settlement ring and in the geopolitical and economic-extractive settlement, an urbanization process is presented through which, as expressed by Castells (1978), a significantly large proportion of the population of a society is concentrated in a certain space, in which functional and socially interdependent agglomerations are formed from the internal point of view, and joint hierarchical –red urban– relationship.

The characterization of this network hierarchy allows its classification, work done by Codazzi Institute (IGAC)<sup>1</sup> for Colombian cities nationwide, considering the size of urban centers and the importance of the specialized equipment for the exercise of tertiary functions, typical of urban activity in the provision of goods and services.

The Socio environmental Dynamics Group of Sinchi Institute has conducted studies on the subject (Gutierrez Salazar and Acosta, 2004; Gutierrez, Franco and Salazar, 2006a and b) and the publication by Riaño and Salazar (2009), the first work of identification of the hierarchical structure of urban centers in the Colombian Amazon region by 2005, according to the offer of services and equipment. This allowed us to establish five categories of urban centers, marking the baseline to continue monitoring. In 2012, a second measurement of this indicator was done about urban hierarchy from data referred to 2010, thus building processes of strengthening of some centers or weakening of others.

In general terms, it is noted that the increased supply of services is concentrated in the ring

1. The levels of the centers are: national and regional metropolis, first-order subregional centers, second-order subregional centers, third-order subregional centers, main relay centers, secondary relay centers, main local centers, secondary local centers and basic urban centers. For the Amazonia classified as subregional center of second order is Florencia (Caquetá) and as subregional centers of third order: Leticia (Amazonas), Mocoa (Putumayo), San José del Guaviare (Guaviare), Mitú (Vaupés) and Inírida in Guainía.



Amazonian settlement in the western and northwestern Amazonia and decreases significantly in the northeastern and southern Amazon. Some of the urban centers in the departments of Putumayo, Caquetá and Guaviare moved up the classification of urban hierarchy, with respect to that recorded in 2005. See [Annex 21](#), [Map 50](#) and [Map 51](#).

It is relevant to both regional and departmental level, what happens in the department of Putumayo, where Puerto Asis and Mocoa consolidate their role as suppliers of services and equipment, while the corridor between these two is strengthened by the presence of Villagarzón and Orito as axes of movement and resource extraction. All this will be increased with the construction of the San Francisco-Mocoa variant and the launch of mining activities intended to develop larger scale in the near future. Monitoring this indicator urban hierarchy will determine how beneficiaries are the urban centers and population about the dynamics of this extractive economy, which by its nature leaves little in its path. It is also important to the revitalization of some of the urban centers in the departments of Caquetá, Guaviare and Meta, as seen when comparing the maps of urban hierarchy of the years 2005 and 2010.

The analysis of the urban hierarchy allows establishing new types of urban centers, depending on the range of services and facilities each one has or demands, as explained below.

#### **TYPES OF URBAN CENTERS ACCORDING TO THEIR URBAN HIERARCHY BY OFFERING SERVICES AND FACILITIES IN THE COLOMBIAN AMAZON**

Florencia is the first type and is the only urban center in its category. It has become the center with greater dynamic population, economic and offer of services and facilities. Shows unique characteristics in the region by the concentration of urban population that is occupying the territory without proper planning, making increasingly complex an urban system. This center deserves a particular study, given the complexity of the operation and status of first regional city center. The actions to reverse the disordered growing processes of this core, will serve to young urban centers that are developing in the region. It is a major challenge for planners, managers and implementers at local, regional and national level, its path lacks social, economic, environmental and urban sustainability.

The second type of urban centers is compound by the departmental capitals of San José del Guaviare, Leticia, Mocoa, Inírida and Mitú; major urban centers of economic and commercial activity of Puerto Asis and San Vicente del Caguán; and centers of Orito and Villagarzón booming for its income from oil exploitation. Each is subject to particularly interesting analysis and as a whole are characterized by the most dynamic region cores. Do not suffer from urban macrocephaly as Florence and have been securing an offer services due to the population size they have, it implies certain accessibility for its residents, without being the best or most efficient. However, the incomes that can receive, their population size still manageable, rich and highly vulnerable environmental conditions and certain installed institutional capacity, constitute the inputs to perform better interventions of urban, environmental and administrative systems that benefit its inhabitants and its natural environment.

The third type of urban centers are compound by 17 municipalities of: Cumaribo in Vichada; Calamar in Guaviare and El Retorno; Vistahermosa, Puerto Rico and Puerto Concordia in Meta; Puerto Leguizamo, Sibundoy, San Miguel and Valle del Guamuez in Putumayo; and Curillo, Belén de los Andaquíes, San José del Fragua, El Doncello, El Paujil, Cartagena del Chaira and Puerto Rico in Caquetá. In this group of municipalities the supply of services and facilities has improved in relation to that found in 2005. Most of these urban centers emerged in the process of colonization that has lived the region. From small retailer centers and places of passage, today they have a projection of urban life tending to stabilize. This condition also carries the legacy of unresolved problems existing in Andean urban centers; however, the potential of these places lies precisely in their small population size and urban land area. Successful interventions in urbanism and planning could ensure better quality life to these embryos of city.

The fourth type of centers are compound by 23 municipal headers: Miraflores in Guaviare; Puerto Nariño Amazonas; Piedmonte and Santa Rosa in Cauca; Carurú and Taraira in Vaupes; La Macarena, Mapiripán, Mesetas, San Juan de Arama and Uribe in Meta; Colón, Puerto Caicedo, Puerto Guzman, San Francisco and Santiago in Putumayo; and Albania, La Montañita, Milán, Morelia, Solano, Solita and Valparaiso in Caqueta. Some of these urban centers are even questioned about its viability as municipalities, as in the case of Miraflores, Carurú and Taraira. They have functioned as centers of services generated by extractive economies which when disappear weaken the already

precarious centers. It is not the case of Puerto Nariño, in Amazonas, which could well establish itself as municipal header of the first indigenous territorial entity –ITE– the department. With some planning conditions better adapted to the Amazonian environment has great lessons learned and much to teach to the new born urban centers. The urban centers of Putumayo and Caquetá follow a path of urban consolidation in precarious conditions. A common feature in all these places is their environmental and landscape potential; intervene there is a good challenge to face better strategies for adaptation to the environment, with the least possible impact, creating more balanced and less entropy relationships.

In the urban centers of the fifth type are the headers of the departmental districts of Amazonas, Vaupés and Guainía. Twenty population centers and services where predominant population is indigenous. They can become, like Puerto Nariño, in the nodes of the future ITE, perhaps with a more flattering destiny than the ambitious and predatory mining projects. Intervention in these places requires active and committed leadership participation and indigenous authorities, as well as the coordination between the national, regional and local government for construction of viable consensus for generating sustainable habitats in applied terms, beyond of speeches about what should it be. It is about creating options that promote better or good living, not just “survive” to the communities that have ancestrally occupied this territory, and those found in these lands a new home. Not predatory options that not swell foreign capital leaving people and lands devastated, since no management plan, mitigation or compensation can reverse or balance the damage that mining and oil exploitation brings in to these highly vulnerable areas in cultural and environmental terms.

#### *Concentration of Population in Urban Areas (Pinchemel Index)*

As it has seen, the tendency of the population of the Amazon region is to be located in urban areas. Cities are centers of social and political life where not only wealth but knowledge, skills and works (works of art and monuments) accumulate. The city itself is work, and this feature contrasts with the irreversible orientation to money, trade, exchange and products (Lefebvre, 1969).

The city allows the concentration of the means of production (inputs, raw materials, labor, on a limited space). For this author urban is:

*“... A mental and social form, that of simultaneity, of the conjunction of convergence, the meeting (or even better, meetings). It is a quality that comes from the quantities (space, objects, products). It is a difference, or better, a set of differences. Urban contains the sense of industrial production, in the same way that ownership has the sense of technical domination over nature, which without that verges on the absurd. It is a field of relationships that particularly includes the relation of time (or times: cyclical rhythms and linear durations)” (Lefebvre, 1969).*

However, the city in Colombia and the Colombian Amazon has not been gestated from industrialization, because as explained by Sanchez (2012)

*“[...] the processes of settlement and territorial organization of the country have been historically linked to social conflicts over resources and territory, where violence has played a leading role. Conflicts have continuously caused migration flows, which have repeatedly nurtured Colombian urban formations. This phenomenon has been present in the most important periods of the spatial formation of the country, from the sixteenth to the twentieth century” (Sánchez, 2012: p.44).*

The demands of international markets produced “shooting bonanzas” products such as bananas, sugar, snuff, coffee and ivory palm on the Caribbean coast, the Pacific and the hinterland. In the Colombian Amazon the foreign interest had focused on mining until the eighteenth century and then changed to quinine and leather in the last third of the nineteenth century. Such bonanzas generated the nucleation of the population in what would be the germ of future Colombian cities. These changes thus had the same relationship with social factors, linked to the conflict of land ownership around the phenomenon known as agrarian colonization, due to the unbalanced relationship between land and demography.

The process of formation of urban centers in the Amazon has deep roots in violence and dispossession, encouraging the emergence of marginalization, segregation and fragmentation of urban reality. The Colombian state against this spatial expression has not had a response that seeks to mitigate or offset them and their absence perpetuates social problems and conflicts that have not been resolved.

As stated Bertha Becker, the Amazon “has long being an urban jungle, not only with respect to the number of inhabitants in cities but also in terms of the spread

of urban ideology.” The importance of this recognition is to “identify the urban Amazon to formulate and implement public policies and regional planning.” Similarly, explains that “studies on city-forest relations and the role of the city in the Amazon are extremely important. The image of the city as an expression of deforestation and environmental destruction could be replaced by the idea that it is an important point for the protection of the forest, for example, with a market for green products” (Becker, 1997).

Often, “city” and “urban” are terms used interchangeably and there is no international agreement on its definition. Most governments agree that settlements with 2,000 or more inhabitants are urban, but some consider smaller settlements are also urban, with some restrictions. However, few consider a small urban center from 1000 to 2000 as city dwellers (Hinrichsen, D., et al. 2002). That is, the term “urban” can refer to the population settlements of any size and according to these authors, “the establishment of statistics of urbanization, therefore, depend to some extent on how countries define the urban settlements.”<sup>2</sup>

Thus in Colombia, to the census of 1993 small urban centers, such as the jurisdictional headers, were counted as “urban”; however, in the last census (2005) that population was incorporated into the called “rural rest” without further explanation and not because they have lost their “urban” characteristics. On the contrary, despite their small size, these nodes of continued population growth, are expressing their urban existence: unfortunately the “urban peripheries”, where lack of planning and inadequate utility systems is what characterized them.

The urbanization process can be measured by the proliferation of housing estates<sup>3</sup> and its size increasing, for which it goes to index Pinchemel which measures the concentration of population in urban

areas, in relation to a larger center within the same territory, in this case the Colombian Amazon region. This indicator is relevant because it combines two categories of data: the relationship between rural and urban, and the relative weight of its urban population in the region’s urban population. The resulting figures are a comparative value between the urban centers of a certain territorial entity, defined this by the presence of a big city; Florencia in this case. When calculating the degree of urbanization it can be known how is physically growing the urban centers of a region, department or municipality comparatively (Sinchi Institute, 2010b).

When calculating the index for the years 1985, 1993, 2005 and 2015, the results in **Table 26** and **Chart 34** are obtained.

In 1985 the index values of urbanization increased significantly, marking the trend towards concentration in urban areas; the region grew as well as the departments of Caquetá and Amazon, but none did as much as Florencia did whose index marked 107.30 well above the regional urban growth. Guaviare and Vaupés grew but discreetly, while Putumayo, Meta and Guainía decreased the concentration of population in urban areas. Cauca remained similar to 1973 values.

The Pinchemel index values in the year 1993, showed a slight increase at the regional level: 63.36, reflecting the population behavior in the departments of Putumayo, Amazonas, Guaviare, Vaupes, Guainia and Cauca. At the departmental level, it decreased Florencia and Caquetá few points remaining in the index value 107,18. This means that the urban concentration of the population remained similar to the 1985 census conditions.

In 2005 the index for the region grew reaching the value of 85.14, corresponding to the increase the departments of Caqueta, Putumayo and Guaviare had with high and average values, and Meta, Vaupes, Vichada and Cauca with low values, but higher compared to 1993, while Vaupes grew. Florencia obtained an index of 133.90, increasing significantly relative to its value in 1993, well above the regional value.

According to 2015 projections, Florencia has the highest index value Pinchemel (169, 49), which means that population continues to concentrate in urban areas, well above the regional average. This header maintains since 1985 the highest rates of urbanization, highlighting the phenomenon of urban macrocephaly, requiring urgent action planning and territorial and urban planning. Departments, also, recorded more population in their headers which confirms

2. In UN World Urbanization Prospects, 1996 revision, for example, 46% of the countries represented are defined as “urban” based on administrative criteria, 22% use population size and sometimes Population density, 17% used other criteria, 10% had no definition, and 4% of countries were defined as entirely urban or entirely rural. In the various reviews of World Urbanization Prospects, their population reports indicate that UN-estimated trends in urbanization are based on how each country defines “urban” and “rural” (UN, 1998) By Hinrichsen, D., Salem, R. and Blackburn, R., 2002.

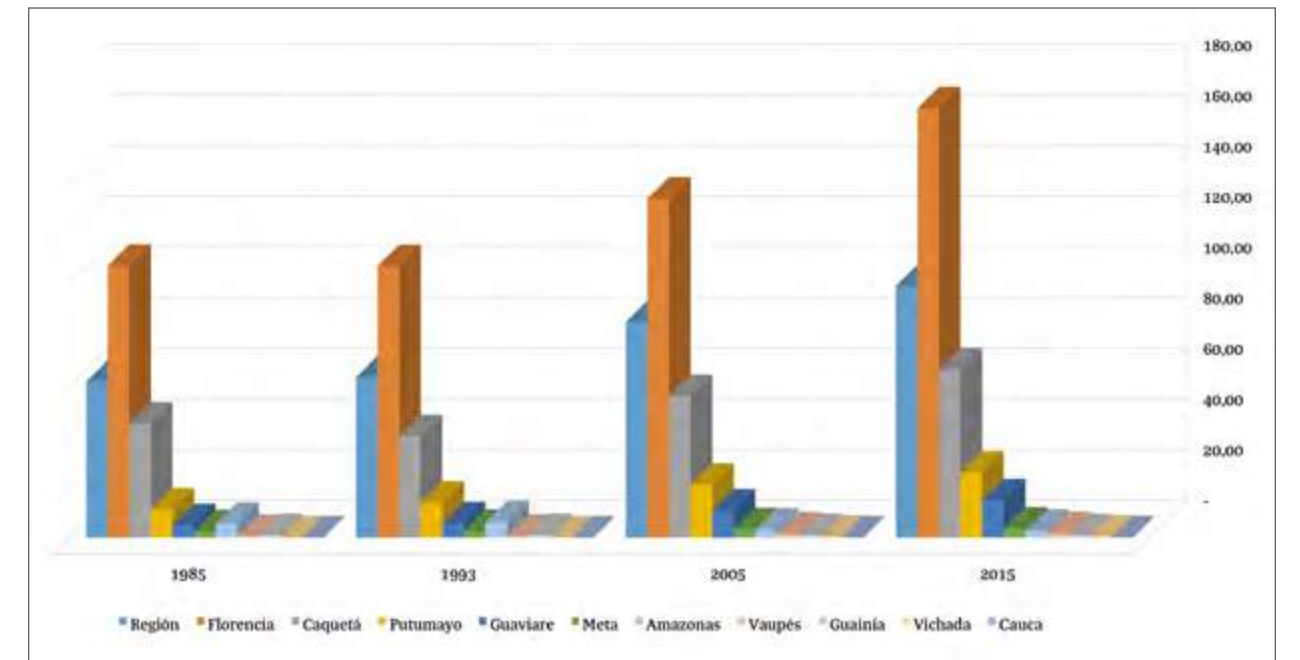
3. According to the DANE Census, in 1985 there were 45 urban centers in the region and in the 2005 census there were 70 of them considering the regionalization proposed by the Sinchi Institute.

**Table 26.** Index Pinchemel for the Amazon region, the departments and the municipality of Florencia from 1985 to 2015

TERRITORIAL ENTITY	1985	1993	2005	2015
Florencia	107,30	107,18	133,90	169,49
Región	61,68	63,36	85,14	99,30
Caquetá	44,97	40,07	55,91	66,50
Putumayo	11,08	13,81	20,82	25,65
Guaviare	4,84	5,58	10,70	14,75
Meta	2,45	2,61	3,26	3,53
Amazonas	5,42	6,05	3,09	2,69
Vaupés	0,57	0,64	1,50	1,69
Guainía	0,92	1,04	0,94	0,89
Vichada	0,03	0,03	0,26	0,43
Cauca	0,03	0,02	0,06	0,07

Source: Socio-Environmental Dynamics Sinchi Institute. Calculations made from the 1985-2005 population estimates and population projections 2005-2020, national total area to June 30 of each year.

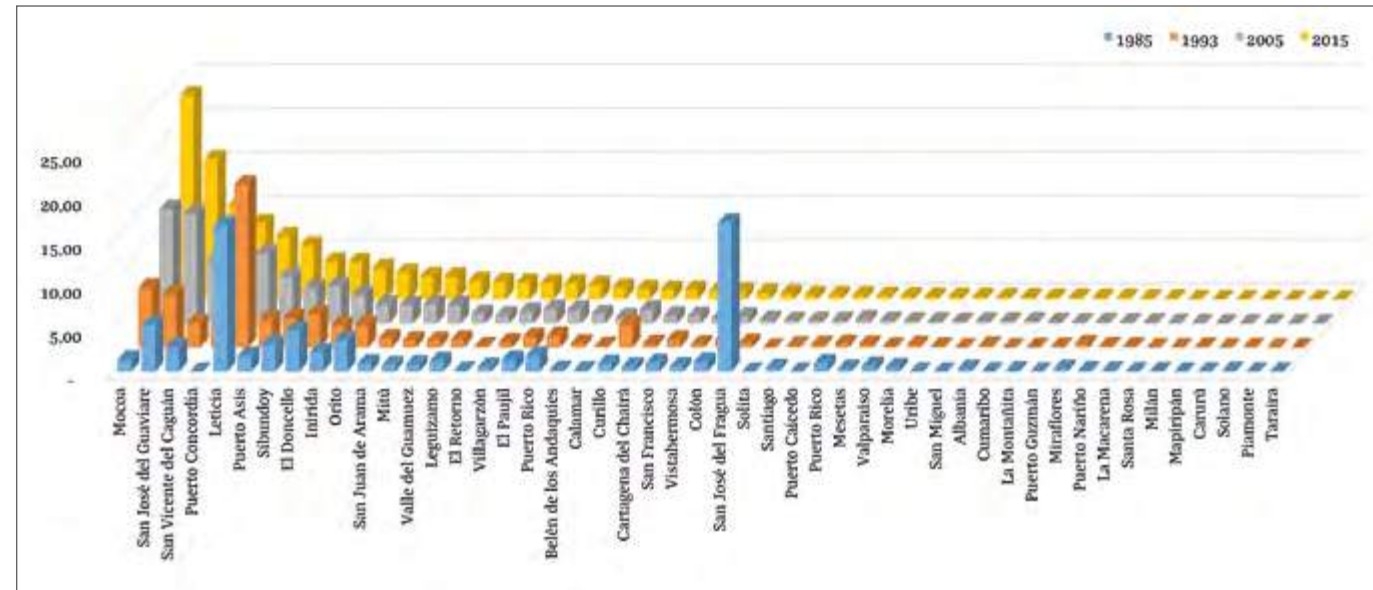
**Chart 34.** Pinchemel Index in the Colombian Amazonic Region, Departments and Florencia 1985-2015.



Source: Socio-Environmental Dynamics Sinchi Institute. Calculations made from the 1985-2005 population estimates and population projections 2005-2020, national total area to June 30 of each year.



Chart 35. Index Pinchemel in the Colombian Amazon region and municipalities excluding Florence, 1985-2015



Source: Socio-Environmental Dynamics Sinchi Institute. Calculations made from the 1985-2005 population estimates and population projections 2005-2020, national total area to June 30 of each year.

the tendency to have more urban dwellers in the Colombian Amazon. The indicator shows the decrease in the concentration of the population in Amazonas and Guainía, which is supported by the increase in rural population, as in the municipalities of Leticia and Puerto Nariño.<sup>4</sup>

Mocoa had a value of low degree of urbanization in 1985, but from 1993 to 2015 its population is predominantly urban, phenomenon due to being displaced population receiving center, and numbers goes from 1.39 in 1985 to 23.31 in 2015.

San José del Guaviare in 1985 had an index of 5.32, 6.09 recorded in 1993, then in 2005 precipitously marked 12.55 and in 2015 is estimated at 16.04. San Vicente del Caguán also increases its rate rising from 2.78 in 1985 to 10.78 in 2015. Puerto Concordia marks high population concentration values in its header with 8.74 in 2015.

The case Leticia calls attention; in 1985 it showed high levels of concentration of population in urban areas and maintains a downward trend. This can be explained by the growth in rural areas, which would be reflecting the increase and strengthening

of the indigenous population located outside the departmental city center.

Puerto Asís, meanwhile, has maintained an increasing rate since 1985 when the ratio was 1.83 and 6.21 in 2015.

Sibundoy, El Doncello, Inírida, Orito, San Juan de Arama, Mitú, Guamuez Valley and Puerto Leguizamo have kept increasing values over the 30 years analyzed, with less than five values; however, some of them have presented deconcentration as in the case of Orito, Valle del Guamuez and El Doncello in 1993. This reflects the high mobility experienced by the population in periods of great social conflict.

Other municipalities reflect relatively low values for this indicator, which can be read as predominance of its population in rural areas. See Annex 22 and Chart 35.

Against the trend of concentration of population in urban areas, it is pertinent to see the conditions of supply of services for constantly growing demands.

### Utilities in the Colombian Amazon

The right to the city is the possibility of every citizen to enjoy the benefits offered in urban areas such as job opportunities, better access to education and health and access to decent housing that allows you to enjoy such benefits. However, the urban centers of

4. It should be noted that in the future it will be very convenient to have the population data broken down by class in the entire territory of Amazonas, Vaupés and Guainía.

the region lack these basic features and informality builds cities in the Amazon.

Cities anywhere cause environmental problems and the Amazon region is no exception. There the major urban environmental problems include inadequate housing and basic sanitation, along with their location in areas of risk, pollution of air, water and soil, and no design of planned cities. The cities in the Amazon are characterized by the proliferation of squatter settlements; the establishments of parts for irregular and clandestine urbanize way, the occupation of public and private land, housing solutions that are beyond the reach of low-income groups in the region. Inadequate housing conditions due to poverty and also because of temporary residents who come to urban areas, with no certainty of having a long-term settlement to become a formal owner.

### WATER, SEWAGE, ELECTRICITY, TELEPHONE

For 2005, the DANE Census collected information regarding the availability of utilities (water, sewer, electricity, telephone) in the territorial entities of the region, both in urban and rural areas. The data obtained provide quantitative information of interest, but lack qualitative information indicating the conditions of service delivery hours in the case of water supply or electricity, water drinkable conditions, disposal of sewage, etc.

Looking at the data in Annex 23, according to the Census DANE 2005 in the urban centers of the Amazon region 79.75% of the population has availability of water supply, while in rural areas only 15.81% accessing the service. For sewerage at the regional level, the availability is 76.99% in urban areas and 7.9% in rural areas.

In much of the urban centers drinking water is obtained from artesian wells, which drinkable is variable characteristics and receives no treatment, nor with many of the municipal aqueducts. While there have been efforts to improve service in recent years, they are still insufficient. Sewerage networks in some municipalities are outdated and no pretreatment is performed before discharge to water bodies, and in rural areas the predominant use of sanitary pit to remove excreta.

As for electricity, service availability reports the 94.90% of urban centers and 29.69% in rural areas. The Census does not provide information on the type of system they belong to the local authorities, as the western Amazon and northwest are linked mostly to the national grid, while a smaller proportion of this

and all the northeastern Amazon and south depend of subsidies granted by the Institute of Planning and Promotion Solutions –IPSE–. This means very significant differences in daily hours of service, which in the first case can be 24 hours and the second, less than 6.

As telephone service, it has been low and keeps at 31.16% availability in urban areas and 1.54% in rural areas.

### HOUSING IN URBAN AREAS

Various theoretical orientations of urbanism point out that “urban settlements of low density favor dynamic tending to lower social cohesion, such as lack of diversity, social segregation, insecurity and also cause the increase of the provision of infrastructure, equipment and services. On the environmental side they are associated with an increased consumption of natural resources in different areas. The low-density residential patterns lead to higher consumption of soil, thus increasing the waterproofing of the territory, and do so by disjointed patterns, thus increasing territorial fragmentation. It also carries a higher consumption of energy and water, both for construction and for the occupation of housing and greater reliance on private vehicle” (Ecurbano, 2012).

However, it has not been determined for the Colombian Amazon region which would be a density value suitable housing conditions of the humid tropics and local culture.

A preliminary approach requires establishing the actual density or, failing that, the most recent data from the census perimeters rose in 1993 and 2005 for each of the census and the number of homes reported by them. Housing density in an area is related to the model of territorial occupation and building types, whether concentration or dispersion. The density itself is not a determining factor of it, just aware of the fact; it comes in the form of the urban fabric itself.

Urban centers departmental capitals, municipal and departmental jurisdictions added 70 in the region. The data listed below are limited by the results of the 1993 and 2005 censuses themselves, which present information gaps in some of them.

In 1993 the urban centers of Puerto Guzman, Curillo and El Paujil reported higher densities housing in the respective municipal capitals. The lowest values were found in Inírida, Mitú and Colón. The maximum density value was of 23.39 housing/hectare (Puerto Guzman) and the minimum of 2.38 housing/hectare (Inírida).

With higher densities of 20 dwellings/hectare were the municipalities of Puerto Guzman and Curillo.

Higher densities 15 households/hectare and less than 20 homes/hectare were in El Paujil, Albania, Puerto Caicedo and Puerto Asis. Follows a group of urban centers with greater densities than 10 home/hectare and less than 15 homes/hectare consisting of: Puerto Leguizamo, Mocoa, San Jose del Fragua, Villagarzón, San Vicente del Caguan, Taraira, Florencia, Valle del Guamuez, The Doncello, Morelia, Sibundoy, Belén de Andaquíes and Cartagena del Chaira. Finally, a group composed of urban centers: Puerto Rico (Caquetá), Mesetas, Milán, Valparaiso, Squid, Solano, Mapiripán, Santiago, La Montanita, San Francisco, Miraflores, Puerto Concordia, El Retorno, Uribe, Puerto Nariño, Orito, Puerto Rico (Meta), San Juan de Arama, San José del Guaviare, Leticia, Vistahermosa, Cumaribo, La Macarena, Colón, Mitú and Inírida, was an indicator of less than 10 dwellings/hectare.

With data from the 2005 Census housing density in urban centers in the region, showing significant growth in the indicator value was calculated. In 1993, the minimum value was 2.38 housing/ha and maximum of 23.39 housing/ha; in 2005 the maximum value was 44,975 housing/ha and less than 1.5 dwellings/ha reported by Piedmont, municipality created at a later date to 1993. It can be said that housing density in urban centers in the region he doubled between 1993 and 2005.

The center of La Hormiga in the Valley of Guamuez, had the highest housing density followed by Cumaribo and San Vicente del Caguán, all with higher densities to 40 homes/hectare. With densities above 20 and less than 40 dwellings/hectare are urban centers: Mocoa, Puerto Guzmán, Villagarzón, El Paujil, Puerto Caicedo, San José del Fragua, Taraira, Curillo, Puerto Leguizamo, Cartagena del Chaira and Solita. Integrated by urban centers Group: Puerto Concordia, Calamar, Sibundoy, La Montañita, Albania, El Doncello, Puerto Asís, Florencia, Belén de Andaquíes, Solano and Santa Rosa, recorded over 15 densities and under 20 housing/hectare. Urban centers with lower densities to 15 homes/hectare were: San José del Guaviare, Orito, Puerto Rico (Caquetá), Valparaiso, Puerto Nariño, Morelia, Milán, San Francisco, Santiago, Mesetas, El Retorno, Miraflores, Puerto Rico (Meta), Uribe, La

Macarena, Vistahermosa, San Juan de Arama, Mitú, Inírida, Carurú, Leticia, Colón and Piedemonte.

The analysis of data density housing of the two censuses (1993 and 2005), identifies the major growth center of Cumaribo, which expanded 12 times the initial density. Very close to triple the value of 1993, were Guamuez Valley (La Hormiga), San Vicente del Caguan, Inírida, San José del Guaviare, Puerto Concordia, Villagarzon, and Mocoa Mitú. They doubled the density of housing urban centers: La Montañita, Calamar, Cartagena del Chaira, Orito, San José del Fragua, La Macarena, Taraira, Puerto Nariño, Vistahermosa, Puerto Caicedo and Puerto Leguizamo. Other urban centers increased only slightly less than 10% housing density (El Paujil, Puerto Guzmán, Belén de Andaquíes, Puerto Rico (Meta), Colón, San Francisco, El Retorno, Valparaiso, Santiago, El Doncello, Miraflores, Puerto Rico (Caquetá), San Juan de Arama, Leticia, Milán, Florence, Uribe, Curillo, Mesetas, Morelia, Puerto Asís and Albania).

The departmental head more increased housing density was Inírida, followed by San José del Guaviare, Mitú and Mocoa. In Putumayo and Caquetá however, were urban centers of a lower order (La Hormiga and San Vicente del Caguan) the fastest growing; probably they absorbed a demand that did not offer in the respective capitals and the influx of displaced people by causes of armed conflict. In terms of absolute value, along with Cumaribo were the centers where the highest value of the indicator was recorded.

At this point one wonders what kind of growth is occurring in these urban centers, whether urban planning plays a role or is constructed in the informal—being the latter most likely—, which lost a valuable opportunity to think and execute solutions appropriate housing and urban development for humid tropical conditions. **Annex 23.**

Given the increasing trend towards urbanization in Colombia's Amazon region, expressed in the concentration of population in urban areas and the significant increase in the number of homes, there is an urgent need to address these urban centers with planned interventions of development, which until the time is characterized by informality and improvisation.

Special attention demand urban centers of San Vicente del Caguan, Cumaribo, Valle del Guamuez, Puerto Guzman and Mocoa. Housing demand of its growing population requires a revision of the conditions that are considering new developments, the type of solutions that are being provided and those required in the future.

We cannot lose sight to Villagarzón, Puerto Caicedo, El Paujil, El Retorno, San Jose del Fragua, Taraira,

Curillo and Puerto Leguizamo; some by their status of extractive settlement or being relay centers are demanding housing solutions, which have to be thought in terms of technical conditions and environmental comfort required by their particular location in the Amazonian environment.

Other urban centers also require interventions that enable them to plan their development and have specific problems. For example, in Leticia, with low values presented by the indicator housing, one might think that there is no supply problems, however, this does not account for other situations such as the land where it is feasible that the city grows up concentrated in the hands of a few owners who are unwilling to allocate them for purposes other than the current: the case of the lands of the National Armed strangling the growth of the city.

Therefore, it is urgent to create centers of thought and planning of urban development in the Amazon environment, an initiative that has already been contemplated by some regional research institutions. Task that cannot be undertaken alone and needs the involvement of all local and national actors, in addition to its commitment to an Amazonian urban future planned in harmony and consistency with the environment where current urban centers, future “Amazonian cities” are implanted.

### Networks and Infrastructure

The analysis of the regional road network is critical to understanding the links between geoeconomic spaces between these and urban centers and urban centers to each other. The level of cohesion and organization of space depends largely on the level of development of road networks and transport.

One of the main challenges of Colombian mining sector is to mobilize the current and future production of different minerals; before a demand like this, the country does not have the required in terms of roads, railways, ports and navigability of the rivers, as is clear from the document prepared by Incoplan (2010) infrastructure<sup>6</sup>.

In the Amazon, accessibility and mobility ancestrally have been given by river means recapturing unusual interest as part of a binding network between America and Asia, with immense economic interest globally and poor forecasting of the impacts that this will bring about the Amazon forest at the local level. In the Colombian Amazon region the current shortfall in supply infrastructure is even more precarious than national, because historically remained isolated and cut off from the rest of the country. But, it is on its territory which is planned to unblock decades of backwardness of regional and national connectivity, not so much because it is thought to integrate the region to national development, but addressing global agreements to connect the two oceans, such as Integration Initiative South American Regional Infrastructure –IRISA–.

Below, a picture of the networks by land, river and air communication in the region and a review of supply and consumption of electricity are exposed.

### GROUND ROAD NETWORK

The region has very low road densities, due to the extensive territory and historical isolation in which it lived. The tertiary roads open permanently, secondary use is consolidated and regional importance and primaries begin to be considered for its strategic value for national and global connectedness. However, the actions taken are still insufficient as current conditions do not meet the required minimum and common denominator remains the plight of accessibility.

When making the sum of the main, secondary and tertiary roads in the departments of Amazon piedemonte, Caquetá is the one that has the highest road extension with 12,995 km. Putumayo, Meta and Guaviare quantifies between 3,000 km and 4,000 km of roads. In Vichada and Guainía roads they have less than 700 km extension. Territorial Nariño and Cauca fractions harbor routes with less than 350 km extension. 136 km in Vaupes and Amazonas were counted, 96 km. The presence of a growing road network in the region realizes the process of occupation that has been happening for years ago, especially in the western and northwestern Amazonia. However, the condition of the road network is generally very precarious.

Road density (km/km<sup>2</sup>) department described in **Annex 25**, have the highest values in Putumayo (0.16 km/km<sup>2</sup>), Caquetá (0.14 km/km<sup>2</sup>), Meta (0.12 km/km<sup>2</sup>) and Nariño (0.11 km/km<sup>2</sup>). In other departments values are less than 0.10 km/km<sup>2</sup>. See also **Map 52**.

5. In 2013 El Tiempo newspaper reported that 2'017,230 homes were registered in the capital of the country in an area of 41,388 hectares, which has an estimated density of 48.7 homes/he. This reference gives an idea of the intense process of densification in some of the urban centers of the region.

6. In order to identify the infrastructure needs, the Ministry of Mines and Energy, through a public tender, contracted INCOPLAN SA, to prepare the sectorial technical study called “Multimodal Transport Infrastructure and Integrated Logistics for the Development of the Mining Industry with an emphasis on ports”.



## RIVER NAVIGATION NETWORK

The waterways were the basis for the development of civilization. For the original inhabitants of the Amazon region has been the quintessential route used for communication and mobilization. However, there occurs the same as in the rest of the country is not sufficiently exploited its potential. Just beginning to be studied the navigability of the Putumayo, Caquetá and Meta rivers due to the interest for international investment in agribusiness and oil exploitation especially in the high plains, as highlighted by the special report of the magazine *Semana* (2013). According to the report, it requires an official body to regulate, plan, execute and monitor river, coastal and ocean works in the country. River navigation and water transport have a state of obsolescence due to lack of actual port authority and executive and at the Amazon happens the same, despite an important dynamic in the flow of cargo, passengers and vessels as indicated in [Table 27](#) and [Map 53](#).

In 2012, there moved through the country's waterways 4.8 million tons of cargo and 7 million passengers, while in 2011 in the Amazon cargo transported 259,497 tons and 295,372 passengers.

## AIR NETWORK

In the Colombian Amazon region there are numerous airfields and some authorized by the Civil Aviation airports. In 2010, the only airport with 4C category corresponds to Tres Esquinas (Caquetá), administered by the Colombian Air Force. With categories decreased 3C to 3A airports are: Florencia, San Vicente del Caguán, Solano, Inírida, San José del Guaviare, Puerto Leguizamo, Puerto Asís, Miraflores, Villagarzón and La Pedrera. Its owners are the Civil Aeronautics, the respective governments or municipalities and are managed mostly by the Aerocivil.

Carurú aerodromes, Pacoa, La Chorrera, Tarapaca, Puerto Rico (Caquetá), San Vicente del Caguán, Calamar, La Macarena, Puerto Rico (Meta) and Vistahermosa, are in the 2B and 2A categories. Its owners are the municipalities or departmental districts, also responsible for its administration. There are also 46 aerodromes with Category 1B and 1A, of which 41 are on the Vaupes. Most are owned by indigenous reserves and its administration is in charge of the government of the department.

In the departmental panorama, Vaupes the largest number of small tracks or airfields allows mobilizing cargo and passenger charter flights. Despite

the large number of airstrips, only a small number of them have business with authorized routes.

Air activity is dynamic regionally, but low compared to the cities of the country. Major role play aerodromes or small airstrips throughout the regional geography, although access to this service is restricted to the bulk of the population (Riaño and Salazar, 2009).

In the year 2011, 399.460 passengers and 31,813 tons of cargo were mobilized in the region. In 2012, cargo planes in the country transported 146,000 tons in the domestic market, the same year traveled by air 24.7 million passengers throughout Colombia. At the national and regional level there are many challenges that must be overcome for air transport to be efficient and competitive. Leticia airport is the one that most passengers mobilized in the region. In the departmental order, Amazon ranks first by number of passengers transported by air, followed by Putumayo, Caquetá and Vaupes. After them, there are Guainía, Guaviare and Meta in the Amazon fraction. As for the cargo carried, is also the department of Amazonas where the largest number of tons is moved, Vaupes and Guaviare follow it. Lower volumes transported in Caquetá, Guainía, Meta and Putumayo. See the number of transported passengers and cargo at airports and regional airports during 2011 and on the [Map 54](#) the location of these airports and airfields in [Annex 26](#).

## ELECTRICAL INFRASTRUCTURE

The Colombian Amazon region accesses to electricity service through two methods depending on its geographical location. Those coming to the networks of National Interconnected System –SIN– territories are linked to it; elsewhere, once demand is established, the network is extended to cover the urban centers and rural areas not connected, is the case of the western and northwestern Amazonia. In most distant places, mainly in the northeastern Amazon and southern territories, which do not have access to the network SIN, are addressed by local and isolated systems (Riaño and Salazar, 2013).

### National Interconnected System in the Amazon region

Caquetá, Cauca, Guaviare, Meta, Nariño and Putumayo are part of the National Interconnected System –SIN– in the Colombian Amazon region. In the department of Caquetá the municipalities of 15 of its 16 municipalities are included. The three municipalities

Table 27. Number of vessels, cargo and passenger volume by river network in major ports, 2011.

DEPARTMENT MUNICIPALITIES	RIVER LENGTH- NAVIGATION LENGTH KM	NUMBER OF SHIPS UNDER 25 T	NUMBER OF SHIPS OVER 25 T	CARGO T	LIVESTOCK NUMBER	NUMBER OF PASSENGERS
Amazonas		3.354	116	37.775	0	33.677
Leticia	Amazonas 116-116	3.354	116	37.775	0	33.677
Caquetá		97.958	7	14.892	36.837	23.276
Cartagena del Chairá	Caguán 497-497	97.321	0	11.206	35.419	14.892
Solano	Caquetá 1.350-1.200	637	7	3.686	1.418	8.384
Guainía		4.721	482	19.353	424	15.106
Inírida	Inírida 919-448	4.721	482	19.353	424	15.106
Guaviare		1.208	181	16.926	300	5.428
San José del Guaviare	Guaviare 947-947	1.208	181	16.926	300	5.428
Meta		1.502	304	5.622	80	20.840
Puerto Gaitán	Meta 885-866	1.502	304	5.622	80	20.840
Putumayo		9.283	1.246	164.929	3.833	197.045
Puerto Leguizamo	Putumayo	298	191	7.906	824	4.674
Puerto Asís	1.717-1.600	8.985	1.055	157.023	3.009	192.371
<b>TOTAL REGIÓN</b>		<b>118.026</b>	<b>2.336</b>	<b>259.497</b>	<b>41.474</b>	<b>295.372</b>

Source: Ministry of Transport –Transport y Traffic Bureau– Report 2011. Processed by Socio-Environmental Dynamics Group of Sinchi Institute.

of Cauca department as part of the Amazon region belong to the SIN. In Guaviare, the capital and the municipalities of El Retorno and Calamar are part of the SIN, while Miraflores is still out of this. In the southern department of Meta they are interconnected the municipalities of Mesetas, Puerto Concordia, Puerto Rico, San Juan de Arama, Uribe and Vistahermosa. The six municipalities of Nariño that are part of the region are interconnected. Finally, the department of Putumayo joins SIN interconnection with 12 of its 13 municipal seats. The coverage is not uniform in municipalities and departments, since part of the rural territory of some of these is outside the SIN and is supplied by the service provided to non-interconnected areas –ZNI–. The regional area covered by the SIN closely linked to the Amazonian ring settlement (*Ibid*).

### Non-Interconnected Zones

–ZNI– Non-interconnected areas of the Amazon region are those areas that are not connected to the National System of Generation and Transmission of

Electricity –SIN– and where supply is made through local systems and isolated diesel plants, solar photovoltaic systems and small hydroelectric plants. Attention is paid in urban centers departmental capitals, municipal headers, departmental headers of districts and towns of indigenous and farmers (police inspectorates, municipal districts, villages, hamlets and villages).

In the Colombian Amazon region nine of the ten departments are parts of non-interconnected areas –ZNI– well: the entire territory of the departments of Amazonas, Guainía and Vaupés and partially departments of Caquetá, Cauca, Guaviare, Meta, Putumayo and Vichada (*Ibid*).

### Electricity consumption per capita in the Colombian Amazon

The indicator electricity consumption per capita is defined as the ratio between electricity consumption by the population of a territory in a given time. In a territory, the form of occupation is marked by the

**Table 28.** Total consumption of electricity per capita in the Colombian Amazon region 2005-2010

INDICATOR	YEAR					
	2005	2006	2007	2008	2009	2010
Consumption kW	184.885.559	222.286.689	241.852.529	262.129.458	276.024.723	327.072.092
Population	1.201.000	1.216.921	1.232.555	1.248.301	1.264.245	1.280.358
Per capita	153,94	182,66	196,22	209,98	218,33	255,45

Source: Data reported to the Single Information System Public Service –SUI– and Population projections DANE, consulted in the database on social aspects “Inírida” Sinchi Institute, 2012, and processed by the Socio-Environmental Dynamics group.

generating source electricity and consumption of the inhabitants. The calculations for the region in the period 2005-2010 are shown in **Table 28**.

A steady growth of total electricity consumption per capita in the Amazon region is observed, considering the sum of consumption in the two ways in which the regional population (SIN and ZNI) is served. In 2005 consumption 153.94 kWh/inhabitant was recorded, while in 2010 this value reached 255 kWh/inhabitant. This indicator is particularly relevant when compared with the values calculated for Colombia. Thus, in 2005 the per capita consumption reported for the country was 845.92 kWh and 2010 were 909.01 kWh per capita. This means that the regional consumption was 5.4 times lower than the national in 2005 and 3.55 times lower in 2010, which gives an indication of the growing trend towards greater regional consumption (*ibid*).

### Final Remarks

The tour of the Colombian Amazon region and the processes of occupation, settlement and urbanization, which are expressed spatially in the system of human settlements, the ring of settlement and analysis of the urban hierarchy (2005 and 2010), the concentration of the population in urban centers analyzed with the index Pinchemel, mobility of the population because of forced migration, the concentration of land and occupation without settlement, the pressure that hangs over the region access to mining resources and hydrocarbons, the presence of protected areas and indigenous population in their ancestral territories, constitute elements of the regional reality that can be represented synthetically by choremes for the years 2005 and 2015.

The chorematic representation of the Amazon region for 2005, highlights the concentration of urban regional population relative to the total population

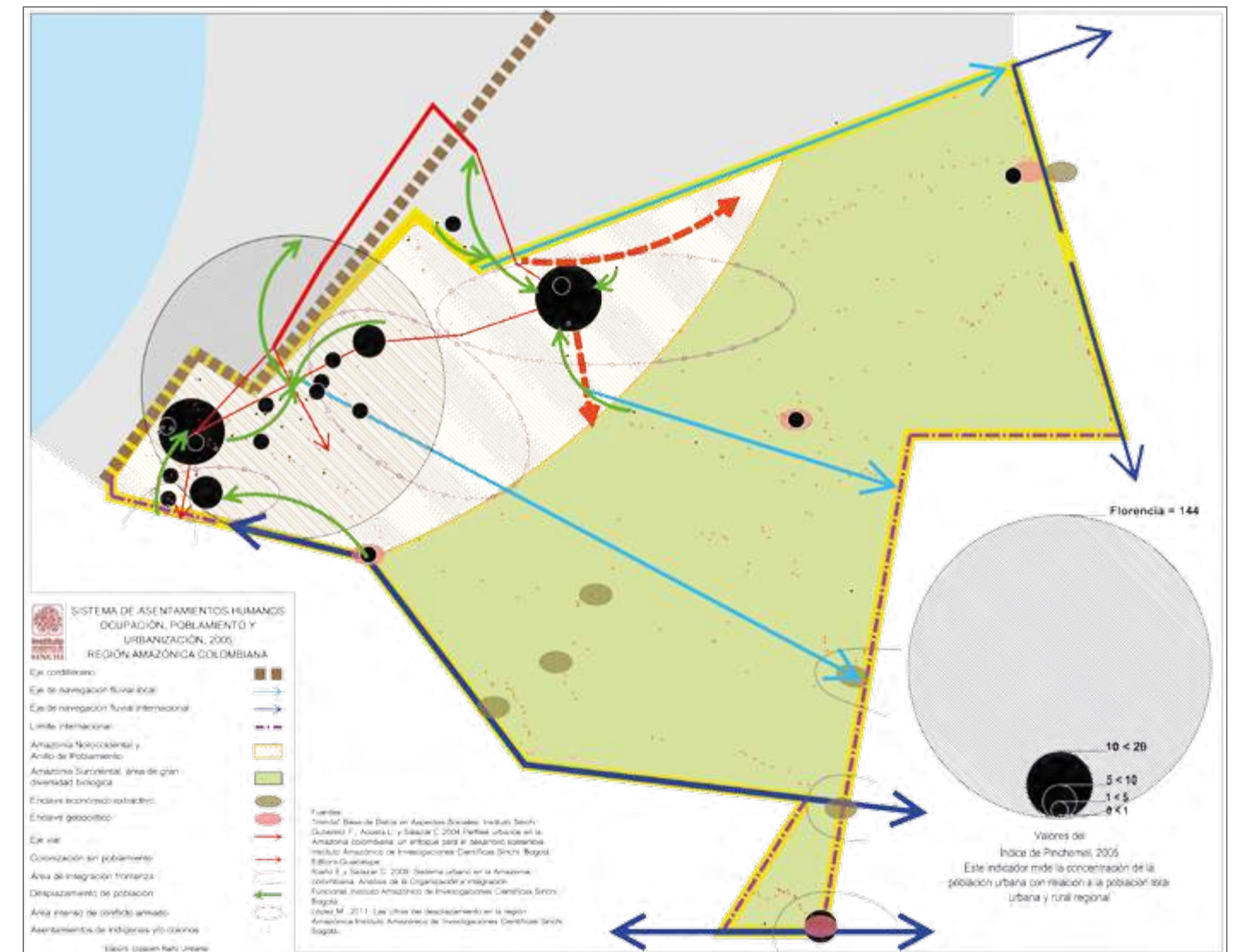
(urban and “other”) by Pinchemel index. A cloud of urban centers in the area of the ring has its largest population expression settlement in Florencia. Small settlements and peasant settler population has a presence there too. This area has historically maintained a strong population dynamics, due to the processes of colonization and settlement that degenerate in occupation without settlement and concentration of land in the hands of landlords, who by means of violence and corruption have been appropriate with destine to agribusiness and extractive activities.

Amazon and Southeast northwestern Amazonia: two sub regions are clearly identified. The first area has been the scene of intense armed conflict in Colombia; population originally from within the country came to occupy, seeking a place to maintain their way of peasant life. In this territory the heritage of national violence and people manifests itself, between conflict forces, barely manage to join some links in the chain of various legal and illegal extractive economies that has seen the region by ephemeral periods.

The people of the northwest Amazon have lived the processes of colonization, settlement and urbanization that characterize this sub region, in the midst of armed conflict, forced displacement, violence and poor living conditions in urban centers with limited supply of services and equipment despite having a significant volume of population. It has lacked an efficient environmental, territorial and urban planning.

The southeastern Amazon, settlement of the dispersed indigenous communities lives the nucleation and the concentration of the population both in municipal and departmental jurisdictions as within indigenous reservations. There are also located the geopolitical settlements, which increasingly operate more like urban pairs or villages in double or triple border. It is the area that concentrates greater number of protected areas and indigenous reserves. The potential of biodiversity is enormous and yet little known; likewise, the cultural heritage of the peoples who

**Chart 36.** Corema system of human settlements in the Colombian Amazon, 2005



have occupied ancestrally, which requires not only increasing our knowledge about them, but understanding and respect for Colombian society. See **Chart 36**.

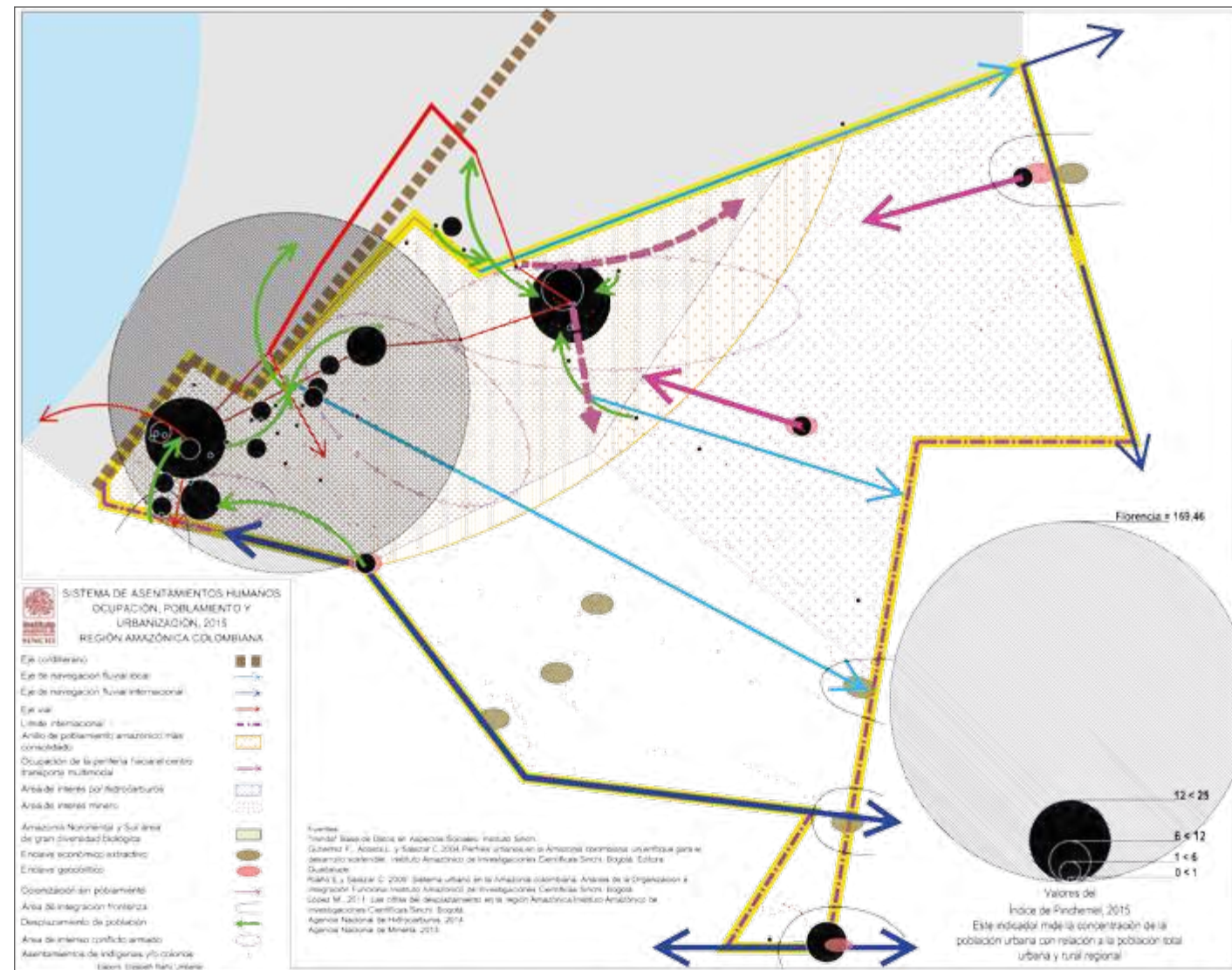
In 2015, the panorama in the Colombian Amazon region is directly related to the extension of the ring of settlement, given the increase and concentration of the urban population, feed by population mobility generated by the forced migration. Expectations for the strong interest in the extraction of energy resources miner, seeking to find their way out to the Pacific, have influenced the dynamics of urban centers which is reflected in changes in their level of hierarchy by offering services and facilities. Some of these centers increased from level two to level three others, level three to level four. Florencia remains the largest

urban center of hierarchy and neglected even greater demands.

If the region is looked under sub regions scrutiny, appears a western Amazonia which increased the indicator of the urban hierarchy in the municipalities of Orito and Villagarzón, which went from level three to level four on the Putumayo department; urban centers of San José del Fragua, Belén de Andaquíes and El Paujil in Caquetá and La Dorada (San Miguel) in Putumayo level went from two to three in the urban hierarchy. Most of the people in the region are concentrated there. It is for this sub region which historically has established the connection with inside the country, which is expected to strengthen and further connect with the Pacific and eastern Brazil. It is the area where the largest number of oil wells in operation, as well as



Chart 37. Corema system of human settlements in the Colombian Amazon, 2015



large areas in hydrocarbon exploration and prospects for large open pit mining. Planning of urban centers is a central hub of action to prevent and mitigate the impact of decades of national neglect.

In the northwestern Amazon, the urban centers of the road axis leading to the Guaviare: Vistahermosa, Puerto Rico, Puerto Concordia, El Retorno and Calamar improved their urban hierarchy indicator. This sub region hover high expectations for hydrocarbon exploration within ecosystems that have suffered the impacts of forest loss, grassing and livestock. Live in it much peasant population and colonist of the Amazon, and large population movements have occurred due to the effects of armed conflict. It is in this sub region to where the pressure and consolidation settlement ring advance immediately. The central axis of

intervention in this area could focus on promoting agroforestry; some have been developed as pilot projects, but it is still necessary to find more appropriate solutions to the coexistence of the rural sector with forest recovery and to stop the advance of deforestation on the sub-regions of eastern and southern Amazonia.

In the northeastern Amazon was Cumaribo the city center that increased its urban hierarchy. The other centers remained at the same level of the first measurement, the same happened with the southern Amazon. These two sub-regions, characterized by having the lowest population density are the foundation of the great cultural and human wealth of the region: the indigenous peoples. It depends largely on the management to be given to these sub-regions, their survival, which has among other challenges, particularly

the northeastern Amazon, the imminent threat of large-scale mining. Chart 37.

Today the country faces the radicalized positions of development and conservation, without encouraging examples of successful developmental practices, while requiring conservation exercises that result in real benefit of the population. It is known that no polarization is healthy and the situation requires joint agreements; it is desirable that agreements are protective of life in all its expressions.

The country moves between headlines that outshine against the occurrence of the next and in the meantime the process of urbanization in the country and the Amazon moves inexorably. The process of urbanization in the Amazon lacks any environmental consideration, it is a fact done without planning in almost all cases. Urbanized areas do not have adequate and efficient services to serve the population. The houses lack proper sanitation infrastructure and no urban facilities. It is precisely in urban areas where some of the biggest environmental problems in the Amazon are located, which is not different from the rest of the country but it is even more sensitive in these ecosystems.

The precarious urban environmental conditions seem not significantly worry the Amazonians. As Serre (2001) states, you may think that the lack of awareness of the population on the urban environment is related to the ignorance of the negative impacts of that attitude. In fact, social exclusion comes from the process of unplanned urban sprawl, not integrated to the starting city and not environmentally where it is inserted. However, these are the characteristics of the urbanization process in the region.

Following Serre (2001), the process of social exclusion in urban areas is the continuation of a process initiated in rural areas. Excluded from rural areas come to the city hoping to live better access to health and education for their children. Unfortunately, already part of the “logic of the excluded”, no job, no education and few resources. The consequences of urban segregation are insecurity, violence and privatization of urban space, which generates separation into social classes. Thus, it is evident that the model of urban development in the Amazon is just the opposite of sustainable development. Given this reality we may ask, who really cares implement a genuine environmentally friendly policy?

Bertha Becker (2001) raised the challenge of defining a new pattern of development for the Amazon, which must reconcile economic development, provide better living conditions for the rural and urban population, maintain the balance between these two

realities, limit deforestation and define the use of natural heritage conservation forms. It is necessary to transcend social and infrastructure relationships, when we refer to urban centers or cities to consider a wider relations field including the commercial links, media, education, culture and nature itself.

Urban environmental management based on respect for the relationships that can be established with the environment is a long-term investment, which requires involving the State, trade associations and civil society, where the state fulfills its regulatory role. It takes back the concept of quality of life, not only for people, and has considered the social aspect as well as the ecological, in the sense of a binding relationship. This should go beyond the urban to the called “rural”, where health conditions and education must be guaranteed and facilitate access of rural population to urban centers.

Finally, as Serre (2001) states, must strengthen public institutions operating in the area of environmental management and leverage existing and efficient tools. In Colombia already has a policy of Urban Environmental Management whose general objective is: “Establish guidelines for sustainable management of urban areas, in order to harmonize the management, sector policies and strengthen coordination spaces interagency and civic participation, to contribute to urban environmental sustainability and quality of life of its residents, recognizing regional diversity and types of urban areas in Colombia”.

This main objective will be achieved by developing the following specific objectives:

- ▶ Improve knowledge of the natural base of support in urban areas and design and implement conservation strategies and sustainable use of renewable natural resources.
- ▶ Identify, prevent and mitigate threats and vulnerabilities through integrated risk management in urban areas.
- ▶ Contribute to improving the quality of urban habitat, ensuring environmental sustainability of public service activities, mobility, and protection and sustainable use of landscape and public space.
- ▶ Manage the environmental sustainability of production processes developed in urban areas.
- ▶ To promote, support and guide land occupation strategies that affect the processes of regional urban development, from the perspective of environmental sustainability.
- ▶ Develop education and participation processes that contribute to the formation of citizens aware

of their rights and environmental duties, promoting sustainable use and consumption.

Sustainable urbanization requires a policy of short, medium and long term. It is necessary that the concept of sustainable development is integrated into the practices of public policies, or otherwise will end up in utopia. All public institutions participation is required, national, departmental and municipal government to obtain meaningful results. Despite the need to resolve urgent situations, such as lack of infrastructure, politicians makers of environmental management of urban life should not delay the necessary measures to improve the environmental quality of urban centers. It is urgent to limit the effects of bad development (Serre, 2001).

Given the growing process of concentration of population in urban areas of the Amazon region, as it was presented at the beginning, it needs:

- ▶ Advance methodologies to determine the carrying capacity of the ecosystems where they are currently located the cities of the Amazon region.
- ▶ Give an Amazonian identity urban centers versus the Andean image have now, based on the assessment and restoration of water bodies, wetlands, and in general, of their natural resources.
- ▶ Restore life to the rivers now converted into municipal landfills.
- ▶ Develop a conceptual framework and elements of urban policy for cities in the Amazon. Build a Decalogue of priority interventions for cities in the region and progress towards the development of a specific urban code.
- ▶ Structuring databases Amazonian cities, with variables that can be monitored and give signals the urban environment.
- ▶ Forming teams on issues of territorial, environmental and urban planning (infrastructure, public and social services, among others).
- ▶ Promote the implementation of alternative technologies and materials that are appropriate for the region.

- ▶ Start using renewable energy sources of wind-systems, solar, modern, geothermal and hydroelectric plants small-biomass is crucial for the sustainability of cities. The Kyoto Protocol, signed by 84 countries in 1997, encourages investment in renewable energy.
- ▶ In summary, run the Urban Environmental Policy.

As a recommendation for architectural projects should be formulated minimum requirements for a more integrated environment and natural resources architecture; have indicators of energy efficiency in buildings; certify materials and equipment and develop educational and social interest projects.

The example should start with housing projects of social interest by the State itself. It should take advantage of the set of existing environmental resources; to reduce or minimize investment costs, maintenance and operation, mainly ensuring environmental comfort of these buildings, which have direct effect on the health, productivity and quality of life of its inhabitants.

It aims to produce an architecture that maximizes the bioclimatic conditions where the projects will be built, mitigating negative and enhancing the positive aspects. It is therefore essential to know the climatic and cultural specificities of each region, routines use construction and profile of users whether rural or urban, in order to ensure the care of their basic needs for lighting, ventilation, hot water, cooling, among others, at lower cost and with greater energy efficiency and environmental quality.

It is essential that these skills are applied at all stages of project design, from planning, surveying, architectural design (volume and interior spaces), choice of materials, sizing and external protection of openings and covers, etc. All set of actions will cause the result to be the improvement of energy performance in housing and quality of these projects and, in the case of the Colombian Amazon, can support the construction of a “model of sustainable Amazonian city”.



76°39'0"W

1°10'0"N

1°10'0"N

1°9'0"N

1°9'0"N

0 105 210 420 630 840 Meters

MOCOA  
Fuente: Google Earth a través de SAS Planet

76°39'0"W



## 4. LESSONS AND PROSPECTS

It has been over 40 years since the completion of the Conference of the United Nations Conference on the Human Environment, known as the Stockholm Declaration<sup>1</sup>, where it is enunciated that man is both creature and maker of his environment and thanks the achievements of science and technology, has acquired the ability to transform in countless ways and on an unprecedented scale everything around. Man must be aware that the two aspects of the human environment, natural and artificial, are essential to their well-being and the enjoyment of fundamental human rights, including the right to life itself, and in this condition, must enjoy adequate living conditions in an environment of a quality that permits a life of dignity and well-being, with the solemn obligation to protect and improve the environment for present and future generations (United Nations, 1972).

Based on the Stockholm Declaration, a huge set of concepts, principles, recommendations and commitments made by the community of nations, have emerged from the meetings of the United Nations conferences on sustainable development, among which include conferences on Human Environment, Population and Development, Human Settlements and environment and Development. Compliance and enforcement of these should be reflected in the Colombian Amazon, under the behavior of population amounts and indicators of urban dynamics in a region that has the greatest potential and commitment to develop tightly to the principles of sustainability.

More than forty years of well-intentioned international law, embodied in national legislation, have not been sufficient to achieve sustainability ways.

It needs to build common agreements on common elements and jungle teaches. It required disseminate scientific knowledge to be appropriated by citizens, as invited researcher Antonio Nobre (2014).

The current proposal to reduce deforestation is not enough; it must be stopped and, additionally, restore and reforest degraded forest as part of the actions to be undertaken urgently. Find a way of life rather than a development model; it would be reasonable at this time. The commitment is for life and the common element the hydrological cycle, water not only as an isolated element, but everything that contributes to its normal flow; ultimately, it is the flow of life what it brings.

### *Sustainable Development<sup>2</sup>*

The Stockholm Declaration emphasizes that States should adopt an integrated and coordinated planning of development, so that development is compatible ensure the need to protect and improve the human environment for the benefit of its population approach and planning human settlements and urbanization should avoid adverse effects on the environment and aim at obtaining maximum social, economic and environmental benefits for all. It also recommends that in areas where population growth or excessive population concentrations harm the

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1. Declaration following the United Nations Conference on Human Environment held in Stockholm, Sweden, from 5 to 16 June 1972.

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2. These contents are based on the document by Mario Orlando López called: Urban dynamics in the Colombian Amazon region, period 1951-2005, essay written for the Amazonian Institute of Scientific Research Sinchi.



environment or development, or, conversely, the low population density may impede the improvement of the human environment and hamper development; it should be applied demographic policies, respectful of fundamental human rights, to improve such situations (United Nations, *op. cit.*).

*“It was the first such meeting in the history of mankind, and was also the culmination of one of the truly universal work of the United Nations in the world. Conference emanated the concept of the common property of humanity, which forced the international community to become aware of the existence of large collective problems that have to be addressed and resolved collectively. Thus, the first message of the conference was ethical. The international community sat down to discuss something, looking very simple, is extremely complex: a code of principles, the result of the will of governments to preserve nature and quality of life on this planet that we all belong to the present welfare and future of men who dwell in it. The message was also of solidarity and as such, the Stockholm action plan was ultimately a program for collective commitment, international cooperation, which should be promoted so that the responsibilities of the ethical and political ideal are assumed. Thus emerged a global plan, and institutions were created and so did the United Nations Environment Programme”* (Iglesias, E. in: INDERENA And UNEP, 1983).

In the action plan adopted by the Conference recommends for human well-being, among other things:

1. Plan, improve and ordered human, urban and rural settlements, especially in housing, transportation, water supply, sewerage and sanitation.
2. Prioritize research in the following areas:
  - › Theories, rules and methods for global development of the environment in urban and rural settlements.
  - › Quantitative Methods for assessing housing needs and to formulate and implement staggered programs with a view to meeting them.
  - › Socioeconomic indicators of environmental quality of human settlements, especially in relation to housing standards and density of desirable occupation, with a view to identifying trends in its development over time.
  - › Socioeconomic and demographic factors that influence migration and spatial distribution among the population, including the problem of transitional settlements.

- › Designs, technologies, financial and administrative procedures for the efficient and expanded housing construction and the establishment of related infrastructure, adapted to local conditions.
- › Water supply systems, sewerage and waste disposal, adapted to local conditions, particularly in semitropical regions and in the Arctic and subarctic areas.
- › Other possible methods to meet the growing needs of urban transport.
- › Physical, mental and social effects of the tensions created by the living conditions and working conditions in human settlements, especially in urban conglomerates.
3. Provides assistance in connection with programs of family planning and promotes and intensifies research in human reproduction, so that can avoid the serious consequences of the population explosion to the human environment.
4. Formulate programs to effectively meet the needs of growth of human settlements and to improve the quality of life of existing ones, particularly in slum settlements.
5. Plan rural areas in connection with the policy of the human environment, as this is closely related to land use and economic and social planning in the medium and long term.
6. Reinforce necessary mechanisms for obtaining knowledge and transmission of experiences on possibilities, degradation, conservation and restoration of soils.
7. Adopt measures to narrow areas that represent important ecosystems.
8. Make a program to conserve genetic resources together with an inventory of genetic resources to run more danger depleted or extinct resources, and the compilation and expansion of existing records collections of genetic resources.
9. Make systematic evaluation of projects of natural resource use in representative ecosystems, as well as studies to determine relationships and the reasons for any discrepancies between the distribution of natural resources and general welfare.

The considerations set out in the Stockholm Declaration are nourished by the Founex<sup>3</sup> report, which distinguishes between environmental problems of the

3. It was presented as result of the technical meeting held in Founex, Switzerland, between 4 and 12 June 1971.

industrially developed countries and developing countries. In the past, according to the report, the main problems are rooted in the rural and urban poverty. Draws attention to the environmental problems related to human settlements in developing countries, in rural areas arising from the inadequate availability of services of one kind or another (water, sewer, health, education, agricultural services, credit, food supply), restrict the quality of life of people, and maintain low levels of production and thus income (Angel, 2008).

Meanwhile, rapid population growth can exacerbate the susceptibility of certain groups to this situation and increase the pressure on natural resources. In such situations the population displacement occurs to cities, contributing to deteriorating urban conditions. In urban areas, the urbanization process entails economic and social welfare, which in turn can lead to expansion to settle poles of development. But at a certain time, for each city that is subjected to rapid population growth, economies of scale become diseconomies; arise shortages of basic services and consequent price increases, congestion, pollution, decreased quality of life, insecurity and deteriorating housing and urban environment, among others.

A measure to counteract this trend is by urban renewal complemented by urban sprawl, through organized decentralization to new growth poles in new human settlements and the creation of new industries. Developing countries have the opportunity to benefit from the experience gained by the more advanced countries, applying those practices that have been successful and avoiding those which have caused environmental problems.

Each settlement has its own capacity limits, which are modified over time. These depend on the level and structure of the population, economic and human resources and infrastructure which, in turn, are also in constant evolution. It is important to monitor each of these elements, because when the capacity of the settlement is overpassed, its deterioration occurs rapidly preying on its sustainability.

Another fact that contributed to the analysis of the problems between development and environment was the Declaration of Menton, signed in 1971 by 2,200 scientists from 23 countries, the text numbers global problems caused by industrial society that, without any consideration, it had been deteriorating the environment and diminishing natural resources, regardless of the effects of such actions on the populations present at that time and future generations. Among the actions proposed to be implemented to prevent the deteriorating situation worsening, are

the overtaking programs in all regions of the world to curb the population growth, taking care that it does not interfere with human rights, decrease the level of consumption of the privileged classes and more equitably distribution of food and other goods to the population of developing countries.

Later, in the Declaration of Cocoyoc<sup>4</sup>, it is mentioned that the combined destructive impacts of a poor majority human beings struggling to survive and affluent minority consuming most of the world's resources is undermining the means by which all the people survive and flourish. This Declaration influenced the change of attitude of the leading environmental thinkers, serving as background for the first paragraph of the World Conservation Strategy published in 1980 and again stated in the Geo-2000 in 1999 (UNEP, 2008).

It also reaffirms that the primary objective of development must be to ensure the improvement of living conditions and the satisfaction of the basic needs of the poor (food, housing, clothing, health and education), without abstracting cover other human needs, such as freedom of expression, the right to express and receive ideas and stimuli, and work, one that contributes to their full realization. It also outlines:

*“Much of the world today is now the center of an immense operator periphery, the universal common heritage and biosphere. Should aim to achieve the ideal of a harmonious world in which every part was a center, without living at someone's expenses, were associated with nature and show their solidarity with future generations”* (INDERENA and PNUMA, 1983).

Another section of the Declaration encourages countries to develop new systems of human settlements that are more harmonious, in order to prevent metropolitan areas to continue congesting more than they are now and avoid the increasing marginalization of rural zones.

Also was held in 1974 (between 19 and 30 August) the Third United Nations Conference on Population and Development, the discussion focused on the relationships between population factors and development. As a result of the Conference, the Global Plan

4. Official declaration from a Congress organized by Environmental Program of United Nations and United Nations Conference, PNUMA, on Commerce and Development, UNCTAD, held in Cocoyoc (México), from October 8 to 12 1974.

of Action on Population says, among other principles as follows:

1. The ultimate goal is the social, economic and cultural development of countries. The objectives and population policies are an integral part and seek to improve the level and quality of life of people.
2. Regardless of the realization of economic and social objectives, respect for human life is a fundamental value of every society.
3. The objectives of the Action Plan must be in conformity with the principles of the United Nations Charter and the Universal Declaration of Human Rights.

Lately, between 31 May and 11 June 1976, took place in Vancouver (Canada), the Conference of the United Nations on Human Settlements fulfilled a proposal made in Stockholm during the Conference of the United Nations on Human Environment. The Vancouver Declaration on Human Settlements issued a mandate, peoples and promoting socially and environmentally sustainable cities, with the goal of providing adequate shelter for all (United Nations, 1976).

The Declaration recognizes the extremely delicate condition of the human settlements, especially those of developing countries, and defines a set of general principles, including the following highlights:

1. Improving the quality of life of each person must be the first and most important goal of human settlements policy. This improved quality of life should include items such as food, housing, drinking water, employment, health, education and social security, and must be provided without regard to race, color, sex, language, religion, ideology, nationality, social origin or other, within a framework of freedom, dignity and social justice.
2. Economic development should be aimed at satisfying human needs, allowing this contributes to a more equitable distribution of benefits among people and nations.
3. Land is one of the fundamental elements of human settlements. Each State has the right to take the steps it deems necessary to maintain under public control, possession, use, disposal and land reserve. Each State has the right to plan and regulate land use, so that the centers of population growth, urban and rural, are consistent with a plan of land use.

4. All people have the right and duty to participate individually and collectively in the development and implementation of policies and human settlement programs.

In 1978 the Amazon Cooperation Treaty, signed by Bolivia, Brazil, Colombia, Ecuador, Guyana, Peru, Surinam and Venezuela was signed. It stated an aim to promote the harmonious development of the region through joint actions that address environmental preservation and rational use of resources. The signatories to the Treaty undertake, also, to promote scientific research and exchange information and technical personnel, for the exploitation of the flora and fauna not to alter the ecological balance of the region and promote policies that favor a balance between economic growth and preservation of the environment (Carrasco, 1978).

To commemorate the tenth anniversary of the Conference of the United Nations Conference on the Human Environment, the world community of States met in Nairobi on May 10, 1982, declaring concerned about the present of the environment of the planet and recognized the urgent need for intensifying efforts at global, regional and national levels to protect and improve it.

Despite these initiatives, the failure was evident in the fight against excessive agglomeration in developing countries. Bussau manifest on Political and Environmental Situation (1976)<sup>5</sup> and the Declaration of Bogotá (1982)<sup>6</sup> realized it.

In the Declaration of Bogotá is admitted that the agreements, the declaration and program of action adopted in Stockholm, made possible progress in the following years in some respects, while in others an increasing deterioration was checked. As a precursor sign of breakthroughs cited incorporating the environmental dimension to the schemes and programs of multinational initiatives, such as the Amazon Pact, the Agreement of the River Plate Basin, the Andean Pact, among others, and which nevertheless, in general terms and without ignoring development experiences with adequate environmental management, regional situation of physical and human environment, has tended to become worse in the past ten years.

5. INDERENA AND UNEP, 1983. *Ecodevelopment, the thought of the decade.*

6. INDERENA AND UNEP, 1983. *Ecodevelopment, the thought of the decade.*

*“Major advances in awareness, ideas and concepts are not adequately reflected in the facts. The great challenge for the coming years is precisely give priority to action”* (INDERENA and PNUMA, *op. cit.*).

For its part, the World Conservation Strategy, developed in 1980<sup>7</sup>, is a step forward in implementing some of the recommendations made by the Conference on the Human Environment, as it poses a more integrated set of guidelines that promotes an approach management of living resources in order to achieve three objectives of conservation:

- I. To maintain essential ecological processes and vital systems of which depends on human survival and development.
- II. To preserve genetic diversity.
- III. To ensure the sustainable utilization of species and ecosystems (IUCN, PNUMA, WWF, FAO and UNESCO, 1980).

The World Soil Charter, signed in 1981<sup>8</sup>, similarly issued a series of practical guidelines for proper land use and conservation and improvement of soil resources. Also in the content of the Nairobi<sup>9</sup> Declaration it recognizes that during the previous 10 years, had increased awareness and understanding of the fragility of the human environment and its problems. In almost all countries it had enacted environmental legislation, many of them had joined to their constitutions dispositions designed to protect the environment. In that period the program of the United Nations for the Environment was created, but at that time, the action plan signed in Stockholm had only partially met and had not had enough impact to reverse the trend of decline recorded in the Human Environment. Something that is evident with deforestation, soil degradation and water, desertification, diseases related to adverse environmental conditions, the decrease in the ozone layer, the increasing concentration of carbon dioxide in the atmosphere, acid rain, pollution of the seas and inland waters, careless use and disposal

7. IUCN, UNEP, WWF, FAO and Unesco, 1980. World conservation strategy: living resource conservation for sustainable development.

8. Resolution 8/81 of the 21<sup>st</sup> Session of the Conference of the Food and Agriculture Organization of the United Nations, Rome, November 1981.

9. It was adopted at the 13<sup>th</sup> session of the United Nations Conference on the Environment, held in Nairobi on 18 May 1982.

of hazardous substances and the extinction of animal and plant species.

In the Nairobi Declaration also it recognizes that in the previous decade, had been new approaches such as one that involved the confirmation of the existence of an intimate and complex interaction between environment, development, population and resources, as well as a pressure on the environment in urban areas by the increasing concentration of the population.

Between 6 and 14 August 1984, it was held in Mexico City the Fourth International Conference on Population and Development, which reviewed and endorsed most aspects of the agreements of the Bucharest Conference 1974 and expanded the Global Action Plan on Population (GAPP) to include the results of the latest research and data provided by governments. Individual and family human rights, health conditions and welfare, employment and education, among others, were important issues of the declaration by the Conference (United Nations, 2008a).

Years later, between 3 and 14 June 1992, it was held in Rio de Janeiro (Brazil), the Conference of the United Nations on Environment and Development (UNED), also known as Earth Summit in which the community of nations agreed to adopt a development approach to protect the environment, while ensured the economic and social development, called sustainable development.

One of the products of the conference was the Rio Declaration on Environment and Development, which reaffirms the Declaration of the United Nations Conference on Human Environment, adopted at Stockholm, and based on it proclaims a set of principles, among which highlight (United Nations, 1992):

1. Human beings are at the center of concerns for sustainable development. They have right to a healthy and productive life in harmony with nature.
2. The right to development must be fulfilled so as to equitably meet development needs and environmental impacts of present and future generations.
3. In order to achieve sustainable development, environmental protection shall constitute an integral part of the development process and cannot be considered in isolation.
4. All States and all people shall cooperate in the essential task of eradicating poverty as an indispensable requirement for sustainable development, in order to reduce disparities in living standards and better meet the needs of the majority of the people of world.



5. To achieve sustainable development and a better quality of life for all people, States should reduce and eliminate unsustainable patterns of production and consumption and promote appropriate demographic policies.

Community leaders from around the world approved during the Conference, a plan for comprehensive global action covering all aspects of sustainable development, called Agenda 21, which identifies the basis for action, objectives, activities, implementation means and the actors involved in order to achieve sustainable development.

Chapter 5 of Agenda 21 deals with the relationship between population dynamics and sustainability, considering three program areas:

1. Development and dissemination of knowledge about the relationship between demographic trends and factors and sustainable development.
2. Formulation of integrated development environment and national policies, taking into account demographic trends and factors.
3. Implementing integrated environment and development at the local level, taking into account demographic trends and factors programs.

On the basis for action, it is recognized that there is a synergistic relationship between demographic trends and factors and sustainable development. The combination of population growth and production with unsustainable consumption patterns causes pressures increasingly serious about the capacity of the Earth to sustain life. If management is not correct, the rapidly growing cities face major environmental problems. The increase in the number and size of cities calls for greater attention to issues of local government and municipal management. To develop comprehensive policies for sustainable development, it is necessary to pay attention to the relationships between demographic trends and factors, resource use, appropriate technology dissemination and development. In population policy the influence of humans on the environment and development should also be recognized. It is necessary to advance strategies to mitigate both the adverse impact of human activities on the environment such as environmental changes on human populations.

Plans to promote sustainable development, should recognize demographic trends and factors as elements that have a critical influence on consumption patterns, production, lifestyles and long-term

sustainability. To formulate general policies and development plans, it will have to improve the ability to evaluate the effects of demographic trends and factors for the environment and development. When appropriated, there will also have to formulate and implement specific policies and action programs. These policies should assess the consequences of population growth inherent to demographic trends and at the same time, measures to provide a transition in this area.

Environmental and population issues should be combined into an integrated view of development whose primary goals were the alleviation of poverty, ensuring livelihoods, good health, quality of life, improving the condition of the women, increasing their income and their access to education and vocational training, as well as the realization of their aspirations, and recognition of the rights of individuals and communities.

Considering that, as any likely hypotheses about population growth, size and number of cities will increase significantly in developing countries, should pay more attention to meeting the needs, especially of women and children, which involves improving municipal management and local government.

Agenda 21 recommends establishing databases on demographic trends and factors and the environment, disaggregating data by ecological regions and prepare descriptive notes of the population and the environment by region. Also, create methods and instruments to identify areas where sustainability is, or threatened by the environmental effects of demographic trends and factors, using both current and projected demographic data linked to natural environmental processes. Also, identify local level responses of different groups to demographic dynamics, especially in areas subject to environmental pressures and in urban centers that were deteriorating. In addition, there should disaggregate data on population by sex and age, among other criteria, to take into account the consequences of the division of labor by sex for the use and management of natural resources.

On the other hand, recommends assessing the consequences of the age distribution of the population to the demand for resources and family responsibilities, ranging from the cost of educating young people to medical care and support for older people, and for the generation of household income. It also should make an assessment of the highest population density in the context of satisfaction of human and sustainable development needs, and should give special attention to critical resources such as water and

land, and environmental factors, such as the state of ecosystems and biodiversity.

Population programs are more effective when implemented together with appropriate cross-sectorial policies. To achieve sustainability at the local level, it is necessary to devise a new structure that integrates demographic trends and factors with elements such as the state of ecosystems, technology and human settlements, as well as socio-economic structures and access to means. Population programs should be consistent with socio-economic plans and those relating to the environment. Integrated programs for sustainable development should have, on one hand, a strong correlation between the measures on demographic trends and factors and, secondly, between resource management and development goals that meet the needs of the population.

Between 5 and 13 September 1994, it was held in Cairo (Egypt) the International Conference on Population and Development. As a result of the meeting, an action program which highlights the multiple linkages between population and development and focuses on meeting the needs of individual men and women rather than achieving demographic targets approved. This program was intended to guide the management of the international community in these two areas over the next 20 years (United Nations, 1994).

The Program of Action of the International Conference on Population and Development is based on the Global Plan of Action on Population, adopted at the World Population Conference held in Bucharest in 1974, and the 88 recommendations for implementation arising from the International Conference on Population, which was held in Mexico City in 1984. It also includes the results of the United Nations Conference on Environment and Development, Agenda 21 and the Rio Declaration and the agreement achieved at the World Summit for Children, 1990, and the World Conference on Human Rights, 1993.

During the Cairo Conference, it was clear the existence of a growing awareness about that population, poverty, patterns of production and consumption and the environment are so closely interconnected and that none of these factors can be considered in isolation. Therefore, the objectives and measures of the Action Program jointly address challenges and interrelationships between population and sustained economic growth in the context of sustainable development. In the program the international community recommended a number of important objectives on population and development as well as qualitative and quantitative goals that are mutually complementary

and vital for the achievement of these objectives. Among these objectives and goals include: sustained economic growth in the context of sustainable development; education, especially for girls; equality and gender equity; the reduction of infant and maternal and infant mortality, and universal access to reproductive health services, including family planning and sexual health (United Nations, *op. cit.*).

In the beginning of the program the fundamental right of all couples and individuals to decide freely and responsibly the number and spacing of their children is reaffirmed, and to have the information, education and means to do so. It also stresses that the family is the basic unit of society and as such should be strengthened, recognizing in advance that there are various forms of family in different cultural, political and social systems.

It argues that efforts to reduce population growth, reduce poverty, achieve economic progress, improve environmental protection and transform unsustainable patterns of production and consumption, complement each other. Sustained economic growth in the context of sustainable development is essential to eradicate poverty. Its eradication will help reduce population growth and get their early stabilization. The elimination of all forms of discrimination against women is a prerequisite for ending poverty, promoting sustained economic growth, ensure the provision of quality family planning and reproductive health, and achieve a balance between population status and available resources (United Nations, *op. cit.*).

It is said also that the satisfaction of the basic needs of a growing population depends on a healthy environment. These needs should be taken into account when the general policies of sustainable development are made. It should ensure that population, environmental and poverty eradication factors are integrated into policies, plans and programs for sustainable development and reduce unsustainable patterns of production and consumption and the negative effects of demographic factors. Governments are recommended to formulate and implement population policies in support of the objectives and measures agreed in Agenda 21 and other conferences and international agreements on the environment. In particular, governments should:

1. Incorporate demographic factors to environmental impact assessments and other planning and decision-making aimed at achieving sustainable development.

2. Adopt measures to eradicate poverty, paying particular attention to strategies for income generation and employment aimed at the rural poor and people living in fragile ecosystems or the edge of those areas.
3. Use demographic data to promote the management of natural resources, especially of ecologically fragile systems.
4. Modify unsustainable patterns of production and consumption by adopting economic, legislative and administrative measures designed to promote sustainable use of resources and prevent environmental degradation.
5. Implement policies to address the ecological implications of inevitable future increases in population and changes in concentration and distribution, particularly in ecologically vulnerable areas and urban agglomerations.

Regarding the growth and structure of the population, the program therefore seeks to facilitate the demographic transition as soon as possible in countries where there is an imbalance between demographic rates and social, economic and environmental goals, which further contribute to the stabilization of the world population. Moreover, it urges governments to pay more attention to the importance of population trends for development.

The program records the importance of playing the full recognition of reproductive rights and reproductive health of both men and women, whose attention should include, among other things, provide advice, information, education, communication and services in planning family. It recommends that:

- I. Take actions to help couples and individuals meet their reproductive goals, prevent unwanted pregnancies and reduce the incidence of high-risk pregnancies and morbidity and mortality.
- II. Provide access to quality services that are acceptable and affordable to all who need and want to receive them.
- III. Use all the means available to support the principle of voluntary choice in family planning.
- IV. Identify and remove all the major remaining barriers to the use of the services of family planning.
- V. Provide, through all possible channels, an enabling environment for the provision of high quality information on family planning and reproductive health, in the public and private sectors environment.

- VI. Take immediate steps to establish an effective coordination system and services for the acquisition of condoms and other essential products to reproductive health programs of developing countries and countries with economies in transition.

On the distribution of the population and its relationship to sustainable development, the program considers that the process of urbanization is an intrinsic aspect of economic and social development and therefore both the developed and developing countries follow a process of transformation in passing from predominantly rural to predominantly urban societies. As objective in relation to these aspects, it is proposed to foster a more balanced spatial distribution of the population by promoting in an integrated manner the equitable and ecologically sustainable development of the different regions, with particular attention to the promotion of economic, social equity and between sexes. As related objective, it is proposed to reduce the role of the various pressure factors for migration, as well as the uneven distribution of development resources, adoption of inappropriate technologies and lack of access to land. Countries should adopt strategies that foster the growth of small and medium urban centers and the sustainable development of rural areas. To develop urban areas, governments should actively support access to ownership and water resources, especially from households, and invest or promote investments to increase productivity field (United Nations, *op. cit.*).

Finally, the program states that in many countries, the urban system is characterized by the overwhelming preponderance of a single city, which poses specific economic, social and environmental problems. The goal is to help countries improve the management of these large urban agglomerations favoring security and quality of life of the poor in rural and urban areas.

Later, from 3 to 14 June 1996, it took place in Istanbul (Turkey), the Second United Nations Conference on Human Settlements (Habitat II), in which 171 governments and 8,000 representatives from 2,400 organizations participated in the parallel NGOs forum. It was the first conference of the United Nations which gave an official platform for civil society representation.

At this conference the Istanbul Declaration on Human Settlements and an action plan, the Habitat Agenda were formulated. In the Declaration, Heads of State and Government and the official delegations of countries assembled confirm objectives ensuring adequate

shelter for all and making human settlements safer, healthier and more livable, equitable, sustainable and productive (sustainable) in an urbanizing world.

To improve the quality of life in human settlements, must combat the deterioration of conditions facing broadly patterns of unsustainable production and consumption, unsustainable population changes, including the structure and distribution of the population, giving priority attention the tendency to excessive concentration of population, the homeless, increasing poverty, unemployment, social exclusion, family instability, inadequate resources, lack of infrastructure and basic services, proper planning absence, increased insecurity and violence, environmental degradation and increased vulnerability to disasters. Cities must be places where human beings enjoy a full life in dignity, good health, safety, happiness and hope.

Rural development and urban development are interdependent. In addition to improving the urban habitat, should be properly expand infrastructure, public services and employment opportunities in rural areas, to make them more attractive, to establish an integrated settlement network and minimize rural to urban migration. Particular attention should be paid to the medium and small towns.

The declaration recognizes the right of all to have adequate housing and agreed to expand the supply of affordable housing, providing legal guarantees regarding the possession, protect the population against discrimination and ensure equal access to appropriate housing.

Recognizing the impact that poverty and lack of access to land and its safe owning have, Habitat II pointed living conditions out as the main cause of violent social conflict and declining personal security.

In the action plan of the conference, known as Habitat Agenda, guidelines for creating sustainable human settlements are collected, taking into account their relationship with the environment, human rights, social development, women's rights, Annexes population and other issues. The Plan gives a positive view of the development; one in which adequate housing and basic services, a healthy and safe environment, productive and freely chosen employment are the rule rather than the exception (United Nations, 1996).

The program includes a statement of objectives and principles, a set of commitments made by governments, classified by subject:

- I. Adequate housing for all.
- II. Sustainable human settlements.
- III. Enablement and participation.

- IV. Gender equality.
- V. Financing human settlements.
- VI. International cooperation and assessing progress.
- VII. Strategies for implementation.

In 1997, the General Assembly held a special session devoted to evaluating the implementation of Agenda 21<sup>10</sup>, during which it was noted that at the time was more urgent than ever implement such a program, considered a priority focus on poverty eradication as a requirement prerequisite for sustainable development (UNIC, 2008).

In relation to promoting appropriate demographic policies, consideration contained in Principle 8 of the Declaration of Rio de Janeiro, the Secretary-General, after the fifth session of the Commission on Sustainable Development, says that the adoption of such policies must be pursued by each State (United Nations, 1997).

Between 6 and 8 September 2000, leaders of 189 countries met in the city of New York reaffirming faith in the United Nations and its Charter as indispensable foundations of a more peaceful, more prosperous and just world. During the meeting the Millennium Declaration was approved, based on a decade of major conferences and summits of the United Nations. In this historic document aspiration of peoples to build a better and safer world for the twenty-first century is embodied; united by common values of freedom, equality, solidarity, tolerance, respect for nature and shared responsibility (United Nations, 2008b).

Based on the Declaration was fixed, unlike what happened in previous conferences, a very specific set of objectives to which the community of nations committed to target their efforts; these objectives were accompanied by goals to be met for a preset time. The Millennium Development Goals are:

- I. Eradicate extreme poverty and hunger.
- II. Achieve universal primary education.
- III. Promote gender equality and empower women.
- IV. Reduce child mortality.
- V. Improve maternal health.
- VI. Combat HIV / AIDS, malaria and other diseases.
- VII. Ensure environmental sustainability.

10. Summit for Earth+5. Special session of the General Assembly for the review and appraisal of the implementation of Agenda 21. New York, 23-27 June 1997.



**VIII.** Develop a global partnership for development (United Nations, 2009a)<sup>11</sup>.

Later, between 18 and 22 March 2002, it took place in Monterrey (Mexico), the International Conference on Financing for Development, under which the Monterrey Consensus adopted which, in turn, contains a proposal for measures to address the problems of financing for development, especially in developing countries (United Nations, 2002a).

The Consensus reaffirms that each country has the primary responsibility for its own economic and social development, but given the close interrelationship today between national economies and the global economic system, developing countries and countries with economies in transition face trade and investment opportunities that can be exploited and special difficulties that the international community can help overcome. The proposal includes:

- I. The mobilization of domestic and international financial resources for development.
- II. International trade plays a role as promoter of development generating economic growth and employment.
- III. Increase international financial and technical cooperation for development.
- IV. Consider alternatives for sustainable financing of external debt, including relief for heavily indebted poor countries.
- V. Increase coherence and good management.
- VI. Increase consistency of the international monetary, financial and trading systems, to complement the work of national development (United Nations, *op. cit.*).

Also in 2002, this time between August 26 and September 4, held in Johannesburg (South Africa), the World Summit on Sustainable Development, having as purpose to follow up Agenda 21, brought the adoption of concrete commitments regarding the program and the achievement of sustainable development (UNIC, *op. cit.*).

In the Johannesburg Declaration commitment of nations reaffirmed to achieve sustainable development, which assume joint responsibility for promoting and strengthening environmental protection, social development and economic development at local, national, regional and global levels, inseparable pillars of sustainable development (United Nations, 2002b).

As the most pressing problem to be solve, poverty, underdevelopment, environmental degradation and social and economic inequalities within and between countries are identified and confirms that the way to solve them goes through defending the Rio Principles and fully implement Agenda 21 (United Nations, *op. cit.*, UN, 2002c).

About the impact of urbanization, the Declaration recognizes that due to the accelerated pace of this and the growing needs of the poor in rural areas, water supply and adequate sanitation are critical to achieving the goal of sustainable development.

In 2005, during the World Summit in New York from 14 to 16 September, the Heads of State and Government reaffirmed the Millennium Declaration and determination to ensure timely and full implementation of the agreed goals and target within (United Nations, 2005a).

On September 25, 2008, also in New York, a high-level meeting on the Millennium Development Goals was held, in which the initiatives and commitments of all nations including the disbursement of \$ 16,000 million dollars are collected (United Nations, 2008c).

Then in Doha (Qatar) from 29 November to 2 December 2008, the International Conference Monitoring on Financing for Development is performed to review the Implementation of the Monterrey Consensus, and after which the Doha Declaration (United Nations, 2009b) is issued.

The Doha Declaration reaffirms the commitment to take concrete measures to implement the Monterrey Consensus and address the challenges of financing for development, in a spirit of global partnership and solidarity with each of the points of consensus.

Between 20 and 22 June 2012, it was held the United Nations Conference on Environment and Development Rio + 20, in Rio de Janeiro. The event, which commemorated 20 years since Rio-92, included three main themes:

1. Assessment of compliance with the commitments made in Rio-92.
2. Contribution of the green economy for sustainable development and poverty eradication.

3. Structure necessary international governance for sustainable development, including attracting the necessary funds to implement the proposed actions.

As relates Aragon (2013), the developed countries who attended the conference, especially the Europeans, did it facing serious questions about the economic and financial crisis that is ravaging and quoting Sach (2008) recalls that *“the crisis is enough evidence that the neoliberal recipe failed. And that certainly broadens the scope to propose another vision of the future”*. A more forceful and coordinated action of emerging tropical countries was expected, including all Amazon countries, to gain credibility with bold proposals and organizing partnerships to change the course of the current system.

The Conference did not reach even close the transcendental results of Rio-92, causing the opposite great frustration, as had happened in other recent UN conferences where serious political and financial required, able to change the *status quo* commitments were not assumed.

According to Boaventura de Sousa Santos (cited by Aragon, 2013), despite the warnings made by the UN itself twenty years ago about the unsustainability of the current model of development and the visible consequences of climate change, Rio + 20 did not generate binding commitments to reduce emission rates of greenhouse gases, assuming differentiated responsibility for the most polluting countries, guarantee funds to implement sustainable development, achieve universal access to health or get the hang of pharmaceutical patents in emergencies and pandemics, among others. Similarly, the advocated green economy, able to solve the problem of poverty in the world, can become *“Trojan horse to finance capital spending to generate global goods and services that nature provides us for free”* (Santos, 2012).

Consequently, it is the countries individually or in block, which define their own agendas and take their own commitments towards society, according to the ideal of sustainable development under penalty of having to answer for the aggravation and deterioration of the environment and quality of life for present and future generations. In this sense, the Amazon because of its importance in the global scale may be the stage of the policies and actions implemented sovereignly by the Amazon countries, in coordination leading to a new civilizing era in which the rights of nature of society, men and women, are mutually reinforcing for the welfare of its people (Aragon, 2013).

## Governance for Sustainability and Governance

International events that were developed in the early 90s in preparation for the Earth Summit and the commitments made by Colombia with the signing of the Declaration of Rio de Janeiro and Agenda 21 in 1992, leading the country in its own National Constitution of 1991 to contemplate the concept of sustainable development.

The State was given the role of planning the management and use of natural resources, so it ensures sustainable development, conservation, restoration or replacement. Law 99 of 1993 which created the Ministry of Environment was signed; today Ministry of Environment, Housing and Territorial Development. The intention of the Colombian State was to formulate and implement a national environmental policy and renewable natural resources, to guide the process of economic and social development of the country following the universal and sustainable development principles was formalized through the enactment of Law 99 of 1993. With this legal framework, the country embarked on a new level of environmental management and renewable natural resources under a global, comprehensive, multidisciplinary approach and consistent population policy.

The country showed itself no stranger to international events that have occurred since the early 70s; presented a prolific development of meetings and global agreements on the human environment, population, development and human settlements. Colombia played a very active role, especially represented by the scientific community who cared to meet politicians, industrialists and the general public, the certainties of incompatibility and imbalances that were obvious when comparing the distribution and availability of natural resources with modes of production and consumption habits practiced especially by the developed world.

The country also focused on designing and implementing an institutional framework to oversee the environment and the use, development and regulated commercialization of renewable natural resources. In 1968, it was created the National Institute for Renewable Natural Resources and Environment, INDERENA (Decree 2420 of 1968), which advanced a famous work for more than 25 years. In 1974, there signed the National Code of Renewable Natural Resources and Environmental Protection (Decree Law 2811 of 1974), most of which is still in validity, and thereafter and permanently legislated and managed

11. Between 27 and 28 June 2005 (United Nations, 2005b) and between 23 and 24 October 2007 (United Nations, 2007), follow-up meetings of the Monterrey Conference, called High-level Dialogues Level of the General Assembly on Financing for Development, in which the approved general theme was entitled: “The Monterrey Consensus: state of implementation and future work”.

on behalf of the conservation and wise use of natural resources, from the enactment of Law 99 of 1993.

While the National Code of Renewable Natural Resources and Environmental Protection does not explicitly mention the concept of sustainability, the environment is considered as the common heritage of humanity, necessary for survival and economic and social development of peoples and public utility and social interest. In this sense, the preservation and management of renewable natural resources were also considered of public utility and social interest (Decree Law 2811 of 1974, *op. cit.*).

The Code sets out three objectives:

- I. To ensure the preservation and restoration of the environment and conservation, improvement and rational use of renewable natural resources, according to equity criteria that will ensure the harmonious development of man and of those resources, permanent availability of these and the maximum social participation, to benefit the health and welfare of the present and future inhabitants of the country.
- II. To prevent and control the adverse effects of the exploitation of non-renewable natural resources over other resources.
- III. Regular human, individual or collective behavior and activity of the public administration, respect the environment and renewable natural resources and relationships arising from the use and conservation of such resources and the environment.

There is a clear relationship between the objectives of the Code and the general principles of environmental policy, expressed in Article 1 of Law 99 of 1993 and hence the validity of Decree-Law 2811 of 1974.

However, especially during the decade of the 80s, environmental management had difficulties prompted by several facts: INDERENA did not have national jurisdiction; there was little coordination capacity with corporations; it had very limited financial and human resources; and made decisions subject to the approval of the Ministry of Agriculture, which added to the lack of awareness of environmental problems of the time, they were aggravated with time and led to the necessary institutional evolution to all hierarchical system that today makes up the National Environmental System.

In the most recent legislation, it is meant by sustainable development, one that leads to economic growth, raising the quality of life and social welfare

without depleting the basis of renewable natural resources on which it is based, or damaging the environment or the right of future generations to use it to satisfy their own needs (Republic of Colombia, 1993).

The concept considers viable and supported the achievement of these cherished desires, with the durability of the base of renewable natural resources and environmental integrity at times, present and future. This consideration is just a setting that emerged in Stockholm in 1972, during the celebration of the Conference on the Human Environment (INDERENA And UNEP, 1983).

At the regional level in Colombia, the impact of all the previously referenced international movement, manifested in the Law 99 of 1993, where the Regional Autonomous Corporations were created. These are defined as corporate entities of public character responsible for administering, within the area of its jurisdiction, the environment and renewable natural resources and foster sustainable development in accordance with the laws and policies of the Ministry of Environment. Corporations are intended to implement policies, plans, programs and projects on environment and renewable natural resources, and implement so fulfilled and timely, existing legal provisions on their disposal, administration, management and use, in accordance with the regulations, standards and guidelines issued by the Ministry (Republic of Colombia, *op. cit.*).

Law 99 of 1993 created a special set of corporations, called Corporations for Sustainable Development, which are responsible for managing natural resources and the environment in regions of special arrangements, including the Amazon region. In this three corporations have jurisdiction:

- I. The Corporation for Sustainable Development in the North and East –CDA– Amazon, whose jurisdiction covers the territory of the departments of Vaupés, Guainía and Guaviare.
- II. The Corporation for Sustainable Development of South –Corpoamazonia– Amazon, whose jurisdiction includes the territory of the departments of Amazonas, Putumayo and Caquetá.
- III. The Corporation for Sustainable Development Special Management Area –Cormacarena– La Macarena, whose jurisdiction corresponds to the department of Meta. Together, these three corporations manage the natural resources of 91.35% of the area comprising the Amazon region.

These special corporations, in addition to the characteristics of the regional autonomous corporations functions, have to promote awareness and use of renewable natural resources and the environment; exercise activities to promote scientific research and technology transfer; direct the process of regional land use planning to mitigate or disable pressures of inadequate exploitation of the territory; promote the integration of traditional communities that inhabit the region and its ancestral methods of harnessing nature to the process of conservation, protection and sustainable use of resources; advise municipalities on environmental planning process and issue the necessary regulations for the control, preservation and protection of ecological and cultural heritage of local authorities, and to promote, with the contribution of national and international entities, generating appropriate use and resource conservation technologies in the Amazon region.

Through Law 99 of 1993, it was also decided to transform the Corporation for the Colombian Amazon Araracuara –COA– in the Amazon Institute of Scientific Research –Sinchi–, which aims the development and dissemination of scientific studies and research on high level of biological, social and ecological reality of the Amazon region.

In 1994, CONPES 2750 document which contains the National Environmental Policy Social Leap called Sustainable Human Development was approved. The guidelines of this policy raises the objective of gradually moving towards sustainable human development, understood as the expansion of opportunities and productive capacities of the population that contribute to a better and more training “social capital” (DNP, 1994).

It is argued that the comprehensive and multidimensional sense of sustainable human development determines the need to incorporate environmental policies urban, industrial, agricultural development, population and human settlements, foreign trade and international relations, among other considerations. Therefore, environmental policy will be based upon advance sustainable human development, with five basic objectives:

- I. Promoting a new culture of development.
- II. Improving the quality of life.
- III. Promoting clean production.
- IV. Developing a sustainable environmental management.
- V. Target population behaviors.

It was expected that the development of a sustainable population policy would effect on trends in migration and human settlements, strengthening incorporating the population dimension in planning processes.

Environmental policy should be based on knowledge and understanding of ecosystem functioning, social and demographic aspects and environmental impacts of human action on the environment. Research institutes created by Law 99 of 1993 and other research entities, in coordination with the National Science and Technology, should form a scientific and technological base to make it available to the decision makers, information of this kind required. The Ministry of Environment and research institutes should promote the rights and dissemination of knowledge, values and technologies on environmental management of indigenous cultures and other ethnic groups.

To move towards sustainable human development, it is proposed to carry out a process to solve the major environmental problems, to prevent deterioration of the ecosystems of greater strategic value and build the foundations of a new culture of development to achieve a change in long term planning. The actions proposed in the document CONPES 2750 are grouped on two fronts; environmental improvement actions and instrumental actions. In actions for environmental improvement are considered, among others, two related to population and human settlements programs:

- I. Best Cities and Towns.
- II. Towards a Population Policy, and as one of the instrumental actions planning and environmental management are foreseen.

The objective of the first program was to improve the quality of life and health of Colombians living in urban centers, reducing pollution, promoting the rationalization of transport and recovering public spaces. According to Pacheco (1995), the formulation of this program prompted the administrative assembly of the General Bureau of Human Settlements and Population of the Ministry of Environment. This program was considered relevant to encourage the establishment of public and recreational spaces, and proper tree planting in cities. In areas of poverty it was appropriate to promote joint actions with the Social Solidarity Network and the Ministry of Development to incorporate environmental plans of social housing, urban environment and overcoming poverty component.



Regarding the second program, Towards a Population Policy, the document outlined the need to promote inter-agency coordination actions to advance the establishment of a sustainable population policy, which pass the discount on the trends of migration and human settlements. It also mentioned the development of a program to strengthen the population dimension in planning processes through the creation and implementation of the National Population, with the participation of related entities. Finally, we assigned the Ministry of Environment the formulation and implementation of a Plan of Research on Population and Human Settlement, to define lines and priority issues that have a bearing on the reorientation of migration flows seeking regional balances, with answers to displaced groups and groups attracted development poles. Equally important it was to formulate and implement policies to control colonization, which stimulate the intensive use of land not used to its full potential and at the same time dismisses the expansion of the agricultural frontier.

The environmental planning was a key regional environmental planning and management tool. They argued that, with the guidelines of the Ministry of Environment, corporations coordinate participatory manner, preparation of plans, programs and environmental projects and, in particular, advise departments and municipalities in environmental development plans, so that harmony and coherence of policies and actions taken by various local authorities will ensure.

Finally, the paper recommended that the National Planning Department and the Ministries of Government, Environment, Education, Health, Economic Development and Agriculture draw up a paper on population policy, location of human settlements, colonization and improvement of reserves indigenous and national parks, to be considered by the CONPES. It also recommended that the Regional Autonomous Corporations and Sustainable Development adopt and implement national environmental policies contained in that document.

From 1994 until 2006 it sought, unsuccessfully, that the Senate approve the implementation of a sustainable development plan for the Amazon, which sought its viability as an integrated peace building and social wealth region. All from its environmental offer, through a plan aimed at lasting improvement in the quality of life of local, present and future inhabitants, both in urban areas, and rural.

In July 1996, in the framework of the Summit of the Americas in Santa Cruz de la Sierra (Bolivia), the commitment of Colombia and the other Amazon

countries, to develop an Agenda 21 for the Greater Amazon Basin was signed as prior to the formulation of national agendas step.

The building process of Agenda 21 Colombian Amazon began in May 1998 (Institute Sinchi, 2001a), and after three phases of development, was published in 2007 a set of regional agendas for the departments of Amazonas, Caquetá, Guainía, Guaviare, Putumayo and Vaupes, and for the municipality of La Macarena.

The result of the work undertaken in meetings, presentations, workshops and a panel of experts, as well as a participatory planning process, the desired Amazon loomed; a region where:

*“Let’s find differences in cultures and on the basis of the potential of natural resources our greatest source of wealth to build a culture of life. A consolidated with minor imbalances in relation to other regions, with a participatory society and structured territorial and institutions that promote their own development entities, through its political, economic, institutional, social and environmental strengthening region. Having identified communities in the Amazon, living in healthy and safe conditions, basing their relations on respect for their fellow human beings and the environment, working in conditions that ensure them every day more welfare and supported by institutions focused on the region”* (Sinchi Institute, *op. cit.*).

The proposed Environmental Public Policy for the Amazon Region: Towards the desired region, was appropriated among others, aim to raise the quality of life of the inhabitants of the Colombian Amazon and as tools for the implementation of environmental policy the region, the formulation of programs and projects related to human settlements (Sinchi Institute, 2001b) were contemplated.

These events and the responsibility assigned to the Institute Sinchi in connection with them, promoted and strengthened the formation of a research devoted to the study of human settlements in the Amazon region through the identification, characterization and explanation of the status and dynamics of the human occupation of the Amazon territory, as well as the determination of the specific social, economic and functional space of different groups based in the region, work that remains permanently (Sinchi Institute, 2007c).

Since the Amazon region, along with the Pacific region and the Orinoco concentrated domestic supply of biodiversity and environmental goods and services with future prospects, policy guidelines were aimed at:

- I. Strengthen preventive and planning actions to prevent and control the transformation and degradation of strategic natural ecosystems and the negative environmental impacts generated by oil activity and illicit crops.
- II. Promote scientific and technological development on limitations and potential of the use of ecosystems and tropical forest soils.
- III. Promoting experimentation and generating added value and economic options for the population, from the use of biodiversity resources and recovery of traditional production systems.
- IV. Promote the strengthening of cultures and territories of ethnic groups (MMA, *op. cit.*).

The same document proposes that local and regional specificity of environmental and population processes requires strengthening the regional dimension in the formulation, implementation and monitoring of the policy; that violence associated with the concentration of ownership, poverty or income mechanisms of forces outside the law, is the main factor of destabilization and uncontrolled population migration; and the impoverishment of the population, and the deepening of the urban-rural gap affects the productive capacity and quality of life of the population, especially its health and nutrition.

In relation to the processes of population distribution, document policy guidelines identified as the most important urbanization, the rural and ethnic territories.

The forces of attraction and expulsion existing in the Amazon region determine the structure of its urban-rural distribution. On the one hand, business development, job creation, public safety and the supply of public and social services of higher quality, typical of urban areas, promote the concentration of the population in these nuclei and migration of certain population groups from rural areas, in contrast, have poor characteristics on all these fronts. Moreover, the search for opportunities linked to the bonanzas, including the same exercise of illicit crops, whose irregular proliferation has led to the elongation and contraction of the rural population and finding land for the expansion of the agricultural frontier, have led to a contrary behavior (at least at certain times). The algebraic sum of these various forces a net in favor of cities, which is expressed in a similar trend balance (although of lesser magnitude) than the rest of the country arises, where most of the population is concentrated in the cities.

This reality as it moves exerts pressures of various kinds on the cities, that despite settle in dynamic

centers of economic and cultural activity and contribute to economic and social development of the country and the region-which empowers them with the capacity to absorb certain population impacts begin to undergo changes of such magnitude and such speed, exceeding the adjustment capacity of their communities and management administrations, ultimately, impair its environmental and social conditions.

Some of the problems which become manifest are:

- I. The occupation unfit for human habitation (prone to flooding or landslides areas, or to another use, including conservation, are used for the installation of substandard housing in cramped conditions, areas which increases vulnerability risk).
- II. The effect on the health of the poor, driven by consumption of poor quality water, deficiencies in basic sanitation and air pollution.
- III. The accumulation of garbage of all kinds.
- IV. The inefficient and unsustainable use of natural resources and the environment, which includes the generation of significant environmental impacts that affect very distant places.
- V. Congestion and invasion of public space.
- VI. Insecurity.
- VII. The high mortality urban violence and traffic accidents.
- VIII. Loss of cultural values and the formation of rural subcultures in the shantytowns.
- IX. The proliferation of poverty.

In rural areas of the region in formation at the expense of natural ecosystems coverage, no minor problems are also presented. The trend of advancing agricultural frontier in the areas of colonization is to replace the temporary primary forest for illicit or licit crops that result, sooner rather than later, to process cattle ranching. This leads on the one hand, recognized environmental problems such as soil degradation, pollution of water and permanent loss of tree vegetation cover, among others, and on the other, social problems such as concentration of ownership land, loss of cultural identity and violence.

In the Amazon region has settlement most of the indigenous population, distributed mainly in territories whose common property is recognized by the figure of safeguards. These lands are covered by natural forest, which is harnessed to sustain life of indigenous groups through their ancestral knowledge of environmental supply and the cycles of nature.

The National Population Policy and the Environment is directed to the fulfillment of two general objectives:

1. Target population processes for efforts to promote economic development and improve the living conditions of the population ensure sustainable supply of environmental goods and services is used for this purpose.
2. To foster the improvement and sustainability of environmental conditions in which the quality of life and development of the Colombian population are based.

The specific objectives are mentioned:

1. Support from environmental the current trend of slowdown in population growth rates, in order to promote growth consistent with sustainable human development, especially in areas where the demographic transition is lagging behind.
2. To promote the stabilization of population dynamics on the fronts of colonization that are in advanced process of consolidation, and incorporate environmental production practices, settlement and land management criteria. In turn, creating options designed both to discourage the opening of new fronts of colonization in areas of forest and water production, and to create alternative production and compatible with environmental conservation of these ecosystems settlement ecosystems.
3. Anticipate and control associated with the development of mega-projects, construction of mining infrastructure and environmental impacts, and address population movements associated with these.
4. Retrieve and strengthen diversity and sustainable productive capacity of the rural economy and help create the conditions for insertion as part of the alternative development of the country and the improvement of living conditions of the rural population.
5. Contribute to creating the conditions for population, environmental, cultural and territorial strengthening of ethnic groups, according to their own cultural patterns, and to ensure that their territorial and economic rights are respected.
6. Contribute to improving the environmental conditions of children, youth and women as social actors who make up the option for the future of the country and as the fundamental subjects of sustainable human development.

7. Improve, develop and strengthen national, regional and local institutional capacity to understand and appreciate, from the sectorial and territorial perspective, the dynamics of population and environment and integrate processes respective decision-making.

Finally, in relation to the Amazon region, Population Policy and the Environment provide, among others, the following recommendations:

1. Support welfare actions contributing to accelerating the demographic transition and prevent impacts associated to spatial mobility.
2. Accompany the processes of formation of peasant reserve areas, particularly in Caquetá, Putumayo and Guaviare.

In 2008, the Urban Environmental Management Policy was formulated whose main objective is to establish guidelines for sustainable management of urban areas, defining the role and scope and identifying resources and instruments of the different actors involved, according to their skills and functions. The purpose is to harmonize management, sectorial policies and strengthen opportunities for interagency coordination and public participation to contribute to urban environmental sustainability and quality of life of its residents, recognizing regional diversity and types of urban areas in Colombia.

The following year, 2009, the National Policy for Integrated Water Resource Management was redacted, in order to ensure the sustainability of the resource by management and an efficient and effective use, articulated the planning and land use and conservation ecosystems that regulate water supply, considering water as a factor of economic development and social welfare, and implementing equitable processes and inclusive participation.

In 2012 the National Policy for Integrated Management of Biodiversity and Ecosystem Services –PNGIBSE– was formulated, whose main objective is to promote integrated management for the conservation of biodiversity and ecosystem services, so as to maintain and improve resilience of socio-ecological systems at national, regional and local levels, considering scenarios of change and through joint, coordinated and concerted action by the State, the productive sector and civil society.

A new model of management of biodiversity in the country wants to be promoted and to that end, the Ministry of Environment, Housing and Territorial

Development –MADS– adopted as the core of management, ecosystem approach. This will generate a balance between different social interests against biodiversity and maintenance of ecosystem services resulting from this that are key to human welfare. The PNGIBSE proposed under this approach, the concept of integrated management of biodiversity, understood as “the process by which plan, implement and monitor the actions for the conservation of biodiversity and ecosystem services, on a territorial scenario defined and different states of conservation, in order to maximize human well-being” (MADS, 2012).

The new Biodiversity Policy (PNGIBSE) should be understood as follows (Andrade et al., 2011):

- a. The biodiversity policy is not understood only as objects of interest in the natural sciences, but biodiversity management as a process in society. It emphasizes not only the permanence of a state of biodiversity but intervention in specific contexts to bring about a change in a desired direction.
- b. The policy seeks to intervene in the processes of change that affect the functionality and integrity of biodiversity, is not equal to a conservation policy, but a policy change management of biodiversity in the territory. Conservation objectives remain, but are reviewed and validated in the context of change, at predetermined evaluation cycles.
- c. The policy refers not only to biodiversity seen as attributes of nature (genes, species and ecosystems), but is based on an emerging concept of biodiversity that integrates human dimensions, including ecosystem services and human welfare.
- d. Politics is not knowledge, conservation, sustainable use and equitable sharing taken separately, but a policy of territorial management of biodiversity that feeds on these actions.
- e. The policy seeks to provide elements of biodiversity management throughout the territory (not only protected or less disturbed areas).

The challenge of running this task is enhanced by the scope and complexity of issues that must be addressed.

The MADS considering that this Policy developments should be relevant and appropriate to the regional characteristics of such a diverse country such as Colombia, signed an agreement with the Amazon Institute of Scientific –Sinchi– to facilitate the formulation of policy guidelines for the Amazon region. Among the conclusions of this formulation stands:

*“According to the National Policy for Integrated Management of Biodiversity and Ecosystem Services, Biodiversity Strategy for the Colombian Amazon, recognizing the interdependence between social systems and ecological systems, and properties of this relationship emerge, and the needs to recognize the multiple both temporal and spatial scales that characterize them.*

*Biodiversity and human wellbeing, relationship should be a central theme in the strategy therefore should identify its main purpose the maintenance of ecosystem services and welfare of the inhabitants of the region.*

*It is important that the Biodiversity Strategy for the Amazon establish the necessary links with other national policies and instruments such as the National Policy Research, to develop lines that address everything related to biodiversity and ecosystem services.*

*The Biodiversity Strategy for the Amazon should consider land management from an integral and functional vision, including tracts of forest, collective territories, protected areas and ecological networks. It is important to note here the boundary condition.*

*Finally, it is necessary that the strategy of Integrated Management of Biodiversity will become a guiding instrument decisions against the development of the region to transform the idea of a marginal and conflictive region in the idea of a provider region of human welfare for country and the planet” (Sinchi Institute, 2013).*

The combination of the growth in world population and the exploitation of natural resources and production of goods with unsustainable patterns of consumption, you cause increasingly severe pressures on the capacity of the Earth to sustain life. The existence worthy of every new human being demand a minimum food, health, education, housing and clothing, which in today’s societies well can be extended to employment, transportation, culture, leisure and political exercise, among others.

If the increased demands as a result of population growth we add the multiplier factor producing certain patterns of consumption, we will be in the current scenario, which has motivated us to force the evidence of unsustainability of the development model present, to formulate a different model, one that



is sustainable. Improper and inefficient environmental and natural resources management has negatively affected the use of land, water, air, energy and other resources, and an intricate network of relationships, its effects were reversed against the species human. For Agenda 21 it is necessary to develop strategies to mitigate both the adverse impact of human activities on the environment and the adverse impact of environmental change on human populations.

However, it is appropriate question regarding sustainability, human settlements in Amazonian soil to grow in magnitude and dynamics that are doing it, and if you have any validity locally and regionally the phenomenon is analyzed in the light of concepts as the optimal size of cities. That in the case of the Amazon region, not only it would have to take into account the conclusions arising from the ability to qualify each of the cities in the short, medium and long term, to meet efficiently –from the point of view administrative– the demands of the growing population, both urban land for housing and institutional and urban infrastructure and public and private services, but also those related pressures on the environment and renewable natural resources are multiplied and whose effect on sensitive Amazon ecosystems, where these cities are located, can be fatal.

The population of the cities as well as urban land, requires construction materials, drinking water, food, transportation, places to deposit their solid waste and to dump sewage, and all activities related to their occupation, extraction, production and storage cause impacts, it is necessary to verify whether they can be sustainably damped by the Amazonian ecosystems.

Each settlement has its own capacity limits, which are not static and change over time; they depend on the level and structure of the population, economic and human resources and infrastructure, which in turn are also in continuous evolution. Therefore it is crucial to monitor and analyze each of these elements, since as long as the capacity limits of the settlement are exceeded, deterioration occurs rapidly against sustainability. The experience of many cities shows that if growth beyond the capacity planning and management or urban management is not correct, they face major environmental problems.

Urban management lags behind the spontaneous development, and the region is waning a real ability to think, plan and realize in the future, sustainable cities designed today, than outside the Amazon environmental condition where they settled.

Own factors and demographic trends of Amazonian cities; seem to be considered independent

variables in the model of development of municipalities. In terms of size or growth, it is not contemplated that urban and rural population of a given settlement has, in a specific moment in time, an optimal state. A fact which means Amazonian cities follow the same path that others followed unthinking years ago and today present serious problems of urban decay, pollution, quality of life of its inhabitants and insecurity and even see threatened their own sustainability.

The sustainable development considerations dictate that in the process of growth of cities without an active and effective intervention, supported by the committed action of civil society and productive sectors, which guarantees the right of everyone to a healthy environment and that incorporates environmental costs of development, recognition of costs and pollution protection.

As suggested Aragon (2013) following Sach (2004), to give content to the concept of sustainable development must be socially inclusive development jargons, environmentally sustainable and economically sustained over time. What is desired is a process of development capable of promoting the welfare of all, based on ethical principles of justice and solidarity; in ecological conditions of responsibility to present and future generations; instruments of economic efficiency, based on what society as a whole considers the rational use of natural resources and the proven ability to support ecosystems and not only with the prospect of profit. There should also be taken into account other related regional and national imbalances dimensions, respect for cultural diversity and democratic practice (Aragon, 2013).

### Development Model for the Region

The republication of the book *Urban Profiles in the Colombian Amazon* allows delving into a number of key aspects for the construction of a vision of the development model of the region. The water wealth analyzed through the zones and subzones, groundwater and aquifers more high rainfall, indicates that water is the most strategic resource for sustainable management, as the human population has no potable water. Facing the imminence of large-scale oil developments, it is required to establish its deep relationship with sedimentary basins, oil blocks and the large number of mining titles in the pipeline, as a means to determine the actual demand and high resource.

The book starts with the picture of the watershed as the first litmus test of the region. Water supply is

the priority ecosystem service. The integration of water as a viewing stand development means providing water consumption conditions for all its inhabitants, regardless of race or social or ethnic background, as well as for all species living in it and of it. Water quality and healthy is one of the conditions that indigenous peoples demand to “heal” and maintain spiritual balance between man, animals, plants and microorganisms, such as ratifying the spirit guides and shamans of all Amazonian ethnic groups.

This binding thinking among all that exists is universal. Shiva (2007) argues in his book *Water Wars* clash between two cultures: one that sees water as sacred and considers its supply an obligation to preserve life and another that considers a commodity whose property and trade are corporate rights fundamental. The culture of commodification of water is at war with the diverse cultures that share, receive and give water for free. Nonrenewable and polluting plastic unsustainable culture is at war with civilizations based on dirt and mud and cultures of technologies and renewal. This author exposes the following “Nine Principles of water democracy”:

1. *Water is a gift of nature: water receives free nature. We owe it to nature to make use of this gift according to our needs for subsistence, keep it clean and in adequate quantity. Deviations with arid or waterlogged regions that are created violate the principles of ecological democracy.*
2. *Water is essential for life: water is the source of life for all species. All species and ecosystems are entitled to their ration of water on the planet.*
3. *Life is closely related to water: water closely every being and every place on the planet through the water cycle. It is our obligation to ensure that our actions do not harm other species or individuals.*
4. *Water for subsistence must be free: because nature provides water free of charge, their sale for profit violates our inherent right to this gift of nature and denies the poor of their human rights.*
5. *Water is limited and can end: the water is limited and can be finished if used not caring sustainability. Unsustainable water use includes get more ecosystems which can restock nature (not ecological sustainability) and consume more than our legitimate, given the rights of others to a fair share (not social sustainability).*
6. *Water must be preserved: all have an obligation to preserve water and use it sustainably within ecological limits and fair.*

7. *Water is a commons: water is not an invention of mankind. Cannot be limited or has limits. It is by nature communal. It cannot be owned as private property or sold as a commodity.*
8. *No one has the right to destroy it. No one has the right to use excess, abuse, waste or pollute it. Tradeable pollution permits violate the principle of sustainable and fair use.*
9. *Water is irreplaceable: Water is intrinsically different from other resources and products. It cannot be treated as a commodity.*

Various ecosystem services provided by the Amazon region: water regulation, forests and biodiversity; by its location in the equatorial belt, brightness and solar energy, food supply and hydro-biological resources, cultural diversity. However, it is necessary to insist on its importance for the balance hydroclimatic at a global scale, the survival of indigenous communities and other newcomers communities, because these attributes must be at the center of its development model.

The Amazon is synonymous with water, based on maintaining standing forests. Advances in science allow us to understand more and more deeply what they are as sophisticated mechanisms. According to Nobre (2014), the jungle in its untouched state constitutes a green ocean that is closely related to the gaseous ocean of the atmosphere, with exchanging gases, water and energy; it is like the ocean blue seas, primary source and final repository of the water that irrigates the continents. This claim is based on five important discoveries for the Amazon Eco hydrology:

1. *Recycling humidity: geysers jungle. The Amazon forest kept moist air moving, leading to rainfall to the continent in areas distant from the oceans. That happens because of the innate ability of trees to transfer large volumes of water from the soil into the atmosphere through transpiration.*
2. *Nucleation of clouds: dust pixies in green ocean. Formation of heavy rains in clean air. Trees emit volatiles precursor seeds condensation of water vapor whose efficiency cloud nucleation results and benign abundant rains.*
3. *Biotic moisture pump: donate water for rain. The Amazon rainforest has been able to survive the climatic cataclysms thanks to the formidable competition to support a beneficial hydrological cycle, even in unfavorable external conditions. According to the new theory of the biotic pump, abundant transpiration of trees, coupled with strong condensation in the*

formation of clouds and rain (condensation is greater than the adjacent oceans) leads to lower atmospheric pressure over the jungle that sucks moist air from the ocean to the continent in keeping the rains in all circumstances.

4. *Aerial rivers: Fresh water suspended arteries. The reason why the southern portion of South America east of the Andes is not desert like areas at the same latitude west of the Andes and elsewhere is that the Amazon rainforest not only keeps the moist air for itself but exports air vapor rivers that carry water to the heavy rains that irrigate distant regions in the hemisphere summer.*
5. *Rugged Dose: brake accumulation of winds. The reason why the Amazon region and nearby oceans do not promote the occurrence of atmospheric phenomena such as hurricanes and other extreme weather events, is the dosing effect that the rugged forest canopy to distribute and dissipate the energy in winds and acceleration large-scale lateral winds in the lower atmosphere promoted by the biotic pump. The spatially uniform over the jungle canopy condensation prevents the concentration of power of the winds destructive vortices, while escaping atmospheric moisture through the side clearance above the ocean, depriving the storms their energy food (water vapor) in the regions ocean adjacent to large forests (Nobre, 2014).*

All these effects together make the majestic Amazon jungle the best and most valuable ally of all human activities that require rain to the extent appropriate, a pleasant climate and protection of extreme events. Unfortunately, deforestation and fire have caused adverse effects on climate. To devastate the “green ocean” a dramatically inhospitable climate is generated because perspiration is reduced, the dynamics of clouds and rain is modified and the dry season is prolonged. This will have unintended effects, such as damage by fumes and soot. The future is even worse than the prediction models have projected so far, says Nobre, since severe cumulative extent of deforestation in the Amazon emerges as the main factor affecting the climate.

A deforested areas degraded areas should be added because its impact has been less studied. A mitigation plan, based on the radical reversal of the damage both past and expectations of future damage is recommended; the only responsible option, according to Nobre, is to act vigorously to combat the causes of deforestation. Disseminate and universalize this new knowledge is the first action that can reduce the pressure of the main cause of deforestation: ignorance. Secondly,

it is necessary to zero the deforestation, degradation and fire, with all the resources and ethical means possible, in the interest in life. In that sense opposite the cumulative degradation, it is necessary and inevitable replant and restores the destroyed forest, developing strategies to recover lost time. Protected and restored forest may be the main ally of human inside and outside the Amazon (Nobre, 2014) activities.

The presentation of the researcher Antônio Nobre was presented in Lima months before the COP 20 of the Framework Convention of the United Nations on Climate Change (UNFCCC) in December 2014. At the end of the event, highlighted the indifference with which countries industrialized see their commitments to climate change, which is not very different from the less developed countries such as Colombia. On the **Map 55**, it is spatially expressed the great ignorance and ignorance of speaking Nobre. Only ignorance justifies steamroll the jungle with the intention to obtain ephemeral wealth that will end with mine water and life which is the Amazon, which works itself free of human greed.

As Boaventura Sousa Santos Express (2012), the promise of wealth is so compelling that happens to condition the development pattern, with the following risks:

*“GDP growth rather than social development; widespread corruption of the political class; increase rather than poverty reduction; increasing polarization between a small super rich minority and a vast majority of indigent; environmental destruction and countless sacrifices to the populations where the resources are in the name of progress that these will never know; creating a consumer culture that is practiced only by a small urban minority, but imposed on the whole society. In sum, the risks are that at the end of the orgy of resources the country is poorer than the beginning” (Santos, 2012).*

As Sach (2008) states:

*“We are all amazónidas, because the future of our species on Earth will depend in large part on the destination that will be given to the Amazon jungle large dispenser of climates and regulating the water regime, besides concentrating a rich biodiversity. The Amazon is not the Garden of Eden or the green hell described by its supporters and detractors. Deforestation in the Amazon must stop, if we really want to avoid irreversible and destructive climate change” (Sach, 2008).*

It is essential to emphasize the close relationship between this “biotic moisture pump”, especially in the Andean-Amazonian strip, and the existence, consolidation and expansion ring settlement, each time advancing on the watershed of the Andes and the top of the Amazon basin. Controlling its unbridled expansion is one of the most urgent to plan measures so that the geodynamics and water stability is not disturbed and hedges highest mountain, as the repeated floods and landslides and other disasters in Andean-Amazonian countries. These are confirmation of this serious environmental problem.

Planning the mining and energy institutions in the country have made the region, presents its potential and possibilities of use: the existence of mineral deposits and their likely exploitation of the exhaustion of mines in the world, will make the region an eminent mining frontier, which is already becoming a trend.

Increasingly, Colombia and the countries of the Great Region offer the world the existence of large mineral reserves and create the conditions for extraction, as it makes it established the constitution of the Mining Reserve Colombian Amazon, in accordance with Resolution 0045-12, which was presented to major global mining consortiums, although overlaps in more than 16 million hectares of indigenous reserves. However, their provisional suspension by Colombian courts Mining Reserve will remain promising area to offer large international mining consortia.

Biophysics regionalization help, in turn, to make sense of the way the system is taking human settlements, which increasingly absorbed traditional indigenous modes distributed in the territory. There are well known settlements from land, meadows and várzeas of the great Amazon capillary system; it is about the large cities on the banks of the main rivers of that system: Manaus, Pucallpa, Belém do Pará, Puerto Maldonado, Iquitos, Florence, Puerto Asís, Leticia, San Vicente de Caguán. For these urban centers, risk management, flood or changes in the riverbeds will be in the construction of development proposals. Large, medium and small cities that historically were located in the main water channels are in arrears for managing the strategies to respond adequately to the water variability that climate change will bring and develop coping mechanisms of these human settlements to changes in the climate.

In Colombia the new sub-regionalization described for the Amazon, offers the opportunity for a deep discussion about planning and what to do with this magnificent region. The four subregions defined

and supported in this publication have elements that allow their understanding increasingly manageable and plannable scales.

The western sub region has the highest number of cities and small cities, including Florencia, San Vicente de Caguán, Belén de Andaquíes, Mocoa, Puerto Asís and Villagarzón. It is the most urbanized and the possibility of designing a system of cities with better planning standards, which comply with the conditions of their rainforest habitats.

For its greater internal integration and the rest of the country it has good prospects for the development of local economies in agricultural and livestock base, with markets in both urban centers and planned to cities like Neiva, Pasto, and Popayan. These local economies will prevent some of the regional impacts arising from extractive mining –oil, gold, copper, construction materials– that threaten it; but also, they have the opportunity to develop areas of support for mining activities to be undertaken, and why not, also, to rethink whether large-scale mining is really convenient for all forms of life in this sub region. The academy, engineering, social and environmental management, participation and community organization, will have new scenarios to integrate development proposals so that the conflict or almost irresolute water or mining, water or food dilemma is exceeded, poverty or mining.

Given the existence of the potential and the possibility of a large scale mining –copper mining open sky–, oil wells and pipelines, will need to assess whether to have the maximum compensatory measures for its use, it is sufficient to mitigate the impacts these activities may entail. To guarantee the existence in optimal conditions of the slopes and Andean highlands, have positive effects on water regulation, vegetation cover and biodiversity preservation piedmont. Good environmental management will mitigate some of the impacts of the construction of the marginal way of the jungle, the Pasto-Mocoa and secondary and tertiary road network planned for this sub region route, which already has the most extensive and road density among the four sub regions rose.

Meanwhile the northern sub region, whose hub is the city of San Jose de Guaviare, faces several of the hottest spots of deforestation registered in the Colombian Amazon. The functional connection with Granada and Villavicencio in the north, San Vicente del Caguán in the west and Puerto Gaitán and Mapiripán in the east, composed of the marginal road to the Llanos and Venezuela, make region with great growth potential for agribusiness and livestock. To prevent this region to become an area of the eastern plains



of Colombia, due to the intense grass landing concurring in southern Meta and northeastern regions of Caquetá, are urgently needed technological developments that use sustainably environmental attributes that they are characteristic, as a transitional zone between the tropical rainforest and natural grassland plain. San José del Guaviare, hub and main pole, requires advance its model of urban sustainability as a pillar of development.

The long history of illicit crops, intense spraying, population displacement and land concentration, plus the existence of important Forest Reserve Areas Act 2 –Amazonian Forest Reserve– and the largest Farmer Reserve Zone of Colombia are incorporated in the project as a central stage for post-conflict actions.

The northeastern sub region is of immense interest to the Colombian State for its mining potential. Indeed, Guainía and Vaupés have most of the Strategic Reserve Mining, given the mineral offer. Its projection towards the great mining will inevitably enter in confrontation with the great cultural and biological diversity which keeps the territories, under the figures of indigenous reservation, national natural reserve or forest reserve. These juridical figures, the presence of more than 30 indigenous peoples, the two main cities of the region, demand a paradigmatic model of development that reconciles the interests of the State, which offers to the large mining consortiums the existing potentials, with the ethnic attributes, legal and urban ones.

The southern sub region requires a differential attention, as it represents the largest area of international border and geostrategic importance, as Brazil maintains its regional projections of power in the South American continent; Peru moves towards the exploitation of its oil fields in the Amazon region, which become paradigm of development what happens at that side of the border; likewise, the relocation of illicit crops that has been projected for both countries by the frontal attack that the Colombian State is making to coca crops.

Meanwhile, Leticia has the characteristic of being a metropolitan city with its pair Tabatinga, a population of over one hundred thousand inhabitants and a radius of influence of 300 kilometers around. Therefore, the region with the longest border line should be designed with this attribute, where the integration of the three countries-Colombia, Brazil and Peru will become the hallmark, with cosmopolitanism that

characterizes it, the great institutional strength that present the first two countries and, surely, the location of new institutions. Indigenous peoples of this area are the socio-demographic binding basis.

In a globalizing world, with most of the population living in cities and towns of varying size, must be addressed without delay the issue of settlements and sustainable cities. Colombian Amazonian cities are small, are intermediate cities that emerge in this vast territory of 483,160 square kilometers, as the center of gravity to start altering them in a planned way at the dawn of the third millennium: the urban civilization, science, technology, communications and biodiversity. The cities are in time to be thought out and organized, so they do not bear the burdens of the great Andean and coastal cities. Likewise, it is considered the instance of normalization between multiethnic society and self-biodiversity nature of the region. Amazonian cities are those that should be given the opportunity to “mediate” sustainable future human habitats. The great purposes of innovation, cooperative rather than competitive, sustainable environmental and land management, risk prevention and regional convergence, have in the Amazonian city bulwark to be brought to its full realization.

There are programs of international technical cooperation and significant progress in the country, which want to implement new paradigms for sustainable growth of cities and other human settlements in the developing world. Its purpose is to generate visions, methodologies and strategies that make urban areas more livable, facing challenges, working closely with municipal governments and civil society, focused on several key areas such as urban sustainability (land use, quality of housing, public transport, energy efficiency, traffic, public safety, efficiency), environmental sustainability (pollution, water resources, waste management, air quality, carbon emissions, adaptation to climate change and natural disaster preparedness), and fiscal and governance (increased tax income, greater impact of public investment, planning decisions and transparent budget, measuring the results of public investment). All these through the integrate analysis of the problems of the city and other settlements to identify the best way to solve them. The integration of all these factors with help from all involved will enable new, better and more sustainable the various types of settlements in the Colombian Amazon.

72°39'0"W

72°38'0"W

2°36'0"N

2°36'0"N

2°35'0"N

2°35'0"N

2°34'0"N

2°34'0"N

2°33'0"N

2°33'0"N



SAN JOSÉ DEL GUAVIARE  
Fuente: Google Earth a través de SAS Planet

72°39'0"W

72°38'0"W



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## ATTACHMENTS



## Annex 1. Amazon Hydrographic Area

ZONA HIDROGRÁFICA	SUBZONA HIDROGRÁFICA	ÁREA Km <sup>2</sup>	
Amazonas	Directos río Amazonas	3.268,85	3.268,85
	Alto río Apaporis	12.353,29	
Apaporis	Bajo río Apaporis	12.786,20	
	Directos río Taraira	1.553,05	
	Río Ajajú	7.831,76	53.509,17
	Río Cananari	3.851,72	
	Río Pira-Paraná	5.865,25	
	Río Tunia o Macayá	9.267,89	
	Río Caguán Alto	5.841,55	
Caguán	Río Caguán Bajo	6.953,67	20.757,40
	Río Guayas	5.494,66	
	Río Sunsiya	2.467,51	
	Alto Caquetá	5.908,73	
Caquetá	Río Cahuinari	15.070,57	
	Río Caquetá Bajo	25.388,18	
	Río Caquetá Medio	15.742,31	
	Río Cuemani	2.431,71	
	Río Mecaya	4.535,30	
	Río Mirití Paraná	9.035,43	99.968,72
	Río Orteguzza	7.647,94	
	Río Peneya	1.605,77	
	Río Pescado	2.067,03	
	Río Puré	7.658,19	
	Río Rutuya	1.135,62	
	Río Sencella	1.741,94	
	Guainía	Alto río Guainía	3.708,42
Bajo río Guainía		7.951,69	
Directos río Negro (md)		3.540,20	
Medio río Guainía		2.786,69	
Río Aquíó o caño Aque		2.994,70	31.283,70
Río Cuaiarí		4.408,42	
Río Isana		3.457,90	
Río Tomo		2.435,68	
Napo	Río Chingual	455,69	455,69
	Alto río Putumayo	6.984,98	
	Río Caraparaná	7.326,73	
	Río Cotuhé	3.658,14	
Putumayo	Río Igará-Paraná	12.906,97	
	Río Pureté (Purite)	1.997,57	57.929,97
	Río Putumayo Bajo	14.215,84	
	Río Putumayo Directos (mi)	3.526,79	
	Río Putumayo Medio	5.069,78	
	Río San Miguel	2.243,17	

Continúa en la siguiente página »

ZONA HIDROGRÁFICA	SUBZONA HIDROGRÁFICA	ÁREA Km <sup>2</sup>
Vaupés	Alto Vaupés	8.793,74
	Bajo Vaupés	13.450,97
	Río Itilla	2.570,87
	Río Papurí	5.408,61
	Río Querary	4.291,52
	Río Tiquié	1.024,61
	Río Unilla	2.154,02
Yarí	Alto Yarí	7.442,56
	Bajo Yarí	3.871,66
	Medio Yarí	5.358,24
	Río Camuya	2.769,43
	Río Cuñare	5.526,96
	Río Luisa	3.513,52
	Río Mesay	8.644,16
<b>TOTAL</b>		<b>341.994,37</b>

Fuente: Mapa de zonificación hidrográfica de Colombia. (IDEAM, 2010).

#### Annex 2. Orinoco hydrographic Area in the Colombian Amazon

ZONA HIDROGRÁFICA	SUBZONA HIDROGRÁFICA	ÁREA Km <sup>2</sup>	
Guaviare	Alto Guaviare	10.369,16	
	Alto río Uvá	4.427,86	
	Bajo Guaviare	8.911,67	
	Bajo río Uvá	5.391,44	
	Caño Chupabe	4.836,56	
	Caño Minisiare	2.345,87	
	Medio Guaviare	9.776,84	
	Río Ariari	382,97	
	Río Guape	2.509,94	
	Río Guayabero	5.040,16	
	Río Güejar	1.763,08	
	Río Iteviare	4.833,77	
	Río Losada	3.658,03	
	Río Siare	4.442,96	
	Inírida	Caño Bocón	6.984,51
		Caño Nabuquén	1.737,18
		Río Inírida hasta bocas caño Bocón y río Las Viñas	8.022,00
Río Inírida Alto		11.783,25	
Río Inírida Medio		18.413,95	
Meta	Río Papunaua	6.854,39	
	Río Manacacías	6,80	
Orinoco Directos	Caño Matavén	10.513,14	
	Directos río Atabapo	4.642,66	
Vichada	Alto Vichada	5,30	
	Bajo Vichada	2.132,08	
	Directos Vichada Medio	2.919,43	
	Río Guarrojo	0,43	
<b>TOTAL</b>		<b>142.705,41</b>	

Fuente: Mapa de zonificación hidrográfica de Colombia. (IDEAM, 2010).

#### Annex 3. Surface of the territorial entities in the Colombian Amazon Region

ENTIDAD TERRITORIAL	SUPERFICIE Km <sup>2</sup> POR CATEGORÍA TERRITORIAL			TOTAL
	CORREGIMIENTO DEPARTAMENTAL	MUNICIPIO	MUNICIPIO CAPITAL DEPARTAMENTAL	
<b>Amazonas</b>	<b>101.078,04</b>	<b>1.517,78</b>	<b>6.148,67</b>	<b>108.744,48</b>
El Encanto	10.681,70			10.681,70
La Chorrera	12.719,26			12.719,26
La Pedrera	13.596,32			13.596,32
La Victoria	1.428,91			1.428,91
Leticia			6.148,67	6.148,67
Mirití Paraná	16.818,72			16.818,72
Puerto Alegría	8.408,81			8.408,81
Puerto Arica	13.620,26			13.620,26
Puerto Nariño		1.517,78		1.517,78
Puerto Santander	14.711,01			14.711,01
Tarapacá	9.093,05			9.093,05
<b>Caquetá</b>		<b>87.468,35</b>	<b>2.586,56</b>	<b>90.054,92</b>
Albania		429,32		429,32
Belén de los Andaquíes		1.142,68		1.142,68
Cartagena del Chairá		12.744,33		12.744,33
Curillo		482,58		482,58
El Doncello		1.096,67		1.096,67
El Paujil		1.251,08		1.251,08
Florencia			2.586,56	2.586,56
La Montañita		1.705,36		1.705,36
Milán		1.227,86		1.227,86
Morelia		475,03		475,03
Puerto Rico		4.152,94		4.152,94
San José del Fragua		1.226,72		1.226,72
San Vicente del Caguán		17.496,22		17.496,22
Solano		42.314,29		42.314,29
Solita		694,16		694,16
Valparaíso		1.029,12		1.029,12
<b>Cauca</b>		<b>4.943,49</b>		<b>4.943,49</b>
Piamonte		1.103,54		1.103,54
San Sebastián		225,90		225,90
Santa Rosa		3.614,06		3.614,06
<b>Guainía</b>	<b>54.985,19</b>		<b>15.819,71</b>	<b>70.804,91</b>
Barranco Mina	9.404,20			9.404,20
Cacahual	2.304,98			2.304,98
Inírida			15.819,71	15.819,71
La Guadalupe	1.189,45			1.189,45
Mapiripana	4.902,68			4.902,68
Morichal	8.506,14			8.506,14
Paná Panamá	10.119,82			10.119,82
Puerto Colombia	15.516,02			15.516,02
San Felipe	3.041,91			3.041,91
<b>Guaviare</b>		<b>38.748,30</b>	<b>16.778,81</b>	<b>55.527,11</b>
Calamar		13.553,83		13.553,83
El Retorno		12.402,14		12.402,14
Miraflores		12.792,33		12.792,33
San José del Guaviare			16.778,81	16.778,81



ENTIDAD TERRITORIAL	SUPERFICIE Km <sup>2</sup> POR CATEGORÍA TERRITORIAL			TOTAL
	CORREGIMIENTO DEPARTAMENTAL	MUNICIPIO	MUNICIPIO CAPITAL DEPARTAMENTAL	
<b>Meta</b>		33.351,49		33.351,49
La Macarena		10.834,96		10.834,96
Mapiripán		7.356,13		7.356,13
Mesetas		1.752,86		1.752,86
Puerto Concordia		232,81		232,81
Puerto Gaitán		2.165,68		2.165,68
Puerto Rico		2.537,26		2.537,26
San Juan de Arama		216,98		216,98
Uribe		4.205,06		4.205,06
Vistahermosa		4.049,77		4.049,77
<b>Nariño</b>		2.903,26		2.903,26
Córdoba		202,49		202,49
*El Tablón		8,31		8,31
Funes		191,07		191,07
Ipiales		1.391,73		1.391,73
Pasto		602,83		602,83
Potosí		246,80		246,80
Puerres		256,77		256,77
*Tangua		3,26		3,26
<b>Putumayo</b>		24.473,12	1.329,58	25.802,71
Colón		77,42		77,42
Puerto Leguizamo		10.772,60		10.772,60
Mocoa			1.329,58	1.329,58
Orito		1.949,14		1.949,14
Puerto Asís		2.798,44		2.798,44
Puerto Caicedo		931,68		931,68
Puerto Guzmán		4.539,80		4.539,80
San Francisco		407,68		407,68
San Miguel		380,83		380,83
Santiago		338,83		338,83
Sibundoy		88,70		88,70
Valle del Guamuez		796,96		796,96
Villagarzón		1.391,05		1.391,05
<b>Vaupés</b>	24.144,03	12.863,62	16.208,99	53.216,64
Carurú		6.353,68		6.353,68
Mitú			16.208,99	16.208,99
Pacoa	13.979,61			13.979,61
Papunaua	5.531,30			5.531,30
Taraira		6.509,94		6.509,94
Yavaraté	4.633,12			4.633,12
<b>Vichada</b>		37.814,72		37.814,72
Cumaribo		37.814,72		37.814,72
<b>TOTAL REGIÓN</b>	<b>180.207,26</b>	<b>244.084,14</b>	<b>58.872,32</b>	<b>483.163,73</b>

\*Dada la reducida fracción de los municipios nariñenses de El Tablón y Tangua no se incluyen análisis sobre ellos en este documento.

Fuente: SIG Instituto «SINCHI» a partir del mapa de la División político-administrativa del Instituto Geográfico Agustín Codazzi –IGAC–. Las cifras aquí señaladas son indicativas y no constituyen los datos oficiales de las entidades territoriales.

Annex 4. Surface of the population ring and its proportion in every territorial entity of the Colombian Amazon

ENTIDAD TERRITORIAL	2002		2007		2012	
	SUPERFICIE ANILLO Km <sup>2</sup>	%	SUPERFICIE ANILLO Km <sup>2</sup>	%	SUPERFICIE ANILLO Km <sup>2</sup>	%
Amazonas	6.332,89	5,82 %	6.339,65	5,83 %	6.914,37	6,36 %
La Pedrera	1.346,33	9,90 %	1.235,50	9,09 %	1.333,57	9,81 %
El Encanto	912,66	8,54 %	917,99	8,59 %	976,41	9,14 %
Mirití Paraná	689,03	4,10 %	667,19	3,97 %	789,34	4,69 %
La Chorrera	654,29	5,14 %	707,54	5,56 %	747,88	5,88 %
Leticia	507,35	8,25 %	519,51	8,45 %	538,10	8,75 %
Puerto Arica	470,14	3,45 %	492,67	3,62 %	520,73	3,82 %
Puerto Alegría	365,01	4,34 %	377,67	4,49 %	386,48	4,60 %
Puerto Nariño	228,68	15,07 %	244,94	16,14 %	304,34	20,05 %
Puerto Santander	550,60	3,74 %	545,31	3,71 %	562,35	3,82 %
La Victoria	110,08	7,70 %	113,02	7,91 %	127,67	8,93 %
Tarapacá	498,73	5,48 %	518,30	5,70 %	627,51	6,90 %
Caquetá	27.665,66	30,72 %	28.272,69	31,39 %	29.928,67	33,23 %
Albania	429,32	100,00 %	429,32	100,00 %	429,32	100,00 %
Belén de los Andaquíes	742,02	64,94 %	741,03	64,85 %	749,73	65,61 %
Cartagena del Chairá	4.631,99	36,35 %	4.784,28	37,54 %	5.093,22	39,96 %
Curillo	480,02	99,47 %	479,87	99,44 %	479,95	99,45 %
El Doncello	757,79	69,10 %	768,12	70,04 %	768,37	70,06 %
El Paujil	993,39	79,40 %	997,91	79,76 %	1.000,34	79,96 %
Florencia	1.686,46	65,20 %	1.723,86	66,65 %	1.751,81	67,73 %
La Montañita	1.701,99	99,80 %	1.702,63	99,84 %	1.705,36	100,00 %
Milán	1.166,71	95,02 %	1.172,43	95,49 %	1.174,05	95,62 %
Morelia	475,03	100,00 %	475,03	100,00 %	475,03	100,00 %
Puerto Rico	2.927,94	70,50 %	3.008,55	72,44 %	3.066,85	73,85 %
San José del Fragua	564,00	45,98 %	590,69	48,15 %	604,00	49,24 %
San Vicente del Caguán	6.078,14	34,74 %	6.538,51	37,37 %	7.430,26	42,47 %
Solano	3.336,81	7,89 %	3.163,71	7,48 %	3.500,80	8,27 %
Solita	664,93	95,79 %	667,63	96,18 %	670,47	96,59 %
Valparaiso	1.029,12	100,00 %	1.029,12	100,00 %	1.029,12	100,00 %
Cauca	1.266,71	25,62 %	1.392,34	28,17 %	1.493,38	30,21 %
Piamonte	532,41	48,25 %	610,83	55,35 %	649,69	58,87 %
San Sebastián	116,83	51,72 %	119,92	53,08 %	123,18	54,53 %
Santa Rosa	617,47	17,09 %	661,59	18,31 %	720,51	19,94 %
Guainía	5.610,78	7,92 %	5.777,65	8,16 %	6.897,07	9,74 %
Barranco Mina	524,35	5,58 %	546,54	5,81 %	617,99	6,57 %
Cacahual	136,59	5,93 %	223,29	9,69 %	324,09	14,06 %
Inírida	2.477,60	15,66 %	2.486,94	15,72 %	3.049,14	19,27 %
La Guadalupe	73,55	6,18 %	79,63	6,69 %	79,63	6,69 %
Mapiripana	221,56	4,52 %	230,74	4,71 %	247,18	5,04 %
Morichal	610,43	7,18 %	620,10	7,29 %	693,27	8,15 %
Paná Panamá	482,81	4,77 %	508,19	5,02 %	609,83	6,03 %
Puerto Colombia	799,32	5,15 %	779,76	5,03 %	921,55	5,94 %
San Felipe	284,57	9,35 %	302,45	9,94 %	354,40	11,65 %
<b>Guaviare</b>	<b>12.305,65</b>	<b>22,16%</b>	<b>12.690,54</b>	<b>22,85%</b>	<b>14.817,40</b>	<b>26,69%</b>
Calamar	1.435,86	10,59 %	1.733,92	12,79 %	1.941,57	14,32 %
El Retorno	3.204,83	25,84 %	3.044,37	24,55 %	3.473,81	28,01 %

ENTIDAD TERRITORIAL	2002		2007		2012	
	SUPERFICIE ANILLO Km <sup>2</sup>	%	SUPERFICIE ANILLO Km <sup>2</sup>	%	SUPERFICIE ANILLO Km <sup>2</sup>	%
San José del Guaviare	4.818,33	28,72 %	5.143,56	30,66 %	5.908,18	35,21 %
<b>Meta</b>	<b>14.524,40</b>	<b>43,55 %</b>	<b>15.351,47</b>	<b>46,03 %</b>	<b>17.201,07</b>	<b>51,58 %</b>
La Macarena	6.194,18	57,17 %	6.660,01	61,47 %	7.259,68	67,00 %
Mapiripán	1.698,20	23,09 %	1.778,23	24,17 %	2.141,53	29,11 %
Mesetas	931,24	53,13 %	996,96	56,88 %	1.036,13	59,11 %
Puerto Concordia	217,68	93,50 %	221,54	95,16 %	225,59	96,90 %
Puerto Gaitán	265,52	12,26 %	340,48	15,72 %	585,95	27,06 %
Puerto Rico	1.652,92	65,15 %	1.699,27	66,97 %	1.875,13	73,90 %
San Juan de Arama	152,01	70,06 %	146,22	67,39 %	158,44	73,02 %
Uribe	1.813,13	43,12 %	1.859,40	44,22 %	2.082,95	49,53 %
Vistahermosa	1.599,52	39,50 %	1.649,36	40,73 %	1.835,67	45,33 %
<b>Nariño</b>	<b>696,77</b>	<b>24,10 %</b>	<b>703,75</b>	<b>24,34 %</b>	<b>855,67</b>	<b>29,59 %</b>
Córdoba	45,41	22,43 %	47,40	23,41 %	66,76	32,97 %
Funes	37,48	19,62 %	25,78	13,49 %	40,72	21,31 %
Ipiales	315,26	22,65 %	339,98	24,43 %	386,83	27,79 %
Pasto	230,67	38,26 %	223,19	37,02 %	264,27	43,84 %
Potosí	17,95	7,27 %	16,20	6,56 %	37,98	15,39 %
Puerres	49,99	19,47 %	51,21	19,95 %	59,11	23,02 %
<b>Putumayo</b>	<b>12.076,20</b>	<b>46,80 %</b>	<b>12.556,83</b>	<b>48,66 %</b>	<b>13.760,37</b>	<b>53,33 %</b>
Colón	57,60	74,40 %	58,98	76,18 %	62,38	80,58 %
Mocoa	536,56	40,36 %	570,28	42,89 %	601,05	45,21 %
Orito	1.220,21	62,60 %	1.248,68	64,06 %	1.337,34	68,61 %
Puerto Asís	1.805,83	64,53 %	1.859,55	66,45 %	1.923,50	68,73 %
Puerto Caicedo	786,53	84,42 %	798,96	85,75 %	853,56	91,62 %
Puerto Guzmán	2.642,29	58,20 %	2.768,71	60,99 %	3.125,41	68,84 %
Puerto Leguizamo	2.842,29	26,38 %	2.997,59	27,83 %	3.550,52	32,96 %
San Francisco	175,61	43,08 %	155,35	38,10 %	184,90	45,36 %
San Miguel	370,54	97,30 %	373,55	98,09 %	372,89	97,92 %
Santiago	98,07	28,94 %	106,54	31,44 %	117,08	34,55 %
Sibundoy	64,75	72,99 %	65,14	73,44 %	65,27	73,59 %
Valle del Guamuez	779,32	97,79 %	789,63	99,08 %	793,32	99,54 %
Villagarzón	696,59	50,08 %	763,87	54,91 %	773,13	55,58 %
<b>Vaupés</b>	<b>7.010,66</b>	<b>13,17 %</b>	<b>6.414,56</b>	<b>12,05 %</b>	<b>7.489,06</b>	<b>14,07 %</b>
Carurú	752,14	11,84 %	673,90	10,61 %	799,00	12,58 %
Mitú	2.971,46	18,33 %	2.753,41	16,99 %	3.345,74	20,64 %
Pacoa	1.481,08	10,59 %	1.403,31	10,04 %	1.663,23	11,90 %
Papunaua	549,32	9,93 %	401,96	7,27 %	421,03	7,61 %
Taraira	584,22	8,97 %	512,83	7,88 %	626,46	9,62 %
Yavaraté	672,44	14,51 %	669,15	14,44 %	633,60	13,68 %
<b>Vichada</b>	<b>5.118,48</b>	<b>13,54 %</b>	<b>5.357,34</b>	<b>14,17 %</b>	<b>6.200,33</b>	<b>16,40 %</b>
Cumaribo	5.118,48	13,54 %	5.357,34	14,17 %	6.200,33	16,40 %
<b>Región</b>	<b>92.608,19</b>	<b>19,17 %</b>	<b>94.856,81</b>	<b>19,63 %</b>	<b>105.557,39</b>	<b>21,85 %</b>

Fuente: Grupo Dinámicas Socioambientales a partir de los mapas de coberturas 2002, 2007 y 2012. Instituto «SINCHI» -GIATZ-.

Annex 5. Percentage of the population within the Amazon population ring

ENTIDAD TERRITORIAL	2002	2007	2012
<b>Amazonas</b>	<b>6,84 %</b>	<b>6,68 %</b>	<b>6,55 %</b>
La Pedrera	1,45 %	1,30 %	1,26 %
El Encanto	0,99 %	0,97 %	0,93 %
Mirití Paraná	0,74 %	0,70 %	0,75 %
La Chorrera	0,71 %	0,75 %	0,71 %
Leticia	0,55 %	0,55 %	0,51 %
Puerto Arica	0,51 %	0,52 %	0,49 %
Puerto Alegría	0,39 %	0,40 %	0,37 %
Puerto Nariño	0,25 %	0,26 %	0,29 %
Puerto Santander	0,59 %	0,57 %	0,53 %
La Victoria	0,12 %	0,12 %	0,12 %
Tarapacá	0,54 %	0,55 %	0,59 %
<b>Caquetá</b>	<b>29,87 %</b>	<b>29,81 %</b>	<b>28,35 %</b>
Albania	0,46 %	0,45 %	0,41 %
Belén de los Andaquíes	0,80 %	0,78 %	0,71 %
Cartagena del Chairá	5,00 %	5,04 %	4,83 %
Curillo	0,52 %	0,51 %	0,45 %
El Doncello	0,82 %	0,81 %	0,73 %
El Paujil	1,07 %	1,05 %	0,95 %
Florencia	1,82 %	1,82 %	1,66 %
La Montañita	1,84 %	1,79 %	1,62 %
Milán	1,26 %	1,24 %	1,11 %
Morelia	0,51 %	0,50 %	0,45 %
Puerto Rico	3,16 %	3,17 %	2,91 %
San José del Fragua	0,61 %	0,62 %	0,57 %
San Vicente del Caguán	6,56 %	6,89 %	7,04 %
Solano	3,60 %	3,34 %	3,32 %
Solita	0,72 %	0,70 %	0,64 %
Valparaiso	1,11 %	1,08 %	0,97 %
<b>Cauca</b>	<b>1,37 %</b>	<b>1,47 %</b>	<b>1,41 %</b>
Piamonte	0,57 %	0,64 %	0,62 %
San Sebastián	0,13 %	0,13 %	0,12 %
Santa Rosa	0,67 %	0,70 %	0,68 %
<b>Guainía</b>	<b>6,06 %</b>	<b>6,09 %</b>	<b>6,53 %</b>
Barranco Mina	0,57 %	0,58 %	0,59 %
Cacahual	0,15 %	0,24 %	0,31 %
Inírida	2,68 %	2,62 %	2,89 %
La Guadalupe	0,08 %	0,08 %	0,08 %
Mapiripana	0,24 %	0,24 %	0,23 %
Morichal	0,66 %	0,65 %	0,66 %
Paná Panamá	0,52 %	0,54 %	0,58 %
Puerto Colombia	0,86 %	0,82 %	0,87 %
San Felipe	0,31 %	0,32 %	0,34 %
<b>Guaviare</b>	<b>13,29 %</b>	<b>13,38 %</b>	<b>14,04 %</b>
Calamar	1,55 %	1,83 %	1,84 %
El Retorno	3,46 %	3,21 %	3,29 %
Miraflores	3,07 %	2,92 %	3,31 %
San José del Guaviare	5,20 %	5,42 %	5,60 %



ENTIDAD TERRITORIAL	2002	2007	2012
<b>Meta</b>	<b>15,68 %</b>	<b>16,18 %</b>	<b>16,30 %</b>
La Macarena	6,69 %	7,02 %	6,88 %
Mapiripán	1,83 %	1,87 %	2,03 %
Mesetas	1,01 %	1,05 %	0,98 %
Puerto Concordia	0,24 %	0,23 %	0,21 %
Puerto Gaitán	0,29 %	0,36 %	0,56 %
Puerto Rico	1,78 %	1,79 %	1,78 %
San Juan de Arama	0,16 %	0,15 %	0,15 %
Uribe	1,96 %	1,96 %	1,97 %
Vistahermosa	1,73 %	1,74 %	1,74 %
<b>Nariño</b>	<b>0,75 %</b>	<b>0,74 %</b>	<b>0,81 %</b>
Córdoba	0,05 %	0,05 %	0,06 %
Funes	0,04 %	0,03 %	0,04 %
Ipiales	0,34 %	0,36 %	0,37 %
Pasto	0,25 %	0,24 %	0,25 %
Potosí	0,02 %	0,02 %	0,04 %
Puerres	0,05 %	0,05 %	0,06 %
<b>Putumayo</b>	<b>13,04 %</b>	<b>13,24 %</b>	<b>13,04 %</b>
Colón	0,06 %	0,06 %	0,06 %
Mocoa	0,58 %	0,60 %	0,57 %
Orito	1,32 %	1,32 %	1,27 %
Puerto Asís	1,95 %	1,96 %	1,82 %
Puerto Caicedo	0,85 %	0,84 %	0,81 %
Puerto Guzmán	2,85 %	2,92 %	2,96 %
Puerto Leguizamo	3,07 %	3,16 %	3,36 %
San Francisco	0,19 %	0,16 %	0,18 %
San Miguel	0,40 %	0,39 %	0,35 %
Santiago	0,11 %	0,11 %	0,11 %
Sibundoy	0,07 %	0,07 %	0,06 %
Valle del Guamuez	0,84 %	0,83 %	0,75 %
Villagarzón	0,75 %	0,81 %	0,73 %
<b>Vaupés</b>	<b>7,57 %</b>	<b>6,76 %</b>	<b>7,09 %</b>
Carurú	0,81 %	0,71 %	0,76 %
Mitú	3,21 %	2,90 %	3,17 %
Pacoa	1,60 %	1,48 %	1,58 %
Papunaua	0,59 %	0,42 %	0,40 %
Taraira	0,63 %	0,54 %	0,59 %
Yavaraté	0,73 %	0,71 %	0,60 %
<b>Vichada</b>	<b>5,53 %</b>	<b>5,65 %</b>	<b>5,87 %</b>
Cumaribo	5,53 %	5,65 %	5,87 %
<b>REGIÓN</b>	<b>100,00 %</b>	<b>100,00%</b>	<b>100,00 %</b>

Fuentes: Elaborado por el grupo Dinámicas Socioambientales a partir de los mapas de coberturas 2002, 2007 y 2012, producidos por el grupo Gestión de Información Ambiental y Zonificación del Territorio del Instituto «SINCHI».

Annex 6. Number of mining rights and percentage of their surface in relation to the territorial entities of the Colombian Amazon

DEPARTAMENTO - MUNICIPIO	SUPERFICIE ha	NÚMERO DE TÍTULOS	SUPERFICIE TÍTULOS	% SUPERFICIE	% TITULADO 2015
<b>Caquetá</b>	<b>9.005.491,64</b>	<b>63,00</b>	<b>5.443,28</b>	<b>0,06 %</b>	<b>4,17 %</b>
Albania	42.931,88	8,00	915,81	2,13 %	0,70 %
Belén de los Andaquíes	114.267,99	8,00	1.313,08	1,15 %	1,01 %
Curillo	48.258,42	2,00	67,38	0,14 %	0,05 %
El Doncello	109.666,51	3,00	390,81	0,36 %	0,30 %
El Paujil	125.107,95	4,00	129,85	0,10 %	0,10 %
Florencia	258.656,31	23,00	1.424,80	0,55 %	1,09 %
La Montañita	170.535,65	1,00	84,00	0,05 %	0,06 %
Morelia	47.503,23	1,00	5,98	0,01 %	0,00 %
Puerto Rico	415.293,81	6,00	628,55	0,15 %	0,48 %
San José del Fragua	122.672,09	8,00	199,61	0,16 %	0,15 %
San Vicente del Caguán	1.749.622,27	8,00	283,41	0,02 %	0,22 %
<b>Cauca</b>	<b>494.349,49</b>	<b>10,00</b>	<b>4.379,28</b>	<b>0,89 %</b>	<b>3,36 %</b>
Piamonte	110.353,69	7,00	622,56	0,56 %	0,48 %
Santa Rosa	361.405,56	3,00	3.756,73	1,04 %	2,88 %
<b>Guainía</b>	<b>7.080.490,69</b>	<b>35,00</b>	<b>72.605,99</b>	<b>1,03 %</b>	<b>55,67 %</b>
Inírida	1.581.971,45	9,00	8.019,35	0,51 %	6,15 %
Paná Panamá	1.011.981,55	20,00	36.697,82	3,63 %	28,14 %
Puerto Colombia	1.551.602,03	6,00	27.888,83	1,80 %	21,38 %
<b>Guaviare</b>	<b>5.552.711,30</b>	<b>15,00</b>	<b>678,44</b>	<b>0,01 %</b>	<b>0,52 %</b>
El Retorno	1.240.213,99	2,00	5,51	0,00 %	0,00 %
San José del Guaviare	1.677.880,81	13,00	672,93	0,04 %	0,52 %
<b>Meta</b>	<b>3.335.149,18</b>	<b>25,00</b>	<b>5.380,83</b>	<b>0,16 %</b>	<b>4,13 %</b>
La Macarena	1.083.495,50	8,00	1.196,25	0,11 %	0,92 %
Mesetas	175.285,68	5,00	88,69	0,05 %	0,07 %
Puerto Concordia	23.281,16	1,00	5,38	0,02 %	0,00 %
Uribe	420.505,51	5,00	238,36	0,06 %	0,18 %
Vistahermosa	404.976,56	9,00	3.852,15	0,95 %	2,95 %
<b>Nariño</b>	<b>289.168,66</b>	<b>5,00</b>	<b>3.918,84</b>	<b>1,36 %</b>	<b>3,00 %</b>
Córdoba	20.249,49	3,00	1.152,72	5,69 %	0,88 %
Ipiales	139.172,88	1,00	21,39	0,02 %	0,02 %
Potosí	24.680,05	1,00	9,38	0,04 %	0,01 %
Puerres	25.676,63	3,00	2.735,35	10,65 %	2,10 %
<b>Putumayo</b>	<b>2.580.270,55</b>	<b>53,00</b>	<b>17.292,69</b>	<b>0,67 %</b>	<b>13,26 %</b>
Mocoa	132.958,06	12,00	10.029,90	7,54 %	7,69 %
Orito	194.913,81	19,00	948,95	0,49 %	0,73 %
Puerto Asís	279.844,00	2,00	313,64	0,11 %	0,24 %
Puerto Caicedo	93.167,72	4,00	1.023,79	1,10 %	0,78 %
Puerto Guzmán	453.980,38	2,00	1.409,00	0,31 %	1,08 %
San Francisco	40.767,72	7,00	1.012,30	2,48 %	0,78 %
San Miguel	38.083,08	3,00	80,36	0,21 %	0,06 %
Santiago	33.882,82	2,00	1.215,26	3,59 %	0,93 %
Sibundoy	8.870,15	3,00	71,01	0,80 %	0,05 %
Valle del Guamuez	79.695,61	3,00	598,06	0,75 %	0,46 %
Villagarzón	139.104,79	4,00	590,42	0,42 %	0,45 %

Continúa en la siguiente página »

DEPARTAMENTO -MUNICIPIO	SUPERFICIE ha	NÚMERO DE TÍTULOS	SUPERFICIE TÍTULOS	% SUPERFICIE	% TITULADO 2015
Vaupés	5.321.664,05	9,00	15.576,98	0,29 %	11,94 %
Mitú	1.620.898,70	5,00	2.046,99	0,13 %	1,57 %
Taraira	650.994,19	4,00	13.529,99	2,08 %	10,37 %
<b>Vichada</b>	<b>3.781.472,15</b>	<b>3,00</b>	<b>5.154,39</b>	<b>0,14 %</b>	<b>3,95 %</b>
Cumaribo	3.781.472,15	3,00	5.154,39	0,14 %	3,95 %
<b>Región</b>	<b>48.315.215,94</b>	<b>218,00</b>	<b>130.430,74</b>	<b>0,27 %</b>	<b>100,00 %</b>

\*Son 209 el número de títulos mineros según el registro de la ANM. Al sumarlos por su existencia en municipios da 243, porque algunos de estos títulos comparten jurisdicción con otro. Por la misma causa, la sumatoria de títulos por departamentos da 218 pues hay títulos que comparten jurisdicción de dos departamentos.

Fuente: Agencia Nacional de Minería –ANM–. Títulos mineros 2015. Procesado por el grupo Dinámicas Socioambientales del Instituto «SINCHI».

#### Annex 7. Number of mining requests and percentage of their surface in relation to the territorial entities of the Colombian Amazon

DEPARTAMENTO -MUNICIPIO	SUPERFICIE ENTIDAD TERRITORIAL ha	NÚMERO DE SOLICITUDES	ÁREA SOLICITUDES ha	% SUPERFICIE	% SOLICITADO
<b>Amazonas</b>	<b>10.874.448,24</b>	<b>2</b>	<b>920,51</b>	<b>0,01 %</b>	<b>0,11 %</b>
La Pedrera	1.359.631,96	1	418,34	0,03 %	0,05 %
La Victoria	142.891,18	1	0,42	0,00 %	0,00 %
Mirití Parará	1.681.871,99	1	501,75	0,03 %	0,06 %
<b>Caquetá</b>	<b>9.005.491,64</b>	<b>65</b>	<b>59.064,86</b>	<b>0,66 %</b>	<b>7,22 %</b>
Albania	42.931,88	4	1.702,00	3,96 %	0,21 %
Belén de los Andaquíes	114.267,99	8	5.045,66	4,42 %	0,62 %
Curillo	48.258,42	1	4,07	0,01 %	0,00 %
El Doncello	109.666,51	6	2.668,05	2,43 %	0,33 %
El Paujil	125.107,95	5	3.991,41	3,19 %	0,49 %
Florencia	258.656,31	12	6.233,71	2,41 %	0,76 %
La Montañita	170.535,65	5	11.875,68	6,96 %	1,45 %
Morelia	47.503,23	4	2.094,19	4,41 %	0,26 %
Puerto Rico	415.293,81	8	2.475,05	0,60 %	0,30 %
San José del Fragua	122.672,09	11	6.820,90	5,56 %	0,83 %
San Vicente del Caguán	1.749.622,27	17	16.154,14	0,92 %	1,97 %
<b>Cauca</b>	<b>494.349,49</b>	<b>23</b>	<b>37.360,79</b>	<b>7,56 %</b>	<b>4,56 %</b>
Piamonte	110.353,69	12	8.324,94	7,54 %	1,02 %
San Sebastián	22.590,23	2	3.382,23	14,97 %	0,41 %
Santa Rosa	361.405,56	13	25.653,63	7,10 %	3,13 %
<b>Guainía</b>	<b>7.080.490,69</b>	<b>159</b>	<b>373.927,42</b>	<b>5,28 %</b>	<b>45,68 %</b>
Barranco Mina	940.420,45	23	43.008,36	4,57 %	5,25 %
Cacahual	230.497,86	11	16.922,39	7,34 %	2,07 %
Inírida	1.581.971,45	56	126.656,94	8,01 %	15,47 %
La Guadalupe	118.945,16	16	32.375,66	27,22 %	3,96 %
Mapiripana	490.267,72	2	2.609,99	0,53 %	0,32 %
Morichal	850.613,78	6	9.279,44	1,09 %	1,13 %
Paná Paná	1.011.981,55	11	13.831,37	1,37 %	1,69 %
Puerto Colombia	1.551.602,03	33	102.858,21	6,63 %	12,57 %
San Felipe	304.190,68	13	26.385,06	8,67 %	3,22 %

Continúa en la siguiente página »

DEPARTAMENTO -MUNICIPIO	SUPERFICIE ENTIDAD TERRITORIAL ha	NÚMERO DE SOLICITUDES	ÁREA SOLICITUDES ha	% SUPERFICIE	% SOLICITADO
<b>Guaviare</b>	<b>5.552.711,30</b>	<b>17</b>	<b>6.331,41</b>	<b>0,11 %</b>	<b>0,77 %</b>
Calamar	1.355.383,41	1	8,50	0,00 %	0,00 %
El Retorno	1.240.213,99	1	450,41	0,04 %	0,06 %
San José del Guaviare	1.677.880,81	15	5.872,50	0,35 %	0,72 %
<b>Meta</b>	<b>3.335.149,18</b>	<b>40</b>	<b>38.514,62</b>	<b>1,15 %</b>	<b>4,71 %</b>
La Macarena	1.083.495,50	15	23.087,32	2,13 %	2,82 %
Mapiripán	735.612,69	3	2.301,20	0,31 %	0,28 %
Mesetas	175.285,68	3	252,30	0,14 %	0,03 %
Puerto Gaitán	216.568,25	2	241,09	0,11 %	0,03 %
San Juan de Arama	21.698,04	2	134,97	0,62 %	0,02 %
Uribe	420.505,51	3	563,38	0,13 %	0,07 %
Vistahermosa	404.976,56	16	11.934,36	2,95 %	1,46 %
<b>Nariño</b>	<b>289.168,66</b>	<b>18</b>	<b>23.434,25</b>	<b>8,10 %</b>	<b>2,86 %</b>
Córdoba	20.249,49	14	5.178,76	25,57 %	0,63 %
Ipiales	139.172,88	2	5.540,51	3,98 %	0,68 %
Potosí	24.680,05	7	8.557,09	34,67 %	1,05 %
Puerres	25.676,63	10	4.157,89	16,19 %	0,51 %
<b>Putumayo</b>	<b>2.580.270,55</b>	<b>78</b>	<b>82.975,68</b>	<b>3,22 %</b>	<b>10,14 %</b>
Colón	7.741,92	1	18,94	0,24 %	0,00 %
Mocoa	132958,0556	23	29.315,00	22,05 %	3,58 %
Orito	194913,8112	10	294,75	0,15 %	0,04 %
Puerto Asís	279.844,00	8	1.118,28	0,40 %	0,14 %
Puerto Caicedo	93.167,72	5	713,90	0,77 %	0,09 %
Puerto Guzmán	453.980,38	5	4.403,41	0,97 %	0,54 %
San Francisco	40.767,72	11	8.316,23	20,40 %	1,02 %
San Miguel	38.083,08	1	72,11	0,19 %	0,01 %
Santiago	33.882,82	6	5.566,99	16,43 %	0,68 %
Sibundoy	8.870,15	4	85,51	0,96 %	0,01 %
Valle del Guamuez	79.695,61	6	354,18	0,44 %	0,04 %
Villagarzón	139.104,79	30	32.716,39	23,52 %	4,00 %
<b>Vaupés</b>	<b>5.321.664,05</b>	<b>52</b>	<b>162.836,57</b>	<b>3,06 %</b>	<b>19,89 %</b>
Carurú	635.368,19	6	8.566,69	1,35 %	1,05 %
Mitú	1.620.898,70	23	54.719,98	3,38 %	6,69 %
Pacoa	1.397.961,12	14	73.139,57	5,23 %	8,94 %
Papunaua	553.129,64	9	16.845,28	3,05 %	2,06 %
Taraira	650.994,19	6	9.565,06	1,47 %	1,17 %
<b>Vichada</b>	<b>3.781.472,15</b>	<b>13</b>	<b>33.132,55</b>	<b>0,88 %</b>	<b>4,05 %</b>
Cumaribo	3.781.472,15	13	33.132,55	0,88 %	4,05 %
<b>Región</b>	<b>48.315.215,94</b>	<b>444</b>	<b>818.498,66</b>	<b>1,69 %</b>	<b>100,00 %</b>

\*Son 444 el número de solicitudes mineras según el código del expediente en el Catastro Minero. Al sumaras por su existencia en municipios da 758, porque varias de estas solicitudes comparten jurisdicción con uno y/o más municipios. Por la misma causa, la sumatoria de solicitudes mineras por departamentos da 467 pues en todos los departamentos hay solicitudes que comparten jurisdicción de dos departamentos.

Fuente: Agencia Nacional de Minería –ANM–. Solicitudes mineras 2015. Procesado por el grupo Dinámicas Socioambientales del Instituto «SINCHI».



**Annex 8.** Number of mining legalization requests and percentage of their surface in relation to the territorial entities of the Colombian Amazon

MUNICIPIO	NÚMERO DE SOLICITUDES	ÁREA SOLICITUDES ha	% SUPERFICIE	% SOLICITADO
<b>Amazonas</b>	<b>1</b>	<b>323,18</b>	<b>0,00 %</b>	<b>1,62 %</b>
Puerto Alegría	1	323,18	0,04 %	1,62 %
<b>Caquetá</b>	<b>75</b>	<b>8.287,76</b>	<b>0,09 %</b>	<b>41,47 %</b>
Albania	8	1.043,56	2,43 %	5,22 %
Belén de los Andaquíes	3	279,71	0,24 %	1,40 %
Curillo	3	101,08	0,21 %	0,51 %
El Doncello	4	550,58	0,50 %	2,75 %
El Paujil	4	146,68	0,12 %	0,73 %
Florencia	6	109,86	0,04 %	0,55 %
La Montañita	4	377,98	0,22 %	1,89 %
Morelia	1	26,33	0,06 %	0,13 %
Puerto Rico	11	782,37	0,19 %	3,91 %
San José del Fragua	30	3.649,18	2,97 %	18,26 %
San Vicente del Caguán	5	230,07	0,01 %	1,15 %
Solano	4	990,36	0,02 %	4,96 %
<b>Cauca</b>	<b>20</b>	<b>1.073,96</b>	<b>0,22 %</b>	<b>5,37 %</b>
Piamonte	18	1.012,69	0,92 %	5,07 %
San Sebastián	1	2,74	0,01 %	0,01 %
Santa Rosa	1	58,53	0,02 %	0,29 %
<b>Guainía</b>	<b>2</b>	<b>323,15</b>	<b>0,00 %</b>	<b>1,62 %</b>
Inírida	2	323,15	0,02 %	1,62 %
<b>Guaviare</b>	<b>8</b>	<b>536,27</b>	<b>0,01 %</b>	<b>2,68 %</b>
San José del Guaviare	8	536,27	0,03 %	2,68 %
<b>Meta</b>	<b>6</b>	<b>1.322,45</b>	<b>0,04 %</b>	<b>6,62 %</b>
La Macarena	1	49,36	0,00 %	0,25 %
Mapiripán	2	1.056,04	0,14 %	5,28 %
Puerto Concordia	1	57,80	0,25 %	0,29 %
Uribe	1	79,84	0,02 %	0,40 %
Nariño	1	13,09	0,00 %	0,07 %
Ipiales	1	10,28	0,01 %	0,05 %
Potosí	1	2,81	0,01 %	0,01 %

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MUNICIPIO	NÚMERO DE SOLICITUDES	ÁREA SOLICITUDES ha	% SUPERFICIE	% SOLICITADO
<b>Putumayo</b>	<b>79</b>	<b>8.049,26</b>	<b>0,31 %</b>	<b>40,27 %</b>
Leguízamo	2	610,41	0,06 %	3,05 %
Mocoa	16	1.451,47	1,09 %	7,26 %
Orito	19	2.451,01	1,26 %	12,26 %
Puerto Asís	14	1.193,85	0,43 %	5,97 %
Puerto Caicedo	6	1.190,51	1,28 %	5,96 %
Puerto Guzmán	3	106,49	0,02 %	0,53 %
San Francisco	9	247,08	0,61 %	1,24 %
San Miguel	1	0,13	0,00 %	0,00 %
Sibundoy	1	18,85	0,21 %	0,09 %
Valle del Guamuez	5	194,92	0,24 %	0,98 %
Villagarzón	8	584,55	0,42 %	2,92 %
<b>Vaupés</b>	<b>1</b>	<b>57,74</b>	<b>0,00 %</b>	<b>0,29 %</b>
Mitú	1	57,74	0,00 %	0,29 %
<b>Región</b>	<b>182</b>	<b>19.986,86</b>	<b>0,04 %</b>	<b>100,00 %</b>

Fuente: Agencia Nacional de Minería –ANM–. Solicitudes de legalización minera, 2013 y 2015 (Ley 685 y Ley 1382). Procesado por el Grupo Dinámicas Socioambientales del Instituto «SINCHI».

Annex 9. Area with potential material in the departments and municipalities of the Colombian Amazon region

DEPARTAMENTO - MUNICIPIO	SUPERFICIE EN HECTÁREAS (ha)			
	CARBÓN	COBRE	COLTÁN	FOSFATOS
<b>Amazonas</b>				
La Pedrera				
<b>Caquetá</b>	<b>13.485,75</b>	<b>833.062,11</b>		<b>125,01</b>
Albania		3.013,89		
Belén de los Andaquíes	9.064,47	83.592,10		
Curillo		6.661,50		
El Doncello		65.397,17		
El Paujil		44.144,86		
Florencia	33,26	201.881,72		
La Montañita		26.877,44		
Morelia		9.953,51		
Puerto Rico		219.932,46		
San José del Fragua	2.571,94	112.131,64		
San Vicente del Caguán	1.816,08	59.475,82		125,01
<b>Cauca</b>	<b>3.847,17</b>	<b>365.936,54</b>		
Piamonte	2.727,92	62.421,65		
San Sebastián		2.681,90		
Santa Rosa	1.119,25	300.832,99		
<b>Guainía</b>			<b>2.192.365,66</b>	
Barranco Mina			249.776,38	
Cacahual			54.381,13	
Inírida			1.174.216,33	
La Guadalupe			74.878,78	
Morichal				
Paná Paná				
Puerto Colombia			402.170,59	
San Felipe			236.942,44	
<b>Meta</b>	<b>802,36</b>			
Uribe	802,36			
<b>Nariño</b>		<b>78.610,41</b>		
Córdoba		19.399,25		
Funes		16.775,76		
Ipiales		316,62		
Pasto		1.182,32		
Potosí		15.179,41		
Puerres		25.757,04		

DEPARTAMENTO - MUNICIPIO	SUPERFICIE EN HECTÁREAS (ha)			
	HIERRO	ORO	URANIO	TOTAL
<b>Amazonas</b>		<b>82.335,99</b>		<b>82.335,99</b>
La Pedrera		82.335,99		82.335,99
<b>Caquetá</b>		<b>153.672,77</b>		<b>1.000.345,63</b>
Albania		861,81		3.875,70
Belén de los Andaquíes		42.275,04		134.931,61
Curillo		2.857,53		9.519,03
El Doncello				65.397,17
El Paujil				44.144,86
Florencia		33,26		201.948,25
La Montañita				26.877,44
Morelia				9.953,51
Puerto Rico				219.932,46
San José del Fragua		107.645,13		222.348,70
San Vicente del Caguán				61.416,90
<b>Cauca</b>		<b>398.638,45</b>		<b>768.422,16</b>
Piamonte		97.226,92		162.376,49
San Sebastián		22.336,47		25.018,38
Santa Rosa		279.075,06		581.027,30
<b>Guainía</b>		<b>1.821.525,27</b>	<b>2.049.754,12</b>	<b>6.063.645,04</b>
Barranco Mina		282.340,35		532.116,73
Cacahual		70.782,93		125.164,06
Inírida		614.025,71	7.777,35	1.796.019,38
La Guadalupe				74.878,78
Morichal		111.706,01	32.510,09	144.216,09
Paná Paná		346.325,45	855.908,91	1.202.234,36
Puerto Colombia		396.344,82	1.153.557,77	1.952.073,18
San Felipe				236.942,44
<b>Meta</b>				<b>802,36</b>
Uribe				802,36
<b>Nariño</b>		<b>83.778,64</b>		<b>162.389,04</b>
Córdoba		19.398,80		38.798,06
Funes		16.776,82		33.552,58
Ipiales		2.632,93		2.949,56
Pasto		1.172,56		2.354,88
Potosí		18.040,49		33.219,90
Puerres		25.757,04		51.514,08

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DEPARTAMENTO - MUNICIPIO	SUPERFICIE EN HECTÁREAS (ha)			
	CARBÓN	COBRE	COLTÁN	FOSFATOS
Putumayo		420.140,61		
Colón		7.607,35		
Mocoa		124.945,57		
Orito		97.539,98		
Puerto Caicedo				
Puerto Guzmán				
San Francisco		40.863,79		
Santiago		33.767,71		
Sibundoy		8.892,04		
Valle del Guamuez				
Villagarzón		106.524,16		
Vaupés				
Mitú				
Pacoa				
Papunaua				
Taraira				
Yavaraté				
Vichada			522,83	
Cumaribo			522,83	
<b>TOTAL</b>	<b>18.135,28</b>	<b>1.697.749,66</b>	<b>2.192.888,49</b>	<b>125,01</b>

DEPARTAMENTO - MUNICIPIO	SUPERFICIE EN HECTÁREAS (ha)			
	HIERRO	ORO	URANIO	TOTAL
Putumayo		526.557,49		946.698,10
Colón		7.605,23		15.212,58
Mocoa		131.643,59		256.589,17
Orito		132.604,79		230.144,77
Puerto Caicedo		23.080,98		23.080,98
Puerto Guzmán		10.186,85		10.186,85
San Francisco		40.863,79		81.727,59
Santiago		33.763,69		67.531,40
Sibundoy		8.892,04		17.784,08
Valle del Guamuez		684,61		684,61
Villagarzón		137.231,91		243.756,07
Vaupés	1.799.838,40	367.052,42		2.166.890,82
Mitú	1.099.788,57			1.099.788,57
Pacoa	231.517,99			231.517,99
Papunaua	12.623,32			12.623,32
Taraira		367.052,42		367.052,42
Yavaraté	455.908,52			455.908,52
Vichada				522,83
Cumaribo				522,83
	<b>1.799.838,40</b>	<b>3.433.561,02</b>	<b>2.049.754,12</b>	<b>11.192.051,97</b>

Fuente: Procesado por el grupo Dinámicas Socioambientales del Instituto «SINCHI». Elaborado a partir de «Áreas con potencial mineral para definir áreas de reserva estratégica del Estado». (SGC, 2012). Agencia Nacional de Minería. Capas de áreas con potencial minero (carbón, cobre, coltán, fosfatos, oro, hierro y uranio) 2013.

Annex 10. Group of materials of national interest in mining rights of the Colombian Amazon Region, 2008, 2011, 2013 and 2015

GRUPO DE MATERIALES	2008		2011		2013		2015	
	n.º TÍTULOS	SUPERFICIE TÍTULOS ha	n.º TÍTULOS	SUPERFICIE TÍTULOS ha	n.º TÍTULOS	SUPERFICIE TÍTULOS ha	n.º TÍTULOS	SUPERFICIE TÍTULOS ha
I	11	18.415,61	7	15.424,69	11	19.507,07	11	18.674,42
I y II	5	9.845,90	4	7.767,61	4	7.767,61	5	9.769,50
I y IV			19	55.379,03	20	49.068,41	21	59.161,98
I, III y IV			1	1.443,62				
II	1	334,38	1	1.955,19	2	2.289,57	2	2.289,58
III	1	4.969,74					1	5.046,48
IV	1	8,60	3	4.747,69	4	4.756,28	6	6.859,63
V			2	4.004,12				
Arenas industriales*					2	4.004,12	2	4.004,12
Arenas negras*	2	1.001,55			1	99,31		
Materiales y agregados de construcción	82	9.130,65	91	9.977,67	133	19.149,10	157	17.411,37
Mineral metálico*	2	3.358,64			3	5.360,70	4	7.213,66
Por definir*	1	48.303,35						
Región	106	95.368,41	128	100.699,62	180	107.998,06	209	130.430,74

\* Se deja como reza el título por no contar con más información para su clasificación. I. Minerales y piedras preciosas-semipreciosas: Au, Pt. II. Metales base: Cu. III. Metales de la industria del acero: Fe. IV. Metales especiales: coltán (columbita-tantalita). V. Minerales industriales: roca fosfórica, sales de potasio, magnesio. VI. Minerales energéticos: carbón y uranio.

Fuente: Tierra minada –títulos mineros 2008–; Ingeominas –títulos mineros 2011–; Agencia Nacional de Minería –ANM–, títulos mineros 2013 y 2015. Procesado por el grupo Dinámicas Socioambientales del Instituto «SINCHI».

Annex 11. Group of materials in mining requests of the Colombian Amazon Region

GRUPO DE MATERIALES	2011		2013		2015	
	n.º SOLICITUDES	SUPERFICIE SOLICITADA ha	n.º SOLICITUDES	SUPERFICIE SOLICITADA ha	n.º SOLICITUDES	SUPERFICIE SOLICITADA ha
I	328	1.523.935,70	234	1.221.984,27	109	245.853,52
I y II	9	31.805,98	17	34.708,61	15	25.882,69
I y III	60	592.513,44	57	562.983,30	1	170,63
I y IV	202	730.105,96	100	294.854,15	62	125.581,84
I y V	1	9.944,03				
I y VI			1	6.376,52	1	20,55
I, II y III			1	4.948,32		
I, II y IV	9	34.740,38			2	4.374,43
I, II, III y IV	2	940,78			1	9.650,03
I, II, III y VI			1	9.943,16		
I, II, IV y V			4	19.739,97		
I, III y IV	2	8.703,72	9	46.429,96		
I, III y VI	3	26.641,57	5	46.704,52		
I, IV y VI	47	412.762,61	25	235.104,28	6	58.800,37

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GRUPO DE MATERIALES	2011		2013		2015	
	n.º SOLICITUDES	SUPERFICIE SOLICITADA ha	n.º SOLICITUDES	SUPERFICIE SOLICITADA ha	n.º SOLICITUDES	SUPERFICIE SOLICITADA ha
I, V y VI	3	27.647,80	1	7.650,47		
II	17	49.678,33	21	40.003,69	19	35.223,58
III	17	100.013,19	11	34.821,38	1	2.436,72
III y IV	1	148,48	8	48.048,72	3	15.065,92
IV	136	564.806,76	37	115.031,39	17	52.166,79
VI			3	2.001,57	2	1.880,38
Arenas industriales *	39	139.392,22	11	39.593,92	3	7.601,87
Materiales y agregados de construcción	65	33.146,90	125	110.111,88	163	103.463,83
Mineral metálico *					37	128.750,58
Otros *	11	35.872,11	8	26.654,21	1	1.555,68
Sin dato					1	19,24
Región	952	4.322.799,94	679	2.907.694,29	444	818.498,66

\* Se deja como reza la solicitud por no contar con más información para su clasificación. I. Minerales y piedras preciosas-semipreciosas: Au, Pt. II. Metales base: Cu. III. Metales de la industria del acero: Fe. IV. Metales especiales: coltán (columbita-tantalita). V. Minerales industriales: roca fosfórica, sales de potasio, magnesio. VI. Minerales energéticos: carbón y uranio.

Fuente: Ingeominas –solicitudes mineras 2011–; Agencia Nacional de Minería –ANM–, solicitudes mineras 2013 y 2015. Procesado por el grupo Dinámicas Socioambientales del Instituto «SINCHI».

Annex 12. Mining rights on Indian reservations

NOMBRE RESGUARDO INDÍGENA	TÍTULO MINERO
Bajo Río Guainía y Río Negro	FHDJ-01, FHDJ-02, JDL-09332, JDT-09221, JDU-11101
Corocoro	GEQB-04
Cuenca Media y Alta del Río Inírida	IHR-10102
Inga de Condagua	FJT-131, FJT-132
La Florida	GCOE-03
La Fuga	OH1-09281
Los Guaduales	HI6-09081, ICU-09551
Remanso-Chorro Bocón	JDP-14201, JDP-14331, JDP-14341, JDP-14441
Ríos Cuiari e Isana	IH3-15401, IH3-15421, IH3-15461, IH3-15481, IH3-15491, IH3-15511, IH3-15521, IH3-15531, IH3-15551, IH8-10101, IH8-10121, IH8-10141, IH8-10161, IH8-10191, IH8-10211, IK2-08071X, JCS-08101
Santa Rosa del Guamuez	KI7-11151
Selva de Matavén	GDJC-03, JCS-09041
Tonina, Sejal, San José y otras	FHDJ-01, FHDJ-02, IH3-15401, IH3-15421, IH3-15461, IH3-15481, IH3-15581, IH3-15591, IH3-16021, IH8-10141, IH8-10161, IH8-10191, IH8-10211, JDL-09332, JDT-09221, JDU-11101
Vaupés	ILJ-09441, JCR-10311, OF6-15171, OFB-09261
Vegas de Santana	KI7-11271

Fuente: Títulos mineros a junio de 2015. Agencia Nacional de Minería –ANM–. Procesado por el grupo Dinámicas Socioambientales del Instituto «SINCHI».



Annex 13. Strategic mining areas in the Colombian Amazon region, Resolution 045, June 20 of 2012

DEPARTAMENTO-MUNICIPIO	ÁREA ha
Amazonas	93,92
La Pedrera	1,37
Mirití Paraná	92,55
<b>Amazonas, Guainía, Guaviare, Vaupés, Vichada</b>	<b>16.483.348,61</b>
Puerto Carreño, La Primavera, Cumaribo, Santa Rosalía, Inírida, Cacahual, Barranco Mina, Mapiripán, Mapiripana, Puerto Colombia, San José del Guaviare, Morichal, El Retorno, Panamá Panamá, Papunaua, Miraflores, Mitú, Carurú, Yavaraté, Pacoa, La Victoria, Mirití Paraná, Taraira, La Pedrera	16.483.348,61
<b>Guainía</b>	<b>533.370,48</b>
Cacahual	518,75
Cacahual, Inírida	162,90
Cacahual, Puerto Colombia	24,65
Cumaribo	110,42
Inírida	10.307,04
Inírida, Barranco Mina	278,80
Inírida, Cacahual	18.174,09
La Guadalupe	16.014,68
Mapiripana	3.952,93
Morichal	75,19
Paná Panamá	82.396,87
Puerto Colombia	53.041,20
Puerto Colombia, San Felipe, La Guadalupe	347.966,85
San Felipe	346,11
<b>Vaupés</b>	<b>66.925,26</b>
Mitú	22.839,76
Mitú, Carurú	593,27
Mitú, Pacoa	56,78
Mitú, Yavaraté	11.489,11
Pacoa	27.186,54
Papunaua	1.293,19
Taraira	3.456,69
Yavaraté	9,92
<b>Vichada</b>	<b>6.297,65</b>
Cumaribo	6.297,65
<b>TOTAL</b>	<b>17'090.035,92</b>

Fuente: Ministerio de Minas y Energía. Resolución 045 del 25 de junio de 2012.

Annex 14. Hydrocarbons production surfaces in the Colombian Amazon region

CONTRATO	OPERADORA	SUPERFICIE EN Km <sup>2</sup> POR DEPARTAMENTO					MUNICIPIOS	TOTAL Km <sup>2</sup>
		CAQUETÁ	CAUCA	META	NARIÑO	PUTUMAYO		
ÁREA OCCIDENTAL	ECOPETROL S.A.				371,49	194,42	Ipiales, Orito, Valle del Guamuez	565,90
ÁREA SUR	ECOPETROL S.A.					239,95	Orito, San Miguel, Valle del Guamuez	239,95
CHAZA (COSTAYACO)	GRANTIERRA ENERGY COLOMBIA LTD.					28,60	Villagarzón	28,60
GUAYUYACO (SANTANA ADY)	GRANTIERRA ENERGY COLOMBIA LTD.		158,55			47,59	Piamonte, Mocoa, Villagarzón	206,13
MARANTÁ (MIRTO)	EMERALD ENERGY PLC SUCURSAL COLOMBIA					9,89	Villagarzón	9,89
NANCY-BURDINE-MAXINE	ECOPETROL S.A.					105,75	Orito, Puerto Asís, Puerto Caicedo	105,75
NORORIENTE	ECOPETROL S.A.					244,74	Puerto Asís, Puerto Caicedo	244,74
OMBÚ (CAPELLA)	EMERALD ENERGY PLC SUCURSAL COLOMBIA	7,99		150,15			San Vicente del Caguán, La Macarena	158,15
ORITO	ECOPETROL S.A.					171,54	Orito	171,54
PLATANILLO	AMERISUR EXPLORACIÓN COLOMBIA LIMITADA					110,31	Puerto Asís	110,31
SANTANA	GRANTIERRA ENERGY COLOMBIA LTD.		2,16			3,59	Piamonte, Mocoa	5,75
SURORIENTE	ECOPETROL S.A.					364,58	Puerto Asís	364,58
<b>TOTAL</b>		<b>7,99</b>	<b>160,71</b>	<b>150,15</b>	<b>371,49</b>	<b>1.520,95</b>		<b>2.211,30</b>
<b>PROPORCIÓN</b>		<b>0,36 %</b>	<b>7,27 %</b>	<b>6,79 %</b>	<b>16,80 %</b>	<b>68,78 %</b>		<b>100,00 %</b>

Fuente: Agencia Nacional de Hidrocarburos. Mapa de tierras, julio de 2014. Elaborado por el grupo Dinámicas Socioambientales del Instituto «SINCHI».

Annex 15. Land map surfaces, July 2014, in the Colombian Amazon region

DEPARTAMENTO - MUNICIPIO	SUPERFICIE ENTIDAD TERRITORIAL	ÁREA EN PRODUCCIÓN	ÁREA EN EXPLORACIÓN	ÁREA DISPONIBLE	ÁREA RESERVADA	PROPIEDAD ADMITIDA EN NEGOCIACIÓN
Amazonas	108.744,48				165,68	
La Victoria	1.428,91				160,25	
Mirití Paraná	16.818,72				5,42	
Caquetá	90.054,92	7,99	15.433,43	14.537,82	506,32	
Albania	429,32		219,32			
Belén de los Andaquíes	1.142,68		373,10	48,59		
Cartagena del Chairá	12.744,33		2.173,38	4.381,84		
Curillo	482,58		157,59			
El Doncello	1.096,67		767,05			
El Paujil	1.251,08		674,14	124,54		
Florencia	2.586,56		580,27	16,00		
La Montañita	1.705,36		627,49	312,52		
Milán	1.227,86		576,98			
Morelia	475,03		419,07	44,08		
Puerto Rico	4.152,94		1.483,21			
San José del Fragua	1.226,72		368,10			
San Vicente del Caguán	17.496,22	7,99	3.677,78	5.526,26	92,01	
Solano	42.314,29		2.838,86	4.083,98	414,31	
Solita	694,16		22,87			
Valparaíso	1.029,12		474,23			
Cauca	4.943,49	160,71	500,60	1.032,44		
Piamonte	1.103,54	160,71	500,60	5,08		
Santa Rosa	3.614,06			1.027,36		
Guainía	70.804,91					
Barranco Mina	9.404,20					
Inírida	15.819,71					
Mapiripana	4.902,68					
Morichal	8.506,14					
Guaviare	55.527,11			2.987,67	22.585,24	
Calamar	13.553,83			564,79	8.332,79	
El Retorno	12.402,14				1.283,29	
Miraflores	12.792,33				10.257,16	
San José Del Guaviare	16.778,81			2.422,88	2.712,00	

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DEPARTAMENTO - MUNICIPIO	RONDA 2014 TIPO 1	RONDA 2014 TIPO 3	TEA	TOTAL	PORCENTAJE SUPERFICIE MUNICIPAL	PORCENTAJE DE PARTICIPACIÓN
Amazonas				165,68	0,15 %	0,10 %
La Victoria				160,25	11,22 %	0,10 %
Mirití Paraná				5,42	0,03 %	0,00 %
Caquetá	2.074,50	7.678,01	3.569,16	43.807,23	48,65 %	26,22 %
Albania	210,00			429,32	100,00 %	0,26 %
Belén de los Andaquíes	3,49			425,17	37,21 %	0,25 %
Cartagena del Chairá	330,63	2.603,85		9.489,70	74,46 %	5,68 %
Curillo	134,08		189,81	481,49	99,77 %	0,29 %
El Doncello		54,28	1,99	823,32	75,07 %	0,49 %
El Paujil		189,50	43,82	1.032,01	82,49 %	0,62 %
Florencia		540,22		1.136,48	43,94 %	0,68 %
La Montañita		129,91	635,44	1.705,37	100,00 %	1,02 %
Milán			650,89	1.227,86	100,00 %	0,73 %
Morelia				463,15	97,50 %	0,28 %
Puerto Rico	129,13	341,16	360,61	2.314,11	55,72 %	1,39 %
San José del Fragua	5,66			373,76	30,47 %	0,22 %
San Vicente del Caguán	1.224,33	3.709,78	5,40	14.243,55	81,41 %	8,53 %
Solano		109,31	492,21	7.938,67	18,76 %	4,75 %
Solita			671,29	694,16	100,00 %	0,42 %
Valparaíso	37,19		517,70	1.029,12	100,00 %	0,62 %
Cauca	17,85			1.711,60	34,62 %	1,02 %
Piamonte	17,85			684,24	62,00 %	0,41 %
Santa Rosa				1.027,36	28,43 %	0,61 %
Guainía			6.947,29	6.947,29	9,81 %	4,16 %
Barranco Mina			2.668,44	2.668,44	28,37 %	1,60 %
Inírida			2.394,40	2.394,40	15,14 %	1,43 %
Mapiripana			1.863,06	1.863,06	38,00 %	1,12 %
Morichal			21,39	21,39	0,25 %	0,01 %
Guaviare			5.362,82	30.935,73	55,71 %	18,52 %
Calamar				8.897,58	65,65 %	5,33 %
El Retorno				1.283,29	10,35 %	0,77 %
Miraflores				10.257,16	80,18 %	6,14 %
San José Del Guaviare			5.362,82	10.497,70	62,57 %	6,28 %

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DEPARTAMENTO - MUNICIPIO	SUPERFICIE ENTIDAD TERRITORIAL	ÁREA EN PRODUCCIÓN	ÁREA EN EXPLORACIÓN	ÁREA DISPONIBLE	ÁREA RESERVADA	PROPIEDAD ADMITIDA EN NEGOCIACIÓN
Meta	33.351,49	150,15	5.292,55	3.360,10	844,10	
La Macarena	10.834,96	150,15	2.178,54	1.441,91	843,74	
Mapiripán	7.356,13		842,54	324,30		
Mesetas	1.752,86		26,56	540,56		
Puerto Concordia	232,81		12,36	140,35		
Puerto Gaitán	2.165,68		1.477,10			
Puerto Rico	2.537,26		128,20	837,92	0,09	
San Juan De Arama	216,98		8,37			
Uribe	4.205,06		428,80	41,37		
Vistahermosa	4.049,77		190,08	33,70	0,27	
<b>Nariño</b>	<b>2.903,25</b>	<b>371,49</b>	<b>87,52</b>	<b>159,08</b>		<b>448,70</b>
Córdoba	202,49		9,62	31,34		
Funes	191,07			4,15		
Ipiales	1.391,73	371,49	76,27	35,31		448,70
Potosí	246,80		1,64	55,99		
Puerres	256,77			32,28		
<b>Putumayo</b>	<b>25.802,71</b>	<b>1.520,95</b>	<b>11.724,56</b>	<b>993,10</b>		
Mocoa	1.329,58	42,99	85,95	517,27		
Orito	1.949,14	490,54	1.163,96	26,30		
Puerto Asís	2.798,44	587,50	1.981,91	89,87		
Puerto Caicedo	931,68	163,13	705,76	3,84		
Puerto Guzmán	4.539,80		3.824,45	191,36		
Puerto Leguízamo	10.772,60		1.973,92	68,07		
San Francisco	407,68		12,60			
San Miguel	380,83	91,92	261,08			
Valle Del Guamuez	796,96	98,20	683,65			
Villagarzón	1.391,05	46,67	1.031,29	96,40		
<b>Vaupés</b>	<b>53.216,64</b>				<b>10.405,51</b>	
Carurú	6.353,68				4.751,74	
Mitú	16.208,99				292,22	
Pacoa	13.979,61				5.361,55	
<b>Vichada</b>	<b>37.814,72</b>		<b>295,43</b>			
Cumaribo	37.814,72		295,43			
<b>TOTAL</b>	<b>483.163,73</b>	<b>2.211,30</b>	<b>33.334,09</b>	<b>23.070,21</b>	<b>34.506,85</b>	<b>448,70</b>
<b>PROPORCIÓN DE SUPERFICIE DEL MAPA DE TIERRAS</b>		<b>1,32 %</b>	<b>19,95 %</b>	<b>13,81 %</b>	<b>20,66 %</b>	<b>0,27 %</b>
<b>PROPORCIÓN DE SUPERFICIE REGIONAL</b>		<b>0,46 %</b>	<b>6,90 %</b>	<b>4,77 %</b>	<b>7,14 %</b>	<b>0,09 %</b>

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DEPARTAMENTO - MUNICIPIO	RONDA 2014 TIPO 1	RONDA 2014 TIPO 3	TEA	TOTAL	PORCENTAJE SUPERFICIE MUNICIPAL	PORCENTAJE DE PARTICIPACIÓN
Meta	271,76	2.084,50	7.723,64	19.726,80	59,15 %	11,81 %
La Macarena	271,76	2.084,50		6.970,60	64,33 %	4,17 %
Mapiripán			6.189,29	7.356,13	100,00 %	4,40 %
Mesetas				567,12	32,35 %	0,34 %
Puerto Concordia				152,71	65,59 %	0,09 %
Puerto Gaitán			688,57	2.165,67	100,00 %	1,30 %
Puerto Rico			4,03	970,24	38,24 %	0,58 %
San Juan De Arama				8,37	3,86 %	0,01 %
Uribe				470,16	11,18 %	0,28 %
Vistahermosa			841,75	1.065,81	26,32 %	0,64 %
<b>Nariño</b>				<b>1.066,79</b>	<b>36,74 %</b>	<b>0,64 %</b>
Córdoba				40,96	20,23 %	0,02 %
Funes				4,15	2,17 %	0,00 %
Ipiales				931,77	66,95 %	0,56 %
Potosí				57,63	23,35 %	0,03 %
Puerres				32,28	12,57 %	0,02 %
<b>Putumayo</b>	<b>140,71</b>		<b>516,74</b>	<b>14.896,06</b>	<b>57,73 %</b>	<b>8,92 %</b>
Mocoa				646,22	48,60 %	0,39 %
Orito				1.680,80	86,23 %	1,01 %
Puerto Asís	81,74			2.741,01	97,95 %	1,64 %
Puerto Caicedo	58,96			931,70	100,00 %	0,56 %
Puerto Guzmán			516,74	4.532,55	99,84 %	2,71 %
Puerto Leguízamo				2.041,98	18,96 %	1,22 %
San Francisco				12,60	3,09 %	0,01 %
San Miguel				353,00	92,69 %	0,21 %
Valle Del Guamuez				781,84	98,10 %	0,47 %
Villagarzón				1.174,35	84,42 %	0,70 %
<b>Vaupés</b>				<b>10.405,51</b>	<b>19,55 %</b>	<b>6,23 %</b>
Carurú				4.751,74	74,79 %	2,84 %
Mitú				292,22	1,80 %	0,17 %
Pacoa				5.361,55	38,35 %	3,21 %
<b>Vichada</b>			<b>37.102,26</b>	<b>37.397,69</b>	<b>98,90 %</b>	<b>22,39 %</b>
Cumaribo			37.102,26	37.397,69	98,90 %	22,39 %
<b>TOTAL</b>	<b>2.504,81</b>	<b>9.762,50</b>	<b>61.221,91</b>	<b>167.060,37</b>	<b>34,58 %</b>	<b>100,00 %</b>
<b>PROPORCIÓN DE SUPERFICIE DEL MAPA DE TIERRAS</b>	<b>1,50 %</b>	<b>5,84 %</b>	<b>36,65 %</b>	<b>100,00 %</b>		
<b>PROPORCIÓN DE SUPERFICIE REGIONAL</b>	<b>0,52 %</b>	<b>2,02 %</b>	<b>12,67 %</b>	<b>34,58 %</b>		

Fuente: Agencia Nacional de Hidrocarburos. Mapa de tierras, julio de 2014. Elaborado por el grupo Dinámicas Socioambientales del Instituto «SINCHI».

Annex 16. Population in the urban area and the remaining municipality in the Colombian Amazon region

DEPARTAMENTO - MUNICIPIO	1985			1993		
	CABECERA	RESTO	TOTAL	CABECERA	RESTO	TOTAL
<b>Amazonas</b>	17.340	20.664	38.004	23.983	27.415	51.398
El Encanto	-	2.458	2.458	-	3.245	3.245
La Chorrera	-	3.433	3.433	-	4.581	4.581
La Pedrera	-	1.388	1.388	-	1.847	1.847
La Victoria	-	-	-	-	-	-
Leticia	16.418	6.010	22.428	22.717	7.995	30.712
Mirití Paraná	-	2.143	2.143	-	2.802	2.802
Puerto Alegría	-	-	-	-	-	-
Puerto Arica	-	-	-	-	-	-
Puerto Nariño	922	2.091	3.013	1.266	2.799	4.065
Puerto Santander	-	1.353	1.353	-	1.775	1.775
Tarapacá	-	1.788	1.788	-	2.371	2.371
<b>Caquetá</b>	135.322	151.725	287.047	165.463	197.173	362.636
Albania	2.832	8.251	11.083	2.677	8.217	10.894
Belén de los Andaquíes	2.653	11.536	14.189	3.958	9.412	13.370
Cartagena del Chairá	2.971	5.689	8.660	5.227	17.933	23.160
Curillo	3.390	4.799	8.189	6.445	4.499	10.944
El Doncello	10.952	9.638	20.590	11.162	9.357	20.519
El Paujil	5.667	8.604	14.271	6.069	8.720	14.789
Florencia	69.015	16.541	85.556	90.926	22.259	113.185
La Montañita	2.442	14.158	16.600	2.307	18.830	21.137
Milán	1.474	11.471	12.945	1.394	13.260	14.654
Morelia	1.530	1.700	3.230	1.619	2.431	4.050
Puerto Rico	10.885	23.945	34.830	10.270	22.335	32.605
San José del Fragua	4.594	462	5.056	4.335	10.335	14.670
San Vicente del Caguán	11.918	19.034	30.952	14.884	23.143	38.027
Solano	1.667	9.681	11.348	1.644	11.495	13.139
Solita	-	-	-	-	-	-
Valparaíso	3.332	6.216	9.548	2.546	14.947	17.493
<b>Cauca</b>	596	12.164	12.760	1.088	19.357	20.445
Piamonte	-	-	-	-	-	-
San Sebastián	-	4.978	4.978	-	5.363	5.363
Santa Rosa	596	7.186	7.782	1.088	13.994	15.082
<b>Guainía</b>	5.513	12.358	17.871	7.643	16.226	23.869
Barranco Mina	-	3.052	3.052	-	1.858	1.858
Cacahual	-	816	816	-	1.070	1.070
Inírida	5.513	5.078	10.591	7.643	6.677	14.320
La Guadalupe	-	132	132	-	170	170
Mapiripana	-	-	-	-	2.169	2.169
Morichal	-	408	408	-	530	530
Paná Paná	-	883	883	-	1.164	1.164
Puerto Colombia	-	1.319	1.319	-	1.712	1.712
San Felipe	-	670	670	-	876	876

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DEPARTAMENTO - MUNICIPIO	2005			2015		
	CABECERA	RESTO	TOTAL	CABECERA	RESTO	TOTAL
<b>Amazonas</b>	25.659	42.067	67.726	28.390	47.853	76.243
El Encanto	-	4.376	4.376	-	4.841	4.841
La Chorrera	-	3.337	3.337	-	3.878	3.878
La Pedrera	-	3.711	3.711	-	4.985	4.985
La Victoria	-	979	979	-	1.102	1.102
Leticia	23.811	14.021	37.832	26.226	15.100	41.326
Mirití Paraná	-	1.643	1.643	-	1.531	1.531
Puerto Alegría	-	1.277	1.277	-	1.941	1.941
Puerto Arica	-	1.440	1.440	-	1.350	1.350
Puerto Nariño	1.848	5.135	6.983	2.164	5.998	8.162
Puerto Santander	-	2.373	2.373	-	2.932	2.932
Tarapacá	-	3.775	3.775	-	4.195	4.195
<b>Caquetá</b>	231.375	189.143	420.518	284.055	193.587	477.642
Albania	2.237	4.157	6.394	2.465	3.965	6.430
Belén de los Andaquíes	5.556	5.525	11.081	6.514	5.027	11.541
Cartagena del Chairá	9.426	19.252	28.678	12.198	21.193	33.391
Curillo	6.270	4.851	11.121	6.205	5.478	11.683
El Doncello	13.379	8.168	21.547	14.410	7.727	22.137
El Paujil	8.699	8.935	17.634	10.578	9.646	20.224
Florencia	122.071	21.981	144.052	150.923	21.441	172.364
La Montañita	4.245	17.936	22.181	4.910	18.710	23.620
Milán	1.603	9.884	11.487	1.836	9.909	11.745
Morelia	1.658	2.060	3.718	1.894	1.919	3.813
Puerto Rico	12.617	19.791	32.408	14.207	19.140	33.347
San José del Fragua	4.540	9.342	13.882	6.135	8.786	14.921
San Vicente del Caguán	31.011	25.663	56.674	41.948	26.046	67.994
Solano	1.858	17.569	19.427	1.944	21.719	23.663
Solita	3.047	6.087	9.134	4.052	5.088	9.140
Valparaíso	3.158	7.942	11.100	3.836	7.793	11.629
<b>Cauca</b>	2.169	20.915	23.084	2.526	22.190	24.716
Piamonte	543	6.540	7.083	626	6.721	7.347
San Sebastián	-	6.422	6.422	-	6.889	6.889
Santa Rosa	1.626	7.953	9.579	1.900	8.580	10.480
<b>Guainía</b>	10.793	24.437	35.230	12.690	28.792	41.482
Barranco Mina	-	4.384	4.384	-	4.862	4.862
Cacahual	-	1.592	1.592	-	2.474	2.474
Inírida	10.793	7.073	17.866	12.690	7.126	19.816
La Guadalupe	-	225	225	-	358	358
Mapiripana	-	3.072	3.072	-	2.845	2.845
Morichal	-	752	752	-	1.192	1.192
Paná Paná	-	2.224	2.224	-	3.149	3.149
Puerto Colombia	-	3.753	3.753	-	4.736	4.736
San Felipe	-	1.362	1.362	-	2.050	2.050

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DEPARTAMENTO - MUNICIPIO	1985			1993		
	CABECERA	RESTO	TOTAL	CABECERA	RESTO	TOTAL
Guaviare	21.578	35.818	57.396	30.028	46.652	76.680
Calamar	1.678	6.042	7.720	2.341	7.932	10.273
El Retorno	1.612	6.761	8.373	2.242	8.759	11.001
Miraflores	2.148	4.783	6.931	3.039	6.169	9.208
San José del Guaviare	16.140	18.232	34.372	22.406	23.792	46.198
<b>Meta</b>	<b>16.620</b>	<b>43.248</b>	<b>59.868</b>	<b>20.810</b>	<b>49.400</b>	<b>70.210</b>
La Macarena	1.531	6.013	7.544	2.152	8.772	10.924
Mapiripán	-	-	-	1.276	4.931	6.207
Mesetas	3.306	11.148	14.454	2.883	6.731	9.614
Puerto Concordia	-	-	-	3.240	1.211	4.451
Puerto Gaitán	-	1.181	1.181	-	1.497	1.497
Puerto Rico	5.175	10.072	15.247	3.736	8.902	12.638
San Juan de Arama	1.953	1.513	3.466	2.274	1.368	3.642
Uribe	-	-	-	1.476	4.728	6.204
Vistahermosa	4.655	13.321	17.976	3.773	11.260	15.033
<b>Nariño</b>	<b>-</b>	<b>76.246</b>	<b>76.246</b>	<b>-</b>	<b>68.969</b>	<b>68.969</b>
Córdoba	-	6.410	6.410	-	6.876	6.876
Funes	-	2.346	2.346	-	5.984	5.984
Ipiales	-	22.035	22.035	-	13.641	13.641
Pasto	-	33.228	33.228	-	29.107	29.107
Potosí	-	7.158	7.158	-	7.722	7.722
Puerres	-	5.069	5.069	-	5.638	5.638
<b>Putumayo</b>	<b>65.541</b>	<b>144.489</b>	<b>210.030</b>	<b>89.411</b>	<b>167.021</b>	<b>256.432</b>
Colón	2.260	1.653	3.913	2.424	1.846	4.270
Leguízamo	5.366	8.732	14.098	5.767	10.688	16.455
Mocoa	10.597	30.075	40.672	15.847	10.565	26.412
Orito	9.850	10.142	19.992	12.260	16.725	28.985
Puerto Asís	14.524	42.964	57.488	18.934	32.419	51.353
Puerto Caicedo	-	-	-	3.469	10.583	14.052
Puerto Guzmán	-	-	-	2.710	19.430	22.140
San Francisco	2.760	2.832	5.592	3.159	3.092	6.251
San Miguel	-	-	-	-	-	-
Santiago	2.350	4.606	6.956	2.294	5.828	8.122
Sibundoy	5.874	4.117	9.991	7.097	4.289	11.386
Valle del Guamuez	7.696	26.430	34.126	10.198	38.414	48.612
Villagarzón	4.264	12.938	17.202	5.252	13.142	18.394
<b>Vaupés</b>	<b>5.190</b>	<b>17.616</b>	<b>22.806</b>	<b>7.218</b>	<b>23.465</b>	<b>30.683</b>
Carurú	355	2.707	3.062	496	3.619	4.115
Mitú	4.674	10.968	15.642	6.488	14.612	21.100
Pacoa	-	1.591	1.591	-	2.097	2.097
Papunaua	-	676	676	-	908	908
Taraira	161	650	811	234	880	1.114
Yavaraté	-	1.024	1.024	-	1.349	1.349
<b>Vichada</b>	<b>659</b>	<b>5.356</b>	<b>6.015</b>	<b>912</b>	<b>7.155</b>	<b>8.067</b>
Cumaribo	659	5.356	6.015	912	7.155	8.067
<b>Región</b>	<b>268.359</b>	<b>519.684</b>	<b>788.043</b>	<b>346.556</b>	<b>622.832</b>	<b>969.388</b>

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DEPARTAMENTO - MUNICIPIO	2005			2015		
	CABECERA	RESTO	TOTAL	CABECERA	RESTO	TOTAL
Guaviare	49.789	45.762	95.551	65.150	45.910	111.060
Calamar	4.806	6.377	11.183	5.305	3.786	9.091
El Retorno	7.348	11.715	19.063	11.684	11.291	22.975
Miraflores	2.772	8.539	11.311	3.469	10.970	14.439
San José del Guaviare	34.863	19.131	53.994	44.692	19.863	64.555
<b>Meta</b>	<b>32.689</b>	<b>66.035</b>	<b>98.724</b>	<b>41.753</b>	<b>80.232</b>	<b>121.985</b>
La Macarena	3.623	20.541	24.164	4.458	28.403	32.861
Mapiripán	1.247	7.379	8.626	1.370	9.766	11.136
Mesetas	3.063	5.922	8.985	3.661	5.917	9.578
Puerto Concordia	7.566	1.560	9.126	10.358	1.958	12.316
Puerto Gaitán	-	1.390	1.390	-	1.362	1.362
Puerto Rico	4.961	9.318	14.279	5.182	10.097	15.279
San Juan de Arama	3.394	1.071	4.465	3.898	908	4.806
Uribe	2.669	6.393	9.062	3.851	8.018	11.869
Vistahermosa	6.166	12.460	18.626	8.975	13.803	22.778
<b>Nariño</b>	<b>-</b>	<b>92.281</b>	<b>92.281</b>	<b>-</b>	<b>97.281</b>	<b>97.281</b>
Córdoba	-	7.608	7.608	-	7.787	7.787
Funes	-	2.230	2.230	-	2.127	2.127
Ipiales	-	31.305	31.305	-	35.126	35.126
Pasto	-	39.269	39.269	-	41.740	41.740
Potosí	-	7.332	7.332	-	6.569	6.569
Puerres	-	4.537	4.537	-	3.931	3.931
<b>Putumayo</b>	<b>135.616</b>	<b>174.516</b>	<b>310.132</b>	<b>168.535</b>	<b>176.669</b>	<b>345.204</b>
Colón	2.935	2.231	5.166	3.276	2.243	5.519
Leguízamo	7.108	8.936	16.044	9.029	6.416	15.445
Mocoa	25.751	10.004	35.755	34.111	7.963	42.074
Orito	17.207	26.447	43.654	23.633	28.947	52.580
Puerto Asís	27.609	28.150	55.759	32.692	27.446	60.138
Puerto Caicedo	4.144	10.062	14.206	5.198	9.377	14.575
Puerto Guzmán	3.706	18.973	22.679	4.692	19.007	23.699
San Francisco	3.713	3.095	6.808	4.152	2.931	7.083
San Miguel	4.752	17.086	21.838	5.811	20.740	26.551
Santiago	3.133	6.076	9.209	4.259	6.169	10.428
Sibundoy	9.148	4.122	13.270	10.280	3.856	14.136
Valle del Guamuez	17.341	27.618	44.959	20.488	31.354	51.842
Villagarzón	9.069	11.716	20.785	10.914	10.220	21.134
<b>Vaupés</b>	<b>13.876</b>	<b>25.403</b>	<b>39.279</b>	<b>16.864</b>	<b>26.801</b>	<b>43.665</b>
Carurú	635	2.607	3.242	686	2.641	3.327
Mitú	13.066	15.316	28.382	16.032	15.536	31.568
Pacoa	-	4.459	4.459	-	5.709	5.709
Papunaua	-	879	879	-	845	845
Taraira	175	873	1.048	146	830	976
Yavaraté	-	1.269	1.269	-	1.240	1.240
<b>Vichada</b>	<b>4.312</b>	<b>14.163</b>	<b>18.475</b>	<b>6.840</b>	<b>17.425</b>	<b>24.265</b>
Cumaribo	4.312	14.163	18.475	6.840	17.425	24.265
<b>Región</b>	<b>506.278</b>	<b>694.722</b>	<b>1.201.000</b>	<b>626.803</b>	<b>736.741</b>	<b>1.363.544</b>

Fuente: Grupo Dinámicas Socioambientales del Instituto «SINCHI». Cálculos para la región amazónica y Colombia a partir de datos del DANE, 2011. Estimaciones de población 1985-2005 y proyecciones de población 2005-2020, total nacional por área a junio 30 de cada año.

Annex 17. Percentage of changes in the population of the department and municipality during the 1985-1993, 1993-2005, 2005-2015 and 1985-2015 period

DEPARTAMENTO - MUNICIPIO	TOTAL				URBANA	
	1985-1993	1993-2005	2005-2015	1985-2015	1985-1993	1993-2005
Amazonas	3,77	2,30	1,18	2,32	4,05	0,56
El Encanto	3,47	2,49	1,01	2,26	-	-
La Chorrera	3,61	-2,64	1,50	0,41	-	-
La Pedrera	3,57	5,81	2,95	4,26	-	-
La Victoria	-	-	1,18	-	-	-
Leticia	3,93	1,74	0,88	2,04	4,06	0,39
Mirití Paraná	3,35	-4,45	-0,71	-1,12	-	-
Puerto Alegría	-	-	4,19	-	-	-
Puerto Arica	-	-	-0,65	-	-	-
Puerto Nariño	3,74	4,51	1,56	3,32	3,96	3,15
Puerto Santander	3,39	2,42	2,12	2,58	-	-
Tarapacá	3,53	3,88	1,05	2,84	-	-
<b>Caquetá</b>	<b>2,92</b>	<b>1,23</b>	<b>1,27</b>	<b>1,70</b>	<b>2,51</b>	<b>2,79</b>
Albania	-0,22	-4,44	0,06	-1,81	-0,70	-1,50
Belén de los Andaquíes	-0,74	-1,56	0,41	-0,69	5,00	2,83
Cartagena del Chairá	12,30	1,78	1,52	4,50	7,06	4,91
Curillo	3,62	0,13	0,49	1,18	8,03	-0,23
El Doncello	-0,04	0,41	0,27	0,24	0,24	1,51
El Paujil	0,45	1,47	1,37	1,16	0,86	3,00
Florencia	3,50	2,01	1,79	2,33	3,45	2,45
La Montañita	3,02	0,40	0,63	1,18	-0,71	5,08
Milán	1,55	-2,03	0,22	-0,32	-0,70	1,16
Morelia	2,83	-0,71	0,25	0,55	0,71	0,20
Puerto Rico	-0,83	-0,05	0,29	-0,15	-0,73	1,72
San José del Fragua	13,32	-0,46	0,72	3,61	-0,73	0,39
San Vicente del Caguán	2,57	3,33	1,82	2,62	2,78	6,12
Solano	1,83	3,26	1,97	2,45	-0,17	1,02
Solita	-	-	0,01	-	-	-
Valparaíso	7,57	-3,79	0,47	0,66	-3,36	1,80
<b>Cauca</b>	<b>5,89</b>	<b>1,01</b>	<b>0,68</b>	<b>2,20</b>	<b>7,52</b>	<b>5,75</b>
Piamonte	-	-	0,37	-	-	-
San Sebastián	0,93	1,50	0,70	1,08	-	-
Santa Rosa	8,27	-3,78	0,90	0,99	7,52	3,35
<b>Guainía</b>	<b>3,62</b>	<b>3,24</b>	<b>1,63</b>	<b>2,81</b>	<b>4,08</b>	<b>2,88</b>
Barranco Mina	-6,20	7,15	1,03	1,55	-	-
Cacahual	3,39	3,31	4,41	3,70	-	-
Inírida	3,77	1,84	1,04	2,09	4,08	2,88
La Guadalupe	3,16	2,34	4,64	3,33	-	-
Mapiripana	-	2,90	-0,77	-	-	-
Morichal	3,27	2,92	4,61	3,57	-	-
Paná Paná	3,45	5,40	3,48	4,24	-	-
Puerto Colombia	3,26	6,54	2,33	4,26	-	-
San Felipe	3,35	3,68	4,09	3,73	-	-

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DEPARTAMENTO - MUNICIPIO	URBANA		RESTO			
	2005-2015	1985-2015	1985-1993	1993-2005	2005-2015	1985-2015
Amazonas	1,01	1,64	3,53	3,57	1,29	2,80
El Encanto	-	-	3,47	2,49	1,01	2,26
La Chorrera	-	-	3,61	-2,64	1,50	0,41
La Pedrera	-	-	3,57	5,81	2,95	4,26
La Victoria	-	-	-	-	1,18	-
Leticia	0,97	1,56	3,57	4,68	0,74	3,07
Mirití Paraná	-	-	3,35	-4,45	-0,71	-1,12
Puerto Alegría	-	-	-	-	4,19	-
Puerto Arica	-	-	-	-	-0,65	-
Puerto Nariño	1,58	2,84	3,65	5,06	1,55	3,51
Puerto Santander	-	-	3,39	2,42	2,12	2,58
Tarapacá	-	-	3,53	3,88	1,05	2,84
<b>Caquetá</b>	<b>2,05</b>	<b>2,47</b>	<b>3,28</b>	<b>-0,35</b>	<b>0,23</b>	<b>0,81</b>
Albania	0,97	-0,46	-0,05	-5,68	-0,47	-2,44
Belén de los Andaquíes	1,59	2,99	-2,54	-4,44	-0,94	-2,77
Cartagena del Chairá	2,58	4,71	14,35	0,59	0,96	4,38
Curillo	-0,10	2,02	-0,81	0,63	1,22	0,44
El Doncello	0,74	0,91	-0,37	-1,13	-0,56	-0,74
El Paujil	1,96	2,08	0,17	0,20	0,77	0,38
Florencia	2,12	2,61	3,71	-0,10	-0,25	0,86
La Montañita	1,46	2,33	3,56	-0,41	0,42	0,93
Milán	1,36	0,73	1,81	-2,45	0,03	-0,49
Morelia	1,33	0,71	4,47	-1,38	-0,71	0,40
Puerto Rico	1,19	0,89	-0,87	-1,01	-0,33	-0,75
San José del Fragua	3,01	0,96	38,85	-0,84	-0,61	9,82
San Vicente del Caguán	3,02	4,19	2,44	0,86	0,15	1,05
Solano	0,45	0,51	2,15	3,54	2,12	2,69
Solita	2,85	-	-	-	-1,79	-
Valparaíso	1,94	0,47	10,97	-5,27	-0,19	0,75
<b>Cauca</b>	<b>1,52</b>	<b>4,81</b>	<b>5,81</b>	<b>0,64</b>	<b>0,59</b>	<b>2,00</b>
Piamonte	1,42	-	-	-	0,27	-
San Sebastián	-	-	0,93	1,50	0,70	1,08
Santa Rosa	1,56	3,86	8,33	-4,71	0,76	0,59
<b>Guainía</b>	<b>1,62</b>	<b>2,78</b>	<b>3,40</b>	<b>3,41</b>	<b>1,64</b>	<b>2,82</b>
Barranco Mina	-	-	-6,20	7,15	1,03	1,55
Cacahual	-	-	3,39	3,31	4,41	3,70
Inírida	1,62	2,78	3,42	0,48	0,07	1,13
La Guadalupe	-	-	3,16	2,34	4,64	3,33
Mapiripana	-	-	-	2,90	-0,77	-
Morichal	-	-	3,27	2,92	4,61	3,57
Paná Paná	-	-	3,45	5,40	3,48	4,24
Puerto Colombia	-	-	3,26	6,54	2,33	4,26
San Felipe	-	-	3,35	3,68	4,09	3,73

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DEPARTAMENTO - MUNICIPIO	TOTAL				URBANA	
	1985-1993	1993-2005	2005-2015	1985-2015	1985-1993	1993-2005
Guaviare	3,62	1,83	1,50	2,20	4,13	4,21
Calamar	3,57	0,71	-2,07	0,54	4,16	5,99
El Retorno	3,41	4,58	1,87	3,36	4,12	9,89
Miraflores	3,55	1,71	2,44	2,45	4,34	-0,77
San José del Guaviare	3,70	1,30	1,79	2,10	4,10	3,68
<b>Meta</b>	<b>1,99</b>	<b>2,84</b>	<b>2,12</b>	<b>2,37</b>	<b>2,81</b>	<b>3,76</b>
La Macarena	4,63	6,62	3,07	4,91	4,26	4,34
Mapiripán	-	2,74	2,55	-	-	-0,19
Mesetas	-5,10	-0,56	0,64	-1,37	-1,71	0,50
Puerto Concordia	-	5,98	3,00	-	-	7,07
Puerto Gaitán	2,97	-0,62	-0,20	0,48	-	-
Puerto Rico	-2,35	1,02	0,68	0,01	-4,07	2,36
San Juan de Arama	0,62	1,70	0,74	1,09	1,90	3,34
Uribe	-	3,16	2,70	-	-	4,94
Vistahermosa	-2,24	1,79	2,01	0,79	-2,63	4,09
<b>Nariño</b>	<b>-1,25</b>	<b>2,43</b>	<b>0,53</b>	<b>0,81</b>	<b>-</b>	<b>-</b>
Córdoba	0,88	0,84	0,23	0,65	-	-
Funes	11,70	-8,23	-0,47	-0,33	-	-
Ipiales	-5,99	6,92	1,15	1,55	-	-
Pasto	-1,66	2,50	0,61	0,76	-	-
Potosí	0,95	-0,43	-1,10	-0,29	-	-
Puerres	1,33	-1,81	-1,43	-0,85	-	-
<b>Putumayo</b>	<b>2,50</b>	<b>1,58</b>	<b>1,07</b>	<b>1,66</b>	<b>3,88</b>	<b>3,47</b>
Colón	1,09	1,59	0,66	1,15	0,88	1,59
Leguízamo	1,93	-0,21	-0,38	0,30	0,90	1,74
Mocoa	-5,40	2,52	1,63	0,11	5,03	4,05
Orito	4,64	3,41	1,86	3,22	2,74	2,82
Puerto Asís	-1,41	0,69	0,76	0,15	3,31	3,14
Puerto Caicedo	-	0,09	0,26	-	-	1,48
Puerto Guzmán	-	0,20	0,44	-	-	2,61
San Francisco	1,39	0,71	0,40	0,79	1,69	1,35
San Miguel	-	-	1,95	-	-	-
Santiago	1,94	1,05	1,24	1,35	-0,30	2,60
Sibundoy	1,63	1,28	0,63	1,16	2,36	2,12
Valle del Guamuez	4,42	-0,65	1,42	1,39	3,52	4,42
Villagarzón	0,84	1,02	0,17	0,69	2,61	4,55
<b>Vaupés</b>	<b>3,71</b>	<b>2,06</b>	<b>1,06</b>	<b>2,17</b>	<b>4,12</b>	<b>5,45</b>
Carurú	3,69	-1,99	0,26	0,28	4,18	2,06
Mitú	3,74	2,47	1,06	2,34	4,10	5,83
Pacoa	3,45	6,29	2,47	4,26	-	-
Papunaua	3,69	-0,27	-0,39	0,74	-	-
Taraira	3,97	-0,51	-0,71	0,62	4,67	-2,42
Yavaraté	3,45	-0,51	-0,23	0,64	-	-
<b>Vichada</b>	<b>3,67</b>	<b>6,91</b>	<b>2,73</b>	<b>4,65</b>	<b>4,06</b>	<b>12,95</b>
Cumaribo	3,67	6,91	2,73	4,65	4,06	12,95
<b>Región</b>	<b>2,02</b>	<b>1,41</b>	<b>1,17</b>	<b>1,49</b>	<b>2,53</b>	<b>2,00</b>
<b>Nación</b>	<b>2,59</b>	<b>1,79</b>	<b>1,27</b>	<b>1,83</b>	<b>3,20</b>	<b>3,16</b>

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DEPARTAMENTO - MUNICIPIO	URBANA		RESTO			
	2005-2015	1985-2015	1985-1993	1993-2005	2005-2015	1985-2015
Guaviare	2,69	3,68	3,30	-0,16	0,03	0,83
Calamar	0,99	3,84	3,40	-1,82	-5,21	-1,56
El Retorno	4,64	6,60	3,24	2,42	-0,37	1,71
Miraflores	2,24	1,60	3,18	2,71	2,51	2,77
San José del Guaviare	2,48	3,39	3,33	-1,82	0,38	0,29
<b>Meta</b>	<b>2,45</b>	<b>3,07</b>	<b>1,66</b>	<b>2,42</b>	<b>1,95</b>	<b>2,06</b>
La Macarena	2,07	3,56	4,72	7,09	3,24	5,18
Mapiripán	0,94	-	-	3,36	2,80	-
Mesetas	1,78	0,34	-6,31	-1,07	-0,01	-2,11
Puerto Concordia	3,14	-	-	2,11	2,27	-
Puerto Gaitán	-	-	2,97	-0,62	-0,20	0,48
Puerto Rico	0,44	0,00	-1,54	0,38	0,80	0,01
San Juan de Arama	1,38	2,30	-1,26	-2,04	-1,65	-1,70
Uribe	3,67	-	-	2,52	2,26	-
Vistahermosa	3,75	2,19	-2,10	0,84	1,02	0,12
<b>Nariño</b>	<b>-</b>	<b>-</b>	<b>-1,25</b>	<b>2,43</b>	<b>0,53</b>	<b>0,81</b>
Córdoba	-	-	0,88	0,84	0,23	0,65
Funes	-	-	11,70	-8,23	-0,47	-0,33
Ipiales	-	-	-5,99	6,92	1,15	1,55
Pasto	-	-	-1,66	2,50	0,61	0,76
Potosí	-	-	0,95	-0,43	-1,10	-0,29
Puerres	-	-	1,33	-1,81	-1,43	-0,85
<b>Putumayo</b>	<b>2,17</b>	<b>3,15</b>	<b>1,81</b>	<b>0,37</b>	<b>0,12</b>	<b>0,67</b>
Colón	1,10	1,24	1,38	1,58	0,05	1,02
Leguízamo	2,39	1,73	2,53	-1,49	-3,31	-1,03
Mocoa	2,81	3,90	-13,08	-0,45	-2,28	-4,43
Orito	3,17	2,92	6,25	3,82	0,90	3,50
Puerto Asís	1,69	2,70	-3,52	-1,18	-0,25	-1,49
Puerto Caicedo	2,27	-	-	-0,42	-0,71	-
Puerto Guzmán	2,36	-	-	-0,20	0,02	-
San Francisco	1,12	1,36	1,10	0,01	-0,54	0,11
San Miguel	2,01	-	-	-	1,94	-
Santiago	3,07	1,98	2,94	0,35	0,15	0,97
Sibundoy	1,17	1,87	0,51	-0,33	-0,67	-0,22
Valle del Guamuez	1,67	3,26	4,67	-2,75	1,27	0,57
Villagarzón	1,85	3,13	0,20	-0,96	-1,37	-0,79
<b>Vaupés</b>	<b>1,95</b>	<b>3,93</b>	<b>3,58</b>	<b>0,66</b>	<b>0,54</b>	<b>1,40</b>
Carurú	0,77	2,20	3,63	-2,73	0,13	-0,08
Mitú	2,05	4,11	3,59	0,39	0,14	1,16
Pacoa	-	-	3,45	6,29	2,47	4,26
Papunaua	-	-	3,69	-0,27	-0,39	0,74
Taraira	-1,81	-0,33	3,79	-0,07	-0,51	0,81
Yavaraté	-	-	3,45	-0,51	-0,23	0,64
<b>Vichada</b>	<b>4,61</b>	<b>7,80</b>	<b>3,62</b>	<b>5,69</b>	<b>2,07</b>	<b>3,93</b>
Cumaribo	4,61	7,80	3,62	5,69	2,07	3,93
<b>Región</b>	<b>1,45</b>	<b>1,95</b>	<b>0,95</b>	<b>-0,09</b>	<b>0,32</b>	<b>0,32</b>
<b>Nación</b>	<b>2,14</b>	<b>2,83</b>	<b>2,26</b>	<b>0,91</b>	<b>0,59</b>	<b>1,16</b>

Fuente: Grupo Dinámicas Socioambientales del Instituto «SINCHI». Cálculos para la región amazónica y Colombia a partir de datos del DANE, 2011. Estimaciones de población 1985-2005 y proyecciones de población 2005-2020, total nacional por área a junio 30 de cada año.

Annex 18. Density of remaining population and discriminated total by municipality, department and region, 2005

DEPARTAMENTO -MUNICIPIO	POBLACIÓN		SUPERFICIE EN LA REGIÓN AMAZÓNICA  Km <sup>2</sup>	DENSIDAD DE POBLACIÓN hab./Km <sup>2</sup>	
	RESTO	TOTAL		EN EL ÁREA RESTO	TOTAL MUNICIPAL
Amazonas	42.067	67.726	108.744	0,39	0,62
El Encanto	4.376	4.376	10.682	0,41	0,41
La Chorrera	3.337	3.337	12.719	0,26	0,26
La Pedrera	3.711	3.711	13.596	0,27	0,27
La Victoria	979	979	1.429	0,69	0,69
Leticia	14.021	37.832	6.149	2,28	6,15
Mirití Paraná	1.643	1.643	16.819	0,10	0,10
Puerto Alegría	1.277	1.277	8.409	0,15	0,15
Puerto Arica	1.440	1.440	13.620	0,11	0,11
Puerto Nariño	5.135	6.983	1.518	3,38	4,60
Puerto Santander	2.373	2.373	14.711	0,16	0,16
Tarapacá	3.775	3.775	9.093	0,42	0,42
<b>Caquetá</b>	<b>189.143</b>	<b>420.518</b>	<b>90.055</b>	<b>2,10</b>	<b>4,67</b>
Albania	4.157	6.394	429	9,68	14,89
Belén de los Andaquíes	5.525	11.081	1.143	4,84	9,70
Cartagena del Chairá	19.252	28.678	12.744	1,51	2,25
Curillo	4.851	11.121	483	10,05	23,04
El Doncello	8.168	21.547	1.097	7,45	19,65
El Paujil	8.935	17.634	1.251	7,14	14,10
Florencia	21.981	144.052	2.587	8,50	55,69
La Montañita	17.936	22.181	1.705	10,52	13,01
Milán	9.884	11.487	1.228	8,05	9,36
Morelia	2.060	3.718	475	4,34	7,83
Puerto Rico	19.791	32.408	4.153	4,77	7,80
San José del Fragua	9.342	13.882	1.227	7,62	11,32
San Vicente del Caguán	25.663	56.674	17.496	1,47	3,24
Solano	17.569	19.427	42.314	0,42	0,46
Solita	6.087	9.134	694	8,77	13,16
Valparaíso	7.942	11.100	1.029	7,72	10,79
<b>Cauca</b>	<b>20.915</b>	<b>23.084</b>	<b>4.943</b>	<b>4,23</b>	<b>4,67</b>
Piamonte	6.540	7.083	1.104	5,93	6,42
San Sebastián	6.422	6.422	226	28,43	28,43
Santa Rosa	7.953	9.579	3.614	2,20	2,65
<b>Guainía</b>	<b>24.437</b>	<b>35.230</b>	<b>70.805</b>	<b>0,35</b>	<b>0,50</b>
Barranco Mina	4.384	4.384	9.404	0,47	0,47
Cacahual	1.592	1.592	2.305	0,69	0,69
Inírida	7.073	17.866	15.820	0,45	1,13
La Guadalupe	225	225	1.189	0,19	0,19
Mapiripana	3.072	3.072	4.903	0,63	0,63
Morichal	752	752	8.506	0,09	0,09
Paná Paná	2.224	2.224	10.120	0,22	0,22
Puerto Colombia	3.753	3.753	15.516	0,24	0,24
San Felipe	1.362	1.362	3.042	0,45	0,45
<b>Guaviare</b>	<b>45.762</b>	<b>95.551</b>	<b>55.527</b>	<b>0,82</b>	<b>1,72</b>
Calamar	6.377	11.183	13.554	0,47	0,83
El Retorno	11.715	19.063	12.402	0,94	1,54
Miraflores	8.539	11.311	12.792	0,67	0,88

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DEPARTAMENTO -MUNICIPIO	POBLACIÓN		SUPERFICIE EN LA REGIÓN AMAZÓNICA  Km <sup>2</sup>	DENSIDAD DE POBLACIÓN hab./Km <sup>2</sup>	
	RESTO	TOTAL		EN EL ÁREA RESTO	TOTAL MUNICIPAL
San José del Guaviare	19.131	53.994	16.779	1,14	3,22
<b>Meta</b>	<b>66.035</b>	<b>98.724</b>	<b>33.351</b>	<b>1,98</b>	<b>2,96</b>
La Macarena	20.541	24.164	10.835	1,90	2,23
Mapiripán	7.379	8.626	7.356	1,00	1,17
Mesetas	5.922	8.985	1.753	3,38	5,13
Puerto Concordia	1.560	9.126	233	6,70	39,20
Puerto Gaitán	1.390	1.390	2.166	0,64	0,64
Puerto Rico	9.318	14.279	2.537	3,67	5,63
San Juan de Arama	1.071	4.465	217	4,94	20,58
Uribe	6.393	9.062	4.205	1,52	2,16
Vistahermosa	12.460	18.626	4.050	3,08	4,60
<b>Nariño</b>	<b>92.281</b>	<b>92.281</b>	<b>2.892</b>	<b>31,91</b>	<b>31,91</b>
Córdoba	7.608	7.608	202	37,57	37,57
Funes	2.230	2.230	191	11,67	11,67
Ipiales	31.305	31.305	1.392	22,49	22,49
Pasto	39.269	39.269	603	65,14	65,14
Potosí	7.332	7.332	247	29,71	29,71
Puerres	4.537	4.537	257	17,67	17,67
<b>Putumayo</b>	<b>174.516</b>	<b>310.132</b>	<b>25.803</b>	<b>6,76</b>	<b>12,02</b>
Colón	2.231	5.166	77	28,82	66,73
Leguízamo	8.936	16.044	10.773	0,83	1,49
Mocoa	10.004	35.755	1.330	7,52	26,89
Orito	26.447	43.654	1.949	13,57	22,40
Puerto Asís	28.150	55.759	2.798	10,06	19,93
Puerto Caicedo	10.062	14.206	932	10,80	15,25
Puerto Guzmán	18.973	22.679	4.540	4,18	5,00
San Francisco	3.095	6.808	408	7,59	16,70
San Miguel	17.086	21.838	381	44,87	57,34
Santiago	6.076	9.209	339	17,93	27,18
Sibundoy	4.122	13.270	89	46,47	149,60
Valle del Guamuez	27.618	44.959	797	34,65	56,41
Villagarzón	11.716	20.785	1.391	8,42	14,94
<b>Vaupés</b>	<b>25.403</b>	<b>39.279</b>	<b>53.217</b>	<b>0,48</b>	<b>0,74</b>
Carurú	2.607	3.242	6.354	0,41	0,51
Mitú	15.316	28.382	16.209	0,94	1,75
Pacoa	4.459	4.459	13.980	0,32	0,32
Papunaua	879	879	5.531	0,16	0,16
Taraira	873	1.048	6.510	0,13	0,16
Yavaraté	1.269	1.269	4.633	0,27	0,27
<b>Vichada</b>	<b>14.163</b>	<b>18.475</b>	<b>37.815</b>	<b>0,37</b>	<b>0,49</b>
Cumaribo	14.163	18.475	37.815	0,37	0,49
<b>Región</b>	<b>694.722</b>	<b>1.201.000</b>	<b>483.152</b>	<b>1,44</b>	<b>2,49</b>

Fuente: Grupo Dinámicas Socioambientales del Instituto «SINCHI». Cálculos para la región amazónica y Colombia a partir de datos del Departamento Administrativo Nacional de Estadística –DANE–. Colombia. Censo 2005. Los datos de superficie fueron generados por el grupo SIG-SR del Instituto «SINCHI» tomando como fuente el mapa de la División político-administrativa (DIVIPOLA), hecho por el Instituto Geográfico Agustín Codazzi –IGAC–; por esto las cifras deben tomarse como indicativas y no como datos oficiales de superficie departamental o municipal.



Annex 19. Density of urban population, 1993 and 2005

DEPARTAMENTO -MUNICIPIO	1993			2005		
	POBLACIÓN URBANA	ÁREA CENSAL URBANA ha	DENSIDAD DE POBLACIÓN URBANA hab./ha	POBLACIÓN URBANA	ÁREA CENSAL URBANA ha	DENSIDAD DE POBLACIÓN URBANA hab./ha
Amazonas	20.544	834,87	24,61	25.659	1.058,71	24,24
El Encanto		3,85	0,00	0	3,85	0,00
La Chorrera		13,29	0,00	0	13,29	0,00
La Pedrera		22,65	0,00	0	22,65	0,00
La Victoria		0,00	0,00	0	0,00	0,00
Leticia	19.177	735,77	26,06	23.811	948,76	25,10
Mirití Paraná		0,00	0,00	0	0,00	0,00
Puerto Alegría		0,00	0,00	0	4,98	0,00
Puerto Arica		0,00	0,00	0	5,87	0,00
Puerto Nariño	1.367	34,42	39,71	1.848	34,42	53,69
Puerto Santander		6,82	0,00	0	6,82	0,00
Tarapacá		18,08	0,00	0	18,08	0,00
<b>Caquetá</b>	<b>158.952</b>	<b>2.410,52</b>	<b>65,94</b>	<b>231.202</b>	<b>2.843,56</b>	<b>81,31</b>
Albania	2.862	31,25	91,60	2.237	31,24	71,60
Belén de los Andaquíes	3.745	70,00	53,50	5.556	70,00	79,37
Cartagena del Chairá	5.386	103,21	52,18	9.426	103,21	91,33
Curillo	7.421	65,59	113,14	6.270	65,57	95,62
El Doncello	11.356	191,69	59,24	13.379	191,69	69,79
El Paujil	5.906	64,68	91,31	8.699	64,68	134,50
Florencia	91.389	1.326,86	68,88	121.898	1.657,51	73,54
La Montañita	1.378	38,31	35,97	4.245	38,30	110,83
Milán	1.237	26,70	46,33	1.603	26,70	60,05
Morelia	1.609	31,36	51,31	1.658	35,78	46,34
Puerto Rico	10.127	186,25	54,37	12.617	244,73	51,56
San José del Fragua	2.383	39,29	60,65	4.540	39,29	115,55
San Vicente del Caguán	9.522	131,61	72,35	31.011	131,61	235,64
Solano	1.798	37,24	48,29	1.858	37,23	49,90
Solita	0	0,00	0,00	3.047	39,53	77,08
Valparaíso	2.833	66,50	42,60	3.158	66,49	47,49
<b>Cauca</b>	<b>689</b>	<b>19,39</b>	<b>35,53</b>	<b>2.169</b>	<b>108,16</b>	<b>20,05</b>
Piamonte	0	0,00	0,00	543	88,77	6,12
Santa Rosa	689	19,39	35,53	1.626	19,39	83,86
<b>Guainía</b>	<b>4.425</b>	<b>505,61</b>	<b>8,75</b>	<b>10.793</b>	<b>505,61</b>	<b>21,35</b>
Barranco Mina		51,70	0,00	0	51,70	0,00
Cacahual		3,77	0,00	0	3,77	0,00
Inírida	4.425	444,08	9,96	10.793	444,08	24,30
La Guadalupe		0,00	0,00	0	0,00	0,00
Mapiripana		0,00	0,00	0	0,00	0,00
Morichal		0,00	0,00	0	0,00	0,00
Paná Panamá		0,00	0,00	0	0,00	0,00
Puerto Colombia		0,00	0,00	0	0,00	0,00
San Felipe		6,05	0,00	0	6,05	0,00
<b>Guaviare</b>	<b>23.037</b>	<b>709,35</b>	<b>32,48</b>	<b>49.789</b>	<b>708,96</b>	<b>70,23</b>
Calamar	2.528	60,91	41,50	4.806	60,91	78,90
El Retorno	2.268	55,88	40,59	7.348	55,88	131,50

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DEPARTAMENTO -MUNICIPIO	1993			2005		
	POBLACIÓN URBANA	ÁREA CENSAL URBANA ha	DENSIDAD DE POBLACIÓN URBANA hab./ha	POBLACIÓN URBANA	ÁREA CENSAL URBANA ha	DENSIDAD DE POBLACIÓN URBANA hab./ha
Miraflores	3.282	69,60	47,15	2.772	69,60	39,83
San José del Guaviare	14.959	522,96	28,60	34.863	522,56	66,72
<b>Meta</b>	<b>19.026</b>	<b>888,30</b>	<b>21,42</b>	<b>32.689</b>	<b>886,58</b>	<b>36,87</b>
La Macarena	2.283	113,53	20,11	3.623	113,53	31,91
Mapiripán	1.288	53,12	24,25	1.247	53,12	23,48
Mesetas	3.011	80,55	37,38	3.063	80,55	38,02
Puerto Concordia	2.870	61,83	46,42	7.566	61,83	122,36
Puerto Rico	3.076	128,07	24,02	4.961	128,07	38,74
San Juan de Arama	2.081	140,83	14,78	3.394	139,11	24,40
Uribe	1.396	57,66	24,21	2.669	57,66	46,29
Vistahermosa	3.021	252,71	11,95	6.166	252,71	24,40
<b>Putumayo</b>	<b>76.370</b>	<b>1.434,07</b>	<b>53,25</b>	<b>135.616</b>	<b>1.614,22</b>	<b>84,01</b>
Colón	2.102	167,95	12,52	2.935	167,95	17,48
Leguízamo	5.853	68,04	86,02	7.108	68,04	104,47
Mocoa	14.165	189,40	74,79	25.751	189,40	135,96
Orito	8.820	301,86	29,22	17.207	301,86	57,00
Puerto Asís	19.163	249,56	76,79	27.609	422,36	65,37
Puerto Caicedo	2.076	23,36	88,87	4.144	30,71	134,95
Puerto Guzmán	2.634	19,97	131,90	3.706	19,97	185,58
San Francisco	2.799	81,75	34,24	3.713	81,75	45,42
San Miguel	0	0,00	0,00	4.752	0,00	0,00
Santiago	1.747	59,81	29,21	3.133	59,81	52,38
Sibundoy	6.085	119,42	50,95	9.148	119,42	76,60
Valle del Guamuez	6.414	86,50	74,15	17.341	86,50	200,48
Villagarzón	4.512	66,45	67,90	9.069	66,45	136,47
<b>Vaupés</b>	<b>4.655</b>	<b>361,10</b>	<b>12,89</b>	<b>13.876</b>	<b>361,10</b>	<b>38,43</b>
Carurú	0	21,09	0,00	635	21,09	30,11
Mitú	4.052	337,51	12,01	13.066	337,51	38,71
Pacoa		0,00	0,00	0	0,00	0,00
Papunaua		0,00	0,00	0	0,00	0,00
Taraira	234	2,50	93,55	175	2,50	69,97
Yavaraté	369	0,00	0,00	0	0,00	0,00
<b>Vichada</b>	<b>0</b>	<b>19,45</b>	<b>0,00</b>	<b>4.312</b>	<b>19,45</b>	<b>221,65</b>
Cumaribo		19,45	0,00	4.312	19,45	221,65
<b>Región</b>	<b>307.698</b>	<b>7.182,67</b>	<b>42,84</b>	<b>506.105</b>	<b>8.106,34</b>	<b>62,43</b>

Fuente: Cálculos del Instituto «SINCHI», realizados por el grupo Dinámicas Socioambientales a partir de los datos del Departamento Administrativo Nacional de Estadística –DANE–. Colombia. Censos 1993 y 2005. Los datos de superficie censal son generados por la División de Geoestadística del DANE.

Annex 20. Population on Indian reservations by department and municipality, 2005-2015

DEPARTAMENTO -MUNICIPIO-RESGUARDO	2005	2006	2007	2008	2009	2012	2015
Amazonas	24.020	24.593	25.186	25.793	26.321	28.769	30.878
El Encanto	1.810	1.867	1.926	1.987	2.022	2.124	2.269
Predio Putumayo	1.810	1.867	1.926	1.987	2.022	2.124	2.269
La Chorrera	2.895	2.986	3.080	3.177	3.247	3.452	3.555
Predio Putumayo	2.895	2.986	3.080	3.177	3.247	3.452	3.555
La Pedrera	3.512	3.620	3.731	3.845	3.960	4.316	4.701
Camaritagua	101	104	107	110	113	122	134
Comeyafú	594	613	633	654	675	740	807
Curare-Los Ingleses	244	251	258	265	272	294	322
Puerto Córdoba	330	340	350	360	370	401	438
Yaigoje-Río Apaporis	2.243	2.312	2.383	2.456	2.530	2.759	3.000
Leticia	4.105	4.166	4.228	4.290	4.383	4.556	5.263
Arara	313	317	321	325	329	340	400
El Vergel	67	68	69	70	71	74	75
Isla de Ronda	243	245	247	249	276	293	302
Kilómetro 6 y 11 Vía Leticia-Tarapacá	334	337	340	343	358	374	389
La Playa	336	341	346	351	356	372	396
Macedonia	447	452	457	462	467	482	496
Mocagua	214	218	222	226	229	238	246
Nazaret	252	259	266	273	278	291	812
Puerto Triunfo	136	138	140	142	144	150	160
San Antonio de Los Lagos	427	433	440	447	453	467	476
San José del Río	260	264	268	272	276	285	289
San Juan de Los Parentes	90	93	96	99	101	106	108
San Sebastián	190	194	198	202	205	214	222
Santa Sofía y El Progreso	316	320	324	328	332	345	359
Zaragoza	480	487	494	501	508	525	533
Mirití Paraná	1.500	1.493	1.486	1.479	1.471	1.486	1.531
Mirití Paraná	1.500	1.493	1.486	1.479	1.471	1.486	1.531
Puerto Alegría	1.277	1.317	1.359	1.402	1.440	1.605	1.857
Predio Putumayo	1.277	1.317	1.359	1.402	1.440	1.605	1.857
Puerto Arica	1.243	1.255	1.268	1.281	1.282	1.327	1.350
Predio Putumayo	1.243	1.255	1.268	1.281	1.282	1.327	1.350
Puerto Nariño	4.680	4.805	4.934	5.066	5.181	5.497	5.705
Puerto Nariño	4.680	4.805	4.934	5.066	5.181	5.497	5.705
Puerto Santander	1.013	1.046	1.081	1.117	1.148	1.236	1.305
Nunuya de Villa Azul	248	256	265	274	282	304	320
Predio Putumayo	765	790	816	843	866	932	985
Tarapacá	1.985	2.038	2.093	2.149	2.187	3.170	3.342
Cothue-Putumayo	1.985	2.038	2.093	2.149	2.187	2.314	2.455
Uitiboc						856	887
Caquetá	6.802	6.839	6.984	7.131	7.359	8.019	8.826
Albania	79	81	83	85	92	101	123
Los Pijaos	79	81	83	85	92	101	123
Belén de los Andaquíes	119	122	125	128	139	155	276
La Cerinda	68	70	72	74	80	88	197
La Esperanza	51	52	53	54	59	67	79
Curillo	92	94	97	100	107	120	

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DEPARTAMENTO -MUNICIPIO-RESGUARDO	2005	2006	2007	2008	2009	2012	2015
Las Brisas	92	94	97	100	107	120	
Florencia	157	162	167	172	184	203	217
Honduras	107	110	113	116	122	133	139
San Pablo-El Pará	50	52	54	56	62	70	78
La Montañita	39	40	41	42	43	50	57
El Cedrito	39	40	41	42	43	50	57
Milán	1.467	1.383	1.401	1.419	1.445	1.516	1.567
Aguanegra	519	422	427	432	429	441	442
Getucha	64	65	66	67	70	76	86
Gorgonia	144	146	148	150	154	164	176
Hericha	163	166	169	172	178	187	192
Jácome	157	159	161	163	167	177	186
La Esperanza	53	54	55	56	59	65	66
Maticuru	197	197	197	197	197	203	205
San Luis	170	174	178	182	191	203	214
Puerto Rico	335	344	353	362	384	445	460
La Siberia	83	84	85	86	90	102	106
Nasa Kiwe	136	141	146	151	161	168	173
Witac ´kwe						35	35
Zit-Sek del Quecal	116	119	122	125	133	140	146
San José del Fragua	1.089	1.118	1.148	1.178	1.224	1.314	1.496
El Portal	134	138	142	146	154	163	171
Las Brisas							132
San Antonio de Fragua	230	236	242	248	261	279	285
San Miguel	575	590	606	622	640	670	684
Yurayaco	150	154	158	162	169	202	224
San Vicente del Caguán	691	707	724	741	759	798	1.094
Altamira	334	342	350	358	367	388	397
Banderas del Reaibo							117
La Libertad 2							134
Yaguara II-Llanos del Yari	357	365	374	383	392	410	446
Solano	2.671	2.723	2.778	2.835	2.907	3.234	3.446
Agua Negras	76	78	80	82	84	91	96
Andoque de Aduche	260	265	271	277	283	301	321
Coropoya	86	88	90	92	94	101	107
Cuerazo	71	73	75	77	79	86	90
El Diamante	230	235	240	245	250	382	408
El Guayabal	67	68	69	70	71	75	80
El Quince	127	130	133	136	139	148	159
El Triunfo	92	94	96	98	100	107	113
Huitoto de Monochoa	331	342	353	365	382	423	455
Jerico-Consaya-Peñas Altas	212	216	221	226	231	248	262
La Teófila	60	61	62	63	64	69	72
Mesai	75	77	79	81	83	90	95
Niñeras	122	124	126	129	134	143	149
Páez de El Líbano	71	72	74	76	78	85	89
Peñas Rojas	79	81	83	85	87	93	99
Porvenir-Kananguchal	69	70	71	72	76	83	88

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DEPARTAMENTO -MUNICIPIO-RESGUARDO	2005	2006	2007	2008	2009	2012	2015
Puerto Naranjo	105	107	109	111	113	119	128
Puerto Zabalo-Los Monos	323	326	329	332	337	354	381
San Miguel	33	34	35	36	37	41	45
Witora o Huitora	182	182	182	182	185	195	209
Solita	63	65	67	69	75	83	90
Cusumbe-Agua Blanca	63	65	67	69	75	83	90
<b>Cauca</b>	<b>1.451</b>	<b>1.478</b>	<b>1.505</b>	<b>1.533</b>	<b>1.547</b>	<b>1.776</b>	<b>1.710</b>
Piamonte	1.004	1.016	1.028	1.040	1.047	1.099	1.150
Guayuyaco	602	607	612	617	620	641	666
Inga de Wasipanga	123	125	127	129	130	140	148
La Floresta-La Española	110	111	112	113	114	121	126
La Leona	66	68	70	72	73	78	83
Las Brisas	24	24	24	24	24	26	29
San Rafael	79	81	83	85	86	93	98
Santa Rosa	447	462	477	493	500	677	560
El Descanse	162	167	172	178	181	194	201
Mandiyaco	138	143	148	153	155	166	172
Santa Marta	147	152	157	162	164	178	187
Villa María de Anamú						139	
<b>Guainía</b>	<b>15.604</b>	<b>16.217</b>	<b>16.360</b>	<b>16.510</b>	<b>16.404</b>	<b>17.039</b>	<b>17.858</b>
Barranco Mina	3.920	4.044	4.171	4.303	4.435	4.627	4.851
Arrecifal	175	181	187	193	200	209	214
Guaco Bajo-Guaco Alto	596	615	634	654	673	703	804
Laguna Curvina-Sapuara	148	153	158	163	170	178	185
Minitas-Miralindo	407	420	433	447	460	480	507
Murciélago-Altamira	278	287	296	305	314	327	340
Pueblo Nuevo-Laguna Colorada	710	732	755	779	803	837	860
Ríos Atabapo e Inírida (Cacahual)	1.606	1.656	1.708	1.762	1.815	1.893	1.941
Inírida	6.831	7.305	7.305	7.305	6.990	7.105	7.106
Almidón-La Ceiba	160	160	160	160	152	155	153
Bachaco Buenavista	227	227	227	227	215	223	223
Caranacoa-Yuri-Laguna Morocoto	582	582	582	582	549	570	563
Carrizal	105	105	105	105	100	104	105
Chigüiro	107	107	107	107	102	110	110
Coayare-El Coco	226	226	226	226	215	221	222
Concordia	133	133	133	133	126	135	133
Cuenca Media y Alta Río Inírida	2.849	2.849	2.849	2.849	2.693	2.705	2.710
Cumaral-Guamuco	33	33	33	33	31	32	32
El Venado	264	264	264	264	251	257	258
Laguna Niñal-Cucuy-Lomabaja	303	303	303	303	282	286	286
Paujil	957	1.431	1.431	1.431	1.433	1.456	1.463
Remanso-Chorro Bocón	780	780	780	780	741	748	745
Tierra Alta	105	105	105	105	100	103	103
Paná Paná	2.161	2.134	2.107	2.080	2.081	2.178	
Ríos Cuiare e Isana	2.161	2.134	2.107	2.080	2.081	2.178	
Puerto Colombia	1.400	1.399	1.398	1.397	1.420	1.489	4.029
Parte Alta Río Guainía	657	662	667	672	684	718	779
Ríos Cuiari e Isana (Pto.Colombia)							2.410
Tonina-Sejal-San José	743	737	731	725	736	771	840
San Felipe	1.292	1.335	1.379	1.425	1.478	1.640	1.872

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DEPARTAMENTO -MUNICIPIO-RESGUARDO	2005	2006	2007	2008	2009	2012	2015
Bajo Río Guainía y Río Negro	1.292	1.335	1.379	1.425	1.478	1.640	1.872
<b>Guaviare</b>	<b>8.386</b>	<b>8.932</b>	<b>9.189</b>	<b>9.450</b>	<b>9.750</b>	<b>10.543</b>	<b>11.086</b>
Calamar	241	247	253	259	270	289	297
El Itilla	84	86	88	90	95	102	106
La Yuquera	157	161	165	169	175	187	191
El Retorno	1.716	1.772	1.830	1.889	1.964	2.070	2.188
La Asunción	240	247	254	261	274	295	309
Nukak-Makú	459	474	490	506	527	566	597
Santa Rosa-Cerro Cucuy Morichalviejo	1.017	1.051	1.086	1.122	1.163	1.209	1.282
Miraflores	2.757	3.148	3.247	3.347	3.446	3.879	4.135
Bacatí-Arara	783	807	832	857	887	965	1.022
Barranquillita	342	353	365	377	388	421	450
Centro Miraflores		306	316	326	335	363	389
Lagos El Dorado-Lagos del Paso y El Remanso	509	522	536	550	564	603	645
Puerto Monfort						144	153
Puerto Nare	174	180	186	192	197	215	229
Puerto Viejo y Puerto Esperanza	204	211	218	225	231	252	269
Tucán de Caño Giriza y Puerto La Palma	400	413	427	441	454	493	526
Vuelta del Alivio	217	224	231	239	246	267	285
Yavilla II	128	132	136	140	144	156	167
San José del Guaviare	3.672	3.765	3.859	3.955	4.070	4.305	4.466
Barranco Ceiba-Laguna Araguato	202	207	212	217	224	236	242
Barranco Colorado	309	317	325	333	341	356	371
Barrancón	242	249	256	263	271	286	293
Cachivera de Nare	234	242	250	258	269	295	307
Caño Negro	154	158	162	166	171	183	188
Corocoro	191	191	191	191	192	198	213
El Refugio	155	159	163	167	172	180	186
La Fuga	284	292	300	309	323	347	365
La María	80	83	86	89	89	93	100
Nukak-Makú	1.570	1.609	1.649	1.690	1.736	1.827	1.884
Panure (Venezuela)	251	258	265	272	282	304	317
<b>Meta</b>	<b>3.429</b>	<b>3.502</b>	<b>3.576</b>	<b>3.652</b>	<b>3.733</b>	<b>3.917</b>	<b>4.127</b>
Mapiripán	525	532	539	547	558	597	655
Caño Jabón	278	282	286	290	295	315	347
Charco Caimán	67	68	69	70	72	78	84
Macuare	180	182	184	187	191	204	224
Mesetas	145	147	149	151	152	158	163
Ondas del Cafre	145	147	149	151	152	158	163
Puerto Gaitán	2.635	2.695	2.756	2.818	2.883	3.009	3.146
El Tigre	1.182	1.211	1.241	1.271	1.302	1.360	1.417
El Unuma	1.453	1.484	1.515	1.547	1.581	1.649	1.729
Uribe	124	128	132	136	140	153	163
La Julia	52	54	56	58	60	67	71
Los Planes	72	74	76	78	80	86	92
<b>Nariño</b>	<b>4.390</b>	<b>4.456</b>	<b>4.523</b>	<b>4.593</b>	<b>4.657</b>	<b>4.794</b>	<b>6.881</b>
El Tablón de Gómez	2.130	2.158	2.186	2.215	2.238	2.292	2.369
Inga de Aponte	2.130	2.158	2.186	2.215	2.238	2.292	2.369
Ipiales	2.260	2.298	2.337	2.378	2.419	2.502	3.327
Ishu Awa							215

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DEPARTAMENTO -MUNICIPIO-RESGUARDO	2005	2006	2007	2008	2009	2012	2015
Nasa Uh							139
Rumiyaco							215
Santa Rosa de Sucumbíos	94	96	98	101	103	109	116
Ukumari Kankhe							79
Yaramal	2.166	2.202	2.239	2.277	2.316	2.393	2.563
Pasto							1.185
Refugio del Sol							1.185
<b>Putumayo</b>	<b>21.599</b>	<b>23.020</b>	<b>23.621</b>	<b>24.236</b>	<b>24.982</b>	<b>27.976</b>	<b>29.896</b>
Colón	491	502	513	524	537	570	595
Valle de Sibundoy	491	502	513	524	537	570	595
Mocoa	3.684	3.874	3.957	4.041	4.147	4.466	4.922
El Descanse	41	42	43	44	46	55	58
Inga de Condagua	251	370	380	391	402	445	457
Inga de Mocoa	509	520	531	542	556	574	595
Inga de Puerto Limón	381	389	397	405	415	448	480
Inga-Kamsá de Mocoa	910	927	945	963	985	1.013	1.145
Kamentzá-Biya	424	435	447	459	473	499	528
La Florida	143	146	149	152	159	173	183
San Joaquín	55	56	57	58	63	69	75
Villa María de Anamú						101	273
Yunguillo	970	989	1.008	1.027	1.048	1.089	1.128
Orito	1.402	1.562	1.604	1.647	1.700	2.322	2.428
Agua Blanca						131	136
Alto Orito	134	138	142	146	152	159	162
Awa de Cañaveral	132	136	140	144	150	157	162
Awa de Los Guadales	297	305	313	321	331	347	361
Bellavista	117	120	123	126	130	137	141
Bocana de Luzón						236	256
Caicedonia	144	148	152	156	160	172	181
El Espigo		122	125	128	131	140	144
Inkal Awa						148	153
La Cristalina	288	296	304	312	321	351	379
Selva Verde	93	95	98	101	105	114	116
Simorna o La Venada	197	202	207	213	220	230	237
Puerto Asís	1.138	1.168	1.198	1.230	1.277	1.563	1.640
Alto Lorenzo	376	386	396	407	421	447	472
Buenavista	257	264	271	278	287	305	318
La Italia	198	203	208	214	223	236	249
Nasa Chamb						206	207
Santa Cruz de Piñuña Blanco	225	231	237	243	252	264	282
Vegas de Santa Ana	82	84	86	88	94	105	112
Puerto Caicedo	669	687	705	724	749	1.206	1.256
Damasco Vides	183	188	193	198	206	219	231
San Andrés-Las Vegas-Villaunión	486	499	512	526	543	564	593
Santa Rosa de Juanambú						423	432
Puerto Guzmán	1.580	1.632	1.686	1.741	1.808	1.884	2.003
Alpamanga	174	180	186	192	200	215	221
Calenturas	78	80	82	84	90	94	95
El Descanso	261	270	279	288	298	310	322
El Porvenir-La Barrialosa	569	588	608	628	650	671	755

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DEPARTAMENTO -MUNICIPIO-RESGUARDO	2005	2006	2007	2008	2009	2012	2015
La Aguadita	215	222	229	237	245	258	265
Villa Catalina de Puerto Rosario	283	292	302	312	325	336	345
Puerto Leguizamó	2.345	2.409	2.473	2.538	2.633	2.885	3.172
Agua Negra	99	102	105	108	113	122	126
Bajo Casacunte						131	140
Calarcá	181	186	191	196	204	213	225
Cecilia Cocha	214	220	226	232	239	250	256
Consara-Mecaya	55	57	59	61	67	73	78
El Hacha	115	118	121	124	131	140	148
El Progreso	68	70	72	74	81	88	92
El Tablero	172	177	182	187	193	201	209
Jirijiri	232	238	244	250	257	268	280
La Paya	110	113	116	119	126	134	140
La Perecera							99
Lagarto Cocha	188	193	198	204	210	220	228
Predio Putumayo	693	711	729	747	766	785	883
Santa Rita	74	76	78	80	86	90	94
Witoto de Tukunaré	144	148	152	156	160	170	174
San Francisco	1.092	1.116	1.140	1.165	1.189	1.233	1.313
Valle de Sibundoy	1.092	1.116	1.140	1.165	1.189	1.233	1.313
San Miguel	993	1.020	1.047	1.075	1.107	1.191	1.250
Afilador-Campoalegre	140	144	148	152	158	171	180
Yarinal-San Marcelino	853	876	899	923	949	1.020	1.070
Santiago	2.218	2.277	2.338	2.401	2.467	2.561	2.732
Valle de Sibundoy	2.218	2.277	2.338	2.401	2.467	2.561	2.732
Sibundoy	2.507	2.555	2.604	2.653	2.705	2.820	2.998
Sibundoy Parte Alta	400	409	418	427	436	456	482
Valle de Sibundoy	2.107	2.146	2.186	2.226	2.269	2.364	2.516
Valle del Guamuez	1.360	1.406	1.453	1.501	1.559	1.657	1.771
La Argelia	132	136	141	146	153	162	171
Nuevo Horizonte	287	297	307	317	330	359	386
Santa Rosa del Guamuez	321	332	343	354	367	387	408
Yarinal-San Marcelino	620	641	662	684	709	749	806
Villagarzón	2.120	2.812	2.903	2.996	3.104	3.618	3.816
Albania	254	262	271	280	291	307	319
Awa de Playa Larga						118	128
Blasiaku	96	99	102	105	113	124	135
Chaluayaco	72	74	76	79	86	93	98
Jerusalén-San Luis Alto Picudito						614	640
Piedra Sagrada La Gran Familia de los Pastos		184	190	196	203	217	220
Predio Putumayo (Puerto Limón)	364	374	384	394	406	423	432
San Miguel de La Castellana	370	382	395	408	423	446	463
Santa Rosa de Juanambú		441	456	471	482	102	106
Wasipungo	964	996	1.029	1.063	1.100	1.174	1.275
<b>Vaupés</b>	<b>18.366</b>	<b>18.373</b>	<b>18.380</b>	<b>18.387</b>	<b>18.438</b>	<b>19.660</b>	<b>20.470</b>
Carurú	2.363	2.375	2.387	2.399	2.417	2.467	2.489
Bacatí-Arara	560	563	566	569	574	588	592
Vaupés	1.803	1.812	1.821	1.830	1.843	1.879	1.897
Mitú	14.210	14.210	14.210	14.210	14.242	15.206	15.536
Vaupés	14.210	14.210	14.210	14.210	14.242	15.206	15.536

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DEPARTAMENTO -MUNICIPIO-RESGUARDO	2005	2006	2007	2008	2009	2012	2015
Pacoa							395
Vaupés							395
Taraira	697	697	697	697	700	776	830
Yaigoje-Río Apaporis	697	697	697	697	700	776	830
Yavaraté	1.096	1.091	1.086	1.081	1.079	1.211	1.220
Vaupés	1.096	1.091	1.086	1.081	1.079	1.211	1.220
<b>Vichada</b>	<b>18.139</b>	<b>18.709</b>	<b>19.298</b>	<b>19.905</b>	<b>19.404</b>	<b>20.479</b>	<b>21.793</b>
Cumaribo	18.139	18.709	19.298	19.905	19.404	20.479	21.793
Cali-Barranquilla	147	148	149	150	145	151	162
Carpintero-Palomas	501	517	534	551	537	567	642
Chocón	100	103	106	109	106	112	126
Egua-Guariacana	170	176	182	188	184	196	207
El Unuma (Parte)	2.773	2.855	2.940	3.027	2.947	3.100	3.281
Flores-Sombrero	40	41	42	43	42	45	46
Río Siare-Barranco Lindo	346	357	369	381	372	393	444
Saracure-Río Cada	1.605	1.656	1.709	1.764	1.720	1.816	1.926
Selva de Matavén	12.457	12.856	13.267	13.692	13.351	14.099	14.959
<b>TOTAL</b>	<b>122.186</b>	<b>126.119</b>	<b>128.622</b>	<b>131.190</b>	<b>132.595</b>	<b>142.972</b>	<b>153.525</b>

Fuente: Departamento Nacional de Estadística, DANE. Proyecciones de población indígena en resguardos. Vigencia 2005-2009. DANE, Censo General 2005, Conciliación censal 2005 y Proyecciones de población 2006-2009. Proyecciones de población indígena en resguardos. Vigencia 2012. Con corte a 30 de diciembre de 2011. Proyecciones de población indígena en resguardos. Vigencia 2015 -junio-. Con corte a 30 de junio de 2014.

#### Annex 21. Hierarchy in the urban centers in the Colombian Amazon region, 2005 and 2015

DEPARTAMENTO	MUNICIPIO	JERARAQUÍA URBANA 2005	DEPARTAMENTO	MUNICIPIO	JERARAQUÍA URBANA 2010
Caquetá	Florencia	5	Caquetá	Florencia	5
Guaviare	San José del Guaviare		Guaviare	San José del Guaviare	
Amazonas	Leticia		Putumayo	Puerto Asís	
Putumayo	Mocoa		Amazonas	Leticia	
	Puerto Asís	4	Caquetá	San Vicente del Caguán	
Guainía	Inírida		Putumayo	Mocoa	4
Vaupés	Mitú			Orito	
Caquetá	San Vicente del Caguán		Guainía	Inírida	
	Puerto Rico		Putumayo	Villagarzón	
Putumayo	Orito		Vaupés	Mitú	
	Valle del Guamuez		Caquetá	Cartagena del Chairá	
Caquetá	Curillo			El Doncello	
	Puerto Leguizamo			Puerto Rico	
Putumayo	Sibundoy	3	Meta	Vistahermosa	
	Cartagena del Chairá		Putumayo	Puerto Leguizamo	
Caquetá	El Doncello			Valle del Guamuez	3
Meta	Vistahermosa		Vichada	Cumaribo	
Putumayo	Villagarzón		Caquetá	Curillo	
Caquetá	Belén de los Andaquíes		Guaviare	El Retorno	
	El Paujil	2	Putumayo	San Miguel	
Guaviare	El Retorno			Sibundoy	

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DEPARTAMENTO	MUNICIPIO	JERARAQUÍA URBANA 2005	DEPARTAMENTO	MUNICIPIO	JERARAQUÍA URBANA 2010
Meta	Mesetas		Caquetá	Belén de los Andaquíes	
	Puerto Concordia			El Paujil	
Putumayo	Puerto Guzmán			San José del Fragua	3
	San Miguel		Guaviare	Calamar	
	Albania		Meta	Puerto Concordia	
	La Montañita			Puerto Rico	
Caquetá	Milán		Caquetá	Solano	
	Morelia		Putumayo	Puerto Caicedo	
	San José del Fragua			Puerto Guzmán	
	Solano		Amazonas	Puerto Nariño	
	Solita			Albania	
	Valparaíso			La Montañita	
Cauca	Piamonte	2	Caquetá	Milán	
	Santa Rosa			Morelia	
Guaviare	Calamar			Solita	
	Miraflores			Valparaíso	
	La Macarena		Cauca	Piamonte	
	Mapiripán			Santa Rosa	2
Meta	Puerto Rico		Guaviare	Miraflores	
	San Juan de Arama			La Macarena	
	Uribe			Mapiripán	
	Colón		Meta	Mesetas	
Putumayo	Puerto Caicedo			San Juan de Arama	
	San Francisco			Uribe	
	Santiago		Putumayo	Colón	
Vaupés	Carurú			San Francisco	
	Taraira			Santiago	
Vichada	Cumaribo		Vaupés	Carurú	
	Puerto Nariño			Taraira	
	El Encanto		Amazonas	El Encanto	
	La Chorrera			La Chorrera	
	La Pedrera			La Pedrera	
	La Victoria			La Victoria	
Amazonas	Mirití Paraná			Mirití Paraná	
	Puerto Alegría			Puerto Alegría	
	Puerto Arica			Puerto Arica	
	Puerto Santander			Puerto Santander	
	Tarapacá			Tarapacá	
	Barranco Mina	1	Guainía	Barranco Mina	1
	Cacahual			Cacahual	
	La Guadalupe			La Guadalupe	
Guainía	Mapiripana			Mapiripana	
	Morichal			Morichal	
	Paná Paná			Paná Paná	
	Puerto Colombia			Puerto Colombia	
	San Felipe			San Felipe	
Vaupés	Pacoa		Vaupés	Pacoa	
	Papunaua			Papunaua	
	Yavaraté			Yavaraté	

Fuente: Riaño E. y Salazar C., (2009 y 2012).

Annex 22. Pinchemel Index or degree of urbanization discriminated by political and administrative divisions 1985, 1993, 2005 and 2015

DEPARTAMENTO-MUNICIPIO	1985	1993	2005	2015
<b>Amazonas</b>				
El Encanto	-	-	-	-
La Chorrera	-	-	-	-
La Pedrera	-	-	-	-
La Victoria	-	-	-	-
Leticia	16,71	18,63	7,99	7,27
Mirití Paraná	-	-	-	-
Puerto Alegría	-	-	-	-
Puerto Arica	-	-	-	-
Puerto Nariño	0,15	0,17	0,13	0,12
Puerto Santander	-	-	-	-
Tarapacá	-	-	-	-
<b>Total Amazonas</b>	<b>5,42</b>	<b>6,05</b>	<b>3,09</b>	<b>2,69</b>
<b>Caquetá</b>				
Albania	0,36	0,25	0,24	0,24
Belén de los Andaquíes	0,23	0,48	1,10	1,35
Cartagena del Chairá	0,58	0,44	0,91	1,12
Curillo	0,89	2,66	1,60	1,12
El Doncello	4,64	3,84	4,33	4,29
El Paujil	1,39	1,22	1,67	1,85
Florencia	107,30	107,18	133,90	169,49
La Montañita	0,16	0,08	0,20	0,21
Milán	0,07	0,04	0,05	0,05
Morelia	0,51	0,31	0,26	0,30
Puerto Rico	1,84	1,36	1,59	1,68
San José del Fragua	17,02	0,52	0,44	0,68
San Vicente del Caguán	2,78	2,76	7,40	10,78
Solano	0,11	0,07	0,04	0,03
Solita	-	-	0,30	0,51
Valparaíso	0,67	0,13	0,25	0,30
<b>Total Caquetá</b>	<b>44,97</b>	<b>40,07</b>	<b>55,91</b>	<b>66,50</b>
<b>Cauca</b>				
Piamonte	-	-	0,01	0,01
Santa Rosa	0,03	0,02	0,07	0,07
<b>Total Cauca</b>	<b>0,03</b>	<b>0,02</b>	<b>0,06</b>	<b>0,07</b>
<b>Guainía</b>				
Barranco Mina	-	-	-	-
Cacahual	-	-	-	-
Inírida	2,23	2,52	3,25	3,61
La Guadalupe	-	-	-	-
Mapiripana	-	-	-	-
Morichal	-	-	-	-
Paná Paná	-	-	-	-
Puerto Colombia	-	-	-	-
San Felipe	-	-	-	-
<b>Total Guainía</b>	<b>0,92</b>	<b>1,04</b>	<b>0,94</b>	<b>0,89</b>

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DEPARTAMENTO-MUNICIPIO	1985	1993	2005	2015
<b>Guaviare</b>				
Calamar	0,17	0,20	0,72	1,19
El Retorno	0,14	0,17	0,91	1,93
Miraflores	0,36	0,43	0,18	0,18
San José del Guaviare	5,32	6,09	12,55	16,04
<b>Total Guaviare</b>	<b>4,84</b>	<b>5,58</b>	<b>10,70</b>	<b>14,75</b>
<b>Meta</b>				
La Macarena	0,15	0,15	0,13	0,11
Mapiripán	-	0,10	0,04	0,03
Mesetas	0,37	0,36	0,31	0,36
Puerto Concordia	-	2,50	7,25	8,74
Puerto Rico	0,99	0,45	0,52	0,42
San Juan de Arama	0,94	1,09	2,12	2,67
Uribe	-	0,13	0,22	0,30
Vistahermosa	0,61	0,36	0,60	0,93
<b>Total Meta</b>	<b>2,45</b>	<b>2,61</b>	<b>3,26</b>	<b>3,53</b>
<b>Putumayo</b>				
Colón	1,15	0,92	0,76	0,76
Mocoa	1,39	6,86	13,09	23,31
Orito	3,56	2,59	2,21	3,08
Puerto Asís	1,83	3,19	5,35	6,21
Puerto Caicedo	-	0,33	0,34	0,46
Puerto Guzmán	-	0,11	0,14	0,18
Puerto Leguízamo	1,23	0,90	1,12	2,03
San Francisco	1,00	0,93	0,88	0,94
San Miguel	-	-	0,26	0,26
Santiago	0,45	0,26	0,32	0,47
Sibundoy	3,12	3,39	4,01	4,37
Valle del Guamuez	0,84	0,78	2,15	2,14
Villagarzón	0,52	0,61	1,39	1,86
<b>Total Putumayo</b>	<b>11,08</b>	<b>13,81</b>	<b>20,82</b>	<b>25,65</b>
<b>Vaupés</b>				
Carurú	0,02	0,02	0,03	0,03
Mitú	0,74	0,83	2,20	2,64
Pacoa	-	-	-	-
Papunaua	-	-	-	-
Taraira	0,01	0,02	0,01	0,00
Yavaraté	-	-	-	-
<b>Total Vaupés</b>	<b>0,57</b>	<b>0,64</b>	<b>1,50</b>	<b>1,69</b>
<b>Vichada</b>				
Cumaribo	0,03	0,03	0,26	0,21
<b>Total Vichada</b>	<b>0,03</b>	<b>0,03</b>	<b>0,26</b>	<b>0,43</b>
<b>TOTAL REGIÓN</b>	<b>61,68</b>	<b>63,36</b>	<b>85,14</b>	<b>99,30</b>

Fuente: Grupo Dinámicas Socioambientales del Instituto «SINCHI». Cálculos elaborados a partir de las Estimaciones de población 1985-2005 y proyecciones de población 2005-2020, total nacional por área a junio 30 de cada año.



Annex 23. Availability of public utilities in urban and rural areas, discriminated by political and administrative divisions, 2005

DIVISIÓN POLÍTICO-ADMINISTRATIVA	ACUEDUCTO %		ALCANTARILLADO %		ENERGÍA ELÉCTRICA %		TELÉFONO %	
	URBANA	RURAL	URBANA	RURAL	URBANA	RURAL	URBANA	RURAL
<b>Amazonas</b>								
El Encanto	S. D.	0,00	S. D.	0,00	S. D.	4,00	S. D.	0,00
La Chorrera	S. D.	6,54	S. D.	0,26	S. D.	23,82	S. D.	0,00
La Pedrera	S. D.	2,43	S. D.	2,43	S. D.	19,42	S. D.	0,00
La Victoria	S. D.	S. D.	S. D.	S. D.	S. D.	S. D.	S. D.	S. D.
Leticia	83,93	16,10	69,37	2,00	95,26	57,32	47,29	5,34
Mirití Paraná	S. D.	0,00	S. D.	0,00	S. D.	0,00	S. D.	0,00
Puerto Alegría	S. D.	S. D.	S. D.	S. D.	S. D.	S. D.	S. D.	S. D.
Puerto Arica	S. D.	2,39	S. D.	0,96	S. D.	5,74	S. D.	0,55
Puerto Nariño	87,09	6,73	60,71	1,10	85,71	46,02	0,88	0,69
Puerto Santander	S. D.	38,74	S. D.	4,50	S. D.	5,41	S. D.	0,91
Tarapacá	S. D.	26,00	S. D.	21,25	S. D.	40,75	S. D.	0,00
<b>Total Amazonas</b>	<b>84,14</b>	<b>13,36</b>	<b>68,79</b>	<b>3,60</b>	<b>94,62</b>	<b>43,72</b>	<b>44,35</b>	<b>2,58</b>
<b>Caquetá</b>								
Albania	98,27	14,57	96,92	9,17	95,57	48,18	23,75	0,95
Belén de los Andaquíes	99,26	12,25	88,38	9,21	90,96	29,34	21,00	0,90
Cartagena del Chairá	79,73	7,53	72,43	3,58	81,22	6,35	10,17	0,67
Curillo	84,33	1,71	82,54	1,71	91,62	18,38	17,03	1,51
El Doncello	98,29	7,01	92,68	5,43	93,83	49,40	15,52	0,39
El Paujil	97,34	11,78	87,94	7,25	92,19	35,00	20,57	0,42
Florencia	95,12	19,33	81,68	11,47	97,11	61,82	49,43	4,44
La Montañita	90,81	11,80	84,53	7,50	85,76	9,68	9,37	3,17
Milán	94,82	6,49	83,17	7,77	90,61	7,03	2,65	2,21
Morelia	98,97	3,07	95,61	0,95	91,73	51,54	13,73	0,95
Puerto Rico	97,34	26,54	84,83	14,32	93,86	35,72	10,95	0,64
San José del Fragua	96,89	31,34	93,87	23,37	88,81	30,43	0,97	0,55
San Vicente del Caguán	95,91	21,70	71,57	10,61	91,92	22,96	30,64	0,13
Solano	89,02	8,56	76,05	6,61	87,23	9,95	1,73	0,30
Solita	84,80	3,12	84,80	1,42	74,86	0,28	1,14	0,00
Valparaíso	96,36	4,25	90,77	7,57	93,99	14,40	4,07	0,83
<b>Total Caquetá</b>	<b>94,62</b>	<b>13,37</b>	<b>82,27</b>	<b>8,52</b>	<b>94,15</b>	<b>26,36</b>	<b>34,69</b>	<b>1,43</b>
<b>Guainía</b>								
Piamonte	0,75	11,89	1,50	0,00	4,51	0,00	1,55	0,00
Santa Rosa	94,70	11,11	63,58	2,11	95,70	15,91	0,00	0,12
<b>Total Cauca</b>	<b>65,98</b>	<b>11,25</b>	<b>44,60</b>	<b>1,73</b>	<b>67,82</b>	<b>13,08</b>	<b>0,48</b>	<b>0,10</b>
Barranco Mina	S. D.	38,60	S. D.	1,10	S. D.	28,68	S. D.	1,37
Cacahual	S. D.	0,00	S. D.	0,00	S. D.	0,00	S. D.	0,00
Inírida	42,89	8,73	31,67	0,45	90,81	23,00	25,34	2,22
La Guadalupe	S. D.	0,00	S. D.	0,00	S. D.	16,33	S. D.	0,00
Mapiripana	S. D.	S. D.	S. D.	S. D.	S. D.	S. D.	S. D.	S. D.
Morichal	S. D.	S. D.	S. D.	S. D.	S. D.	S. D.	S. D.	S. D.
Paná Panamá	S. D.	S. D.	S. D.	S. D.	S. D.	S. D.	S. D.	S. D.
Puerto Colombia	S. D.	0,00	S. D.	0,00	S. D.	2,86	S. D.	0,00
San Felipe	S. D.	24,55	S. D.	0,91	S. D.	11,82	S. D.	0,00
<b>Total Guainía</b>	<b>42,89</b>	<b>12,89</b>	<b>31,67</b>	<b>0,51</b>	<b>90,81</b>	<b>20,24</b>	<b>25,34</b>	<b>1,59</b>
<b>Guaviare</b>								
Calamar	67,81	25,23	16,00	0,46	96,84	26,61	9,48	24,31
El Retorno	97,19	42,55	90,23	2,84	91,23	39,72	0,17	0,71

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DIVISIÓN POLÍTICO-ADMINISTRATIVA	ACUEDUCTO %		ALCANTARILLADO %		ENERGÍA ELÉCTRICA %		TELÉFONO %	
	URBANA	RURAL	URBANA	RURAL	URBANA	RURAL	URBANA	RURAL
Miraflores	51,67	8,21	6,02	4,00	94,98	15,43	2,13	0,60
San José del Guaviare	33,94	13,69	52,54	1,25	98,97	29,13	24,04	2,11
<b>Total Guaviare</b>	<b>43,01</b>	<b>13,32</b>	<b>47,82</b>	<b>2,57</b>	<b>97,98</b>	<b>22,96</b>	<b>19,55</b>	<b>3,11</b>
<b>Meta</b>								
La Macarena	72,49	0,00	56,30	0,00	82,26	2,40	33,16	0,00
Mapiripán	S. D.	1,19	S. D.	0,00	S. D.	35,71	S. D.	0,00
Mesetas	98,74	40,78	97,86	2,18	95,10	41,99	28,09	0,97
Puerto Concordia	81,34	0,98	70,19	0,39	93,15	8,64	0,35	0,21
Puerto Rico	81,04	0,18	93,46	2,98	91,47	1,40	17,28	0,18
San Juan de Arama	96,72	26,31	89,53	14,46	94,33	58,09	25,58	2,67
Uribe	97,30	3,91	92,38	5,43	96,07	2,53	0,74	0,52
Vistahermosa	76,90	39,35	80,45	24,23	88,45	39,00	12,85	0,84
<b>Total Meta</b>	<b>83,99</b>	<b>18,72</b>	<b>81,70</b>	<b>10,55</b>	<b>90,99</b>	<b>25,42</b>	<b>16,38</b>	<b>0,90</b>
<b>Putumayo</b>								
Colón	98,71	84,27	96,46	70,79	98,39	92,13	29,14	1,55
Mocoa	92,47	65,17	86,61	22,02	96,65	74,63	41,12	5,78
Orito	64,82	8,49	72,01	2,74	96,19	22,52	34,61	1,66
Puerto Asís	31,94	1,35	85,52	5,55	96,95	18,01	30,24	0,72
Puerto Caicedo	80,92	6,10	90,33	12,54	96,16	29,45	42,63	1,17
Puerto Guzmán	95,84	49,91	62,41	35,03	93,91	46,06	0,53	0,79
Puerto Leguízamo	83,02	24,56	79,80	19,34	91,69	32,11	33,75	4,44
San Francisco	98,36	73,61	97,48	8,22	96,72	85,09	29,07	0,00
San Miguel	0,85	0,19	79,85	3,28	95,10	17,50	7,83	0,16
Santiago	97,83	86,97	96,93	23,98	96,93	83,38	30,40	1,63
Sibundoy	98,02	86,85	95,86	20,18	98,64	88,81	36,15	4,60
Valle del Guamuez	44,30	3,44	80,81	4,68	97,78	26,54	24,15	1,45
Villagarzón	94,58	22,59	80,95	12,06	95,99	48,10	30,06	1,55
<b>Total Putumayo</b>	<b>67,51</b>	<b>19,27</b>	<b>83,96</b>	<b>9,73</b>	<b>96,54</b>	<b>35,17</b>	<b>32,18</b>	<b>1,66</b>
<b>Vaupés</b>								
Carurú	87,27	S. D.	73,64	S. D.	86,36	S. D.	6,00	S. D.
Mitú	91,47	6,56	60,41	1,42	98,21	23,05	25,37	1,12
Pacoa	S. D.	S. D.	S. D.	S. D.	S. D.	S. D.	S. D.	S. D.
Papunaua	S. D.	0,00	S. D.	0,00	S. D.	0,00	S. D.	0,00
Tairaira	92,31	4,38	89,23	1,25	95,38	15,00	4,17	0,00
Yavaraté	S. D.	1,94	S. D.	3,88	S. D.	20,87	S. D.	1,27
<b>Total Vaupés</b>	<b>91,29</b>	<b>5,08</b>	<b>61,86</b>	<b>1,91</b>	<b>97,56</b>	<b>20,87</b>	<b>24,06</b>	<b>0,94</b>
<b>Vichada</b>								
Cumaribo	94,95	9,73	42,67	0,45	95,19	15,05	0,73	0,65
<b>Total Vichada</b>	<b>94,95</b>	<b>9,73</b>	<b>42,67</b>	<b>0,45</b>	<b>95,19</b>	<b>15,05</b>	<b>0,73</b>	<b>0,65</b>
<b>TOTAL REGIÓN</b>	<b>79,75</b>	<b>15,81</b>	<b>76,99</b>	<b>7,90</b>	<b>94,90</b>	<b>29,69</b>	<b>31,16</b>	<b>1,54</b>

s. d. Sin dato.

Fuente: Departamento Administrativo Nacional de Estadística –DANE–. Colombia. Censo General, 2005. Información Básica. Procesado con Redatam+SP, CEPAL/CELADE 2007. En: "Inírida", Base de Datos en Aspectos Sociales del Instituto «SINCHI». Cálculos realizados por el Grupo Dinámicas Socioambientales del Instituto «SINCHI».

Annex 24. Housing density by urban hectare

ENTIDAD TERRITORIAL	NÚMERO DE VIVIENDAS POR HECTÁREA URBANA	
	1993	2005
<b>Amazonas</b>		
El Encanto		
La Chorrera		
La Pedrera		
La Victoria		
Leticia	4,27	5,58
Mirití Paraná		
Puerto Alegría		
Puerto Arica		
Puerto Nariño	6,39	12,06
Puerto Santander		
Tarapacá		
<b>Caquetá</b>		
Albania	17,76	18,4
Belén de los Andaquíes	10,59	16,76
Cartagena del Chairá	10,25	24,08
Curillo	21,66	26,95
El Doncello	12,73	17,97
El Paujil	19,08	31,74
Florencia	13,51	17
La Montañita	7,81	19,16
Milán	9,33	11,87
Morelia	10,87	11,91
Puerto Rico	9,97	13,57
San José del Fragua	13,72	29,8
San Vicente del Caguán	13,62	40,57
Solano	8,35	15,58
Solita	0	20,84
Valparaíso	8,42	12,51
<b>Cauca</b>		
Piamonte	0	1,5
Santa Rosa	0	15,58
Guainía		
Barranco Mina		
Cacahual		
Inírida	2,38	6,46
La Guadalupe		
Mapiripana		
Morichal		
Paná Panamá		
Puerto Colombia		
San Felipe		

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ENTIDAD TERRITORIAL	NÚMERO DE VIVIENDAS POR HECTÁREA URBANA	
	1993	2005
<b>Guaviare</b>		
Calamar	8,37	19,87
El Retorno	7,25	10,84
Miraflores	7,64	10,47
San José del Guaviare	5,2	13,96
<b>Meta</b>		
La Macarena	3,63	7,7
Mapiripán	8,34	0
Mesetas	9,52	10,85
Puerto Concordia	7,52	19,92
Puerto Rico	5,47	8,64
San Juan de Arama	5,3	7,05
Uribe	6,59	8,24
Vistahermosa	3,89	7,22
<b>Putumayo</b>		
Colón	2,72	4,15
Puerto Leguízamo	15,37	26,71
Mocoa	14,93	37,31
Orito	6,31	13,86
Puerto Asís	16,59	17,74
Puerto Caicedo	17,04	29,89
Puerto Guzmán	23,39	37,21
Puerto Leguízamo	15,37	26,71
San Francisco	7,77	11,72
San Miguel		
Santiago	7,82	11,25
Sibundoy	10,69	19,44
Valle del Guamuez	13,03	44,97
Villagarzón	13,65	35,94
<b>Vaupés</b>		
Carurú	0	6,07
Mitú	2,54	6,52
Pacoa		
Papunaua		
Taraira	13,59	28,39
Yavaraté		
<b>Vichada</b>		
Cumaribo	3,7	44,77

Fuente: Grupo Dinámicas Socioambientales del Instituto «SINCHI». Cálculos elaborados a partir de las estimaciones de población 1985-2005 y proyecciones de población 2005-2020, total nacional por área a junio 30 de cada año. División de Geoestadística del DANE. Superficies, 2007.



Annex 25. Road density in territorial entities of the Colombian Amazon region, 2012

DEPARTAMENTO -MUNICIPIO	SUPERFICIE EN LA REGIÓN AMAZÓNICA* Km <sup>2</sup>	LONGITUD VIAL DENTRO DE LA REGIÓN Km	DENSIDAD VIAL K/Km <sup>2</sup>
<b>Amazonas</b>	<b>108.744</b>	<b>96</b>	<b>0,00</b>
El Encanto	10.682		0,00
La Chorrera	12.719		0,00
La Pedrera	13.596		0,00
La Victoria	1.429		0,00
Leticia	6.149	76	0,01
Mirití Paraná	16.819		0,00
Puerto Alegría	8.409		0,00
Puerto Arica	13.620		0,00
Puerto Nariño	1.518		0,00
Puerto Santander	14.711		0,00
Tarapacá	9.093	20	0,00
<b>Caquetá</b>	<b>90.055</b>	<b>12.995</b>	<b>0,14</b>
Albania	429	353	0,82
Belén de los Andaquíes	1.143	396	0,35
Cartagena del Chairá	12.744	786	0,06
Curillo	483	268	0,56
El Doncello	1.097	619	0,56
El Paujil	1.251	950	0,76
Florencia	2.587	1.324	0,51
La Montañita	1.705	1.159	0,68
Milán	1.228	767	0,62
Morelia	475	480	1,01
Puerto Rico	4.153	1.848	0,45
San José del Fragua	1.227	207	0,17
San Vicente del Caguán	17.496	2.387	0,14
Solano	42.314	372	0,01
Solita	694	276	0,40
Valparaíso	1.029	802	0,78
<b>Cauca</b>	<b>4.943</b>	<b>314</b>	<b>0,06</b>
Piamonte	1.104	139	0,13
San Sebastián	226	37	0,17
Santa Rosa	3.614	138	0,04
<b>Guainía</b>	<b>70.805</b>	<b>517</b>	<b>0,01</b>
Barranco Mina	9.404	1	0,00
Cacahual	2.305	140	0,06
Inírida	15.820	324	0,02
La Guadalupe	1.189		0,00
Mapiripana	4.903		0,00
Morichal	8.506		0,00
Paná Paná	10.120		0,00
Puerto Colombia	15.516	52	0,00
San Felipe	3.042		0,00
<b>Guaviare</b>	<b>55.527</b>	<b>3.034</b>	<b>0,05</b>
Calamar	13.554	230	0,02
El Retorno	12.402	726	0,06
Miraflores	12.792	625	0,05
San José del Guaviare	16.779	1.452	0,09

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DEPARTAMENTO -MUNICIPIO	SUPERFICIE EN LA REGIÓN AMAZÓNICA* Km <sup>2</sup>	LONGITUD VIAL DENTRO DE LA REGIÓN Km	DENSIDAD VIAL K/Km <sup>2</sup>
<b>Meta</b>	<b>33.351</b>	<b>4.036</b>	<b>0,12</b>
La Macarena	10.835	1.278	0,12
Mapiripán	7.356	691	0,09
Mesetas	1.753	211	0,12
Puerto Concordia	233	27	0,12
Puerto Gaitán	2.166	353	0,16
Puerto Rico	2.537	540	0,21
San Juan de Arama	217	7	0,03
Uribe	4.205	448	0,11
Vistahermosa	4.050	482	0,12
<b>Nariño</b>	<b>2.892</b>	<b>311</b>	<b>0,11</b>
Córdoba	202	23	0,11
Funes	191	9	0,05
Ipiales	1.392	186	0,13
Pasto	603	56	0,09
Potosí	247	16	0,07
Puerres	257	20	0,08
<b>Putumayo</b>	<b>25.803</b>	<b>4.190</b>	<b>0,16</b>
Colón	77	63	0,81
Mocoa	1.330	216	0,16
Orito	1.949	720	0,37
Puerto Asís	2.798	632	0,23
Puerto Caicedo	932	241	0,26
Puerto Guzmán	4.540	475	0,10
Puerto Leguizamo	10.773	241	0,02
San Francisco	408	131	0,32
San Miguel	381	359	0,94
Santiago	339	78	0,23
Sibundoy	89	81	0,91
Valle del Guamuez	797	671	0,84
Villagarzón	1.391	284	0,20
<b>Vaupés</b>	<b>53.217</b>	<b>136</b>	<b>0,00</b>
Carurú	6.354		0,00
Mitú	16.209	109	0,01
Pacoa	13.980		0,00
Papunaua	5.531		0,00
Taraira	6.510	25	0,00
Yavaraté	4.633	2	0,00
<b>Vichada</b>	<b>37.815</b>	<b>661</b>	<b>0,02</b>
Cumaribo	37.815	661	0,02
<b>Región</b>	<b>483.152</b>	<b>26.290</b>	<b>0,05</b>

Fuente: Instituto Amazónico de Investigaciones Científicas «SINCHI», grupo SIGSR. Instituto Geográfico Agustín Codazzi, 2012. Procesado por el grupo Dinámicas Socioambientales del Instituto «SINCHI».

Annex 26. Volume of cargo and passengers mobilized by airports, 2011

DEPARTAMENTO -MUNICIPIO	NOMBRE AEROPUERTO O AERÓDROMO	NÚMERO DE PASAJEROS	CARGA Y CORREO (TONELADAS)
Amazonas		160.176	14.995
La Chorrera	La Chorrera -Virgilio Barco Vargas	971	54
La Pedrera	La Pedrera	2.887	229
Leticia	Alfredo Vásquez Cobo	153.774	14.674
Tarapacá	Tarapacá	2.544	38
Caquetá		62.006	2.461
Cartagena del Chairá	El Pacífico	-	-
Florencia	Gustavo Artunduaga Paredes	58.332	1.348
Puerto Rico	Puerto Rico	-	-
San Vicente del Caguán	Eduardo Falla Solano	3.590	71
	Ciudad Yarí	-	-
	Guacamayas	-	-
Solano	Tres Esquinas	-	195
	Solano	84	847
	Araracuara	-	-
Guainía		24.910	2.254
Barranco Mina	Barranco Mina	1.327	541
Inírida	César Gaviria Trujillo	23.569	1.713
San Felipe	San Felipe	14	-
Guaviare		24.578	4.657
Calamar	Calamar Guaviare	93	10
El Retorno	Morichal-Papunaua	19	1
Miraflores	Barranquillita	20	-
	Miraflores	2.394	716
	Tres Ríos	-	-
San José del Guaviare	Jorge E. González T.	21.953	3.930
	Tomachipán	99	-
Meta		16.232	1.318
La Macarena	La Macarena	10.052	976
Mapiripán	Mapiripán	2.235	116
Puerto Gaitán	La Plata Puerto Trujillo	2.515	122
Puerto Rico	Puerto Rico	79	1
Uribe	Uribe	1.276	102
Vistahermosa	Vistahermosa	75	1
Putumayo		75.117	931
Orito	Orito	1.954	40
Puerto Asís	3 de Mayo	49.560	246
Puerto Leguizamó	Puerto Leguizamó	6.732	503
Villagarzón	Cananguchal	16.871	142
Vaupés		36.441	5.197
Carurú	Carurú	2.563	588
Mitú	Belén de Iñambú	57	4
	Bocoa Querari	100	10
	Buenos Aires Vaupés	459	26
	Cachiporro	44	3
	Cananarí	54	6
	Caño Colorado	128	12
	Ibacaba	38	2

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DEPARTAMENTO -MUNICIPIO	NOMBRE AEROPUERTO O AERÓDROMO	NÚMERO DE PASAJEROS	CARGA Y CORREO (TONELADAS)
Mitú	Fabio Alberto León Bentley	24.948	3.652
	Kamanaos	326	23
	Los Ángeles	35	3
	Monfort	349	37
	Pacú	22	1
	Piedra Ñi	477	32
	Piracuara	279	16
	San Antonio	84	9
	San Gerardo	86	5
	San Luis de Paca	10	1
	San Miguel	353	21
	San Pablo	54	2
	Santa Isabel	192	11
	Santa Lucía-Vaupés	53	8
	Santa Rita	67	3
	Tapurucuara	842	48
	Teresita	178	24
	Tiquié	701	39
	Villa Fátima	88	6
	Villa Gladys	30	18
	Villa Nueva	2	-
	Wacaricuara	881	81
	Wainambí	26	3
Wasay	10	1	
Yapima	-	-	
Yapú	868	46	
Pacoa	Pacoa	142	24
	Soñaña	218	11
Papunaua	Papunaua	243	17
Taraira	Taraira	1.249	392
Yavaraté	Bocas del Querari	-	-
	Yavaraté	185	12
Vichada		0	0
Cumaribo	San José de Ocune	0	-
<b>TOTAL REGIÓN</b>		<b>399.460</b>	<b>31.813</b>

Fuente: Aeronáutica Civil. Subdirección General. Grupo Aeródromos. 2011. Procesado por el grupo Dinámicas Socioambientales del Instituto «SINCHI».



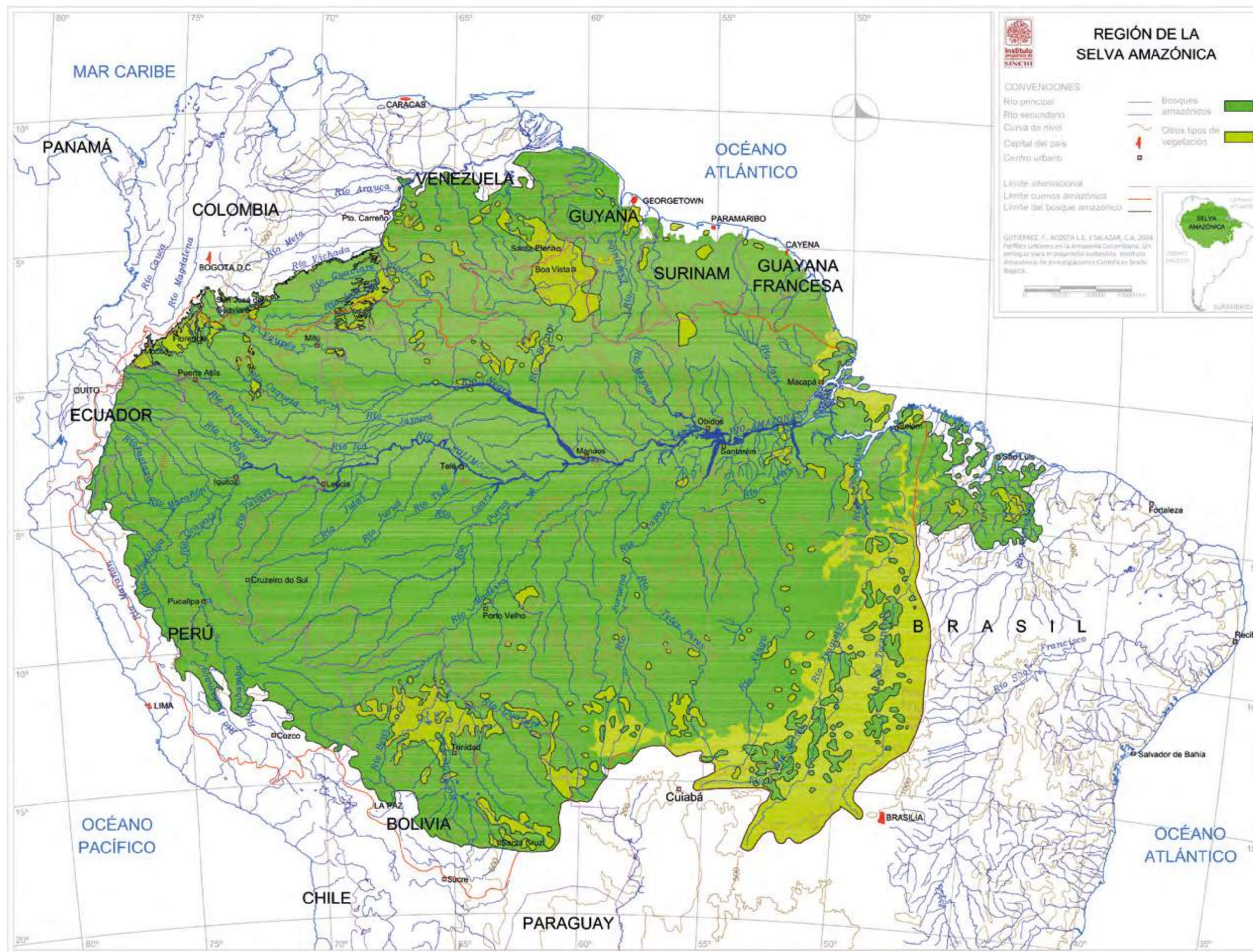






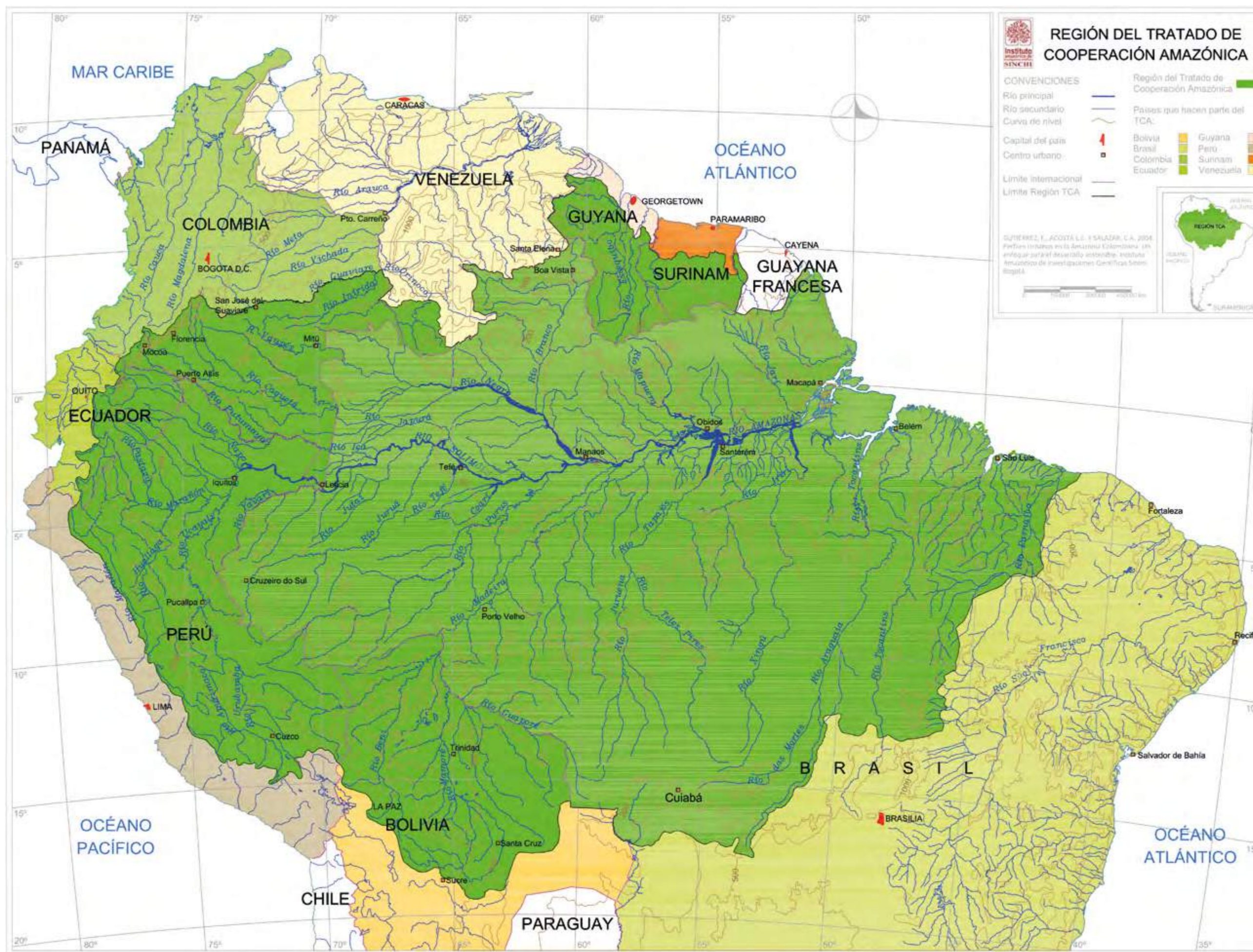


Map 2. Region of the Amazonian jungle





Map 3. Amazon Cooperation Treaty Region





Map 4. The Pan Amazon





Map 5. The Great Amazon Region



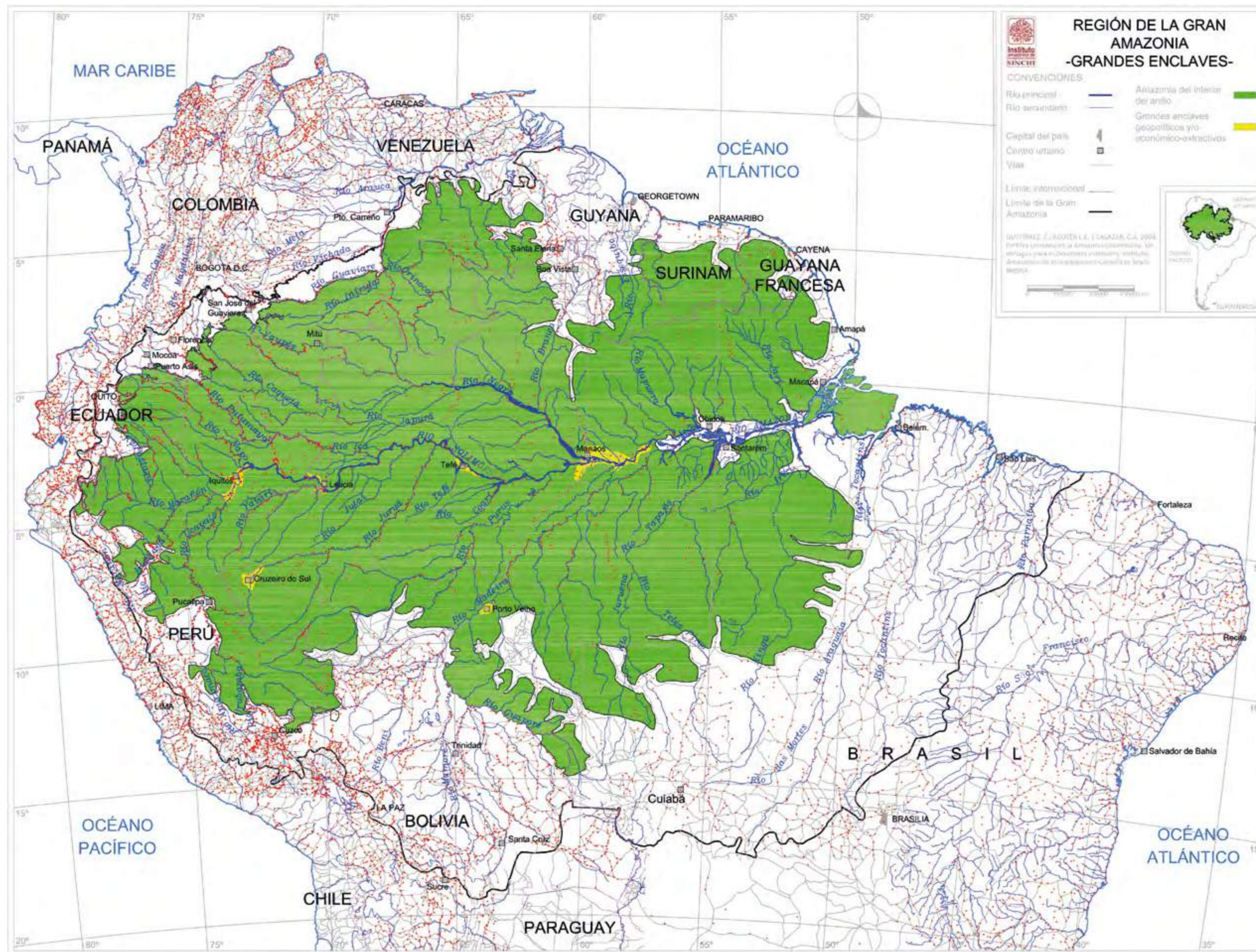


Map 6. The Great Amazon population ring

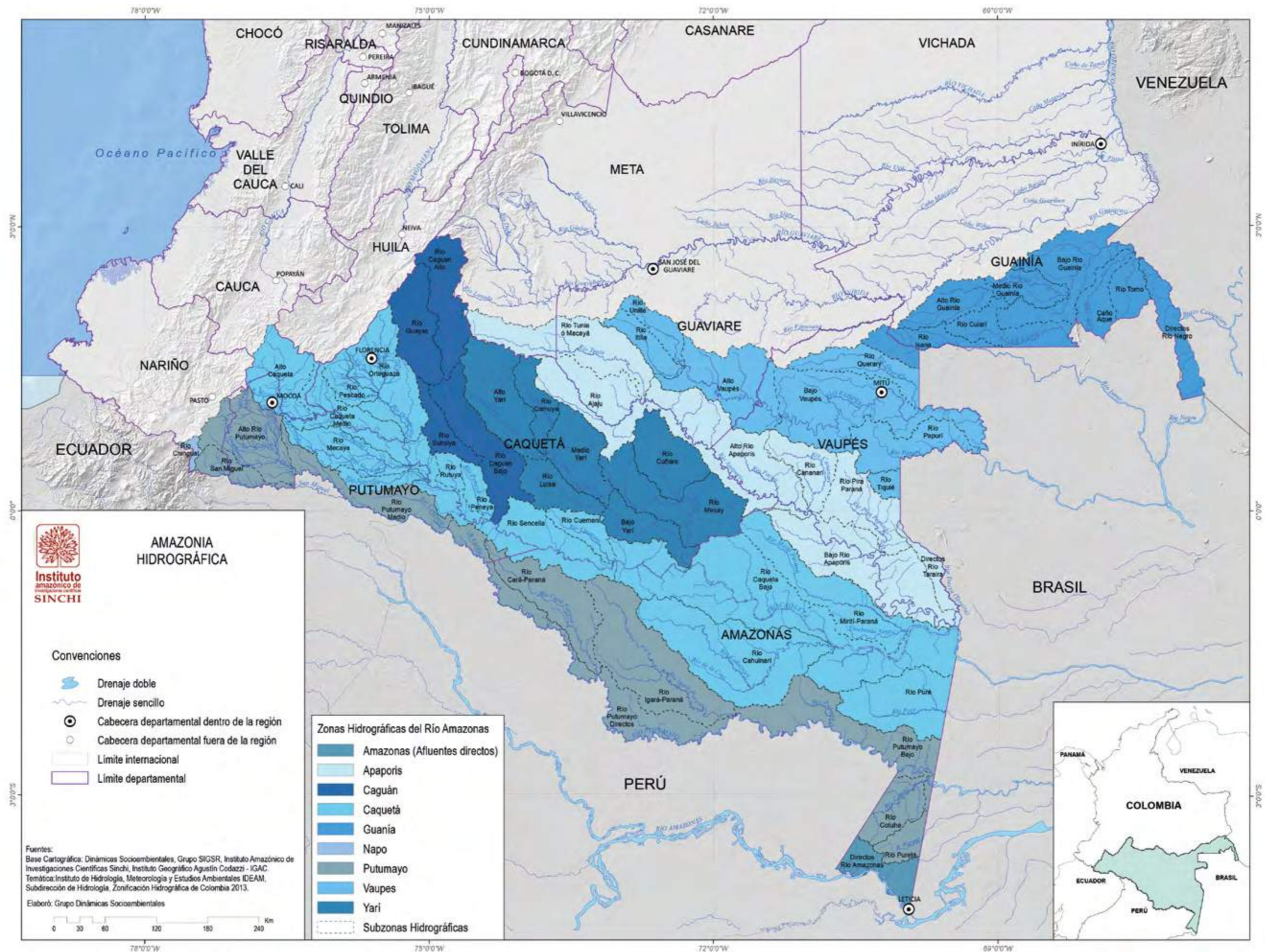




Map 7. Enclaves in the Great Amazon



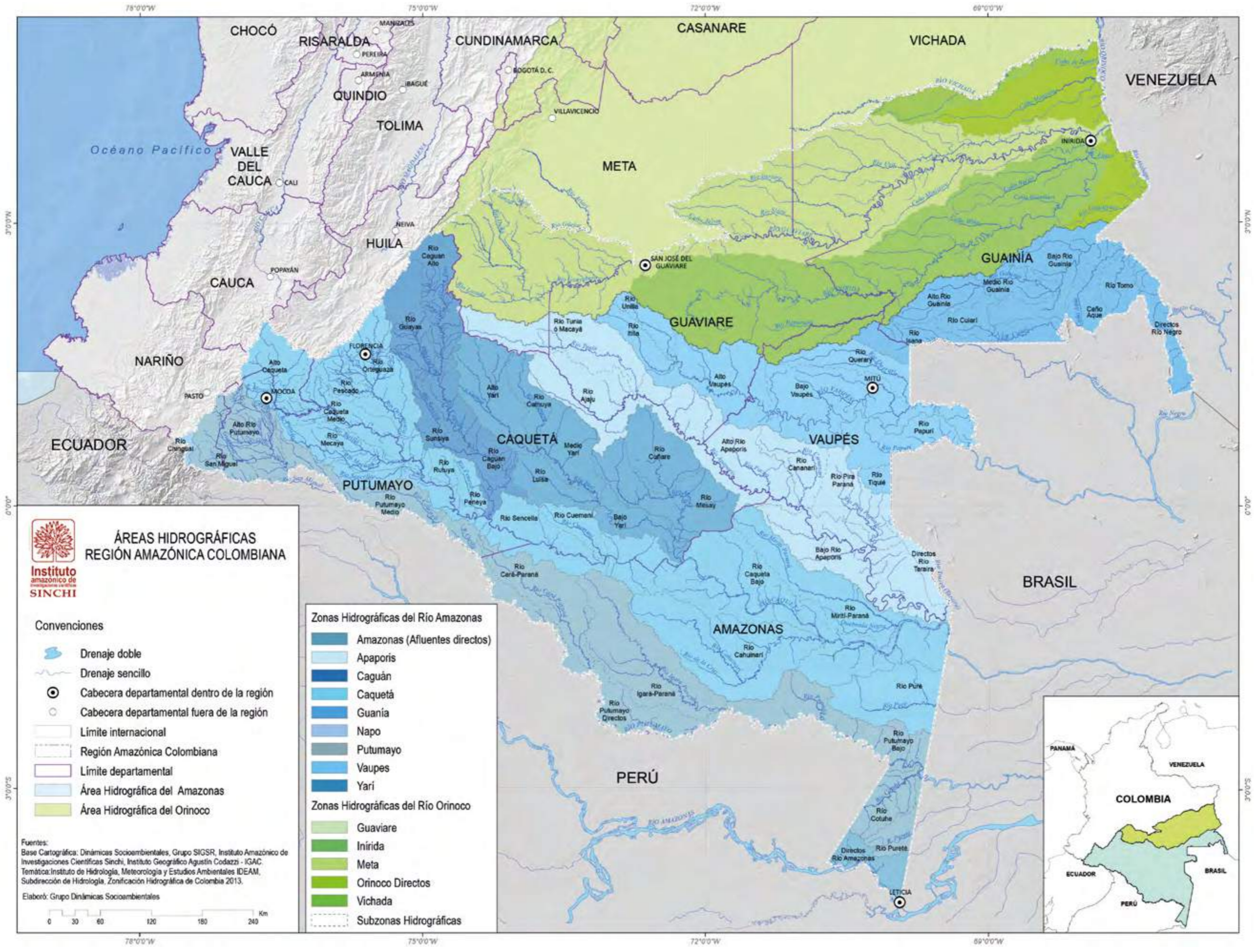




Map 8. Hydrographic Amazon. Hydrographic area, zones and sub-zones of the Amazon



Map 9. Hydrographic areas of the Colombian Amazon

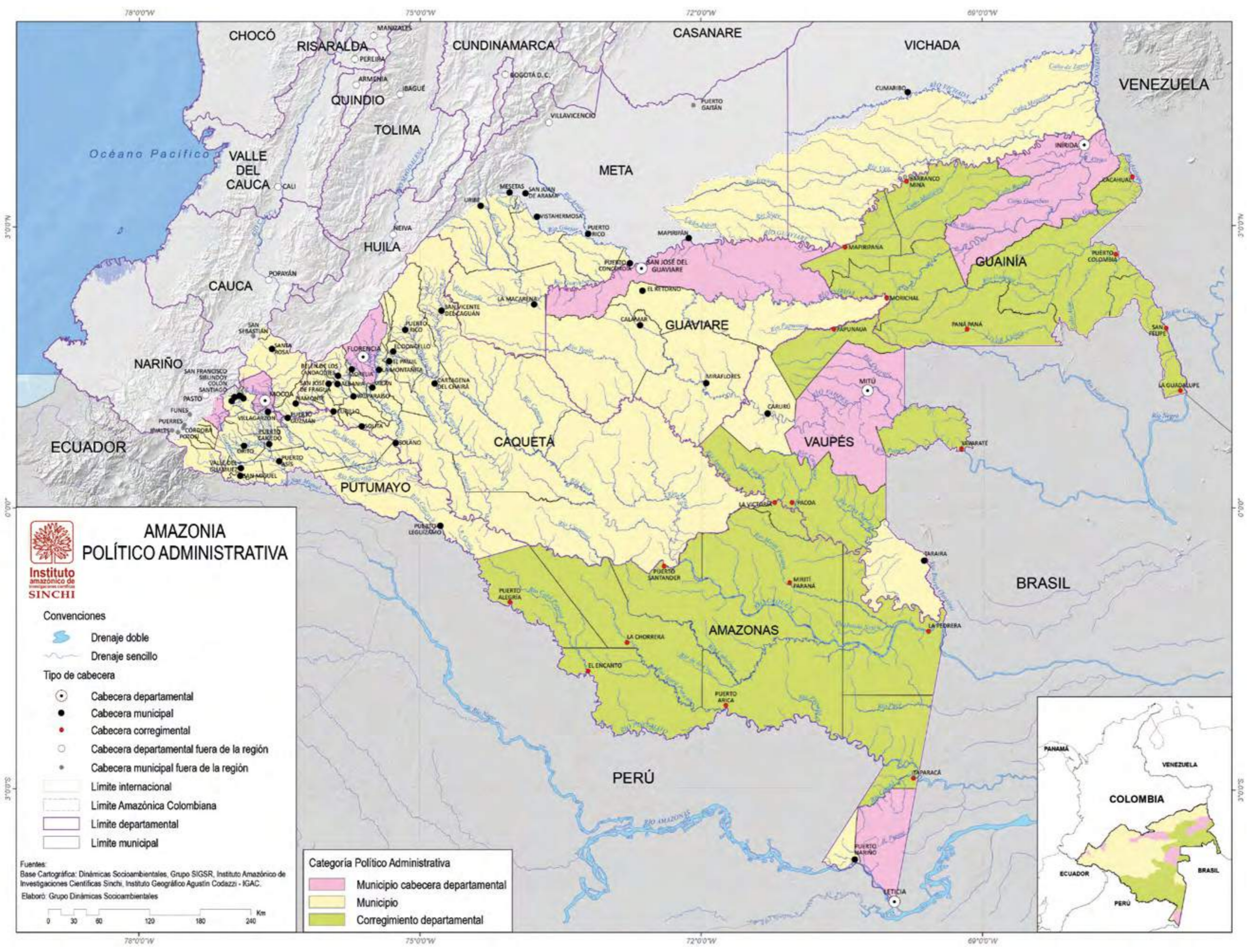






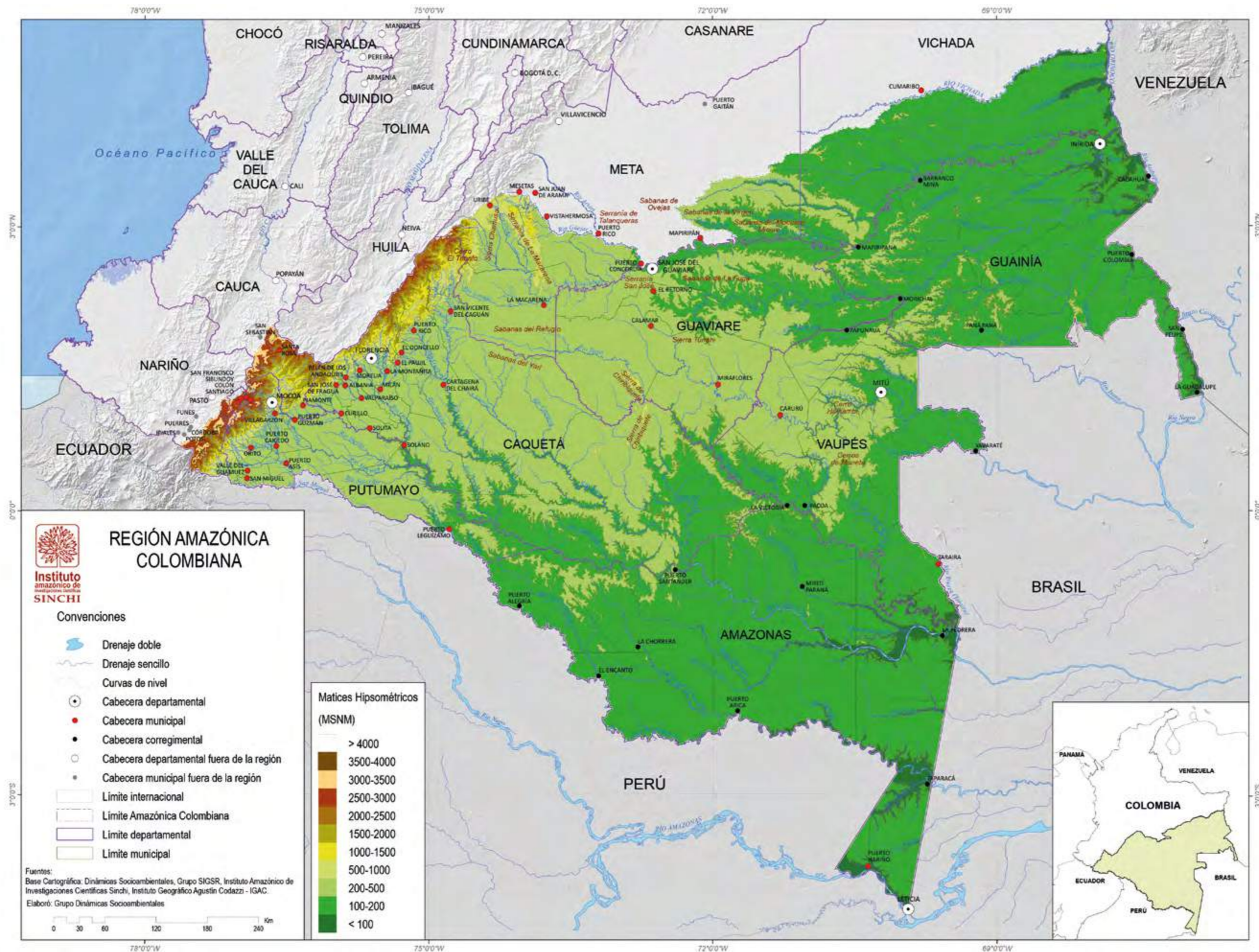


Map 11. The political-administrative Amazon

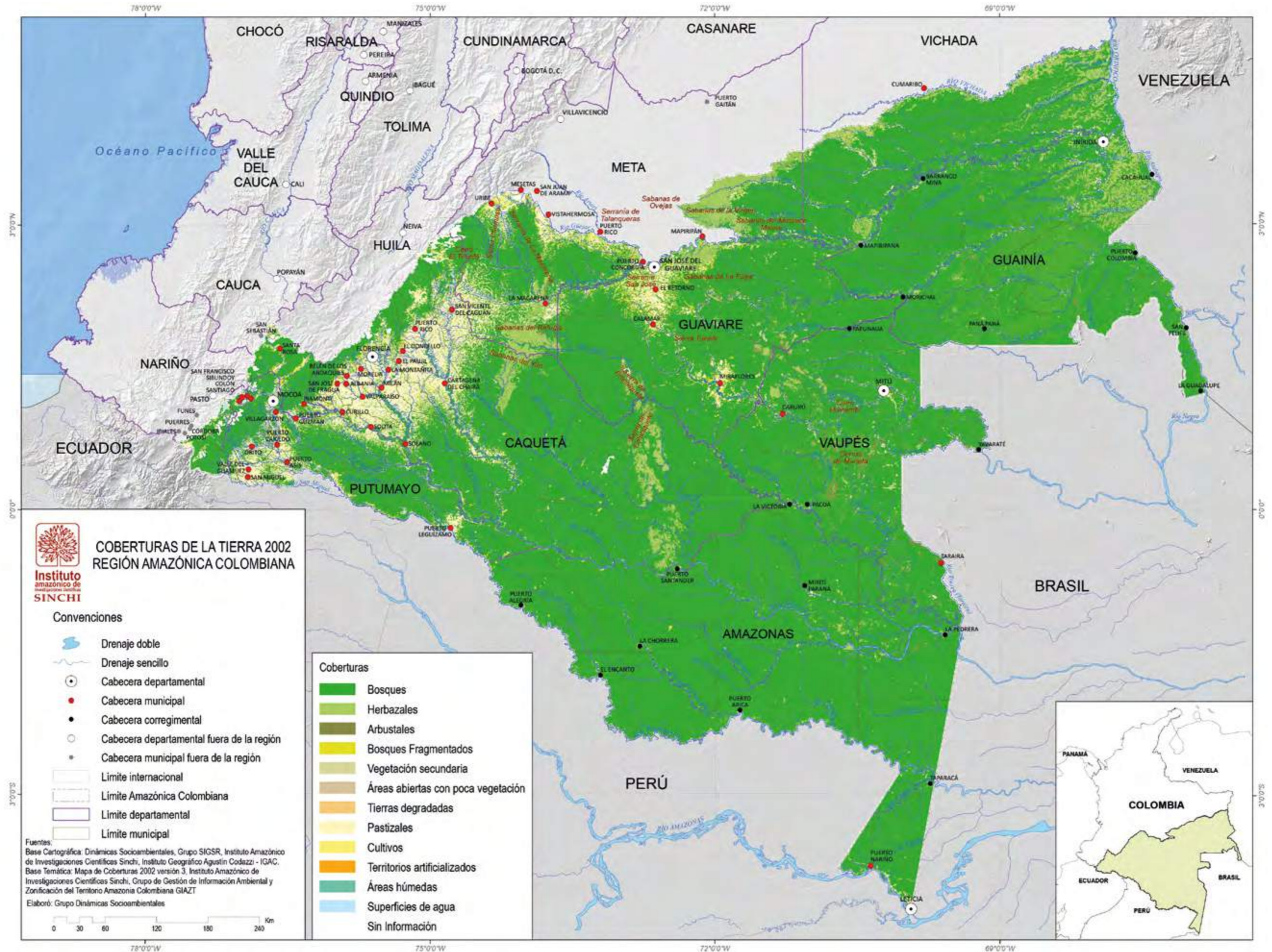




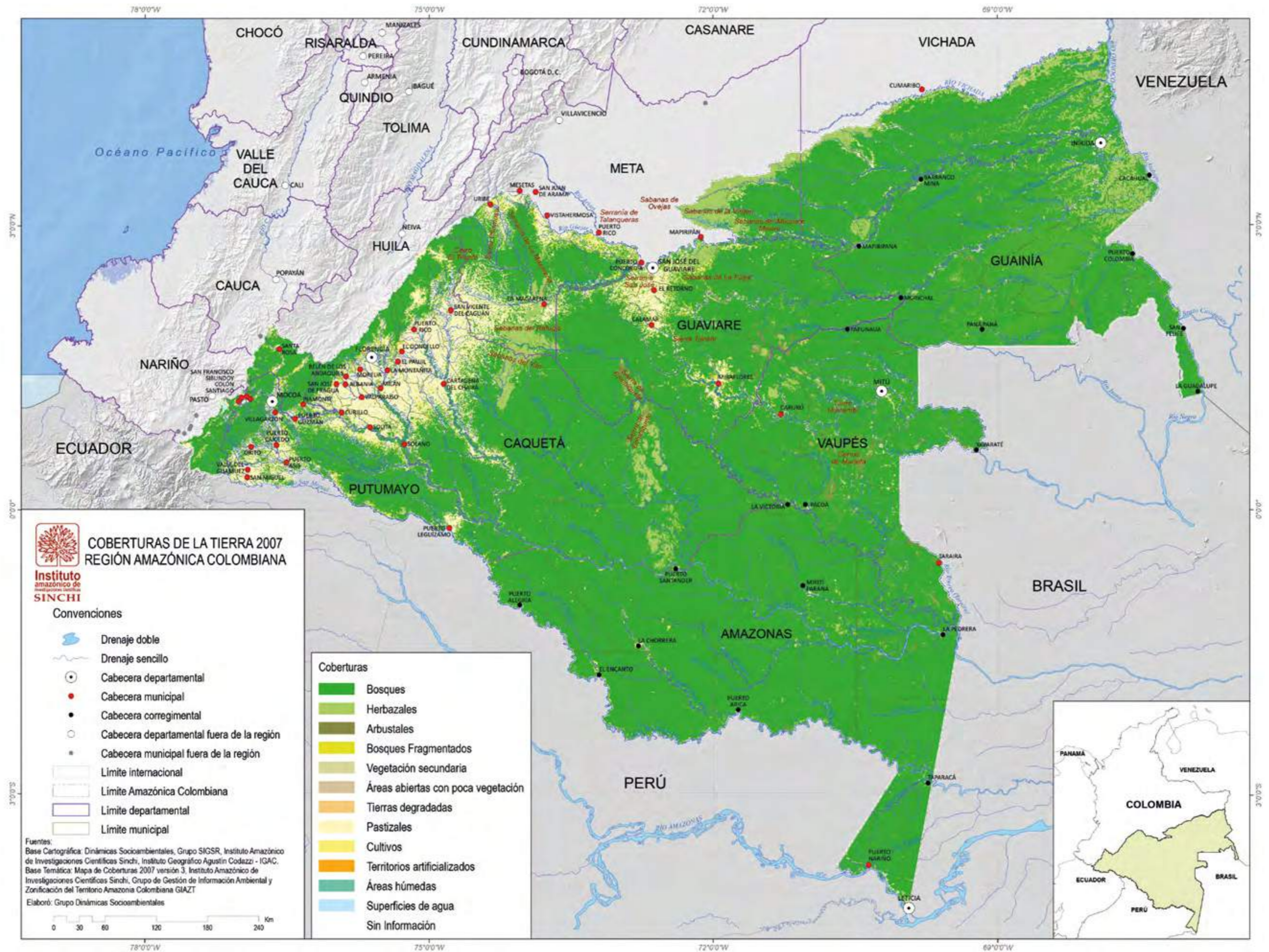
Map 12. Colombian Amazon Region



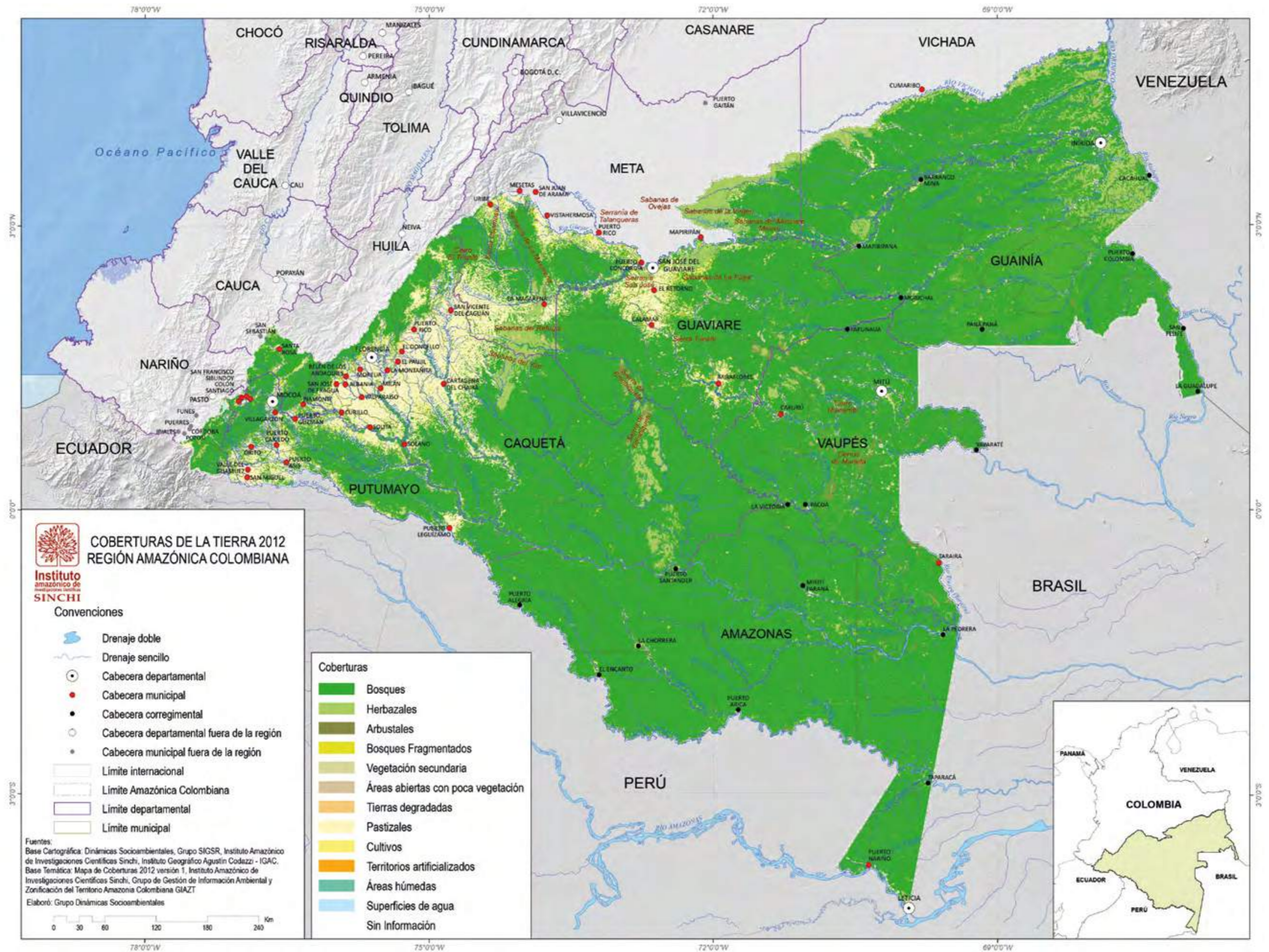






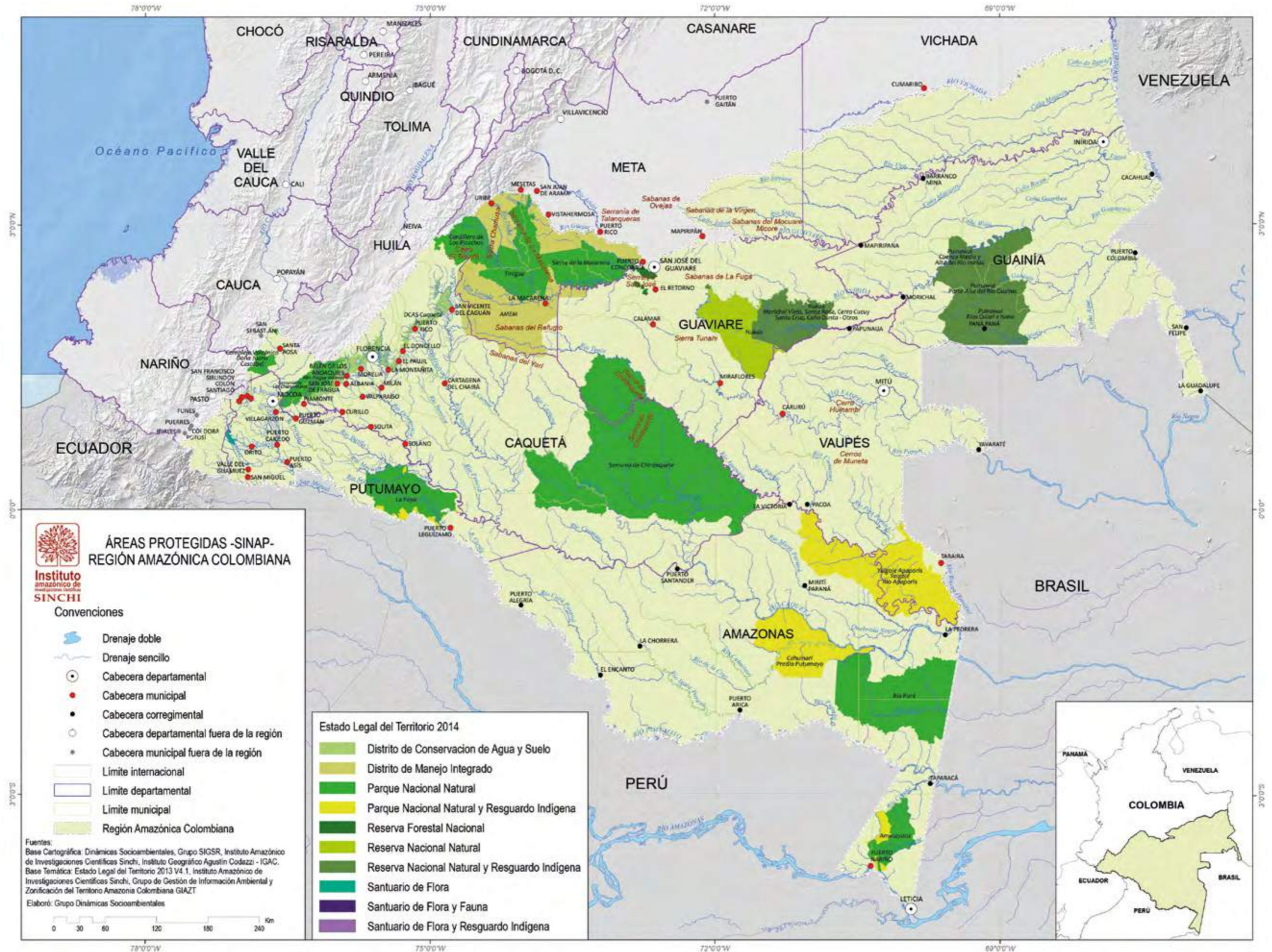






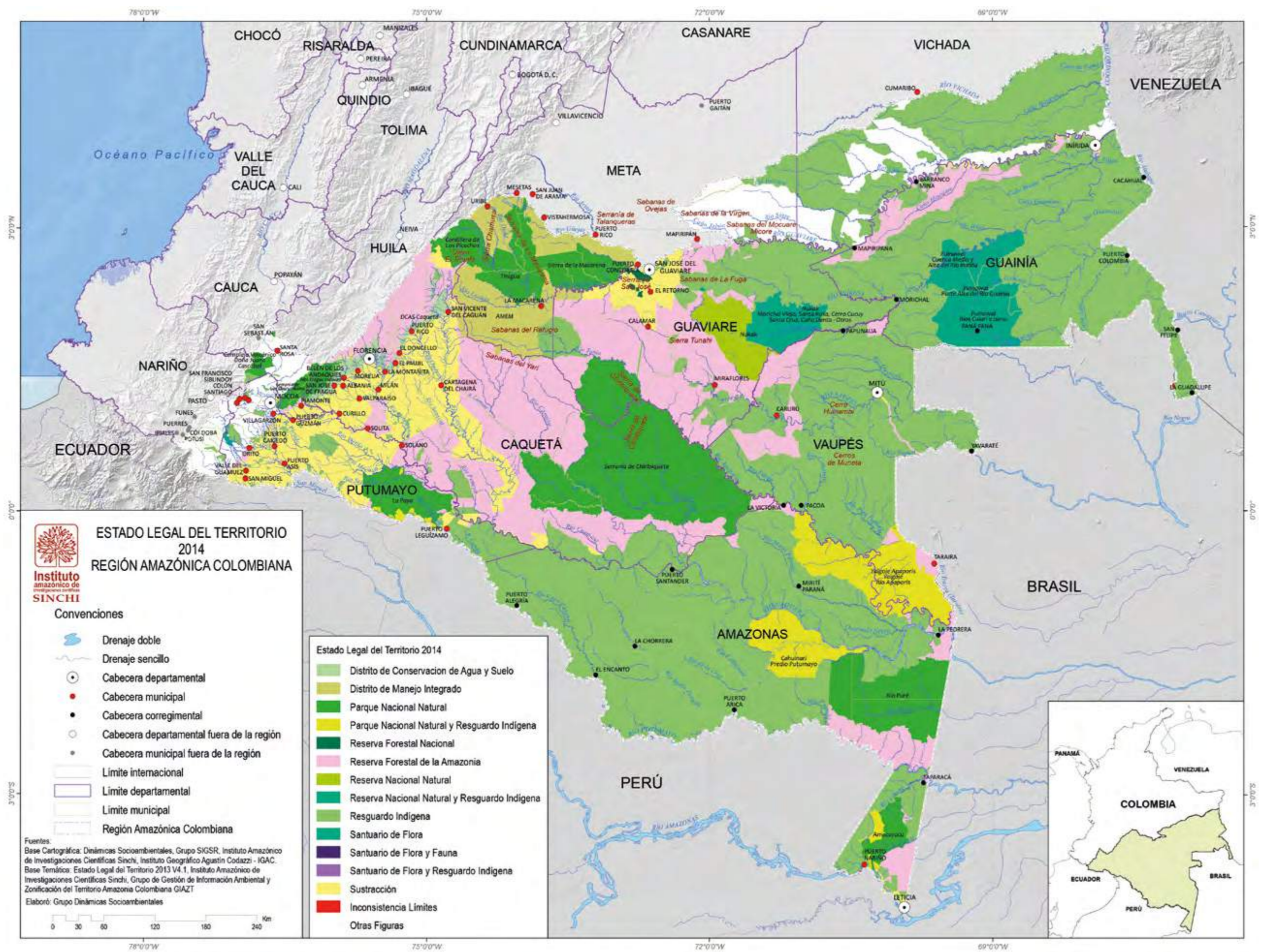


Map 16. Protected areas of the Natural National Parks in the Colombian Amazon



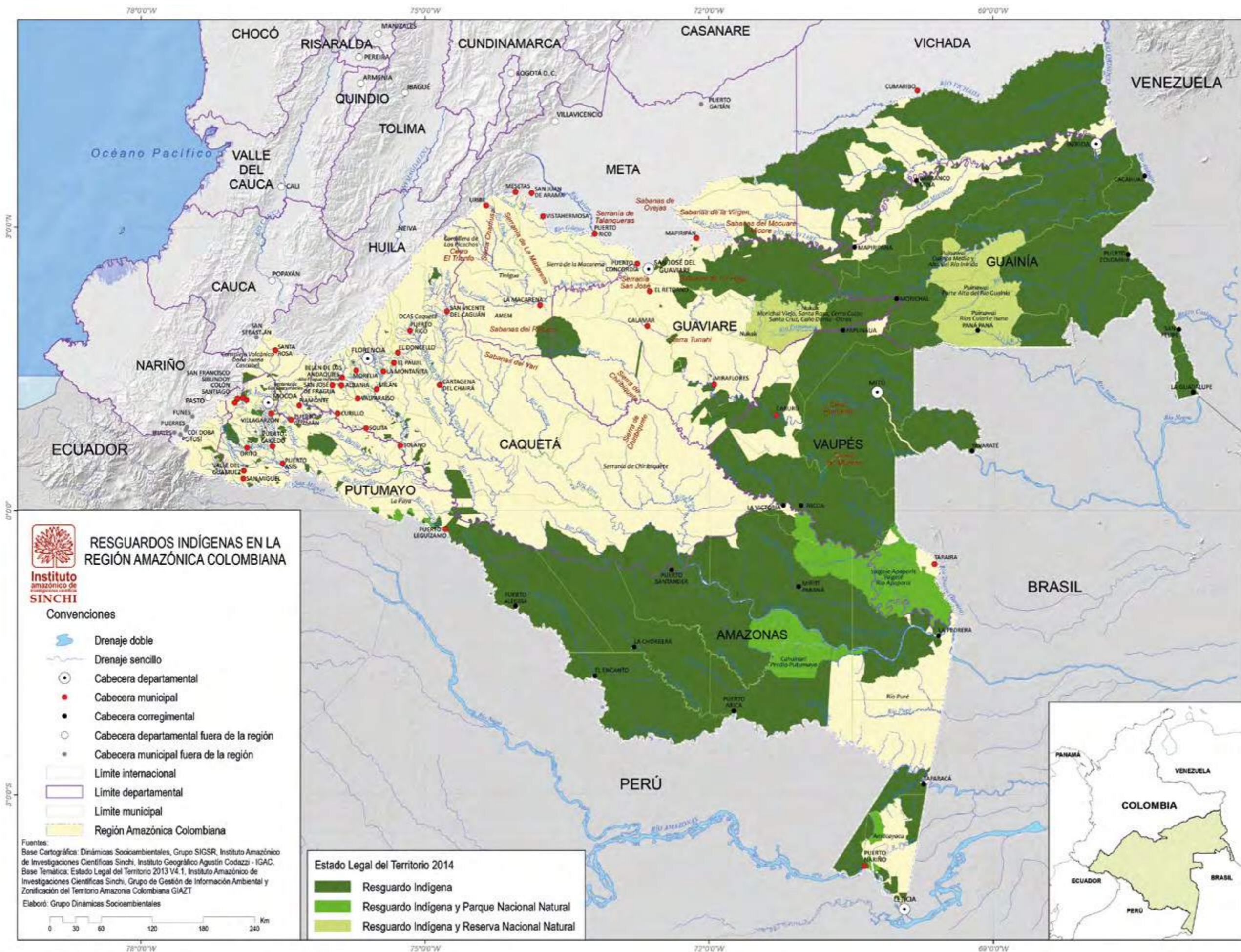


Map 17. Indigenous reservations in the Colombian Amazon





Map 18. Legal condition of the territory in the Colombian Amazon

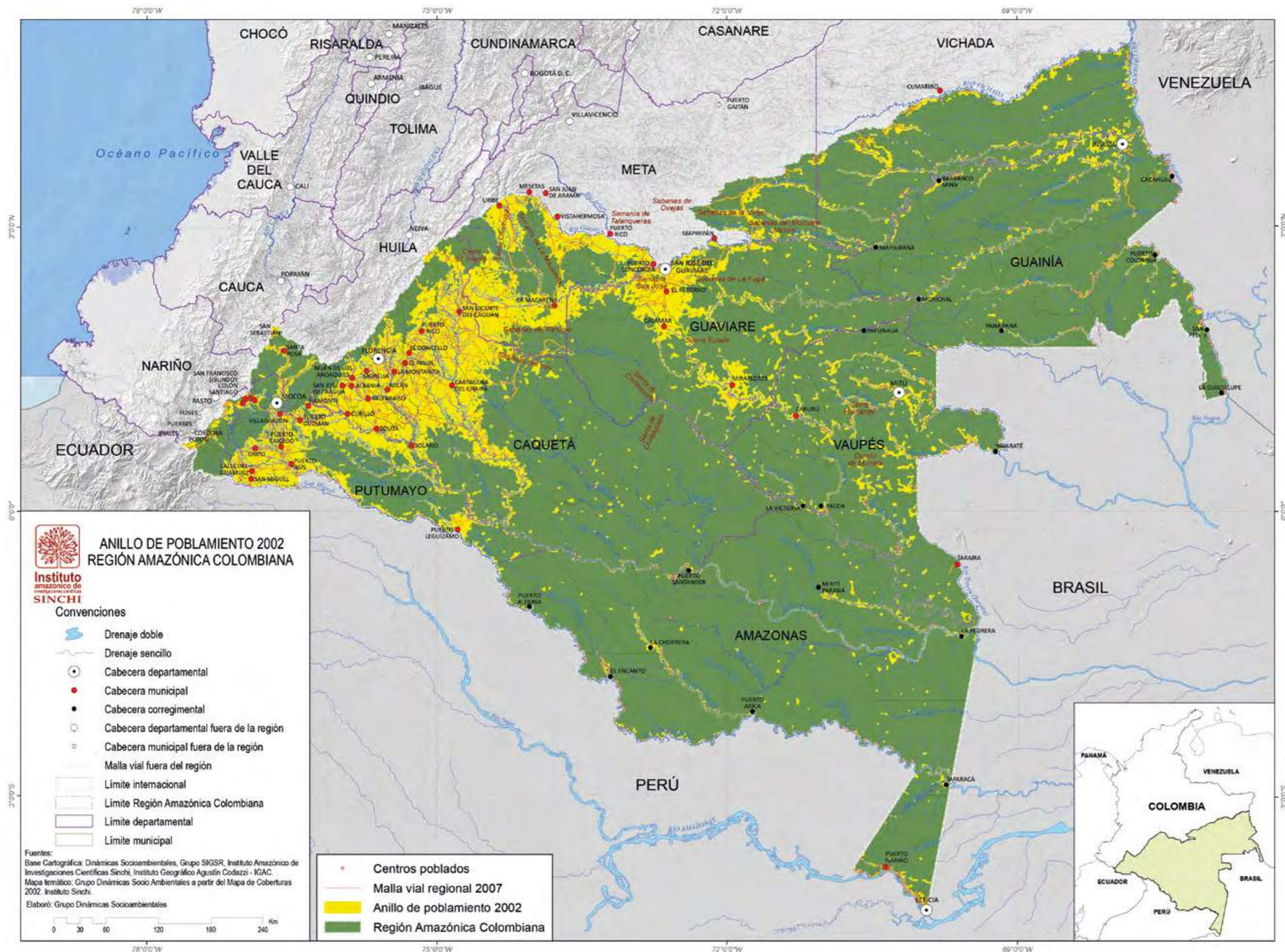






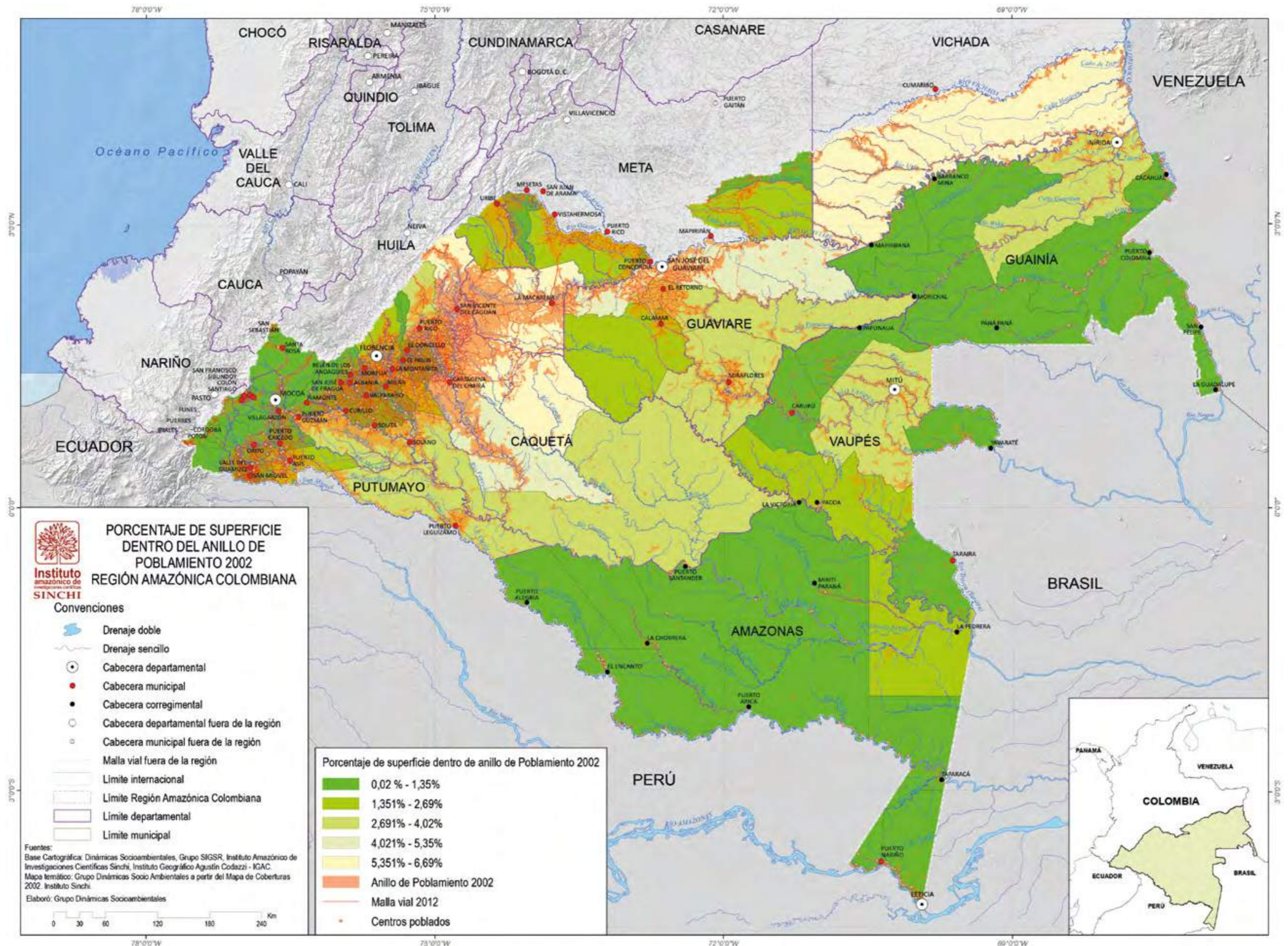


Map 20. Population ring in the Amazon region, 2007

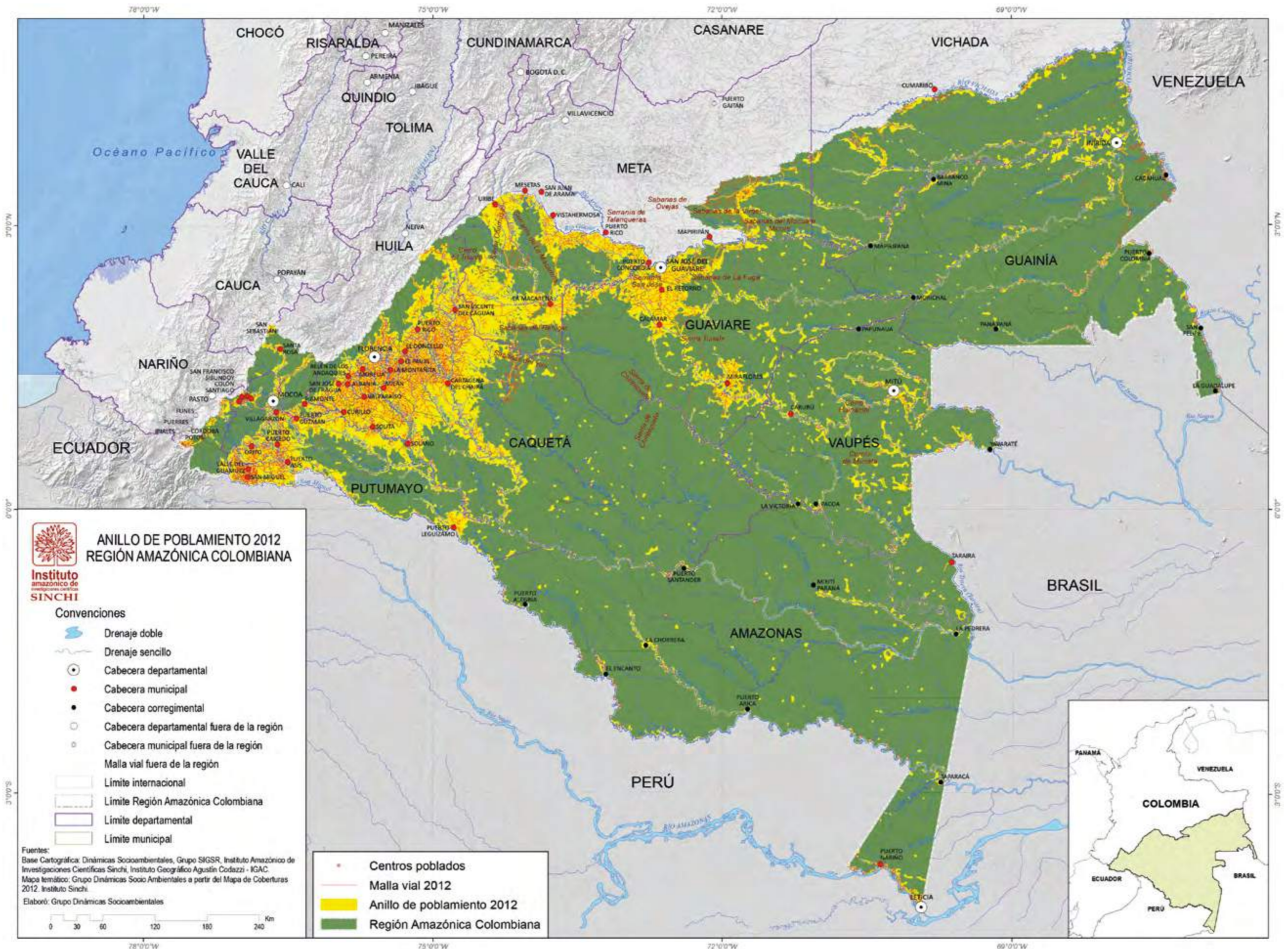




Map 21. Population ring in the Amazon region, 2012

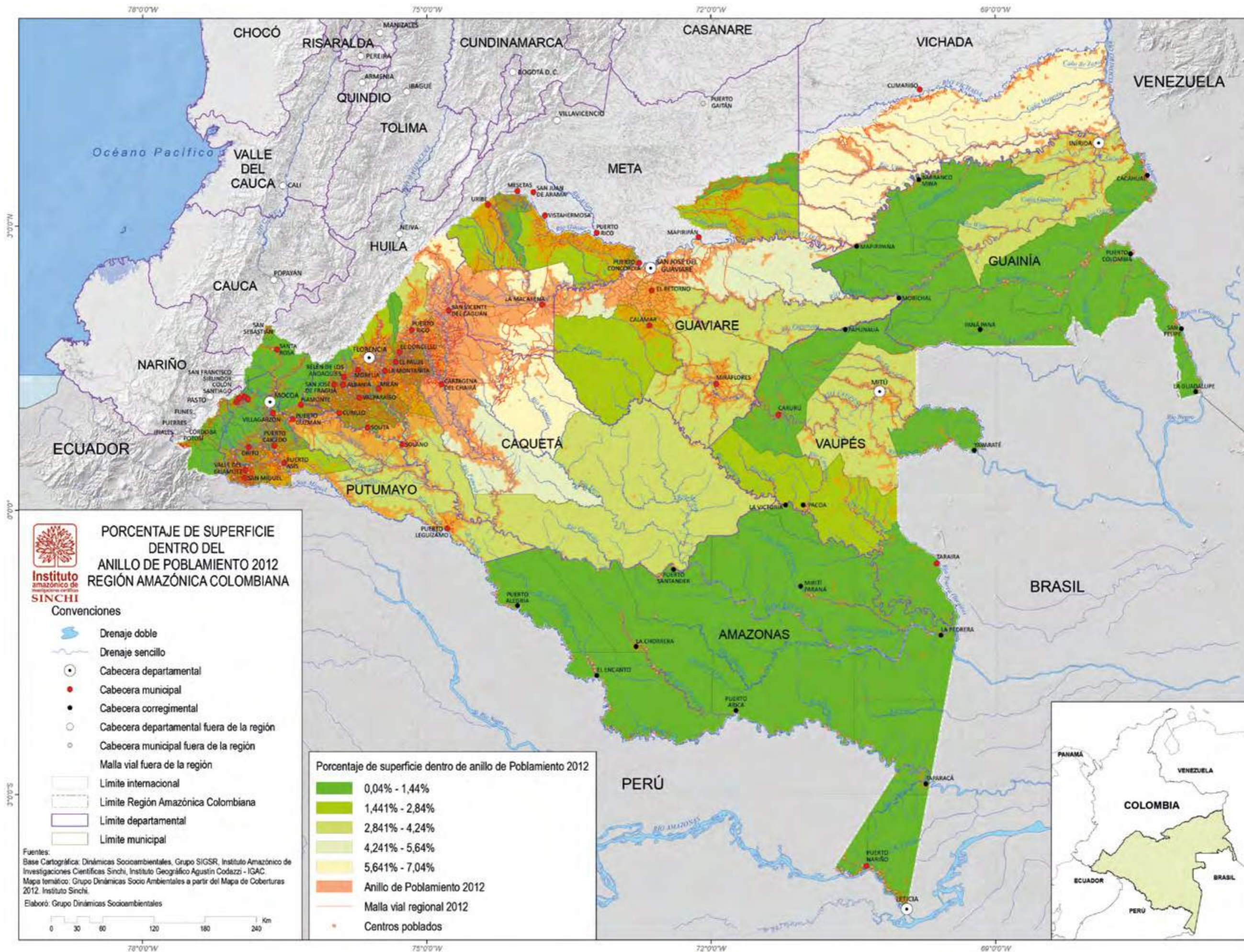






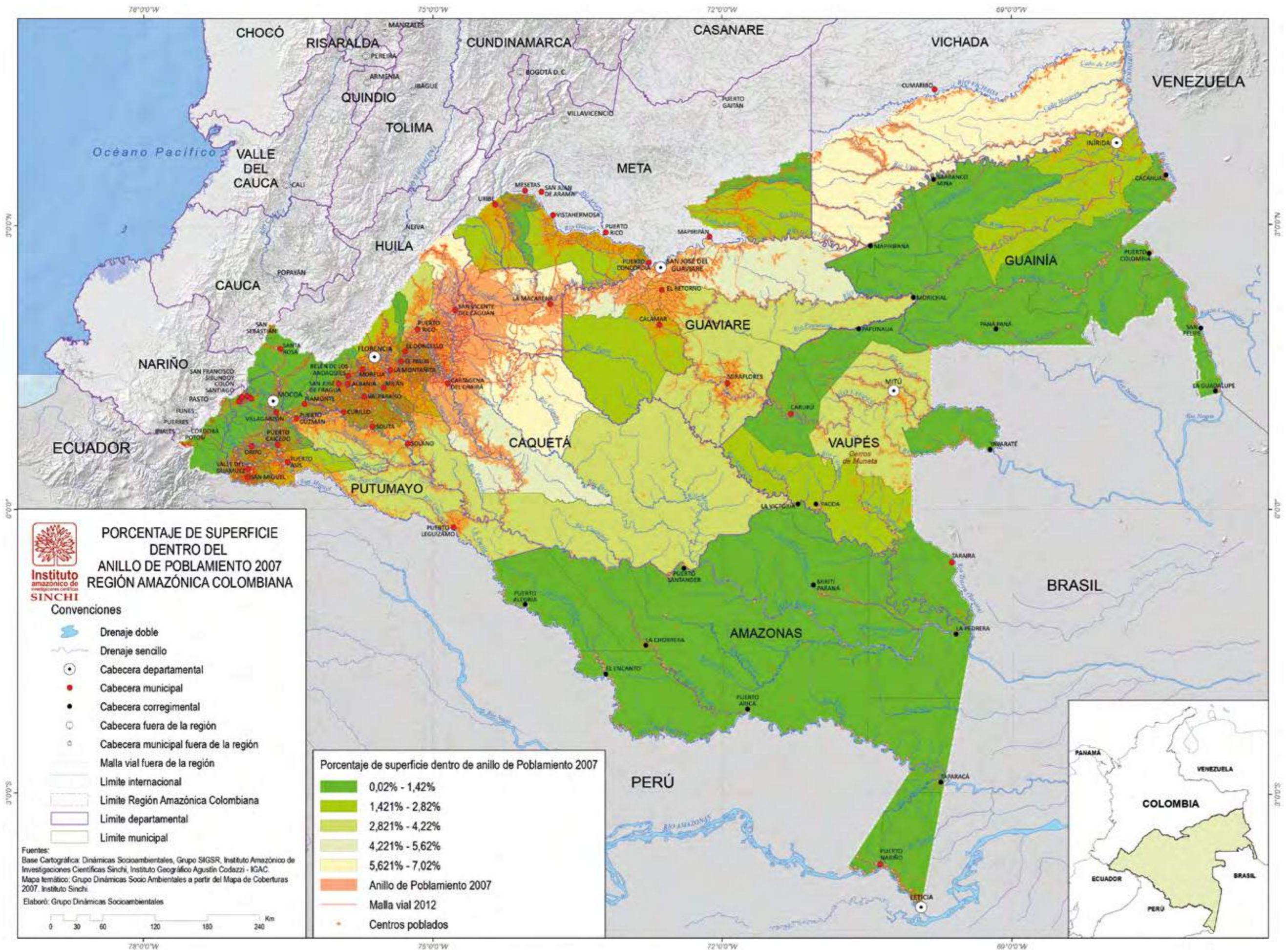
Map 22. Percentage of surface within the Amazonian population ring, 2002





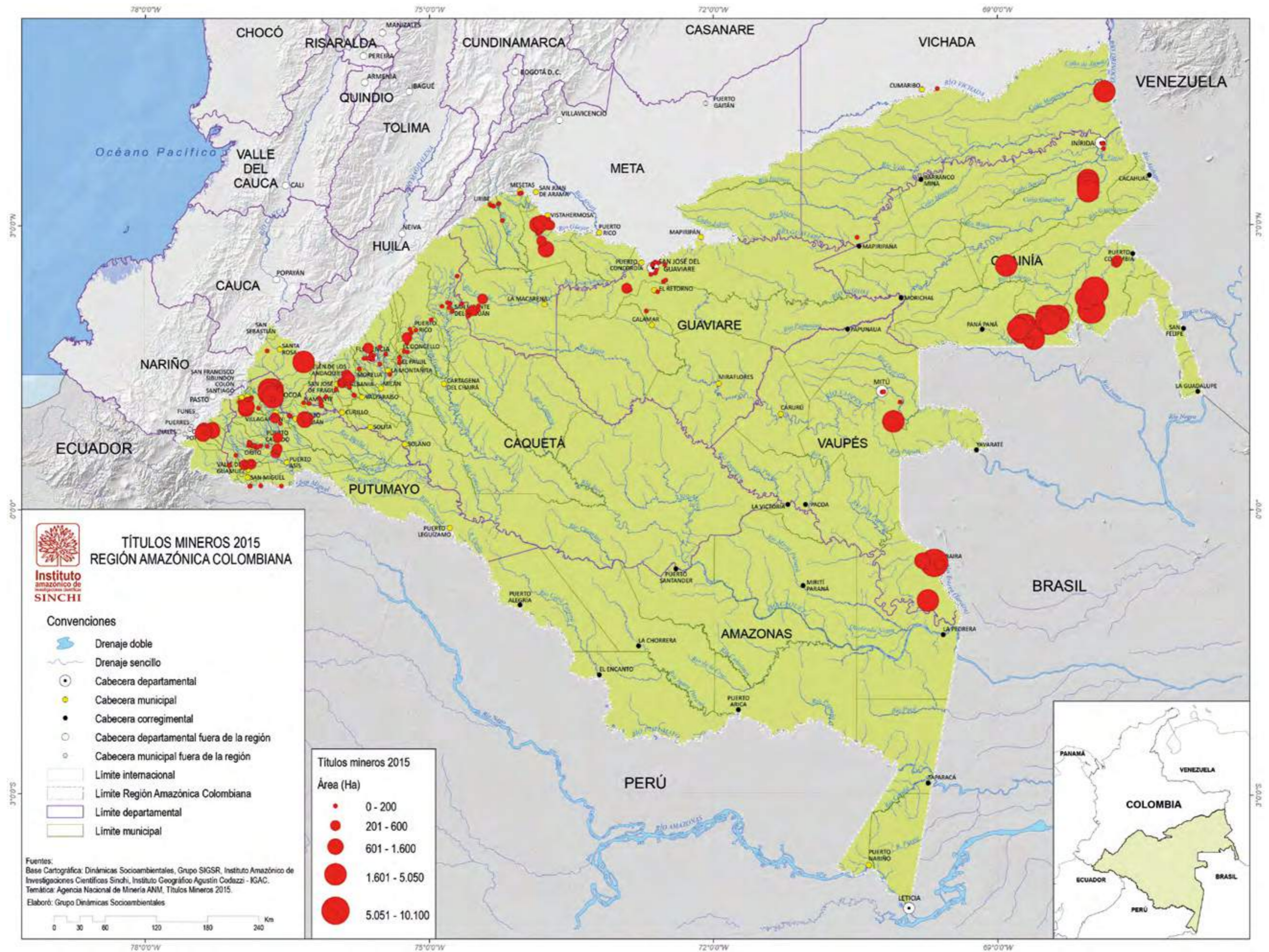
Map 23. Percentage of surface within the Amazonian population ring, 2007





Map 24. Percentage of surface within the Amazonian population ring, 2012

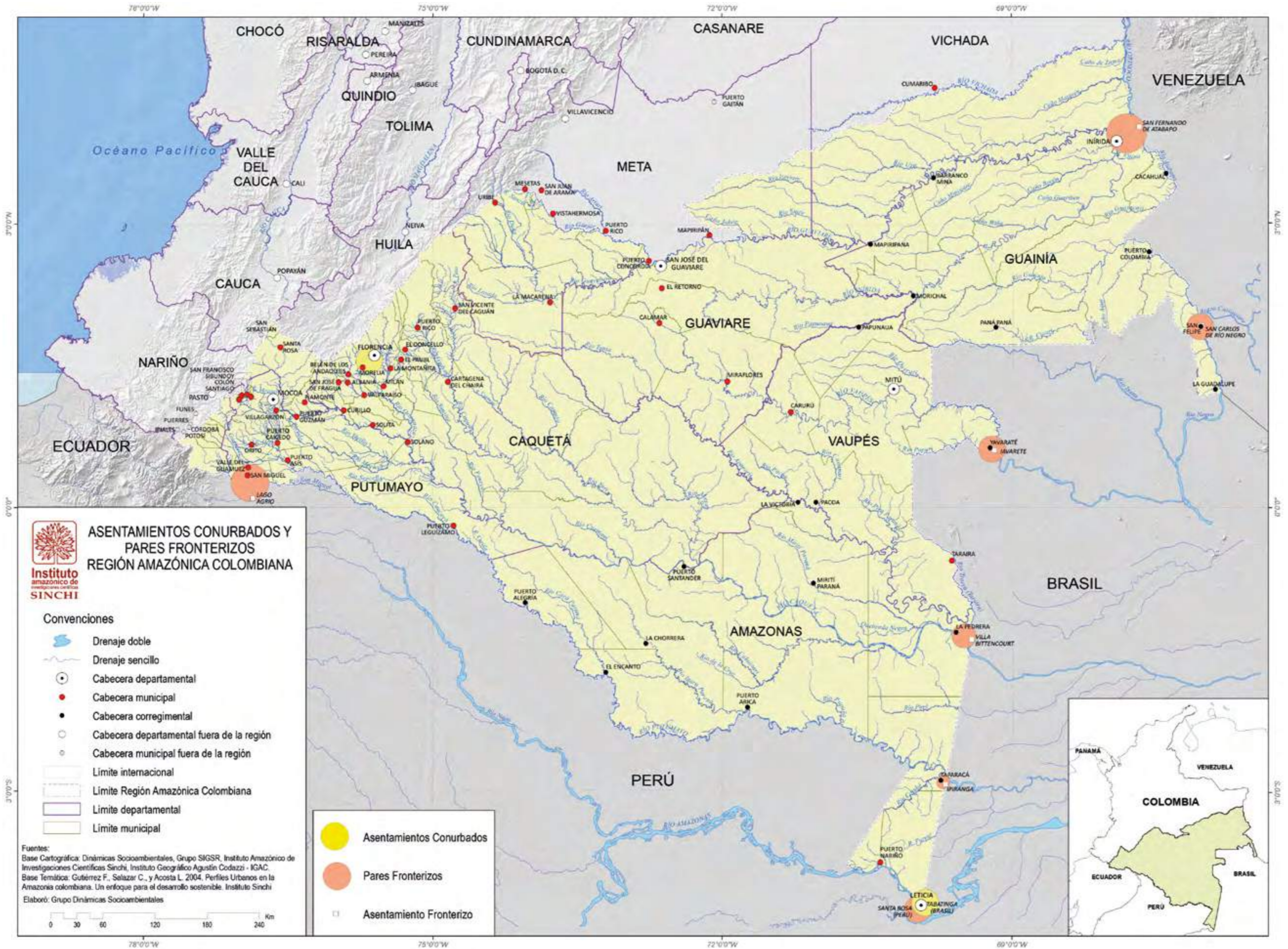




Map 25. Conurbation settlements and border peers

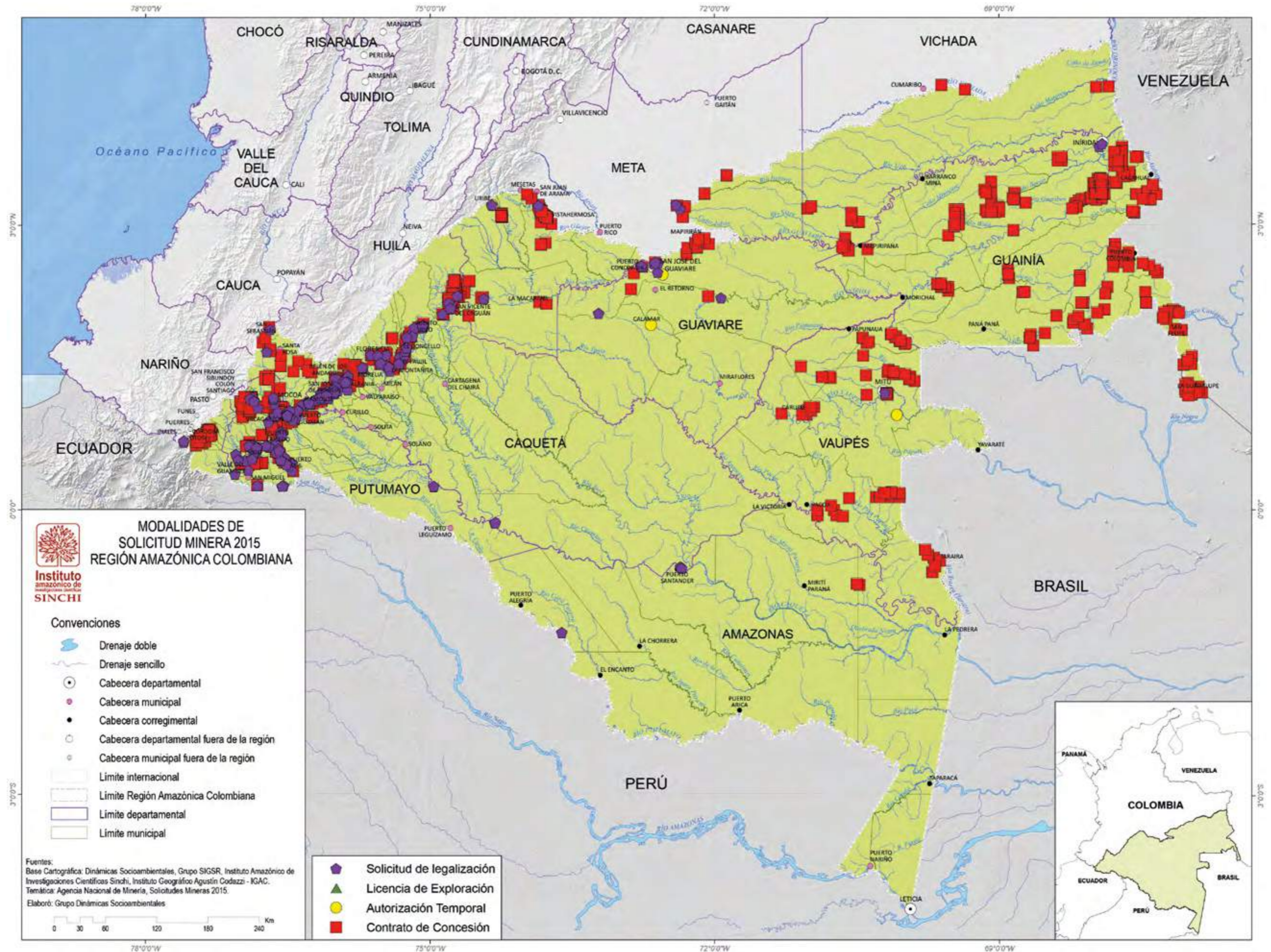


Map 26. Mining entitlements in the Colombian Amazon Region, 2015



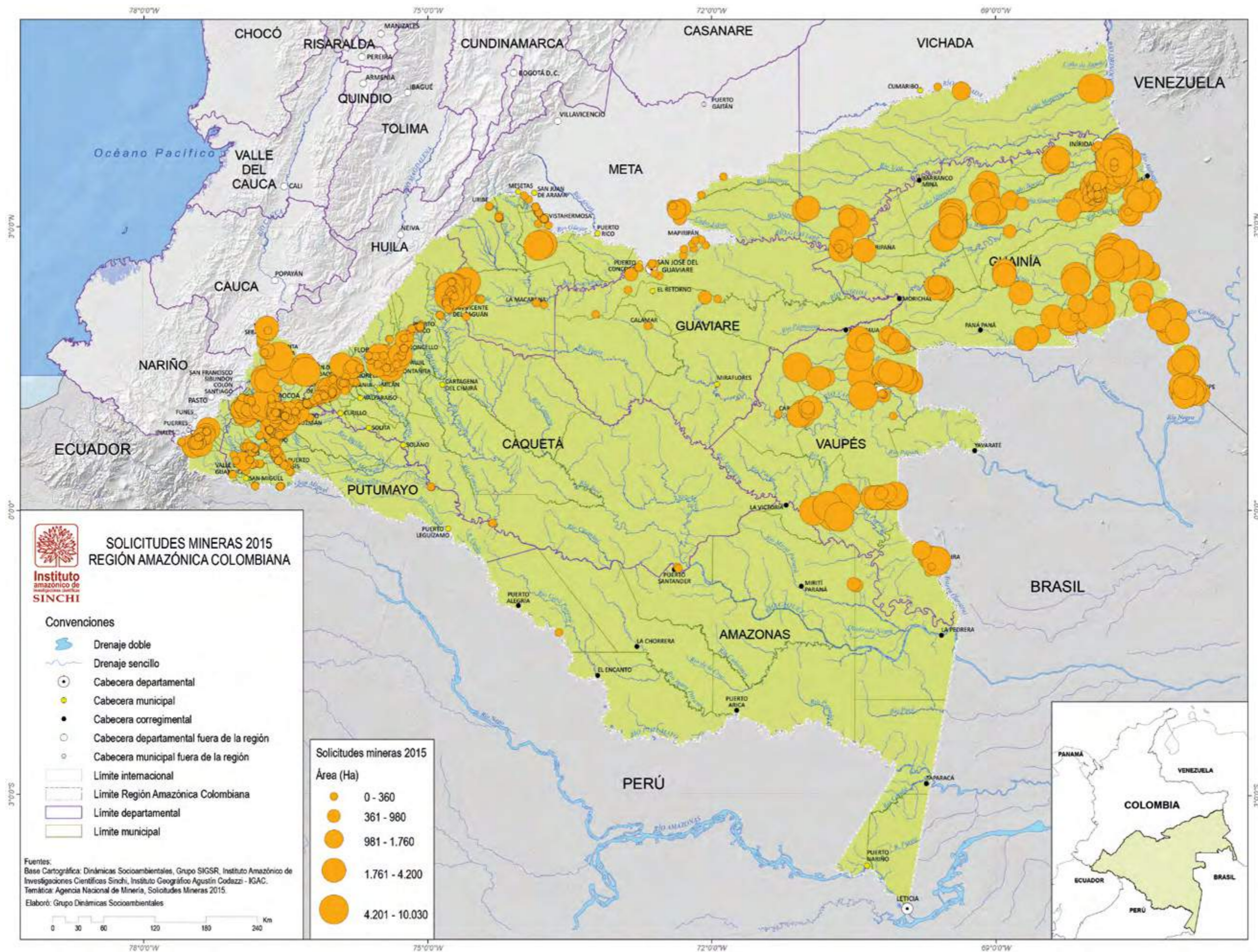


Map 27. Mining requests in the Colombian Amazon region, 2015



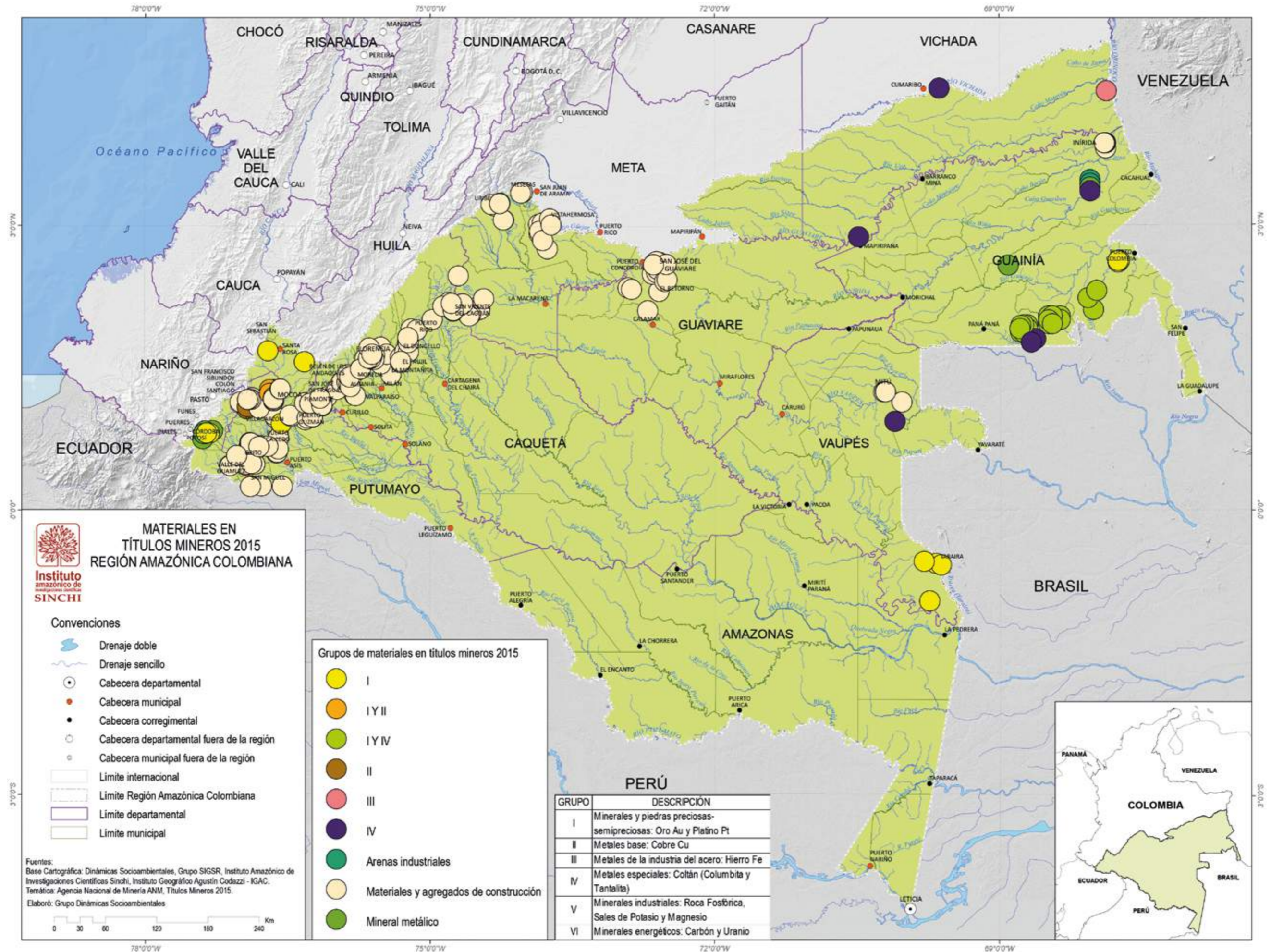


Map 28. Mining request modalities in the Colombian Amazon region, 2015



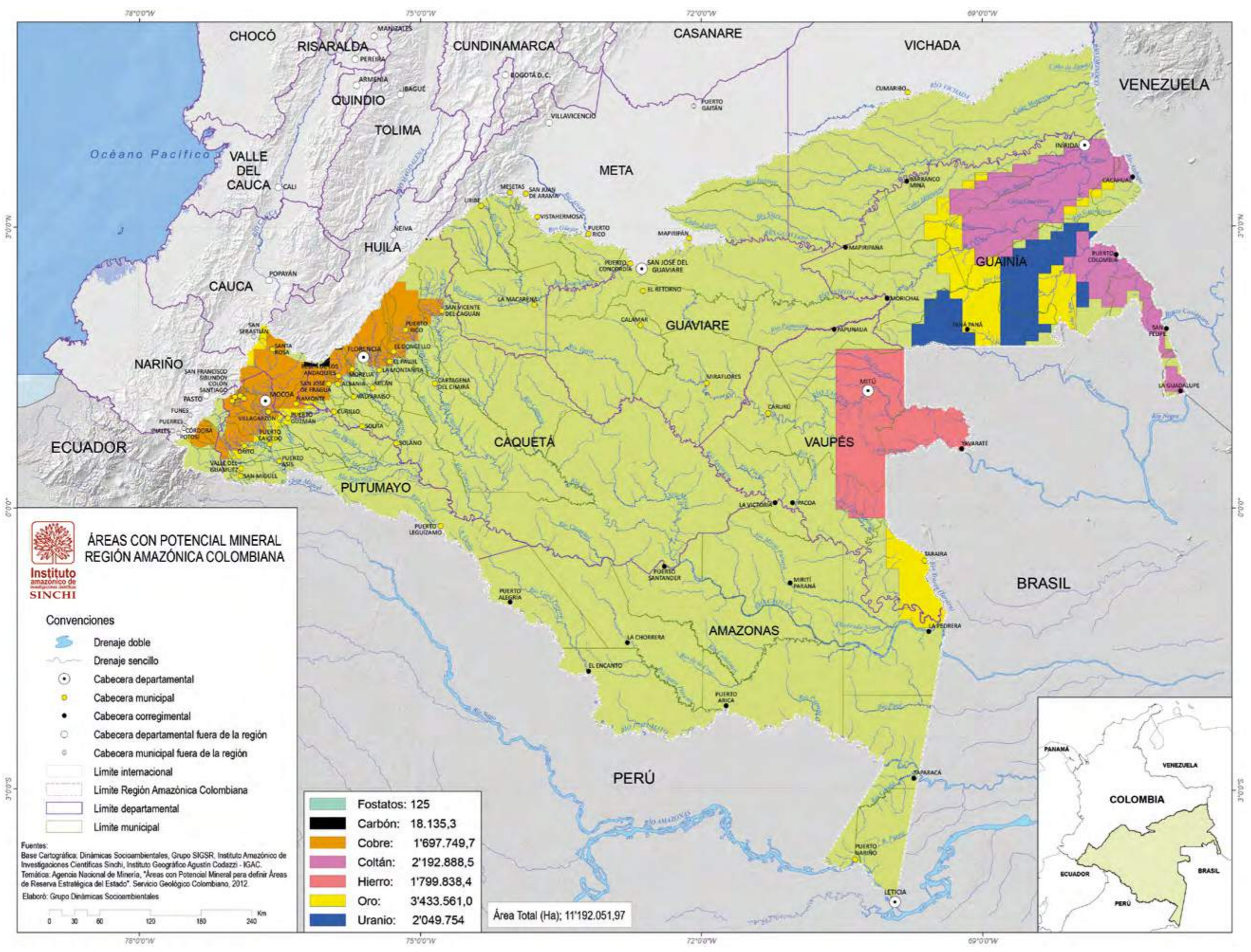


Map 29. Potential mineral areas in the Colombian Amazon region



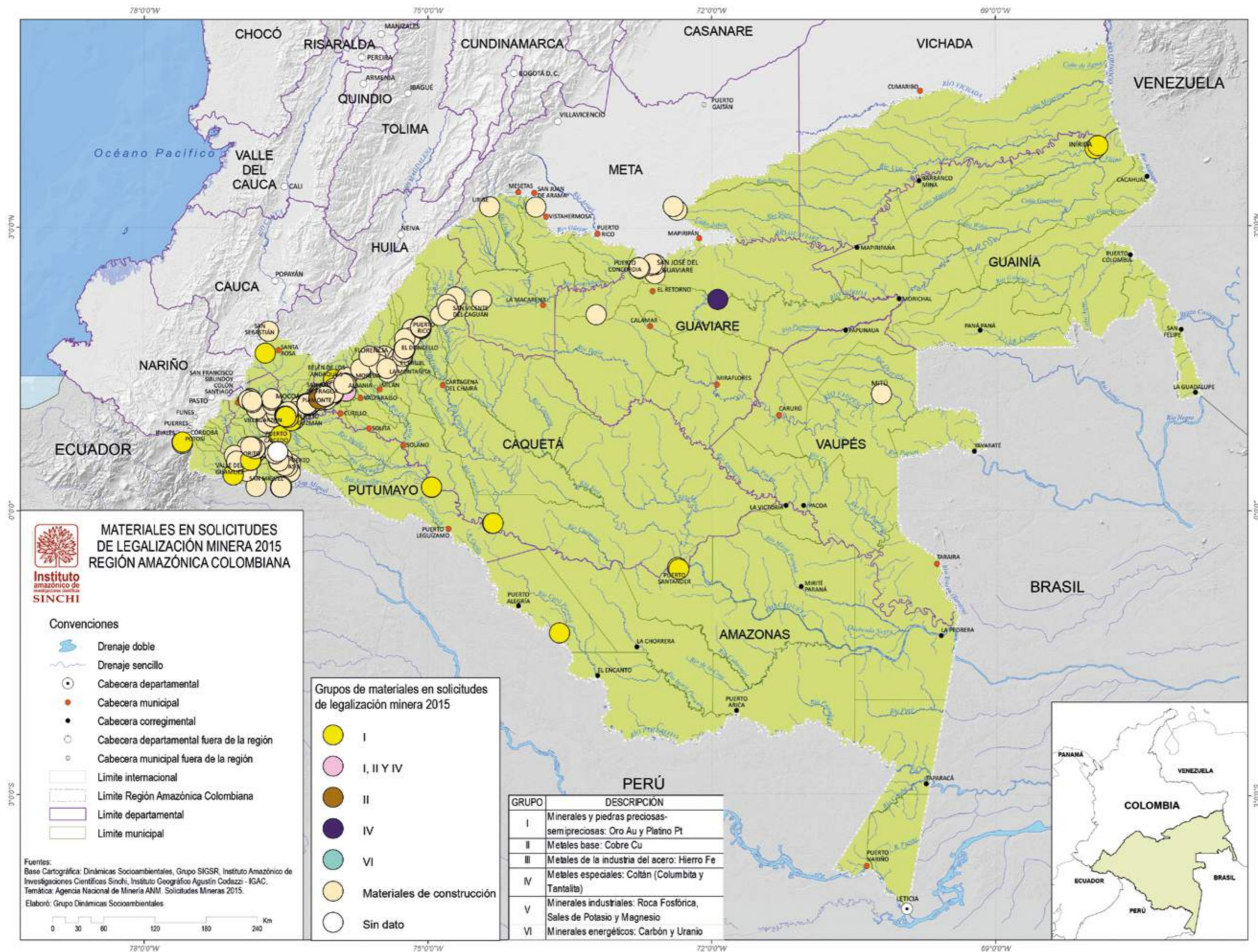


Map 30. Materials for mining entitlements in the Colombian Amazon region, 2015



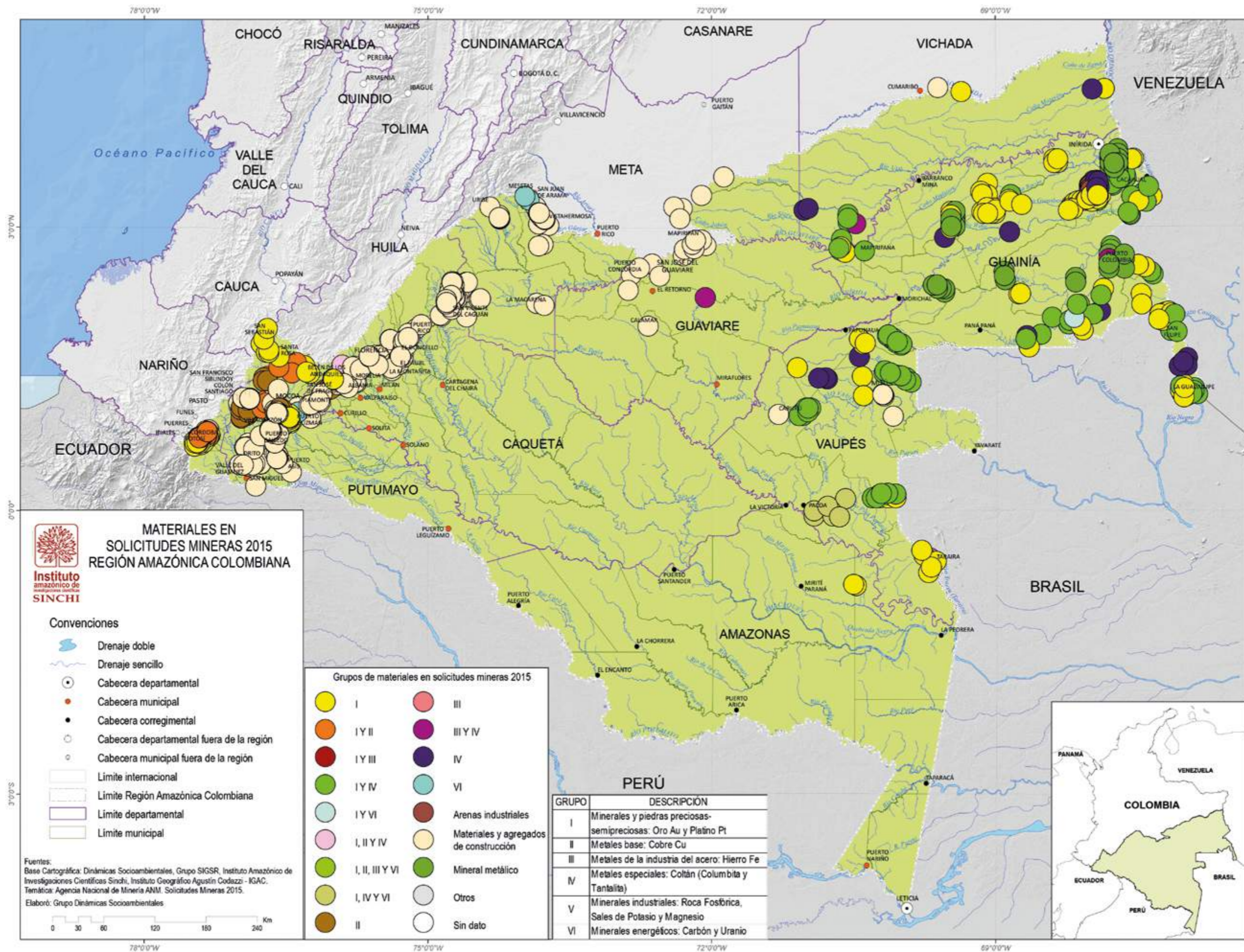


Map 31. Materials in mining requests in the Colombian Amazon region, 2015

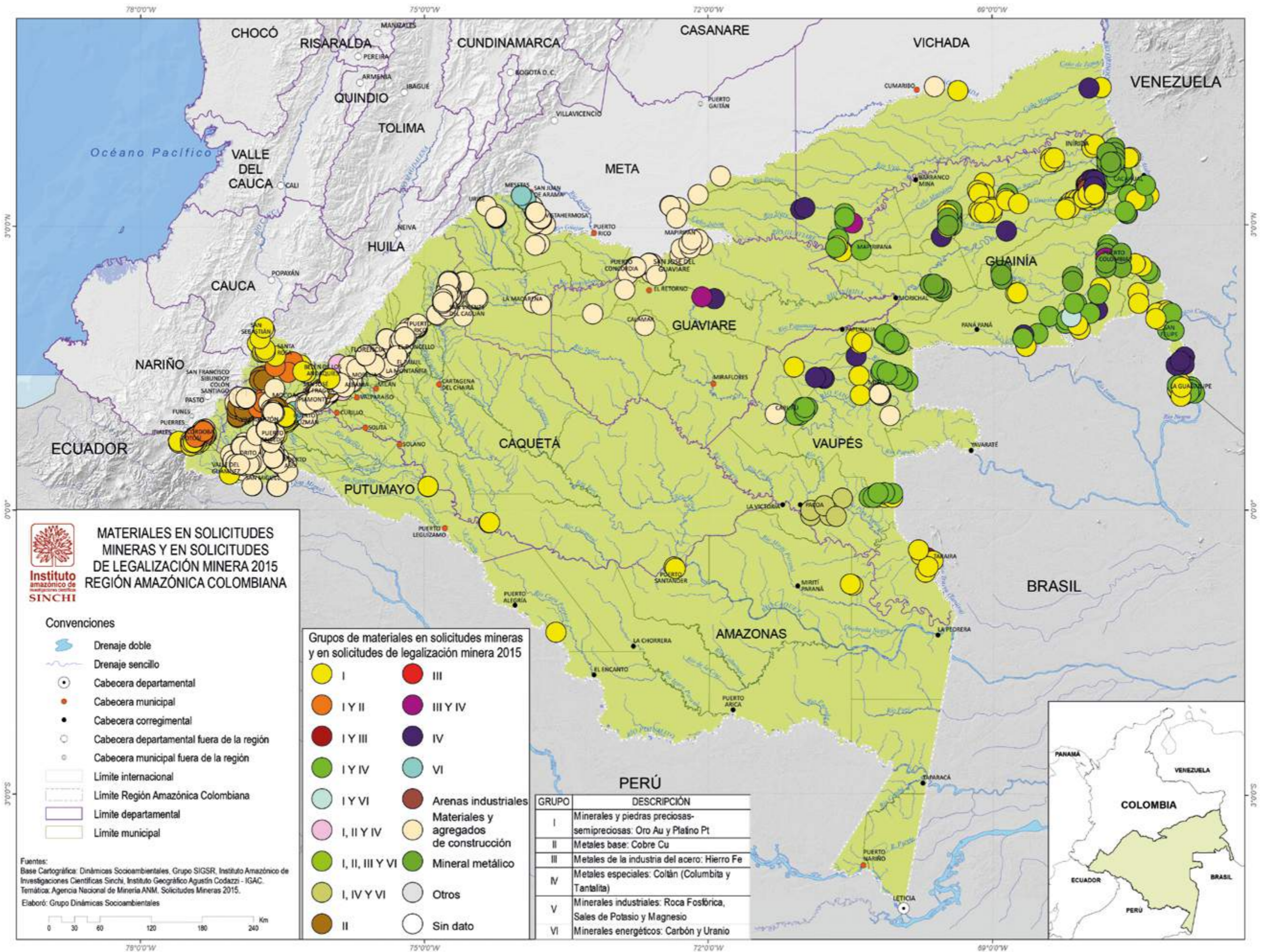




Map 32. Materials in mining legalization requests in the Colombian Amazon region, 2015

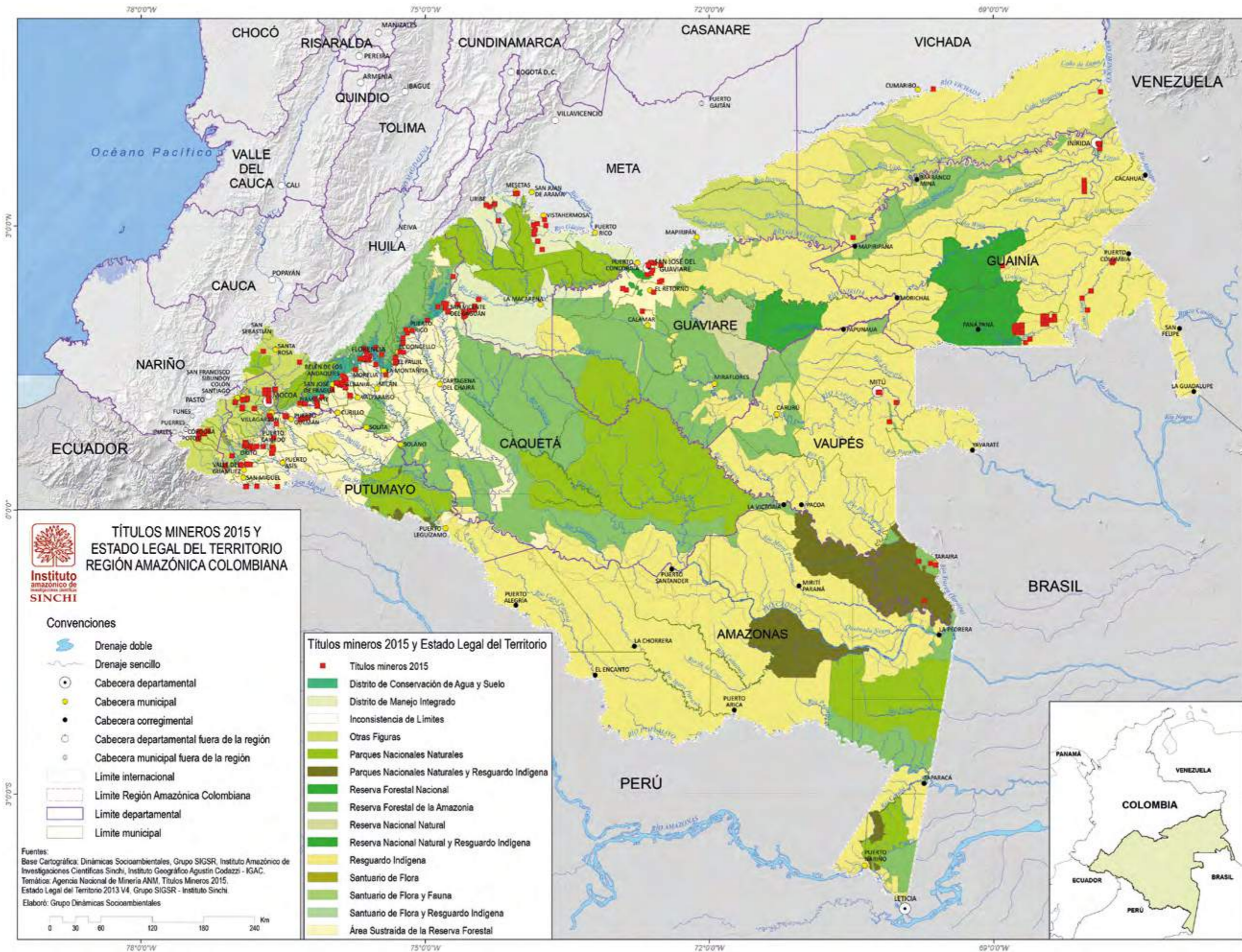






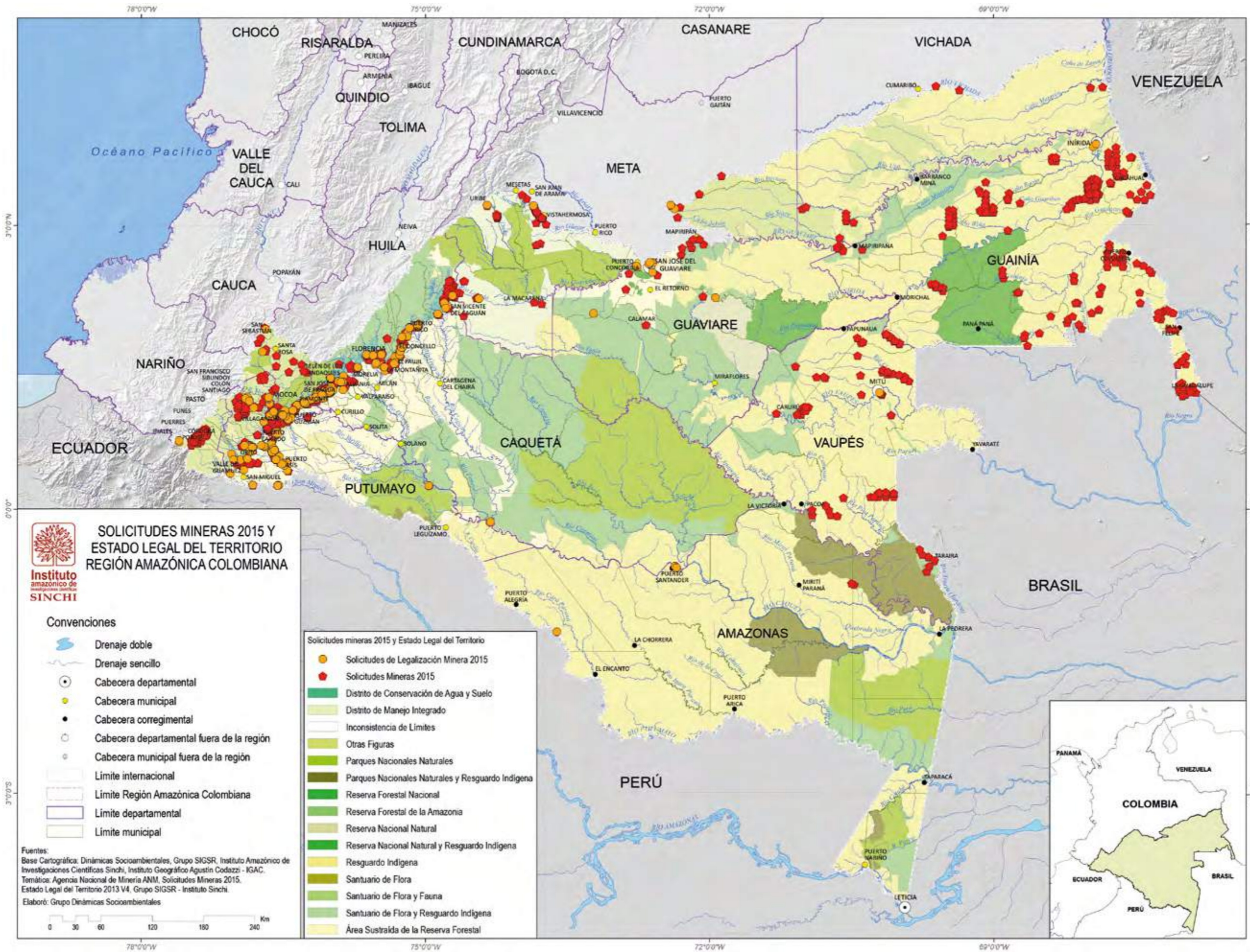
Map 33. Materials in mining requests and mining legalization requests in the Colombian Amazon region, 2015





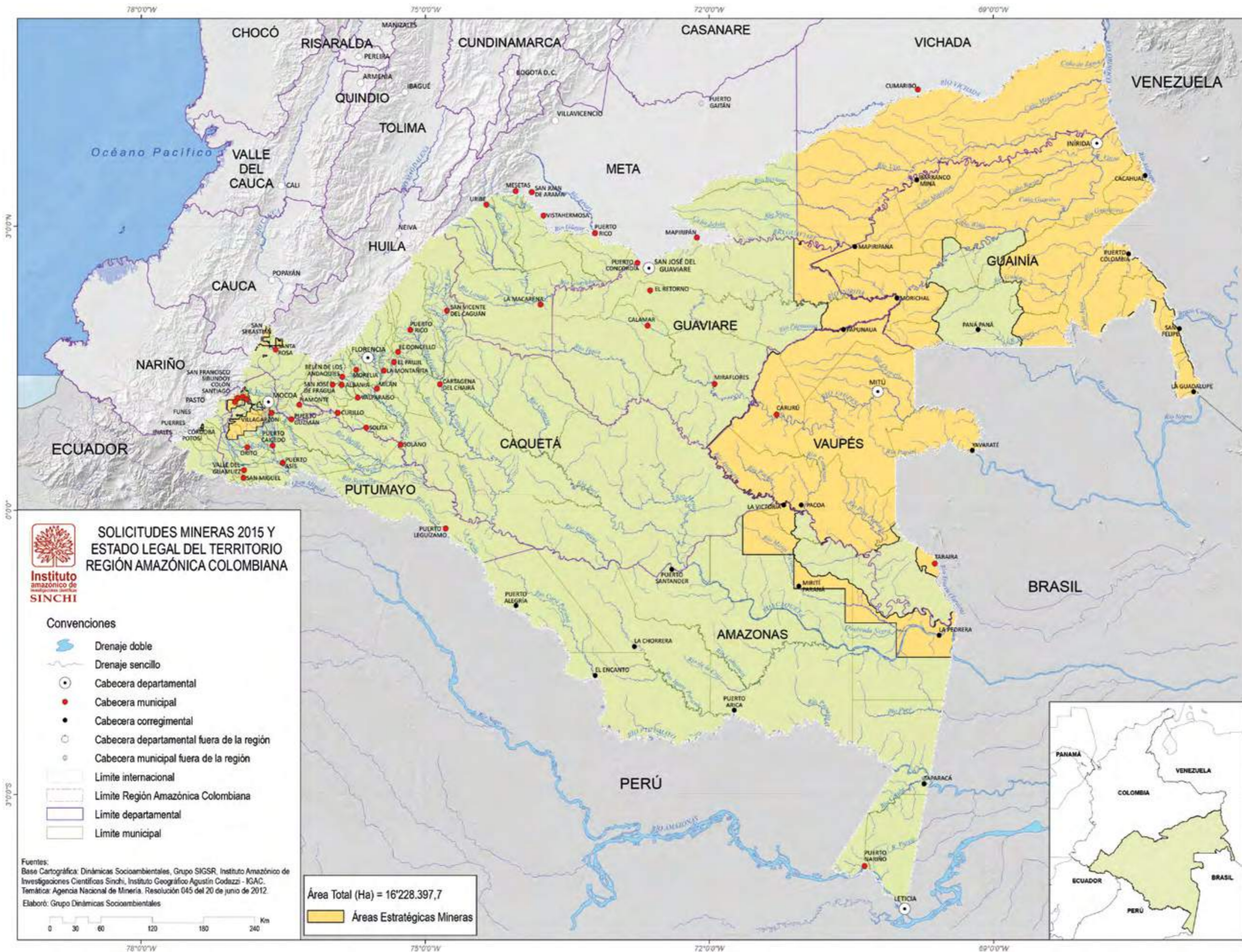
Map 34. Mining entitlements and legal condition of the territory in the Colombian Amazon region, 2015





Map 35. Mining requests and legal condition of the territory in the Colombian Amazon region, 2015

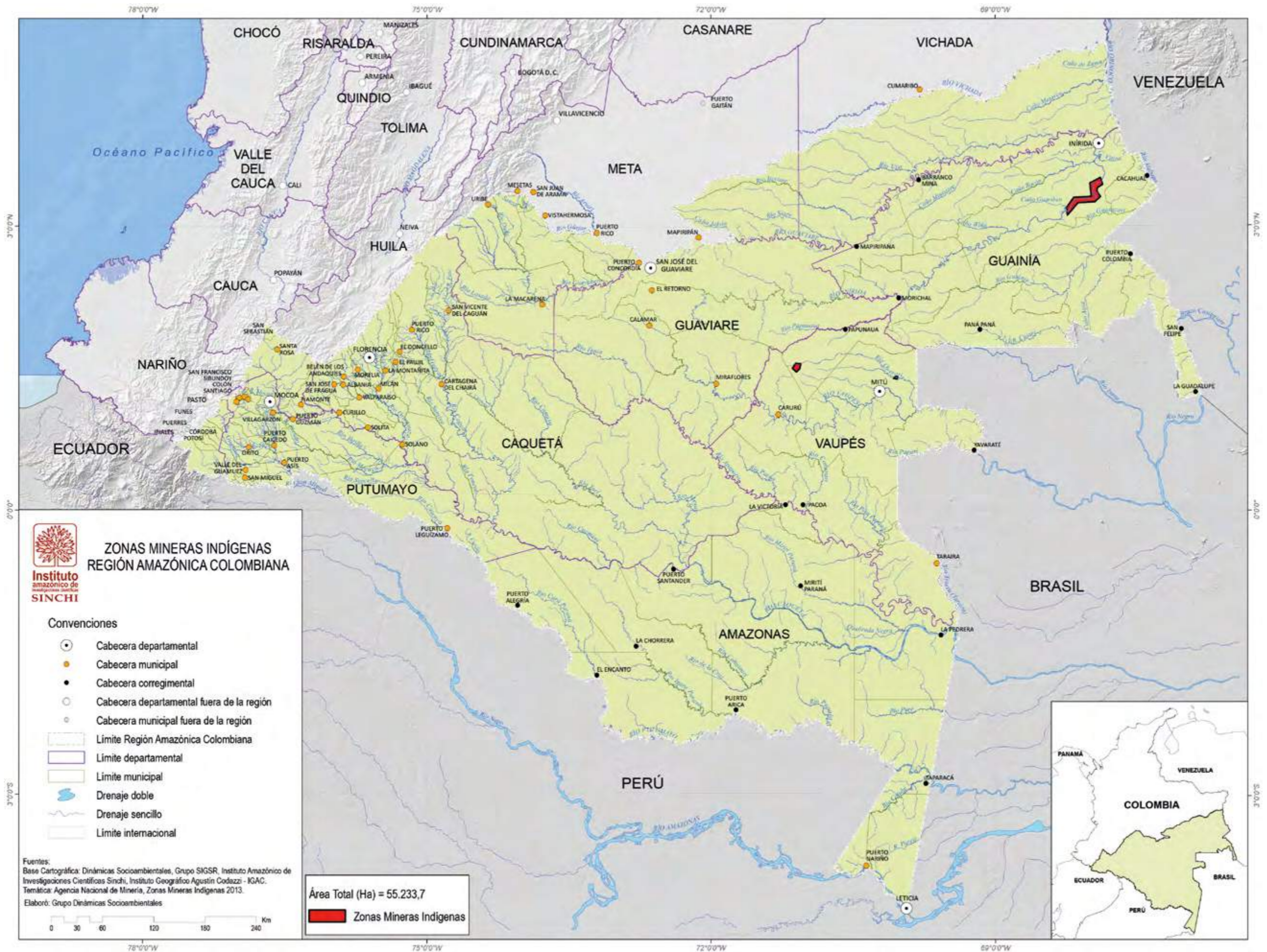




Map 36. Strategic Mining Areas in the Colombian Amazon, according to Resolution 045 from 2012

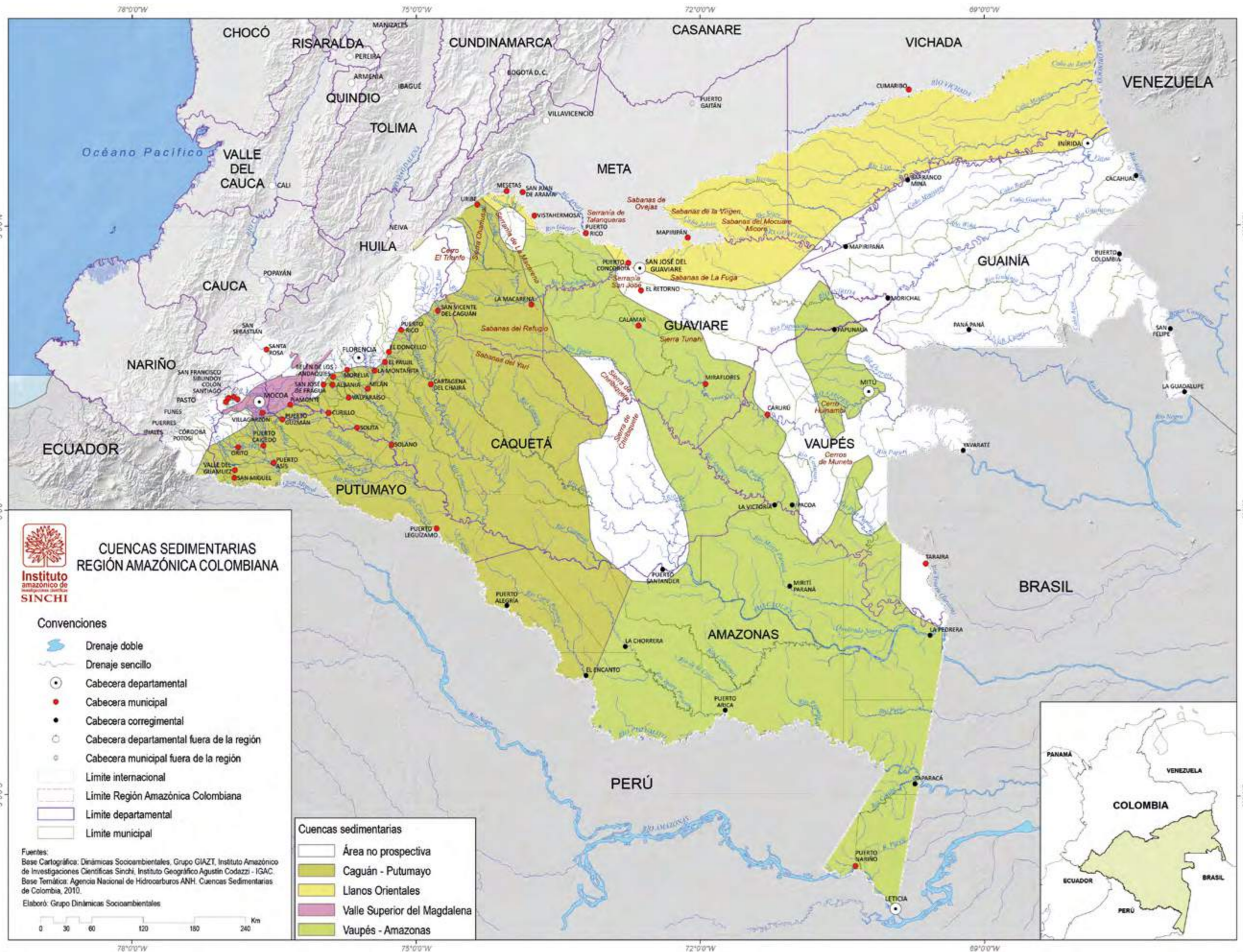


Map 37. Indigenous Mining Areas



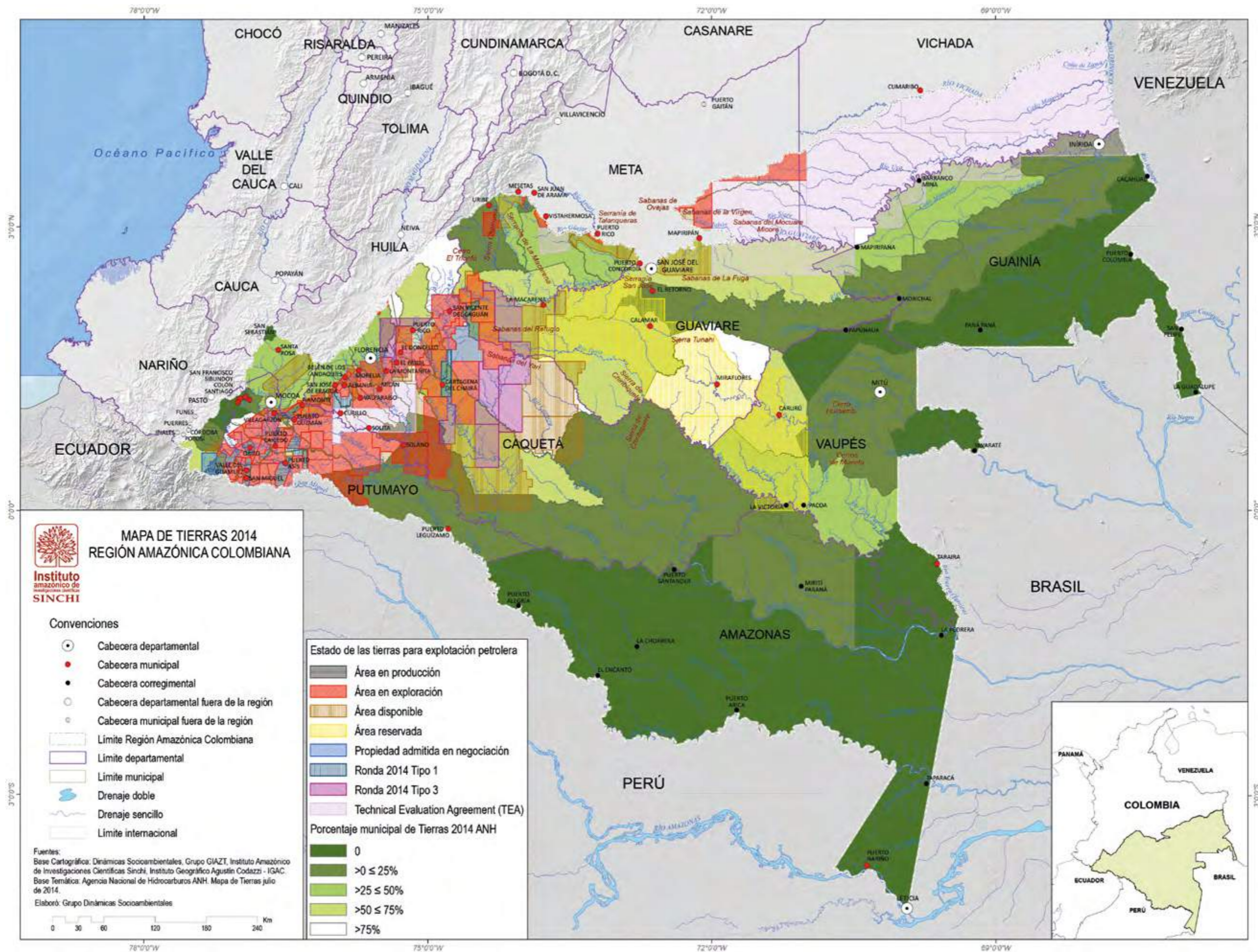


Map 38. Sedimentary basins in the Colombian Amazon region, 2010



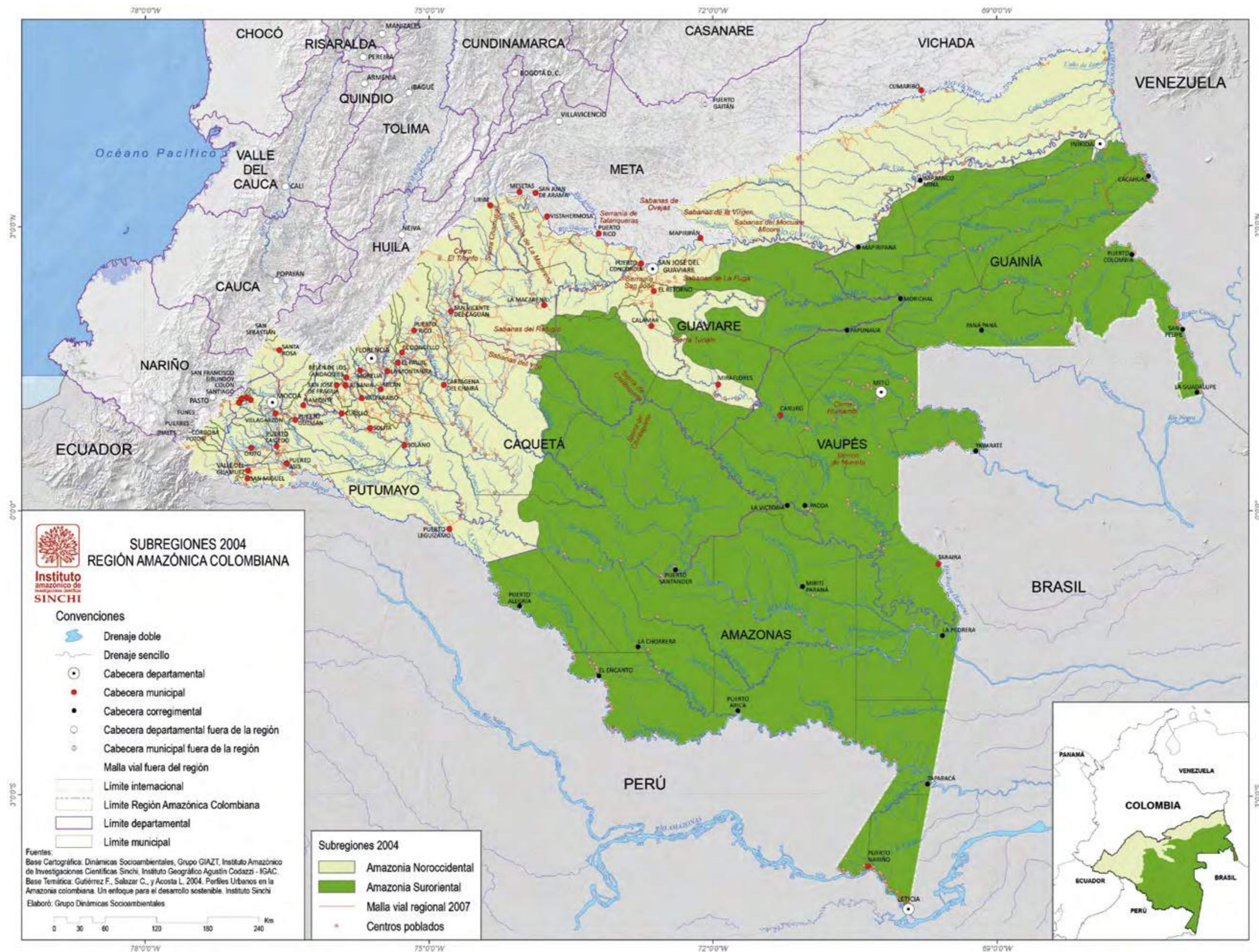


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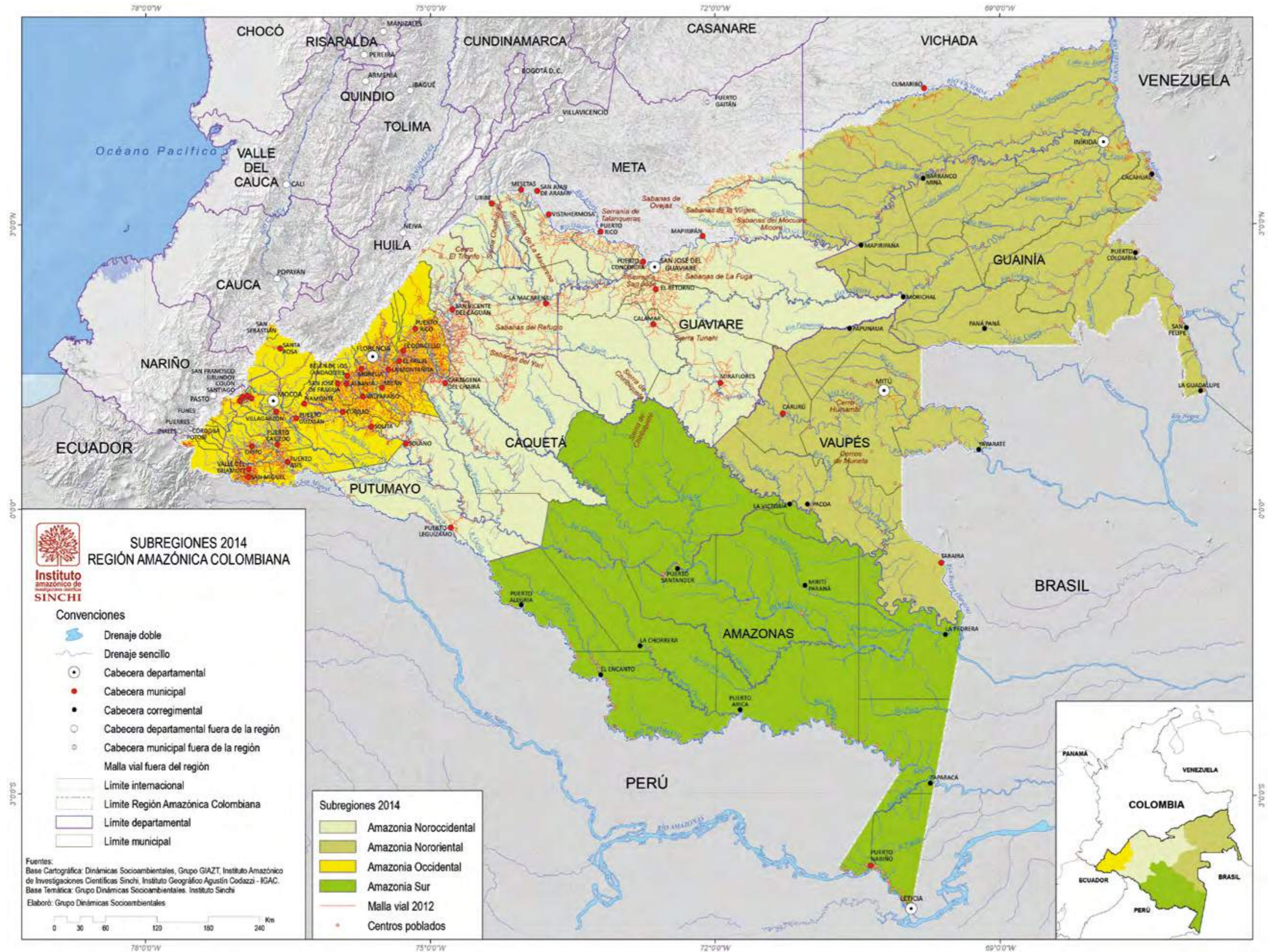


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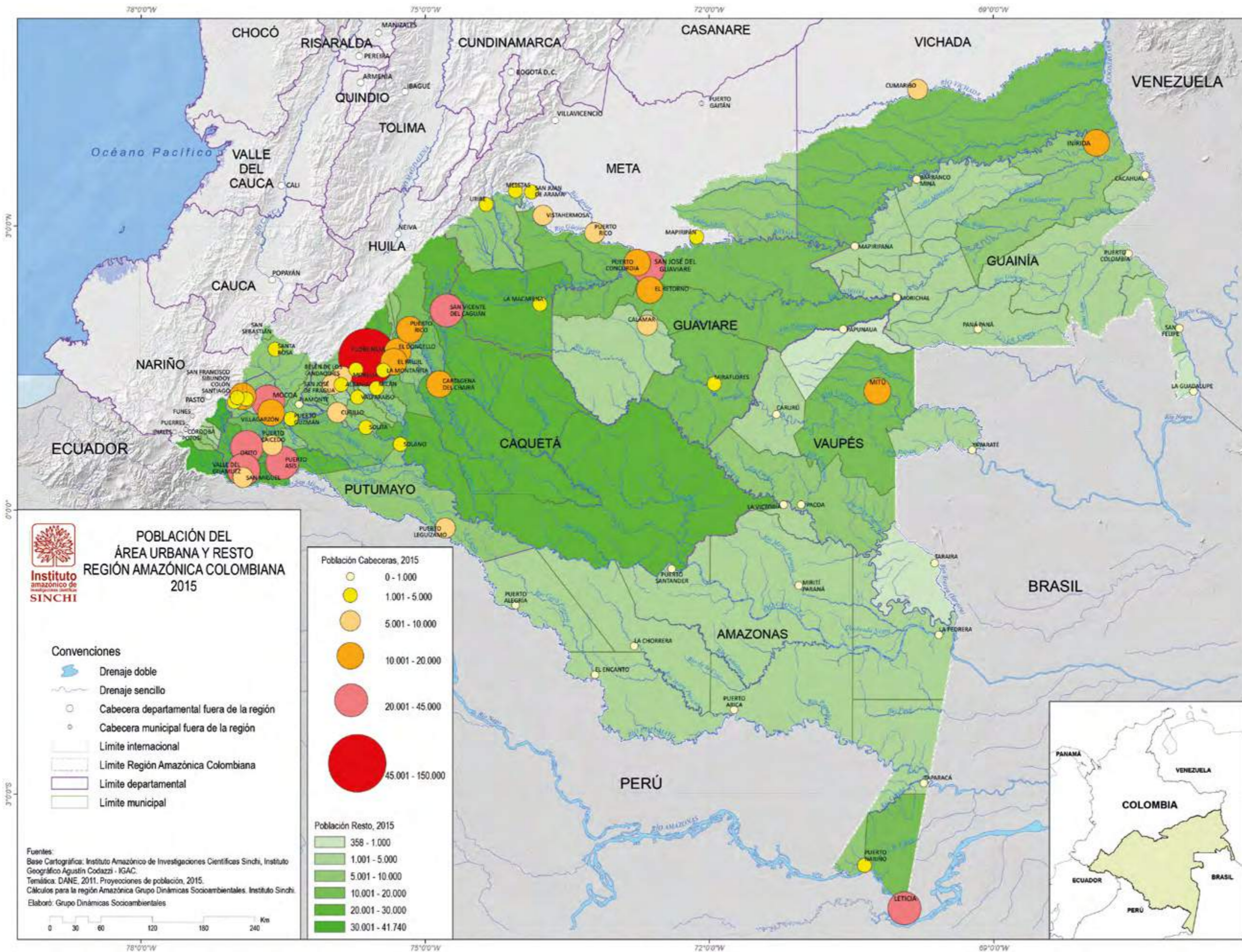




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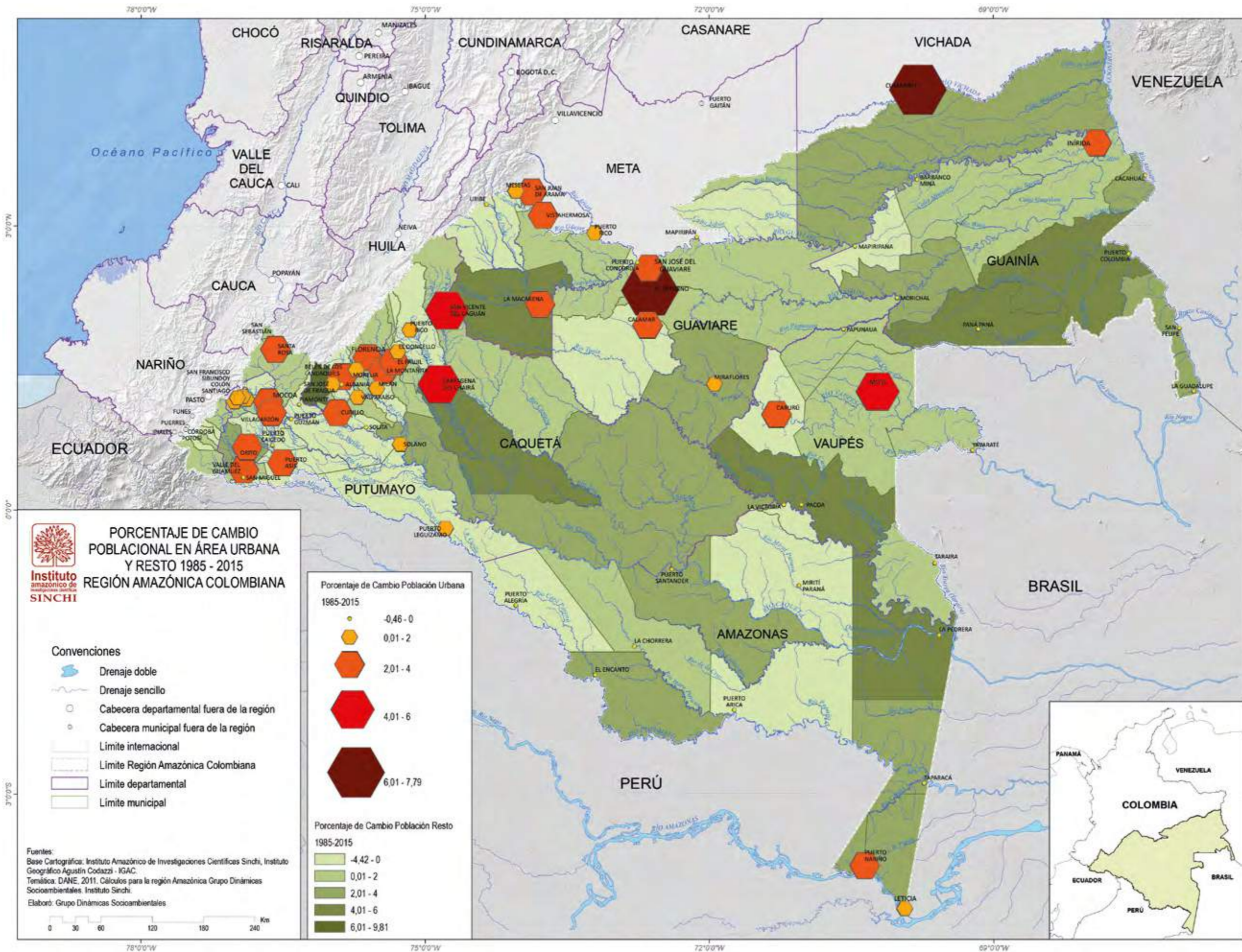






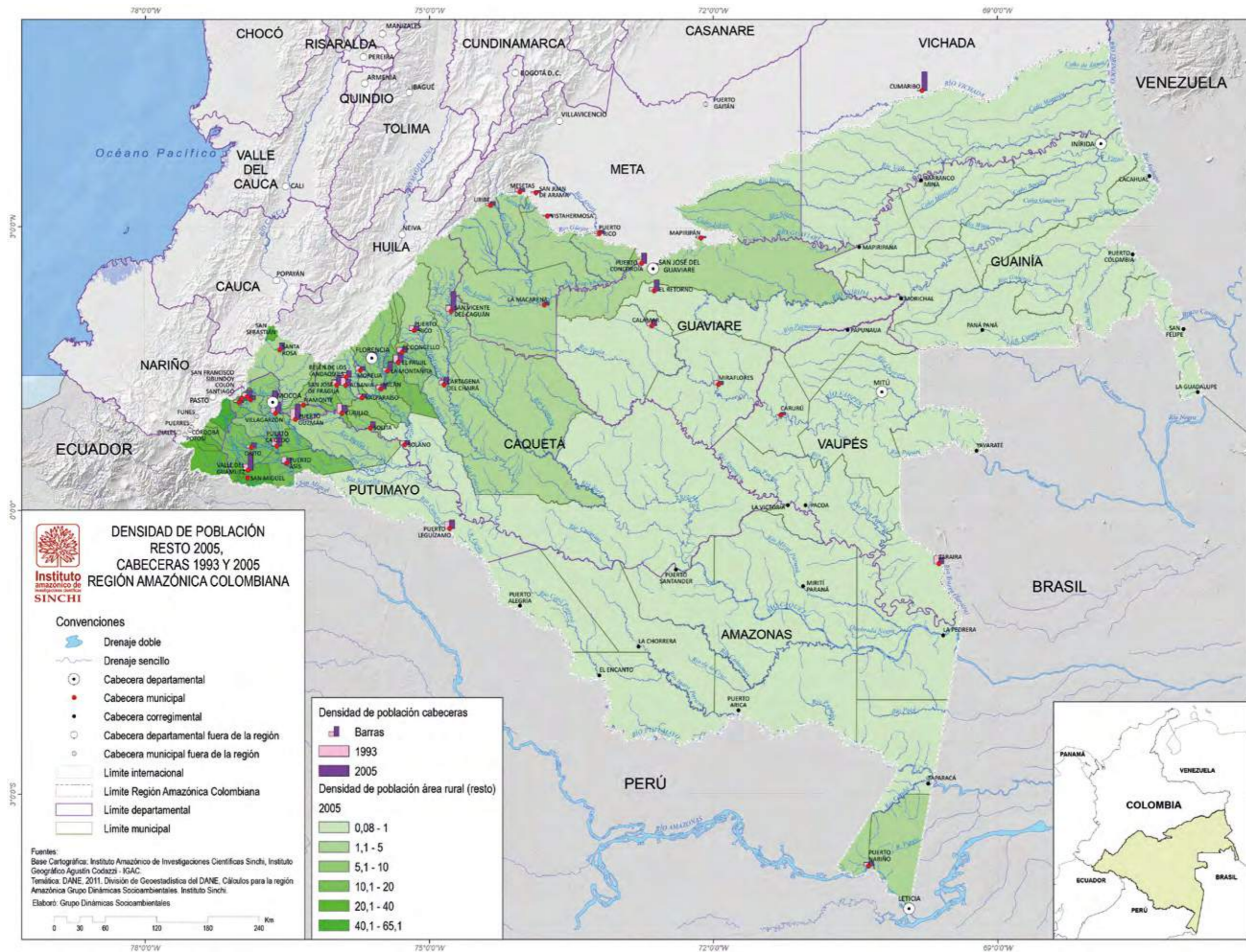
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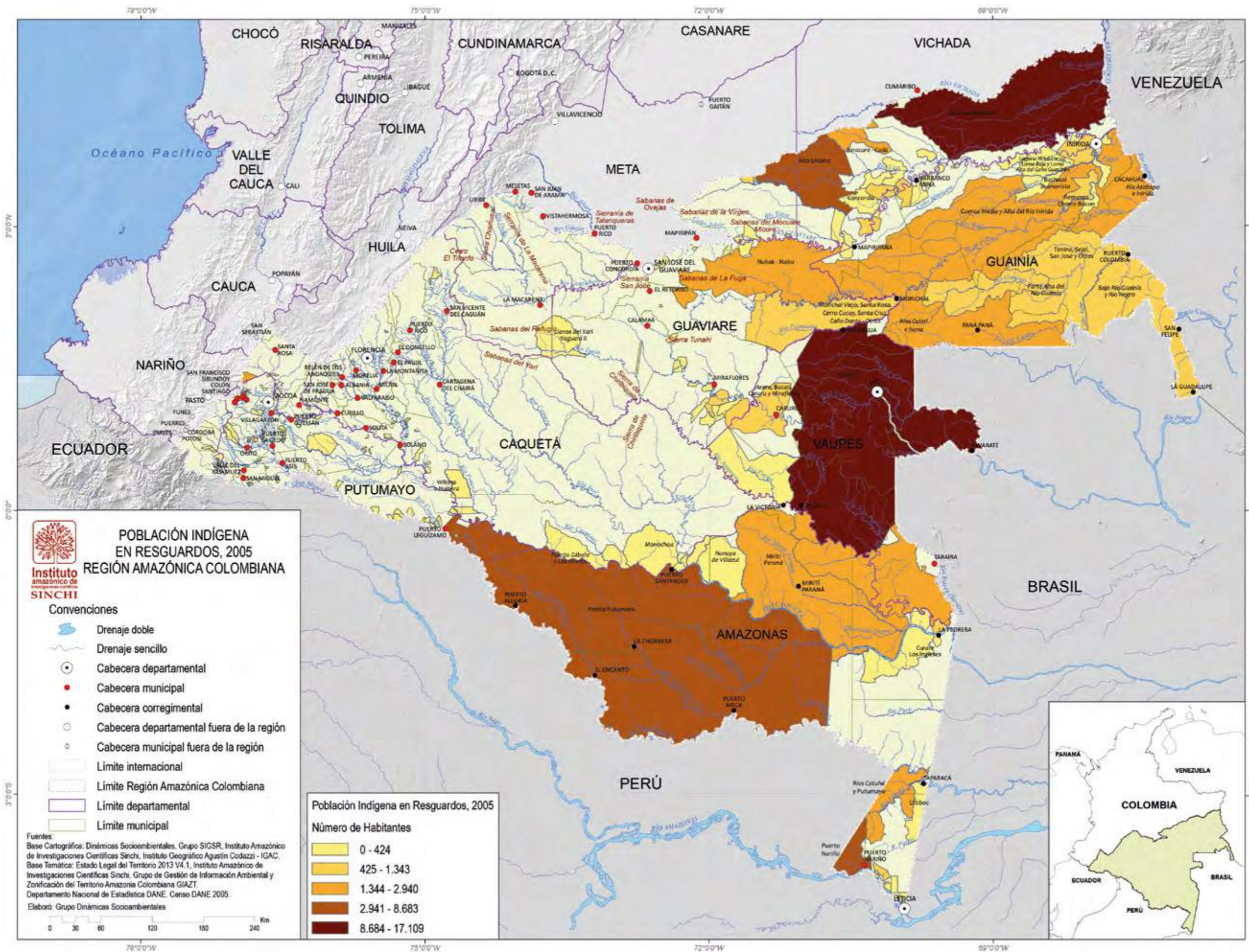
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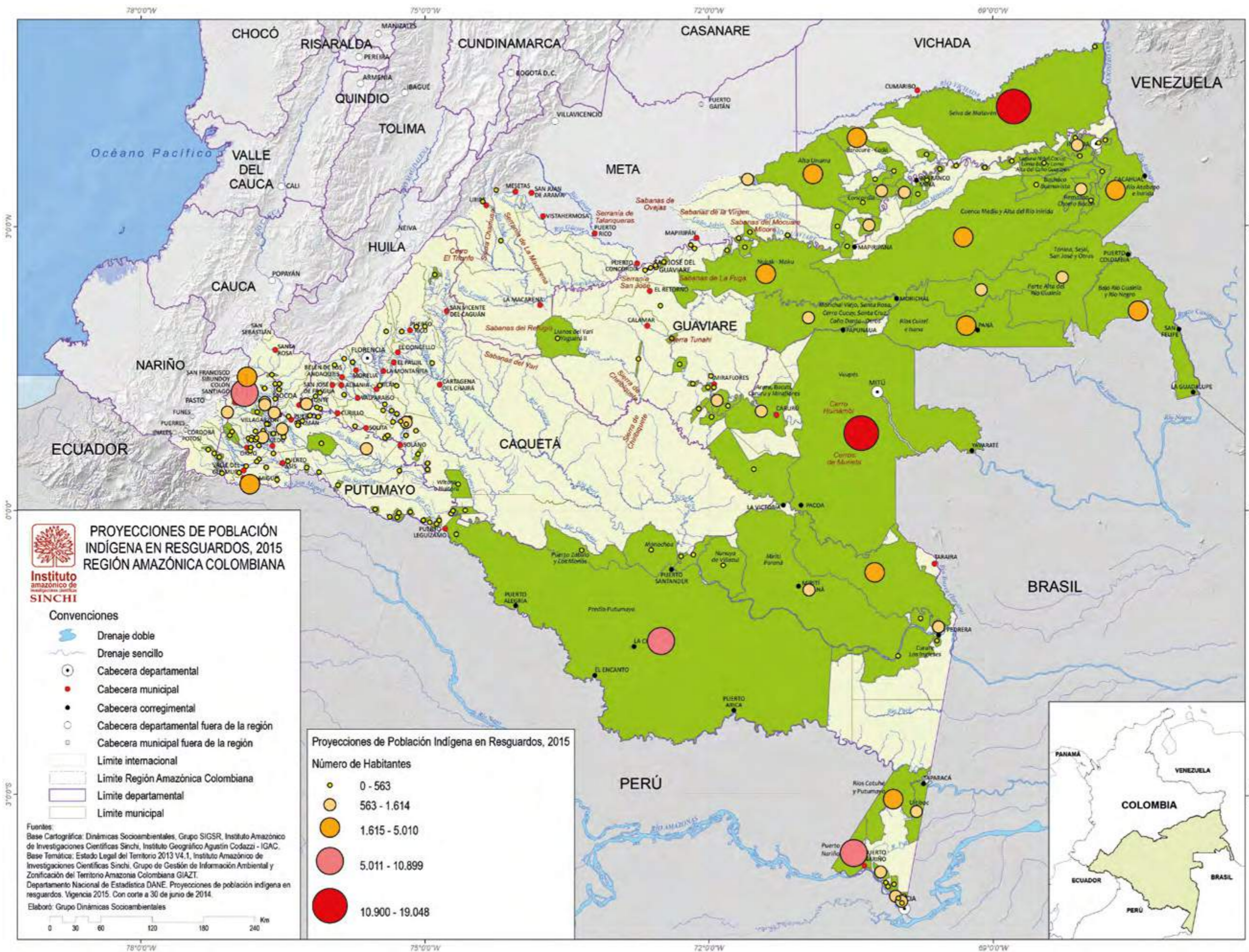
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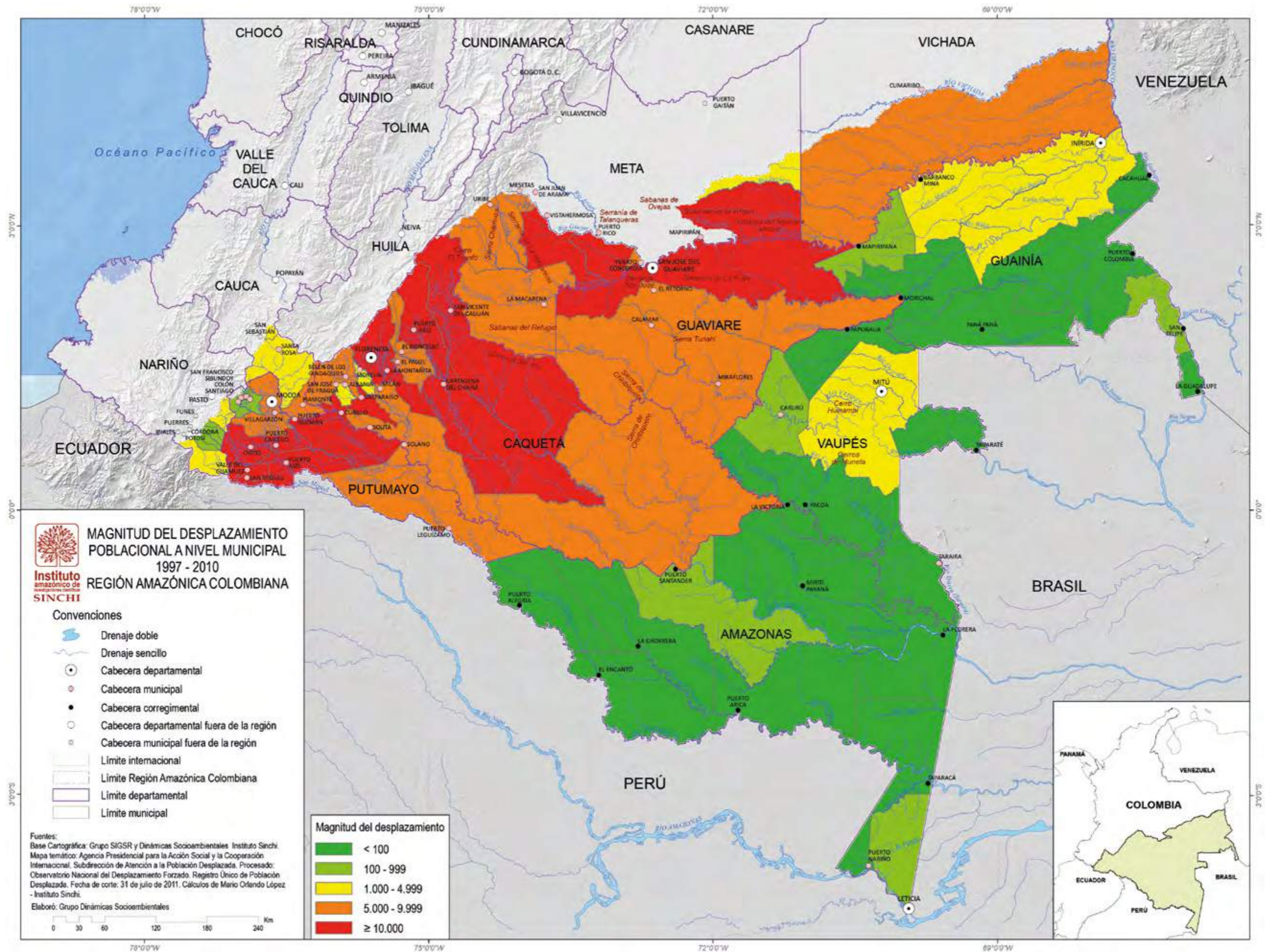
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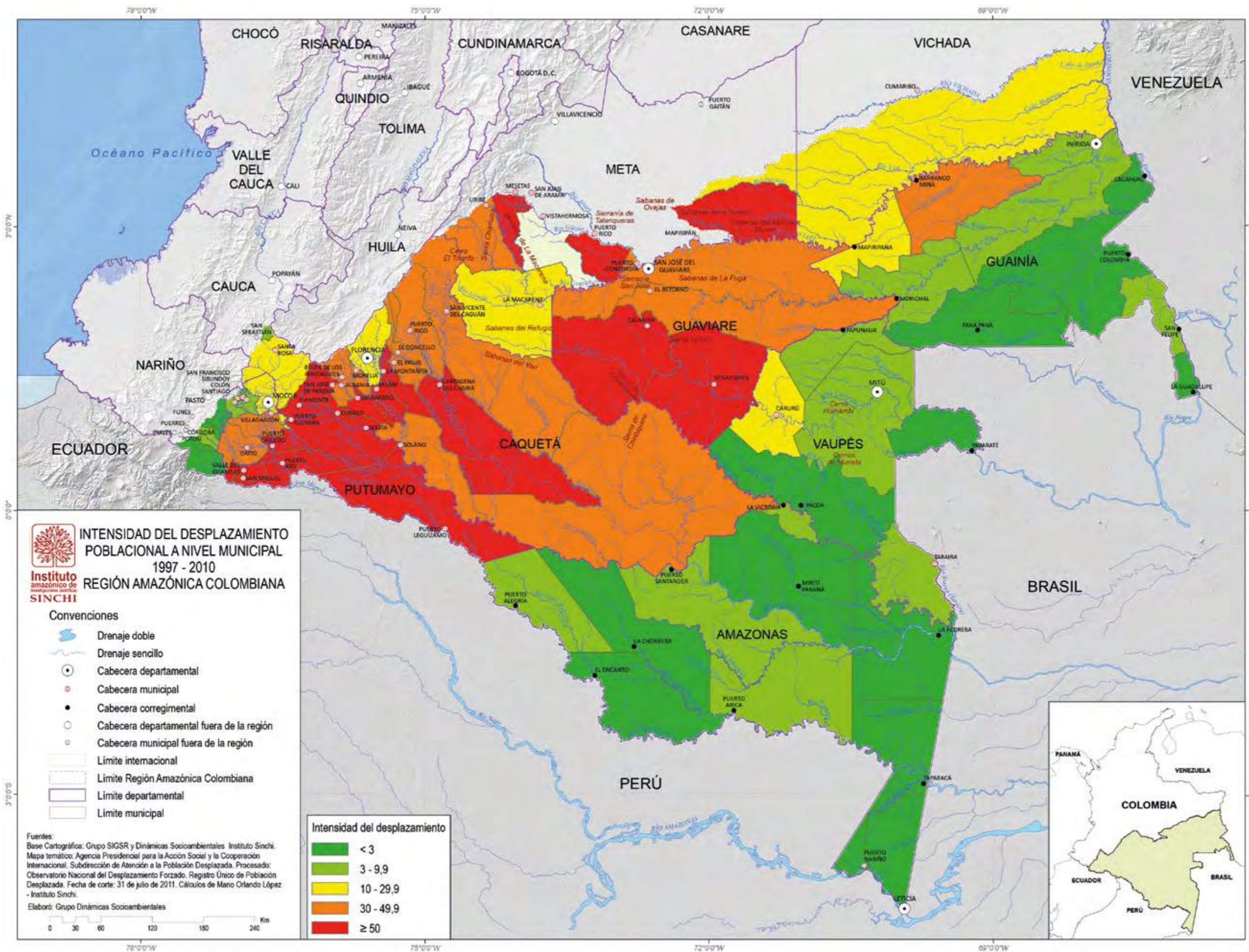
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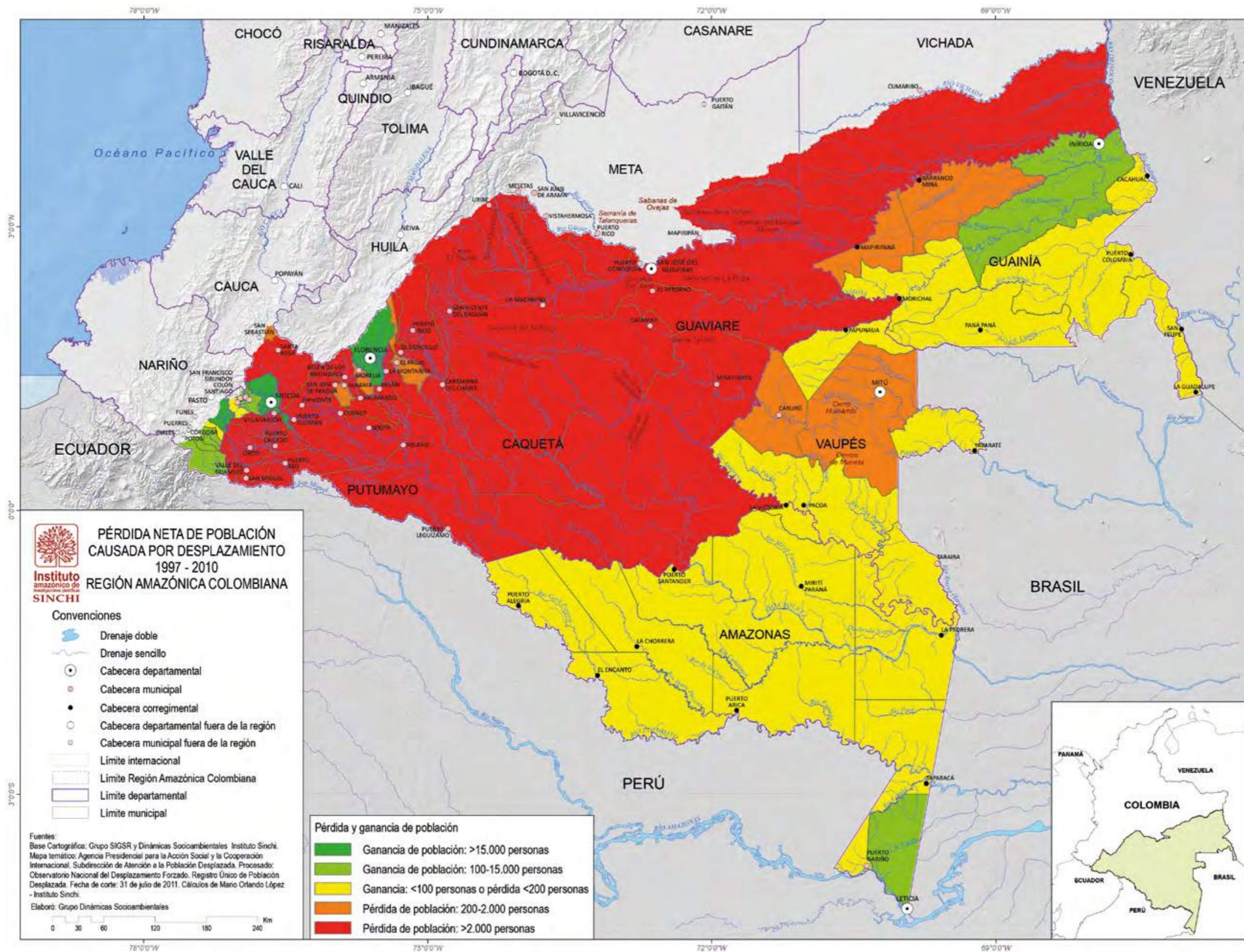




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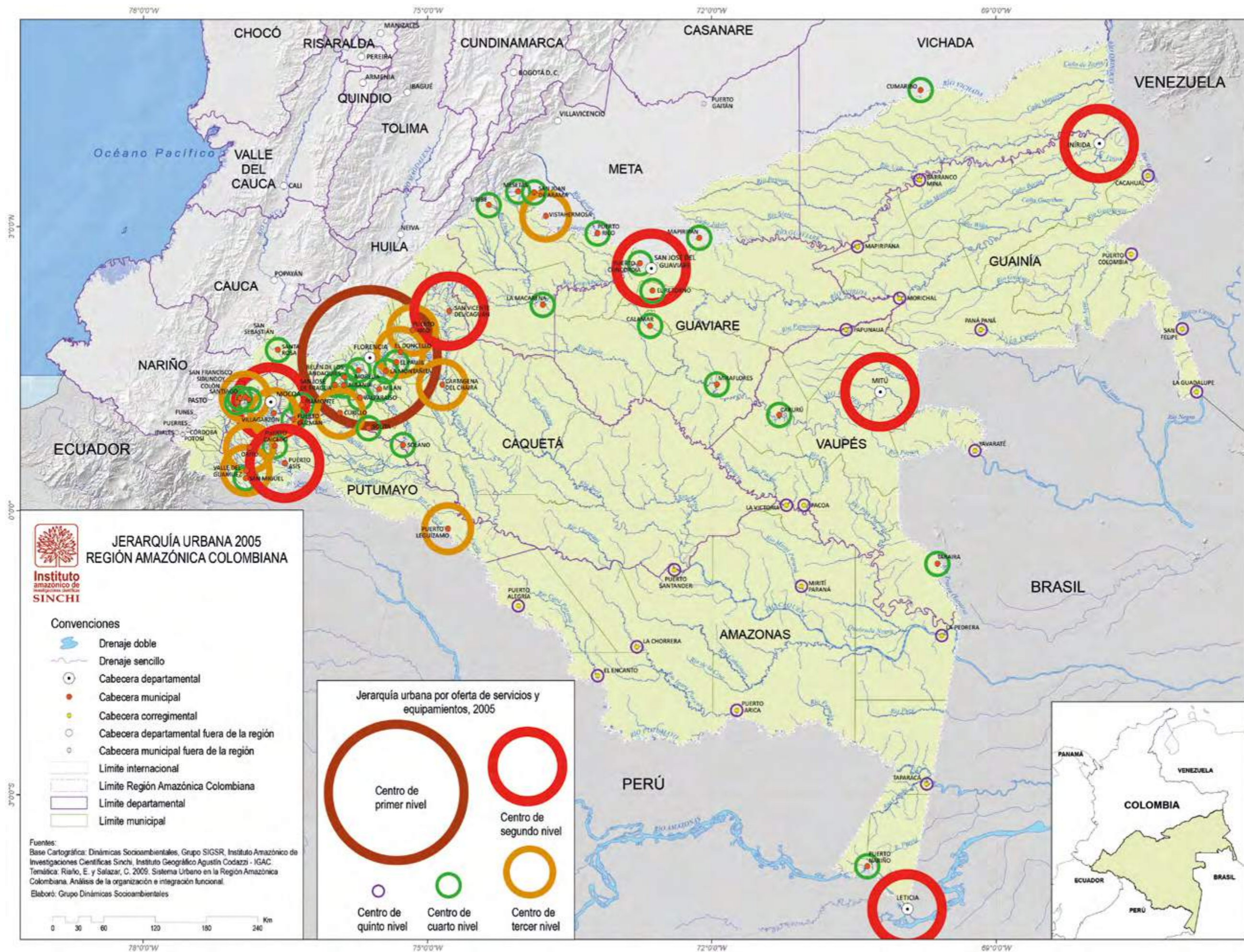


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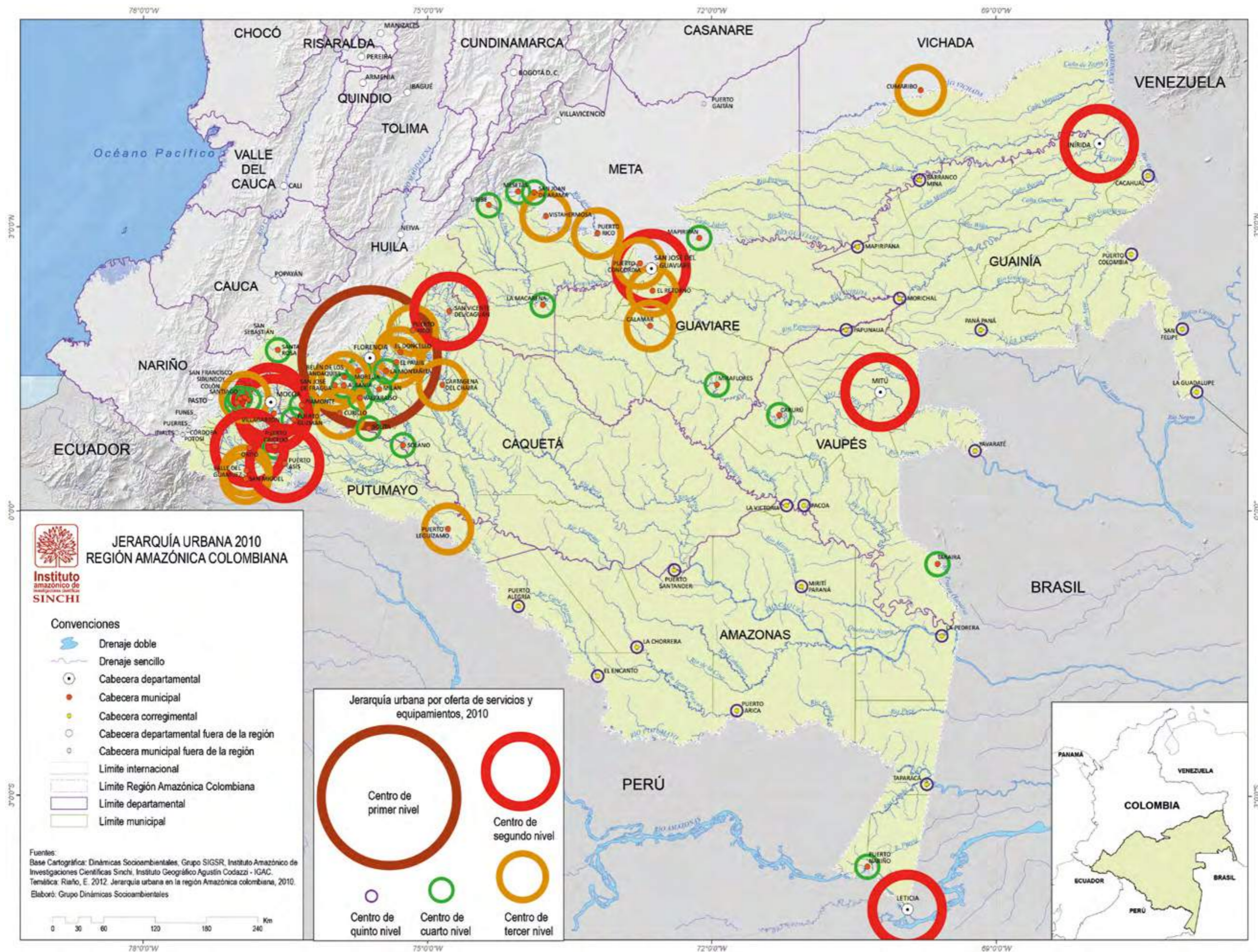


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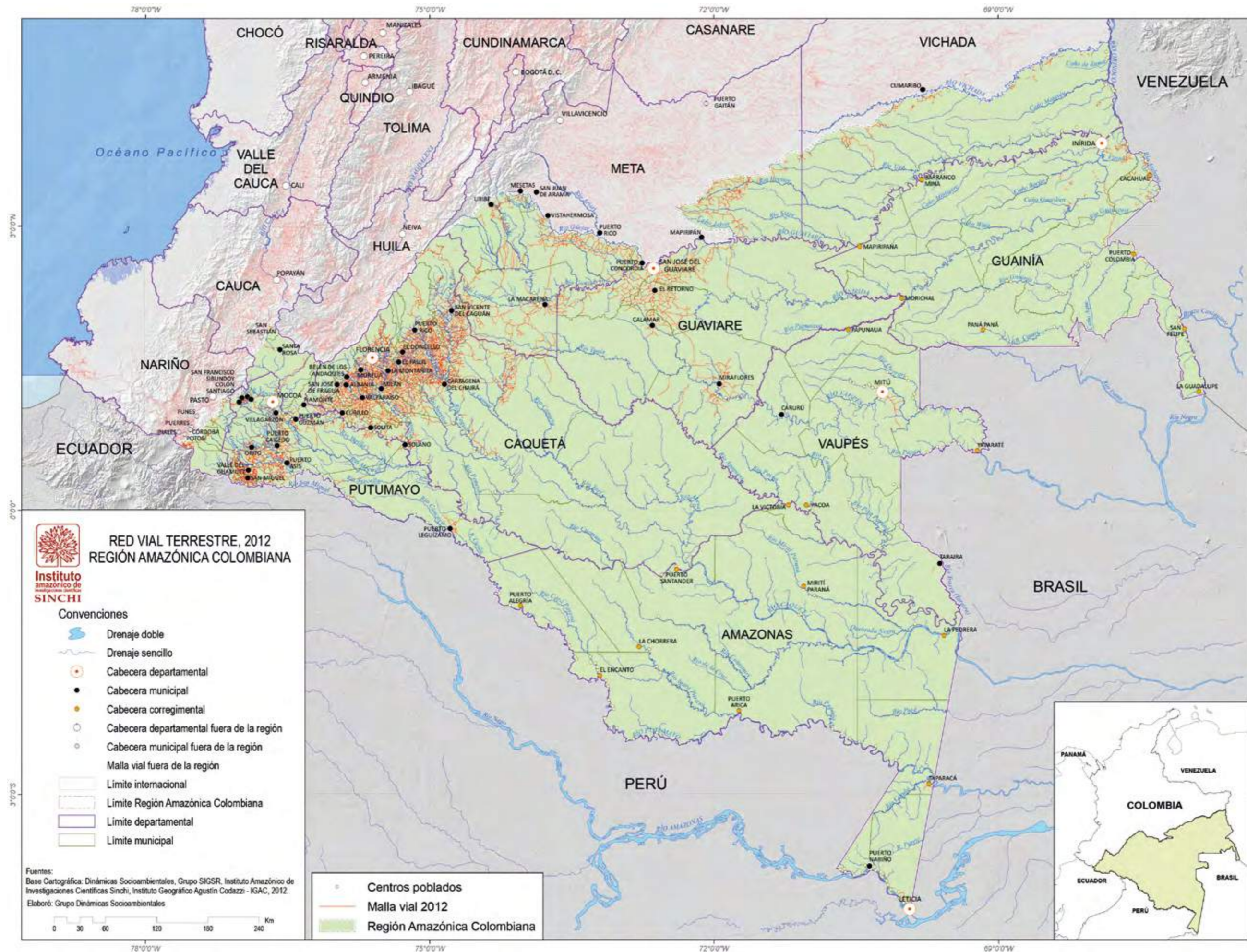


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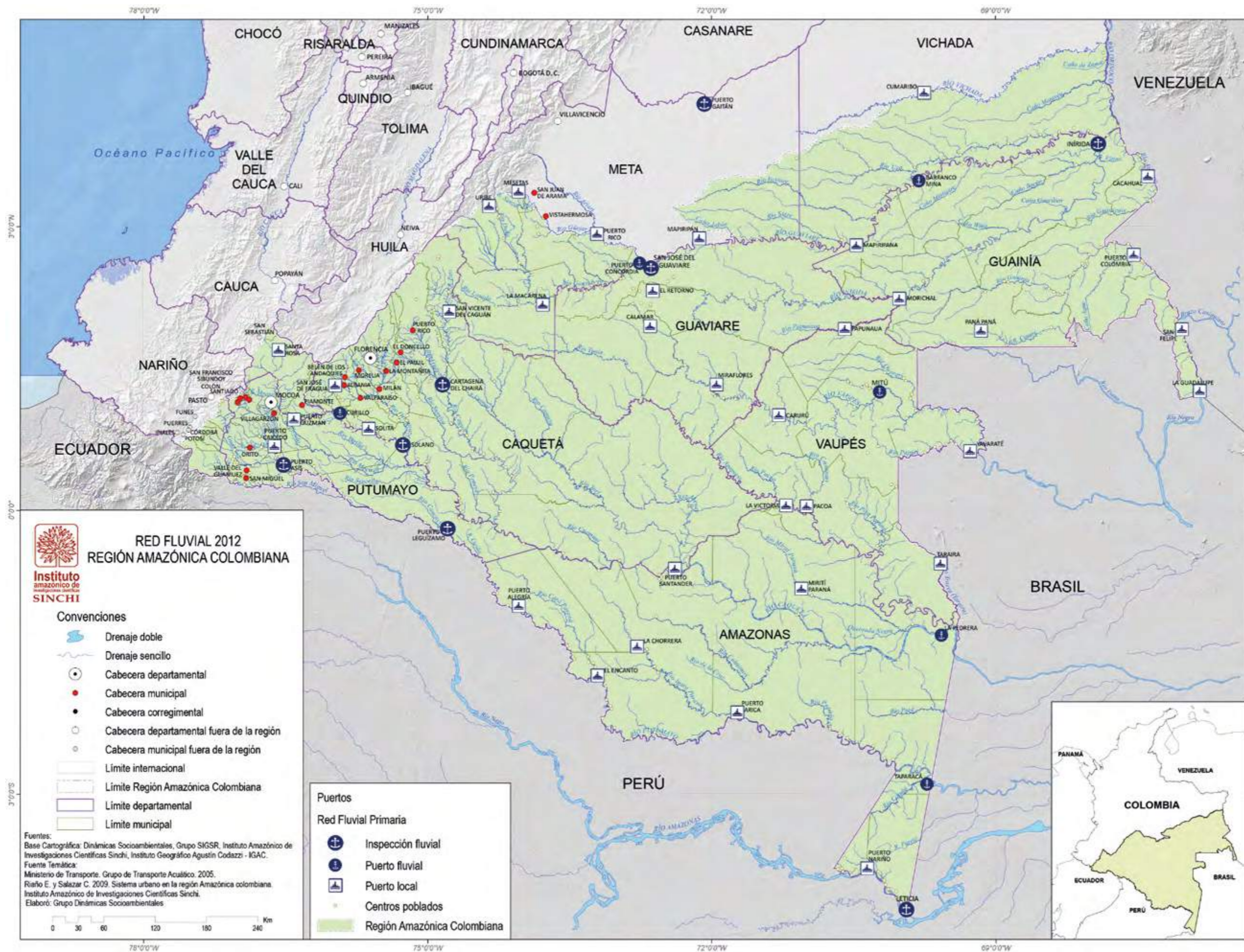


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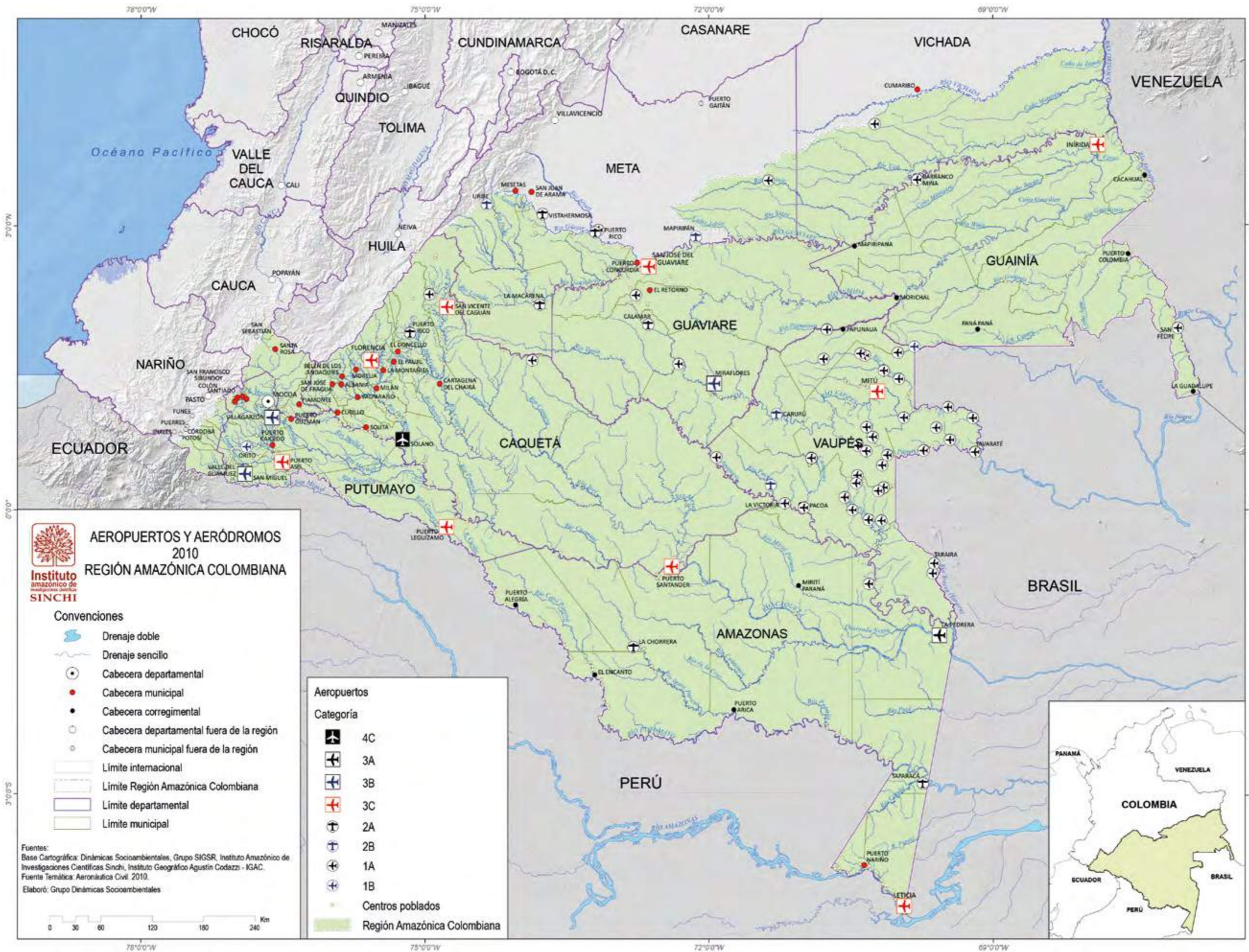




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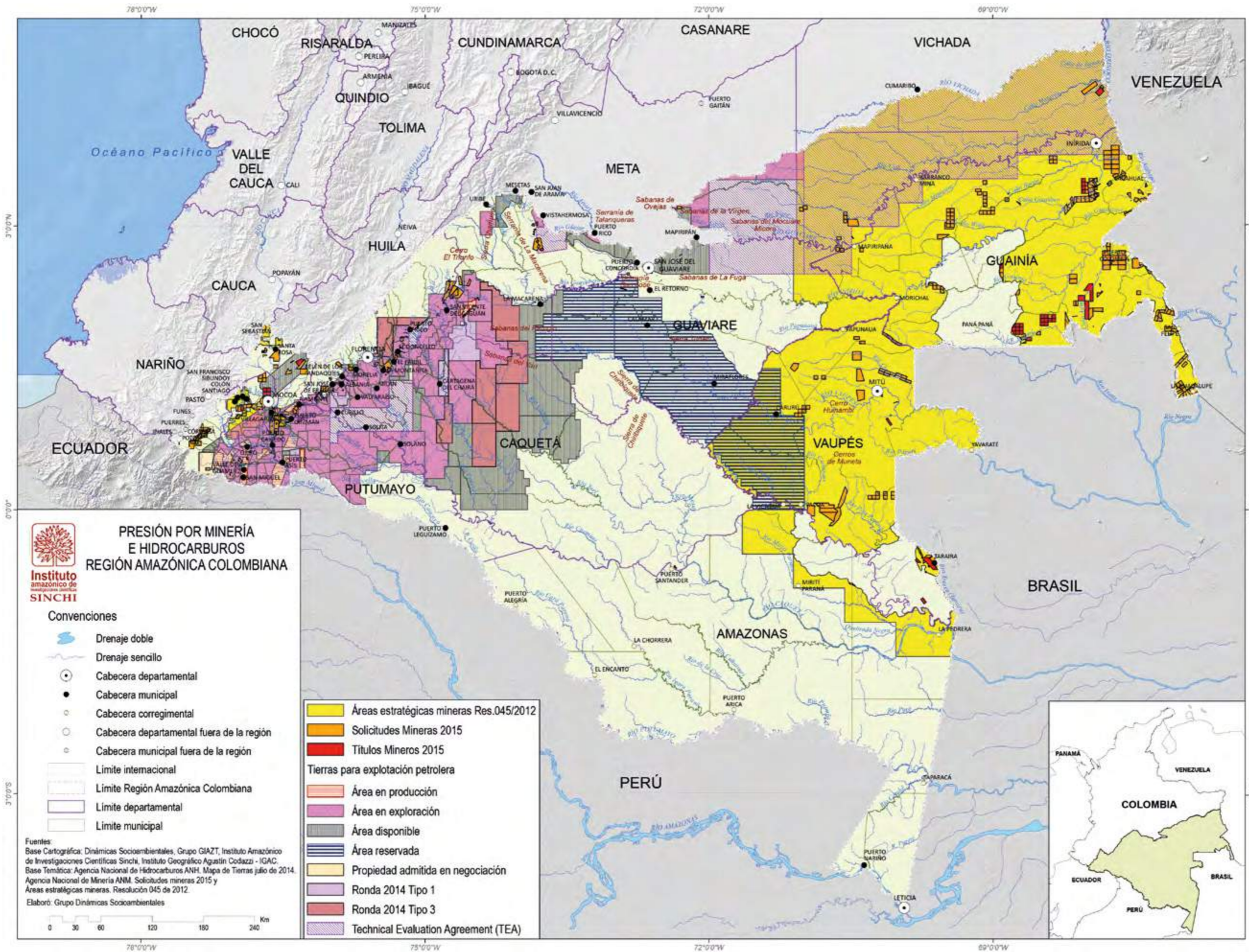






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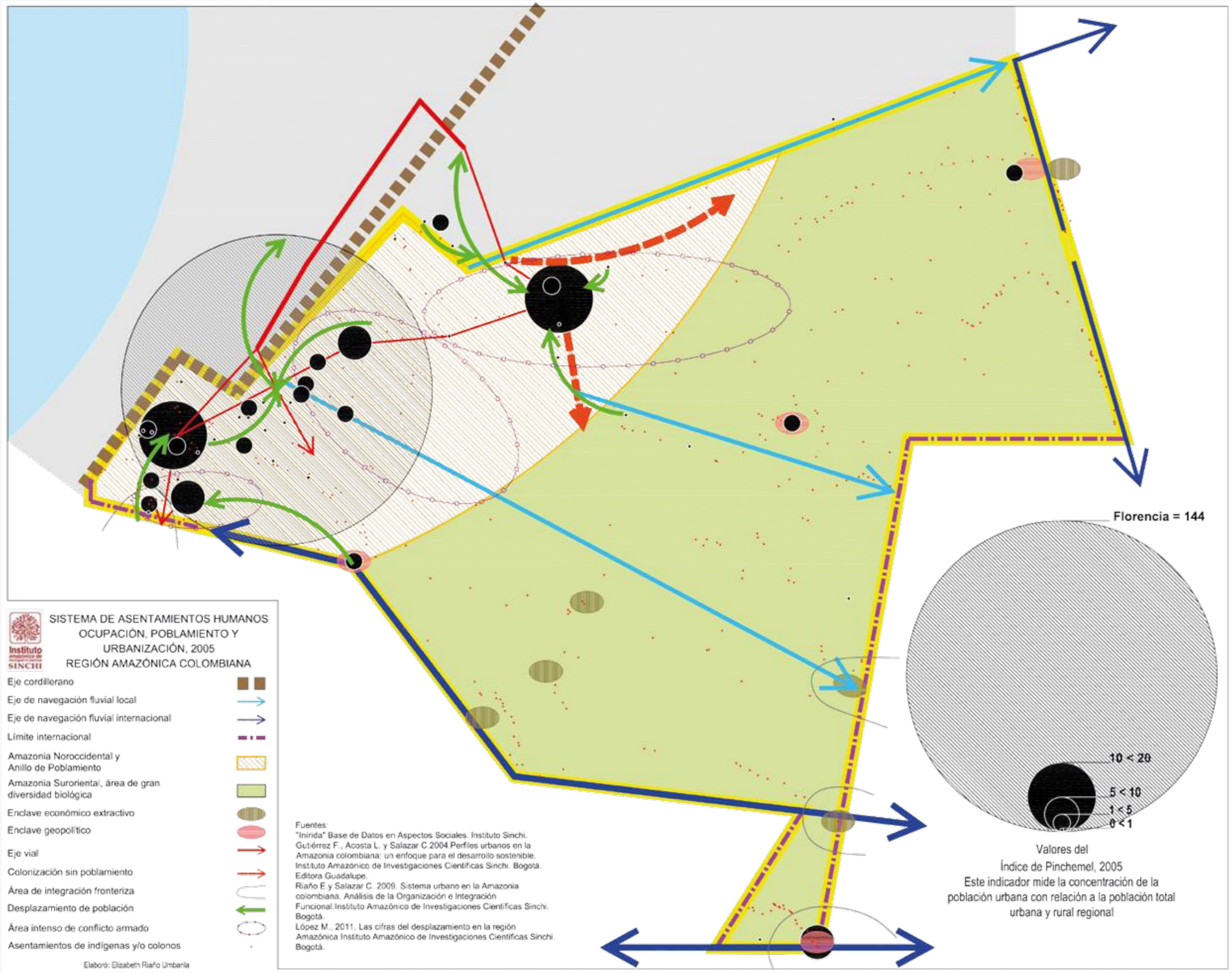
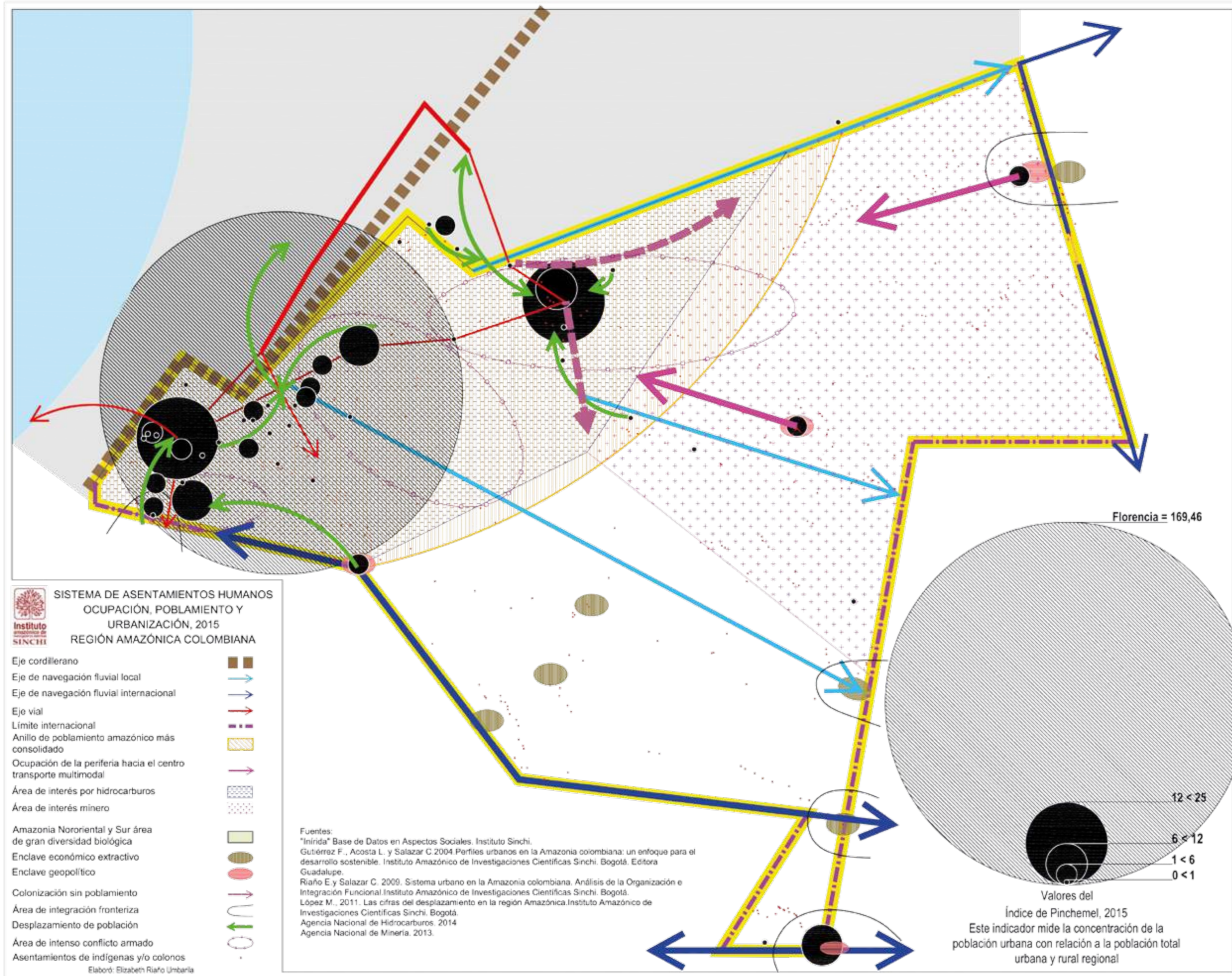




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