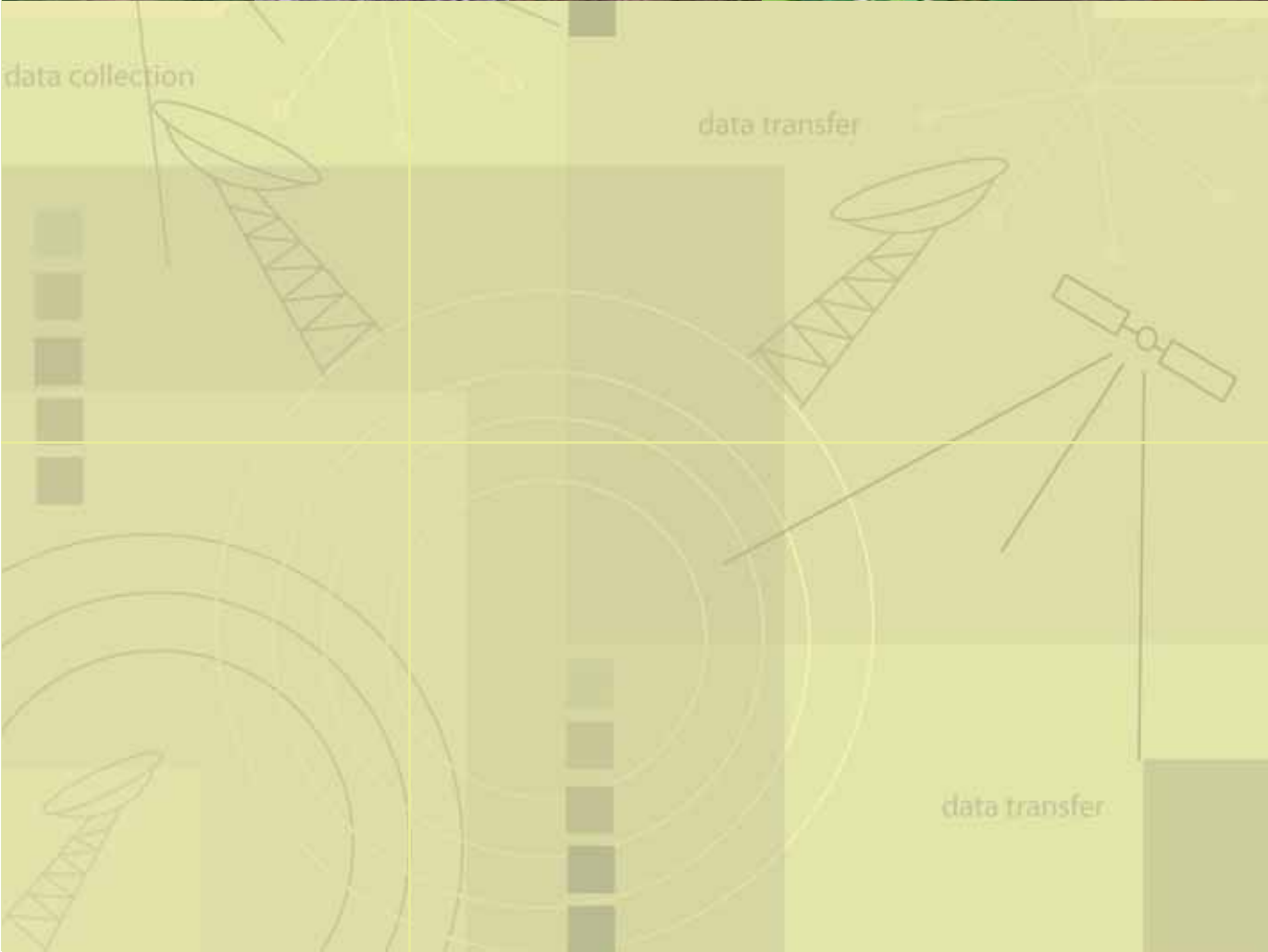


COCA CULTIVATION IN THE ANDEAN REGION

A survey of Bolivia, Colombia and Peru



June 2008

UNODC's Illicit Crop Monitoring Programme (ICMP) promotes the development and maintenance of a global network of illicit crop monitoring systems in the context of the illicit crop elimination objective set by the United Nations General Assembly Special Session on Drugs. It provides overall coordination and direct technical support and supervision to UNODC supported annual illicit crop surveys at the country level.

This reports presents the results of the annual coca cultivation surveys in Bolivia, Colombia, and Peru, which were conducted jointly by UNODC (ICMP) and the respective Governments. The Regional Overview chapter was compiled by ICMP experts in Vienna. The analysis provided takes into account additional data sources and does not necessarily reflect the views of the three Governments.

Unless otherwise specified, all figures presented in this report come from the respective national Governments in the context of national monitoring systems supported by UNODC.

The implementation of UNODC's Illicit Crop Monitoring Programme in the Andean region was made possible thanks to financial contributions from the Governments of Austria, Colombia, France, the United States of America, and from the European Commission.

This report and other ICMP survey reports can be downloaded from:

<http://www.unodc.org/unodc/en/crop-monitoring/index.html>

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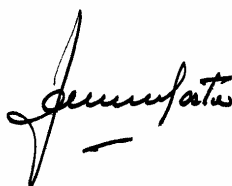
PREFACE

The 2007 Andean coca survey shows a marked increase in coca cultivation. The total area of land under coca cultivation in Bolivia, Colombia and Peru in 2007 was 181,600 hectares, a 16% increase over 2006, and the highest level since 2001 (although well below figures from the 1990s). The increase was driven by a 27% rise in Colombia, and smaller increases of 5% and 4% respectively in Bolivia and Peru.

Despite the increase in the amount of land being used to grow coca, the actual output in terms of production is almost unchanged from 2006 due to low yields. In 2007, global potential production of cocaine reached 994 metric tons, practically unchanged from the 984 mt recorded for 2006.

While the world's supply of cocaine remains stable, there are notable shifts in demand which have a dramatic impact on drug trafficking. In response to growing demand for cocaine in Europe (and a strong Euro), drug traffickers are seeking low-risk routes. As a result, West Africa has unwittingly become a hub for cocaine trafficking. While criminals reap big profits, vulnerable countries of the region are paying a heavy price in terms of public health and public security. States in the Caribbean and Central America as well as the border regions of Mexico are caught in the cross-fire between the world's biggest producers and the world's biggest consumers of cocaine.

This underlines the need for all countries of the world to assume a shared responsibility for drug control: to reduce demand for cocaine (focused on health), to reduce the supply of coca (by promoting development), and by stopping the flow of drug trafficking (through security and justice). The combination of these three factors will increase the long-term effectiveness of drug control, and bring greater peace, security and prosperity to the Andean countries.



Antonio Maria Costa
Executive Director
UNODC

PART 1. REGIONAL OVERVIEW

Back of divider Part 1 Regional Overview

FACT SHEET – Andean Coca Surveys for 2007¹

	2006	Change on 2006	2007
Global coca cultivation	156,900 ha	+16%	181,600 ha
Colombia	78,000 ha	+27%	99,000 ha
Peru	51,400 ha	+4%	53,700 ha
Bolivia	27,500 ha	+5%	28,900 ha
Ecuador	< 100 ha		n/a
Global cocaine production	984 mt	+1%	994 mt
Colombia	610 mt	-2%	600 mt
Peru	280 mt	+4%	290 mt
Bolivia	94 mt	+11%	104 mt
Farm-gate value of coca cultivation	US\$ 1,159 million	+24%	US\$ 1,440 million
Colombia (coca products)	US\$ 683 million	+37%	US\$ 934 million
Peru (coca leaf)	US\$ 285 million	+2%	US\$ 292 million
Bolivia (coca leaf)	US\$ 180 million	+19%	US\$ 214 million
Farm-gate value of coca cultivation in % of GDP²			
Colombia	0.5%		0.5%
Peru	0.4%		0.4%
Bolivia	2.0%		2.4%
Average wholesale price of cocaine*			
Colombia (in main cities)	US\$ 1,762/kg	+25%	US\$ 2,198/kg
Peru (in producing regions)	US\$ 825/kg	+3%	US\$ 851/kg
Bolivia (in main cities)	US\$ 1,870/kg	+6%	US\$ 1,983/kg
Ecuador	US\$ 4,000/kg	0%	US\$ 4,000/kg
Reported eradication of coca bush*			
Colombia (aerial spraying)	172,026 ha	-11%	153,134 ha
(manual)	43,051 ha	+55%	66,805 ha
Peru (manual)	12,688 ha	-5%	12,072 ha
Bolivia (manual)	5,070 ha	+24%	6,269 ha
Ecuador (manual)	9 ha	+278%	36 ha ³
Reported seizure of cocaine (base and HCl)*			
Colombia	177 mt	-9%	161 mt
Peru	20 mt	-30%	14 mt
Bolivia	14 mt	+29%	18 mt
Ecuador	34 mt	-26%	25 mt

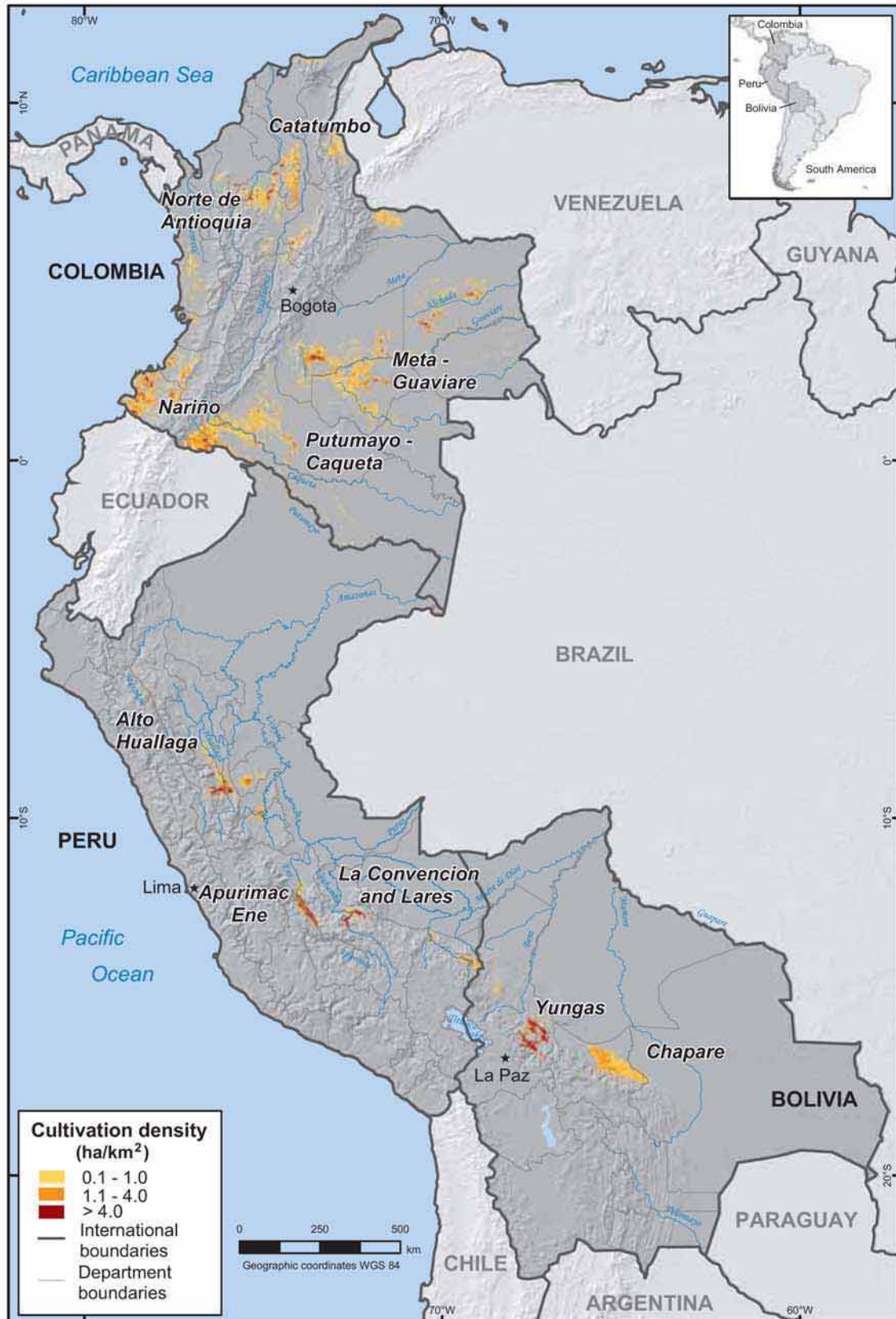
* As reported by the respective Government.

¹ For 2007, no survey was implemented in Ecuador.

² GDP of the respective year as reported by Governments.

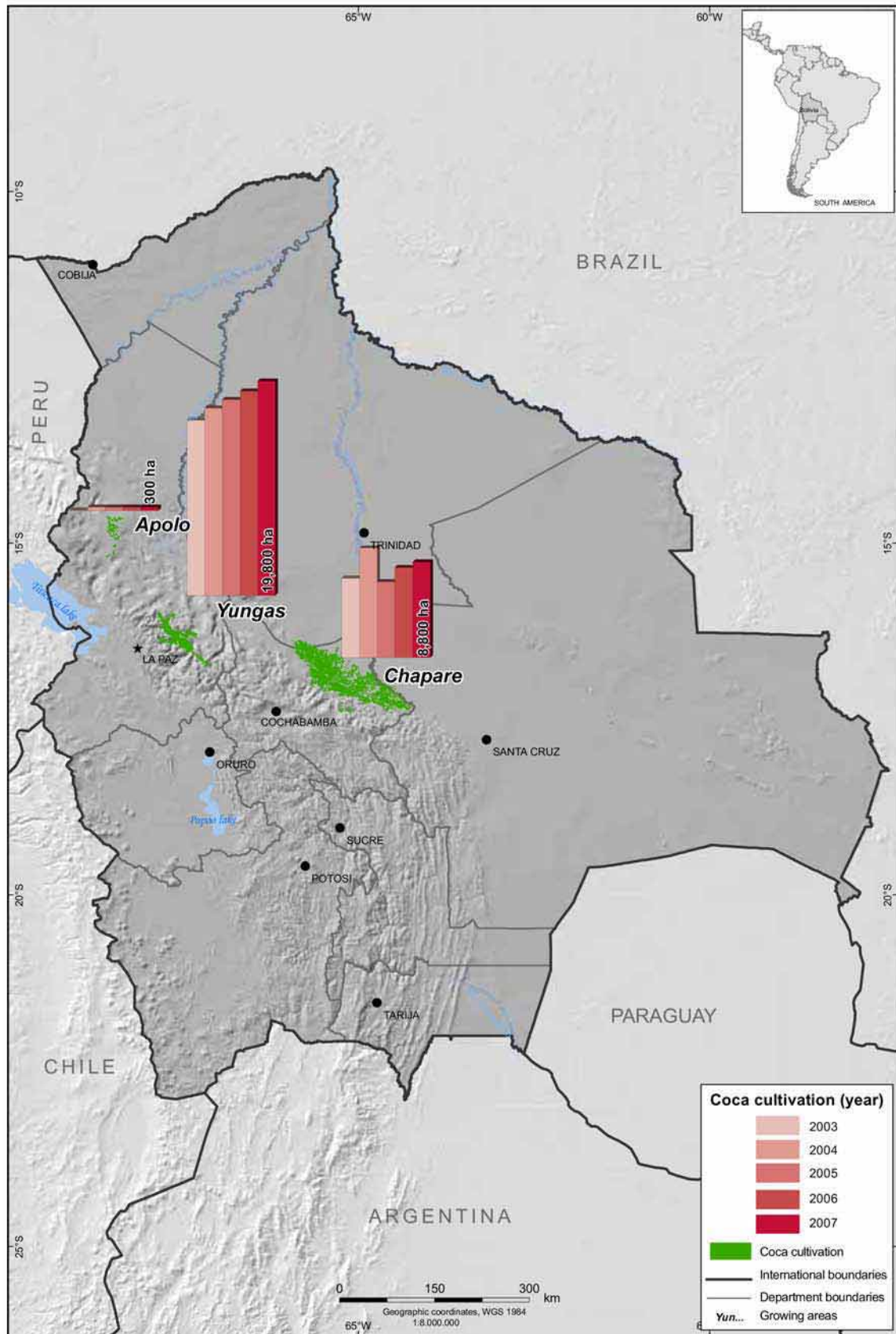
³ Source: INCSR 2008.

Map 1: Coca cultivation density in the Andean Region, 2007



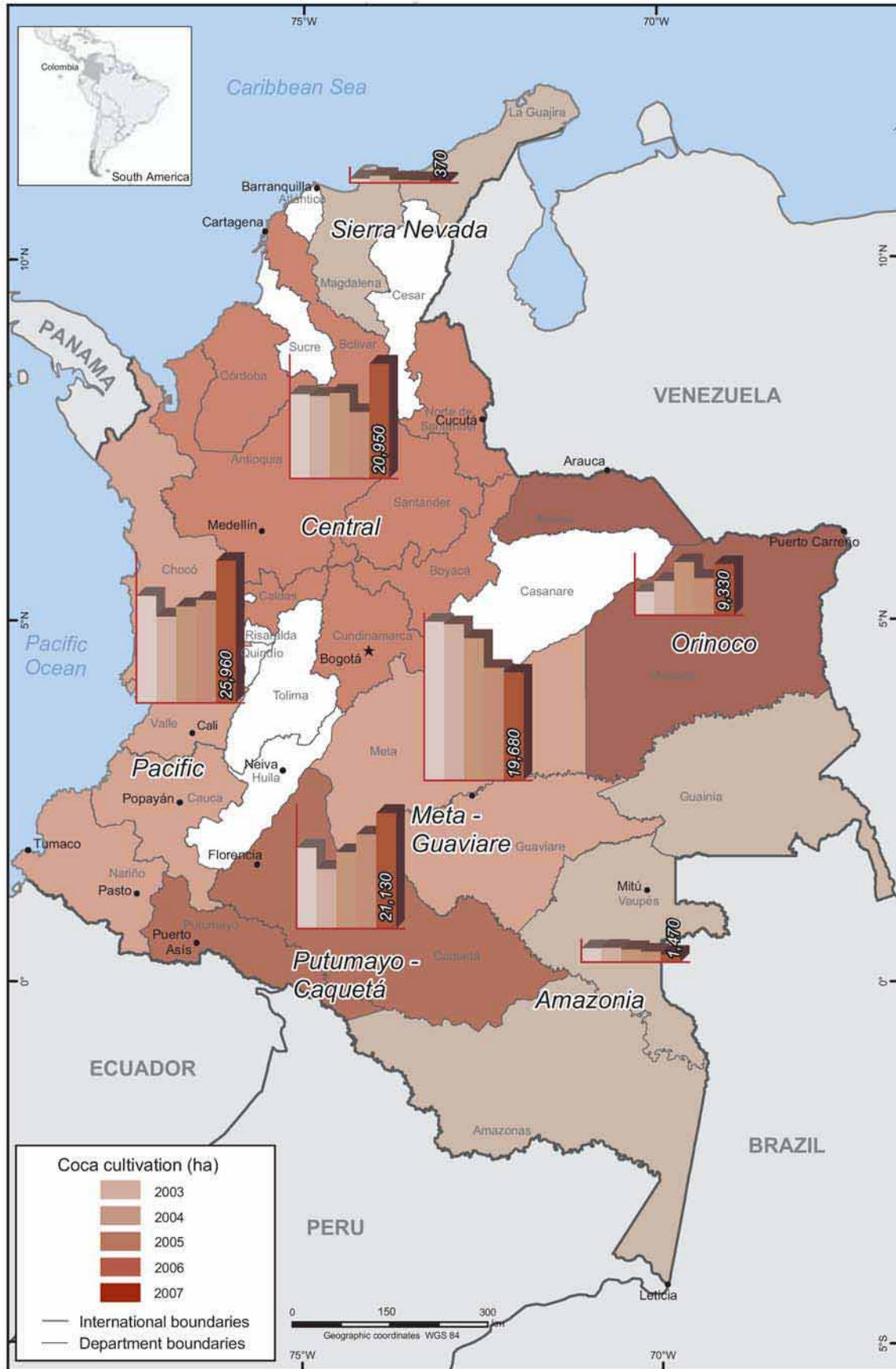
Sources: National monitoring systems supported by UNODC - Governments of Bolivia, Colombia and Perú
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Map 2: Bolivia, coca cultivation by region, 2003 to 2007



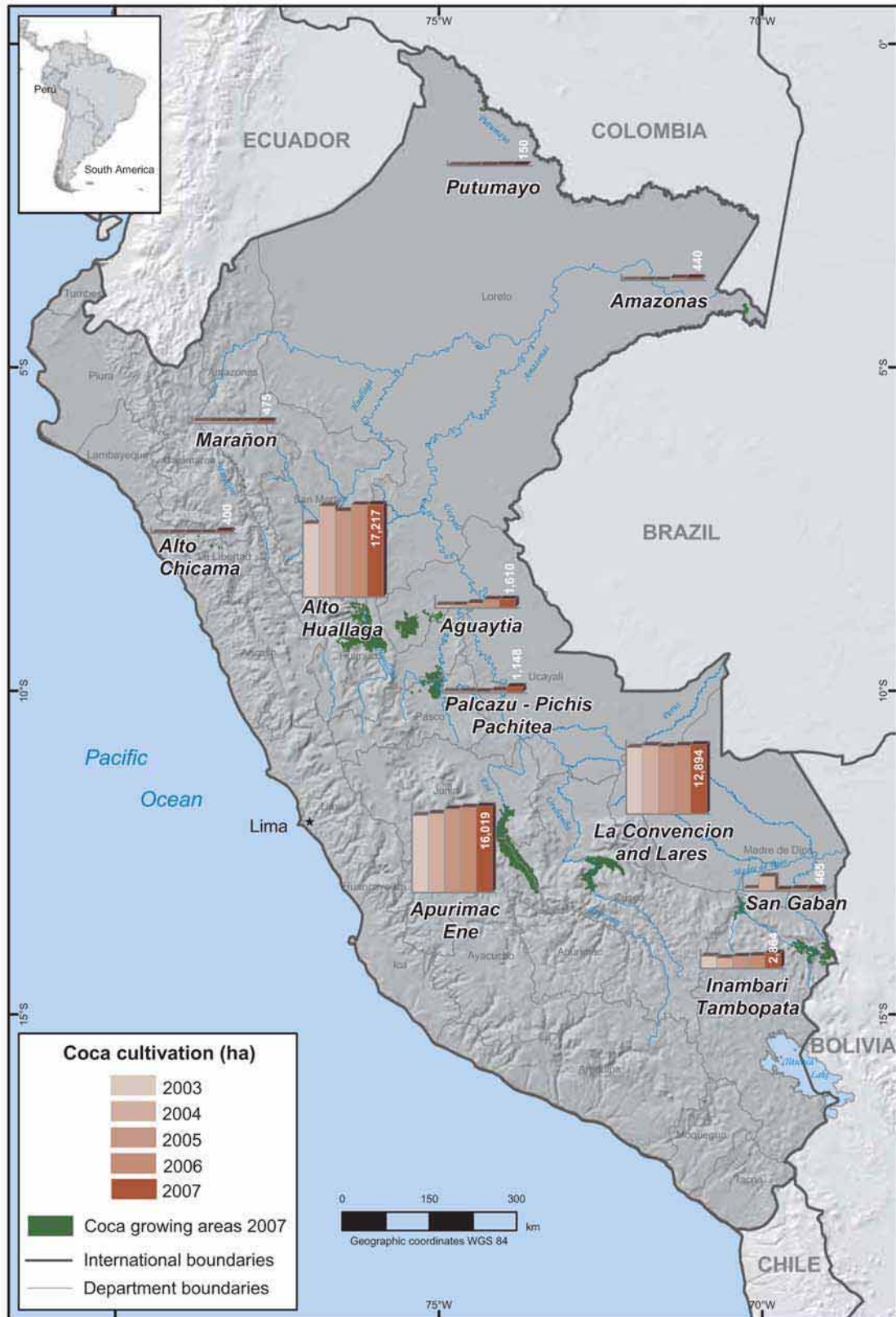
Source: Government of Bolivia - National monitoring system supported by UNODC
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Map 3: Colombia, coca cultivation by region, 2003 to 2007



Source: Government of Colombia - National monitoring system supported by UNODC
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Map 4: Peru, coca cultivation by region, 2003 to 2007



Source: National of monitoring system supported by UNODC - Government of Peru
 The boundaries and names shown and the designations used on this map do not imply official endorsement or acceptance by the United Nations

1 COCA CULTIVATION IN THE ANDEAN REGION

In 2007, the area under coca cultivation in Bolivia, Colombia and Peru amounted to 181,600 ha, 24,700 ha more than in 2006. This increase by 16% is mainly due to a significant increase in Colombia, and smaller increases in Peru and Bolivia. Despite these recent increases, the global area under coca cultivation continues to be lower than in the 1990s and 18% below the level recorded in 2000 (221,300 ha). Colombia represented 55% of the global area under coca bush, followed by Peru (30%) and Bolivia (16%).

There is no indication of large-scale coca cultivation outside the three main coca growing countries. Low levels of coca cultivation were identified in Ecuador in 2006. An assessment of coca cultivation in the Venezuela-Colombia border area of the same year also indicated marginal levels of coca cultivation in Venezuela.

Figure 1: Coca cultivation in the Andean region (ha), 1990 to 2007

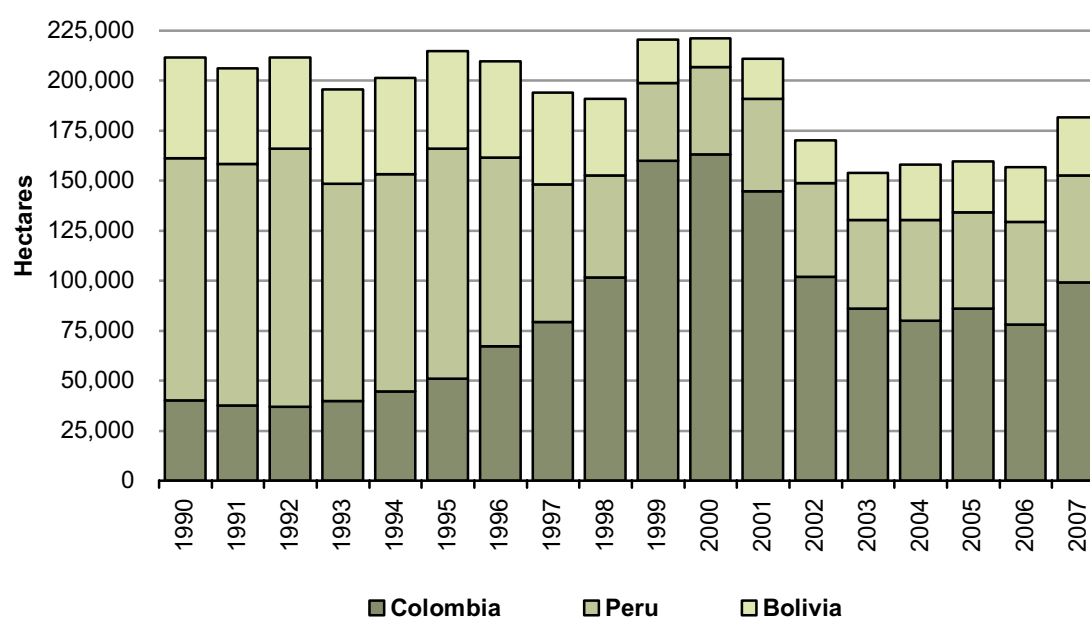


Table 1: Coca cultivation in the Andean region (ha), 1997 to 2007

	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	Change on 2006
Bolivia	45,800	38,000	21,800	14,600	19,900	21,600	23,600	27,700	25,400	27,500	28,900	+5%
Peru	68,800	51,000	38,700	43,400	46,200	46,700	44,200	50,300	48,200	51,400	53,700	+4%
Colombia	79,400	101,800	160,100	163,300	144,800	102,000	86,000	80,000	86,000	78,000	99,000	+27%
Total	194,000	190,800	220,600	221,300	210,900	170,300	153,800	158,000	159,600	156,900	181,600	+16%

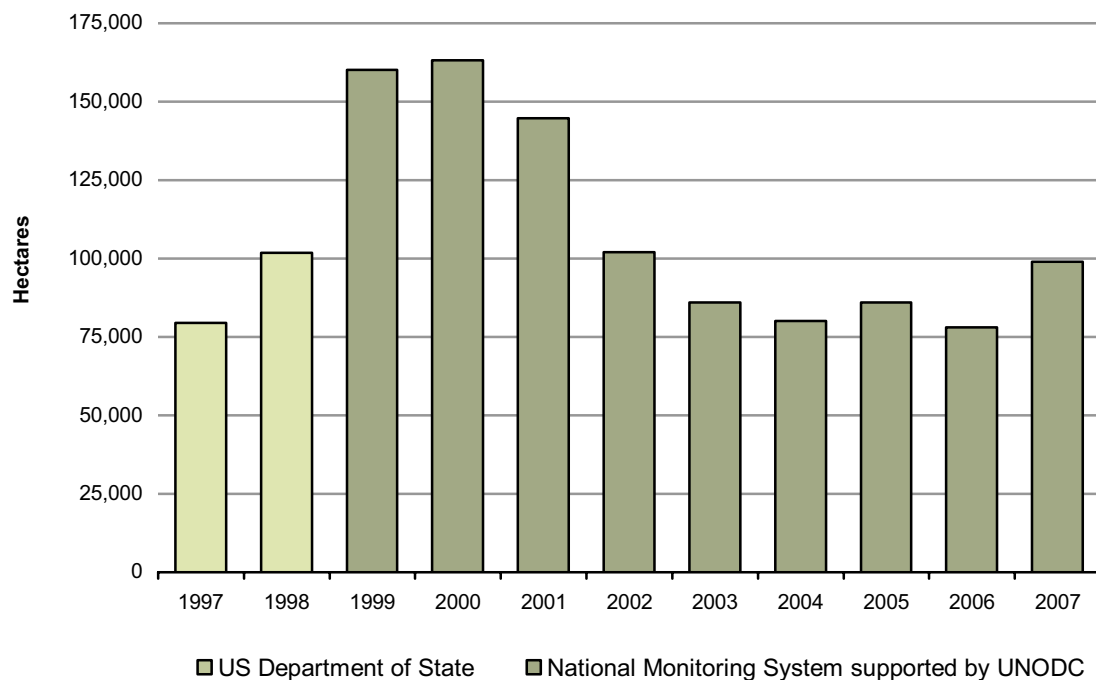
Source:  United States Department of State  National Monitoring Systems supported by UNODC

In 2007, coca cultivation in Colombia amounted to 99,000 ha, an increase of 27% over 2006. This was mainly due to an increase in the Pacific and Central regions, which were responsible for over three quarters of the total area increase. Pacific contained the largest area under coca cultivation in 2007 with 25,960 ha, followed by Putumayo-Caquetá, Central and Meta-Guaviare. Together, these four regions represented 89% of the total area under coca cultivation in Colombia. Putumayo-Caquetá, once the largest coca region, had seen a considerable decrease in area under cultivation between 2000 and 2004. However, coca cultivation has gradually increased to almost the 2002 level. Meta-Guaviare, the second largest coca region in 2001, ranked only fourth in 2007, having

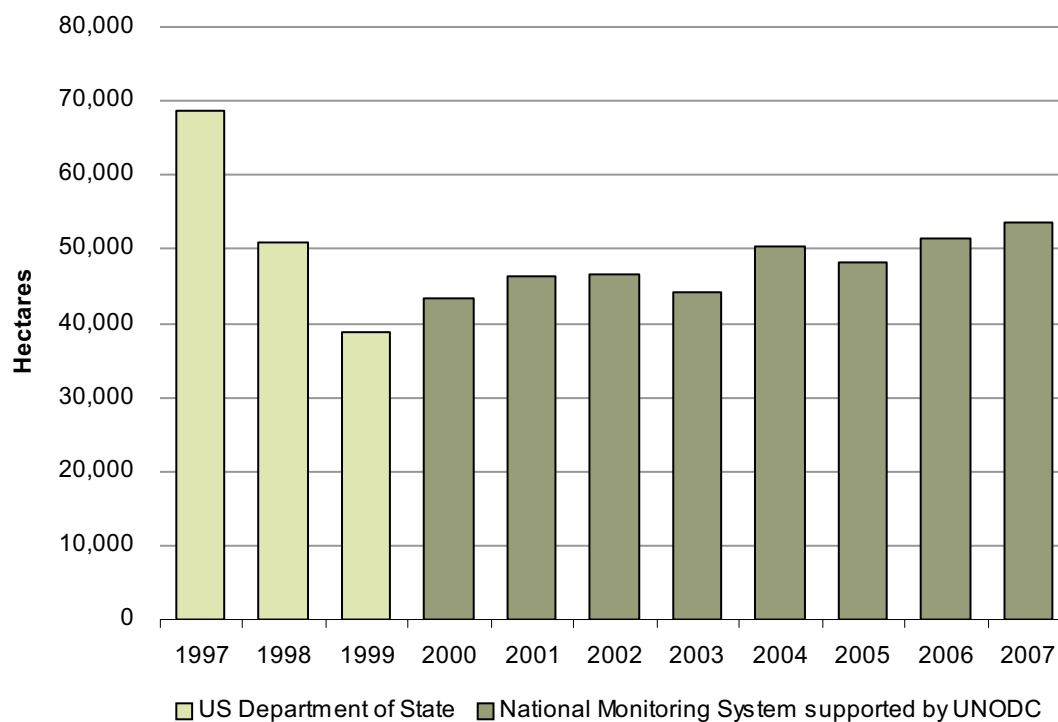
experienced its sixth year of decline. This, and other decreases in smaller cultivating regions, such as Amazonia and Sierra Nevada, could not offset increases in the larger regions.

The Colombian authorities continued to intensify manual eradication efforts. In 2007, 66,805 ha were eradicated manually. In addition, the authorities maintained a high level of eradication by spraying (153,134 ha). Both manual eradication and spraying activities were concentrated in the departments of Antioquia (Central region), Nariño (Pacific region) and Putumayo.

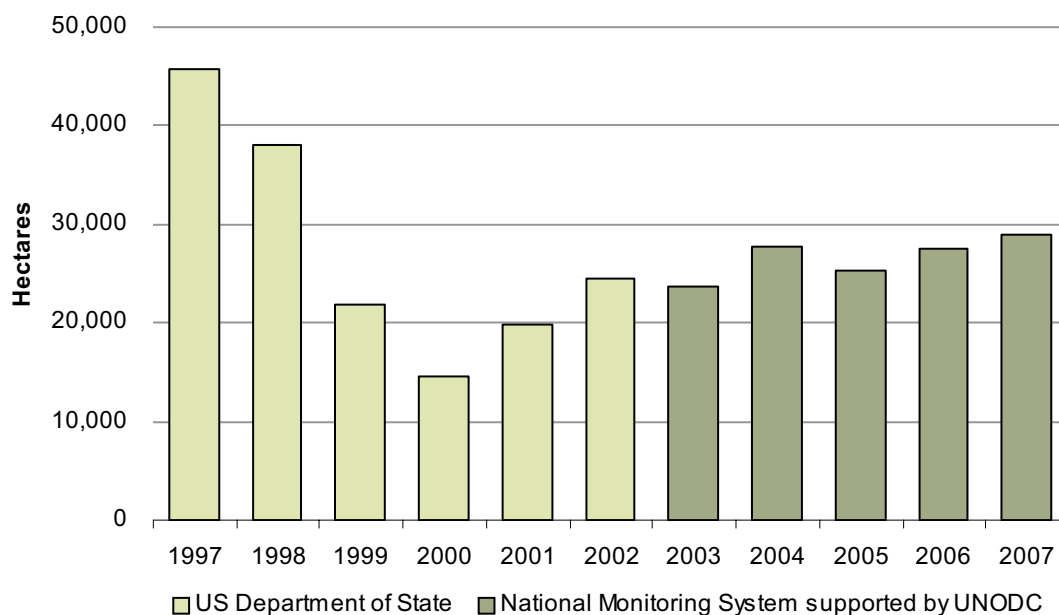
Figure 2: Coca cultivation in Colombia (ha), 1997 to 2007



In 2007, coca cultivation in Peru increased by 4% to 53,700 ha. Cultivation in the three largest coca regions, which together represented 86% of the total area under coca bush, remained relatively stable and increased only marginally (500 ha). In Alto Huallaga, the largest cultivating region, the expansion of coca in the southern areas was somewhat offset by the eradication of coca fields in the northern parts of the region. In 2007, most of the increase occurred in the smaller coca cultivating regions. These regions contributed 1,800 ha to the overall 2,300 ha increase. The coca area in Inambari-Tambopata, a region close to the border with Bolivia, increased by 21% or about 500 ha to 2,900 ha. This is the third consecutive increase in three years in Inambari-Tambopata. The small and partly new coca cultivation areas in the North and North East of the country increased moderately and continued to constitute only a small proportion of the overall coca cultivation area in the country. Eradication of coca bush, which in Peru is done manually, decreased slightly but remained at a relatively high level of over 12,000 ha.

Figure 3: Coca cultivation in Peru (ha), 1997 to 2007

In 2007, coca cultivation in Bolivia increased by 5% or 1,400 ha to 28,900 ha. The coca area used for non-traditional purposes increased by 9% over 2006. Overall, the area under coca cultivation in Bolivia remained much lower than in the early and mid 1990s. The area under coca bush increased in both main cultivation regions (Yungas of La Paz and Chapare) at about the same rate. As in 2006, 69% of the coca area was located in the Yungas of La Paz, 30% in Chapare, and only 1% in Apolo. The Government of Bolivia reported a 24% increase in eradication in 2007 (to 6,269 ha). This was higher than levels reached in 2005 (5,070 ha) and 2006 (6,073 ha). Ninety-five per cent of the eradication, which in Bolivia is done manually, was carried out in the Chapare region.

Figure 4: Coca cultivation in Bolivia (ha), 1997 to 2007

2 POTENTIAL COCAINE PRODUCTION

The global potential production of cocaine reached 994 mt in 2007, almost the same as in 2006 (984 mt), with levels amounting to 600 mt in Colombia, 290 mt in Peru and 104 mt in Bolivia. The slightly lower cocaine production in Colombia, where more coca was grown in lower yielding regions, was offset by increases in Peru and Bolivia. Due to improved cultivation techniques and coca leaf to cocaine conversion processes, global cocaine production is at a level similar to those of the late 1990s, although the area under coca cultivation is considerably smaller.

In 2007, the potential production of cocaine HCl in Colombia remained roughly at the same level as in 2006 (610 mt), representing 60% of global production, despite the increase in area under coca cultivation. Several reasons contributed to this situation, among them the increase in cultivation in regions with under-average coca leaf yields, and the reduction in area under cultivation in high yielding regions such as Meta-Guaviare. In addition, new research revealed lower coca leaf yields in one of the main coca regions (Central), where the largest increase in cultivation occurred.

The total cocaine production in Peru increased by 4% over 2006. While production reached its highest level since 1997 with 290 mt, it is still much lower than it had been during the first half of the 1990s. In 2007, Peru accounted for 29% of global cocaine production.

In 2007, the potential cocaine production in Bolivia increased by 11% and amounted to 104 mt. The increase in cocaine production is almost similar to the increase in area under coca cultivation in areas where coca leaf production is not destined for traditional purposes.

Figure 5: Global potential cocaine production (mt), 1990 to 2007

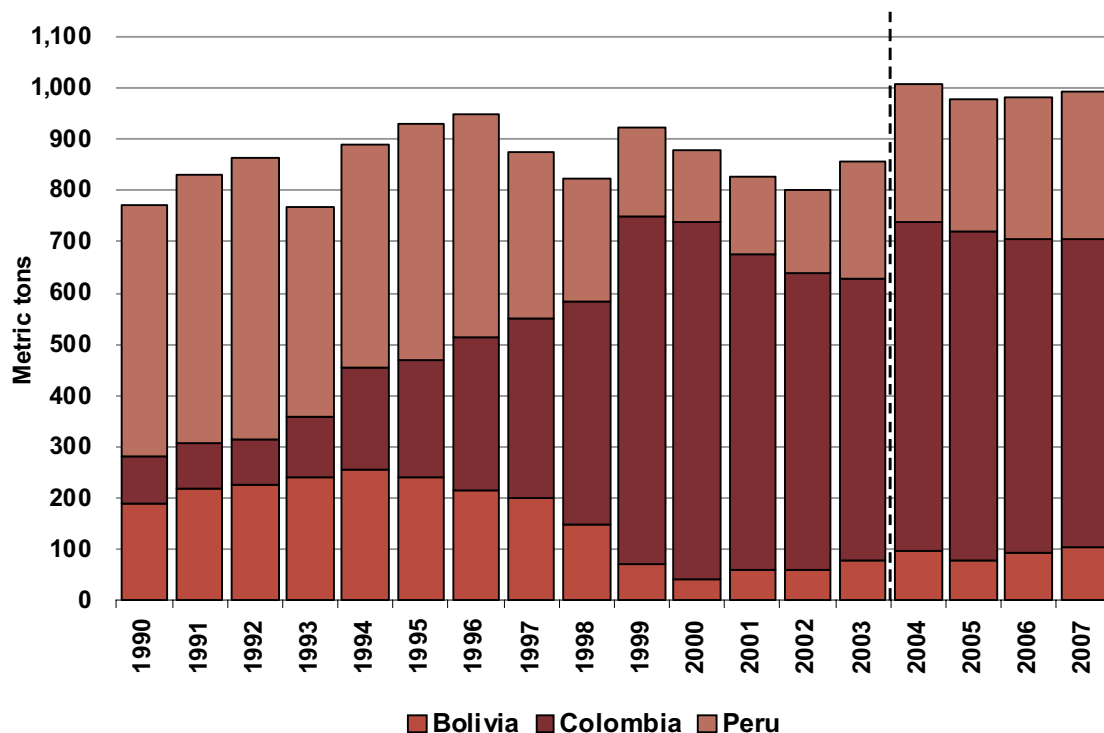


Table 2: Global potential cocaine production (mt), 1997 to 2007*

	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	Change on 2006
Bolivia	200	150	70	43	60	60	79	98	80	94	104	+11%
Colombia	350	435	680	695	617	580	550	640	640	610	600	-2%
Peru	325	240	175	141	150	160	230	270	260	280	290	+4%
Total	875	825	925	879	827	800	859	1,008	980	984	994	+1%

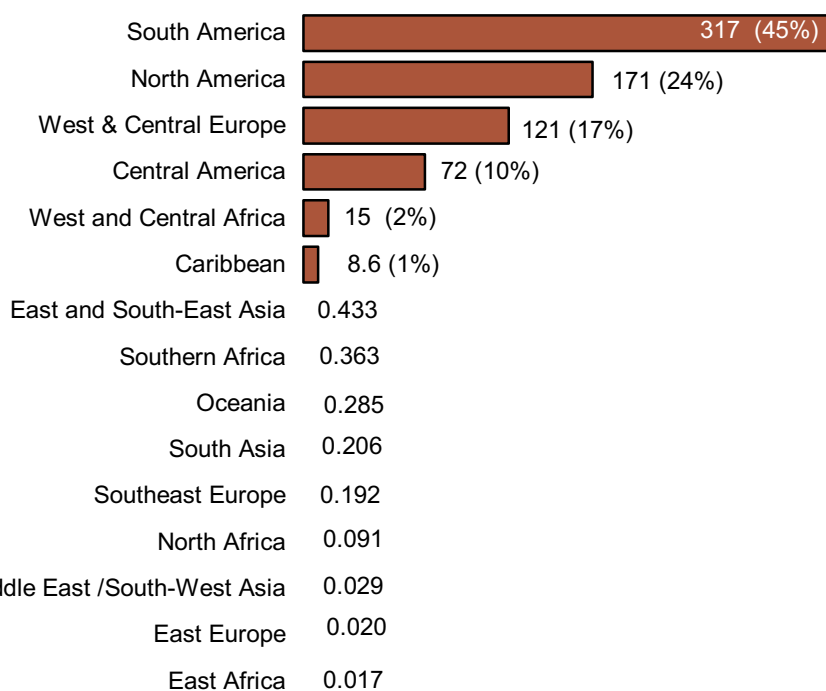
Source: UNODC World Drug Report 2008 and national monitoring systems supported by UNODC.

* Production estimates for 2004 and 2005 in Bolivia and in Peru from 2003 to 2005 were revised based on updated information available in 2007. Colombian cocaine production estimates for 2004 and later are not directly comparable with previous years.

3 COCAINE SEIZURES AND CLANDESTINE LABORATORIES

Global seizures of cocaine HCl and base decreased by 6% from 750 mt in 2005 to 706 mt in 2006. Overall, the amount seized declined in the Americas with the exception of Central America, and increased in other parts of the world, most noticeably in West and Central Europe, where large consumer markets exist, and in West and Central Africa. West and Central Africa seems to develop more and more into a break of bulk location for the trafficking of cocaine en route to Europe. In 2005, seizures in this region still trailed far behind the Caribbean, while in 2006, a much larger amount of cocaine was seized in West and Central Africa. The largest part of seizures continued to take place in South America, namely in Colombia.

Colombia, where 61% of global cocaine was produced in 2006, accounted for 177 mt or 26% of global seizures in 2006. A large majority of cocaine seized in Colombia was cocaine HCl. In 2007, total cocaine seizures declined further to 161 mt. However, the amount of cocaine HCl seized in the country remained by and large unchanged at about 127 mt.

Figure 6: Global cocaine seizures by region (mt equivalents and % of total), 2006*

Source: UNODC Annual Reports Questionnaires 2006.

* Includes cocaine HCl, cocaine base, crack cocaine, and other cocaine types. Seizures as reported (street purity).

In Peru, seizures declined from 22 mt of cocaine HCl and base in 2005 to 20 mt in 2006, about 3% of global seizures, and further to only 14 mt in 2007, despite the fact that over the same period

potential cocaine production in the country increased. However, it should be noted that 2005 and 2006 were years with exceptionally high seizures. The majority of the drugs seized in Peru was cocaine HCl.

In Bolivia, the amount of cocaine HCl and base seized increased for the third consecutive year. In 2007, almost 18 mt of cocaine HCl and base were seized by the authorities. About one fifth of the total amount was cocaine HCl, a much higher proportion than in the past three years. Coca leaf seizures also increased significantly in 2007 and amounted to 1,730 mt of sun-dried coca leaves, 40 times the amount seized in 2002. The increase in seizure of coca leaf can be attributed to the strengthening of the Special Force for the Control of Coca Leaves (GECC) and tighter road controls. An increasing quantity of coca leaves traded in southern part of the country is smuggled to neighbouring Argentina. During 2007, the Argentinean police seized a significant amount of coca leaves (44 mt) and 3.3 mt of cocaine at the Bolivian border.

In 2006, Governments reported over 6,390 clandestine coca processing laboratories worldwide, over 99% of which were located in Bolivia, Colombia and Peru.⁴ The increase over the 5,901 laboratories destroyed in 2005 is mainly due to higher numbers reported by Bolivia and Colombia. Almost the complete conversion process from coca leaf to cocaine HCl seems to take place in the three coca cultivating countries, and there are very few reports of laboratories producing cocaine in other countries.⁵ In 2006, Spain (10), the United States of America (4), Chile (2) and South Africa (1) reported the destruction of cocaine laboratories and the SAR Hong Kong reported the destruction of five crack laboratories. This indicates that a small amount of cocaine was produced in countries outside the coca cultivation region as well.

Preliminary figures for 2007 indicate that the number of coca processing laboratories destroyed in Bolivia, Colombia and Peru remained at about the 2006 level.

Table 3: Reported clandestine coca processing installations destroyed, 2007*

	Bolivia	Colombia	Peru
Coca paste and/or cocaine base laboratories	4,081	2,095	649
Cocaine HCl laboratories	6	265	16
All coca laboratories	4,087	2,360	665
Coca leaf maceration pits	6,526	n.a.	1,079

** As reported by Governments.*

4 FARM-GATE PRICES OF COCA PRODUCTS

Prices for coca and derivatives in the illicit market do not necessarily react like market prices in the licit economy. Climatic seasons, price changes of agricultural inputs, labour costs and precursors all influence prices. The effects of law enforcement activities on prices are more difficult to determine. Eradication typically targets certain areas for a certain period in the form of campaigns. The effects on prices may be limited to only that region, and, depending on their frequency and spatial coverage, price observations may not necessarily trace this dynamism one-to-one. Eradication activities usually lead to a reduction in coca leaf on the illicit market, and a surge in coca leaf prices can be the consequence. However, the presence of law enforcement forces in a coca area may also lead to the temporary disappearance of traffickers in that region, and a breakdown of the illicit coca leaf market as demand crumbles. Law enforcement activities directed mainly against trafficking and clandestine laboratories can lead to similar consequence, even if the actual production remains unaffected.

⁴ These figures were reported to UNODC through the Annual Reports Questionnaire (ARQ) of the respective years and may differ from updated information available from the respective Governments at the time of publishing this report.

⁵ E.g. the Government of Ecuador reported the destruction of 2 cocaine processing laboratories to the CICAD in 2006.

In Bolivia and Peru, where state-controlled markets for coca leaf and consumption for traditional purposes exist, the situation is even more complicated. Farmers can theoretically sell to drug traffickers at the price of the illicit market, to the state-controlled institutions which offers fixed prices, to non-authorized coca leaf traders who nonetheless market coca leaf for traditional purposes, or, in Bolivia, legally market a certain quantity themselves. In Colombia and Peru, anti-government groups involved in drug trafficking execute certain control over some coca cultivation areas. They may also determine prices in their sphere of influence and control marketing channels, again with the effect that the prices observed do not necessarily reflect the dynamics of supply and demand. While all these factors are thought to have a potential effect regionally and in certain months, the national aggregated figures and annual averages are thought to reflect relatively well the overall price trend in a country.

Comparing prices of coca leaf derivatives across countries is even more challenging. It is reasonable to assume that prices include a varying and difficult to quantify risk factor and that this risk factor plays a more prominent role the higher the level of interaction and the more refined the product is. Furthermore, the composition and quality of the products such as the alkaloid content are not known. The local names used do not always reflect the chemical stage of the product, e.g. whether it is coca paste or already cocaine base, nor its purity. More recently, the weakening of the US dollar, the currency of the main consumer market, against the Euro, used in the second largest consumer market, is thought to have influenced prices in producing regions.

Coca leaf prices

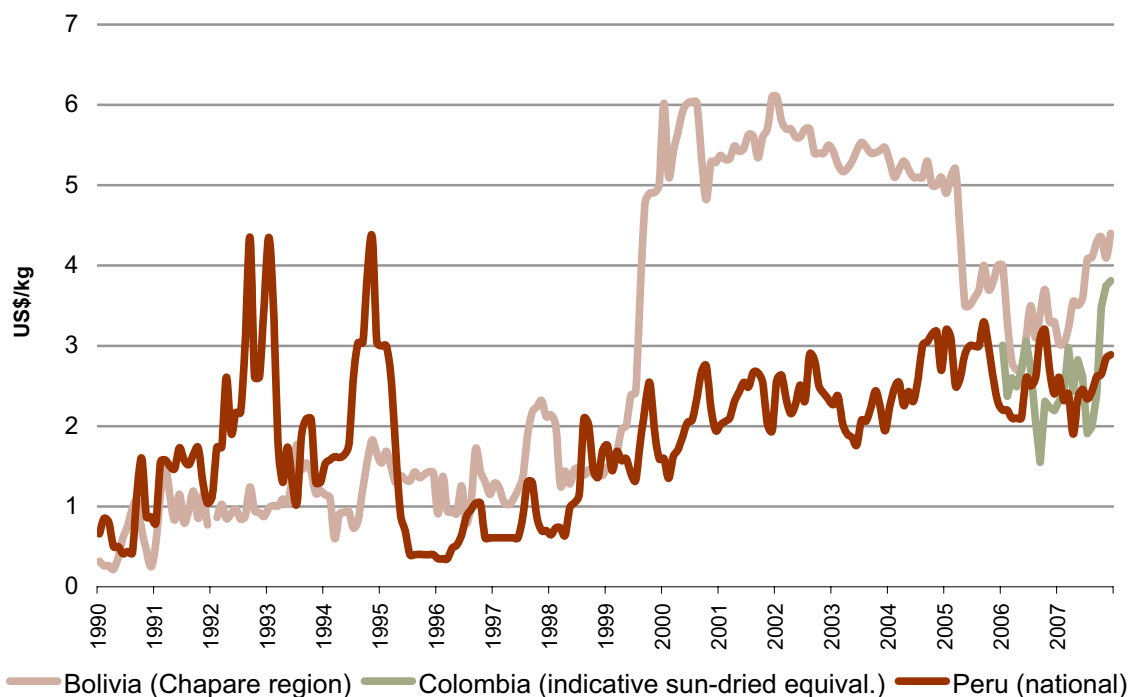
As in most years since 1996, prices of sun-dried coca leaves in Bolivia in 2007 were significantly higher than in Peru in US dollar terms. While farm-gate prices of sun-dried coca leaf in Bolivia have shown an overall decreasing trend from 2000 to 2006 but increased in 2007, prices in Peru have been relatively stable over the same period. However, monthly averages followed a roughly similar pattern over the last three years.

In Bolivia, prices of sun-dried coca leaf in Chapare increased by 16% over 2006 but remained well under the price level of over US\$ 4.0/kg reached between 2000 and 2005. The national average farm-gate price for coca leaf outside the state-controlled market increased by 5% from US\$ 3.9/kg in 2006 to US\$ 4.1/kg in 2007. Prices for coca leaf in the Yungas of La Paz region and also in the state-controlled coca leaf markets all showed increases of similar magnitude, which points towards an increased demand for sun-dried coca leaf. These price increases, which happened in a year in which total coca leaf production increased, in combination with significantly higher seizures of coca leaf and derivatives in 2007, especially of cocaine HCl, indicate that the increased demand can most likely be attributed to narco-trafficking.

In 2007, farm-gate prices for sun-dried coca leaves remained stable in Peru at on average US\$ 2.5/kg, after having seen higher price levels of US\$ 2.7/kg and US\$ 2.9/kg in 2004 and 2005 respectively. However, the annual average prices have remained in the US\$ 2-3/kg range since 2001. It is interesting to note that coca leaf prices in Peru tend to be higher towards the Bolivian border, and that coca cultivation expanded in those regions.

In Colombia, only a small proportion of farmers sells fresh coca leaves, while the majority prefers to process the leaf into coca paste or cocaine base on the farm. The price of fresh coca leaf converted to sun-dried leaf equivalents, without taking into account a possible value added through the sun-drying process, would have been US\$ 2.5/kg at the farm-gate in both 2006 and 2007, which is a level similar to Peru.

Figure 7: Monthly average farm-gate prices of sun-dried coca leaf in Bolivia and Peru (US\$/kg), January 1990 to December 2007



Prices for Colombia in sun-dried leaf equivalents of fresh coca leaf prices, assuming a 57% weight loss through sun-drying. This does not take into account any possible value added through sun-drying. The monitoring of coca leaf prices in Colombia is in its initial phase, and prices are only indicative.

Coca derivatives

In both Colombia and Peru, coca paste prices have been relatively stable over the past years, despite a strong reduction of the area under coca bush cultivation in Colombia and a significant increase in Peru since beginning of the decade. The decline of Colombian coca paste prices in 2002 as well as their increase in 2007 may at least partly be attributed to a weakening and re-strengthening of the Colombian peso, the currency in which prices are reported locally, against the US dollar in these years.

In 2007, the average price for coca paste at the farm-gate in Colombia increased by 7% in US dollar terms, but decreased by 5% in Colombian pesos to COP 1,959,000/kg (US\$ 943/kg) due to a strengthening of the Colombian peso. Annual average prices of coca paste at the farm-gate have been relatively stable at COP 210,000/kg between 2004 and 2006.

In 2007, the wholesale price of cocaine HCl increased in both Colombian peso and US dollar terms and reached COP 4,567,000/kg or US\$ 2,198/kg, an increase by 25% in US dollar over 2006. This is the highest price in US dollars recorded since 1991, and in Colombian pesos at a similar high level as in the years 2003 and 2004.

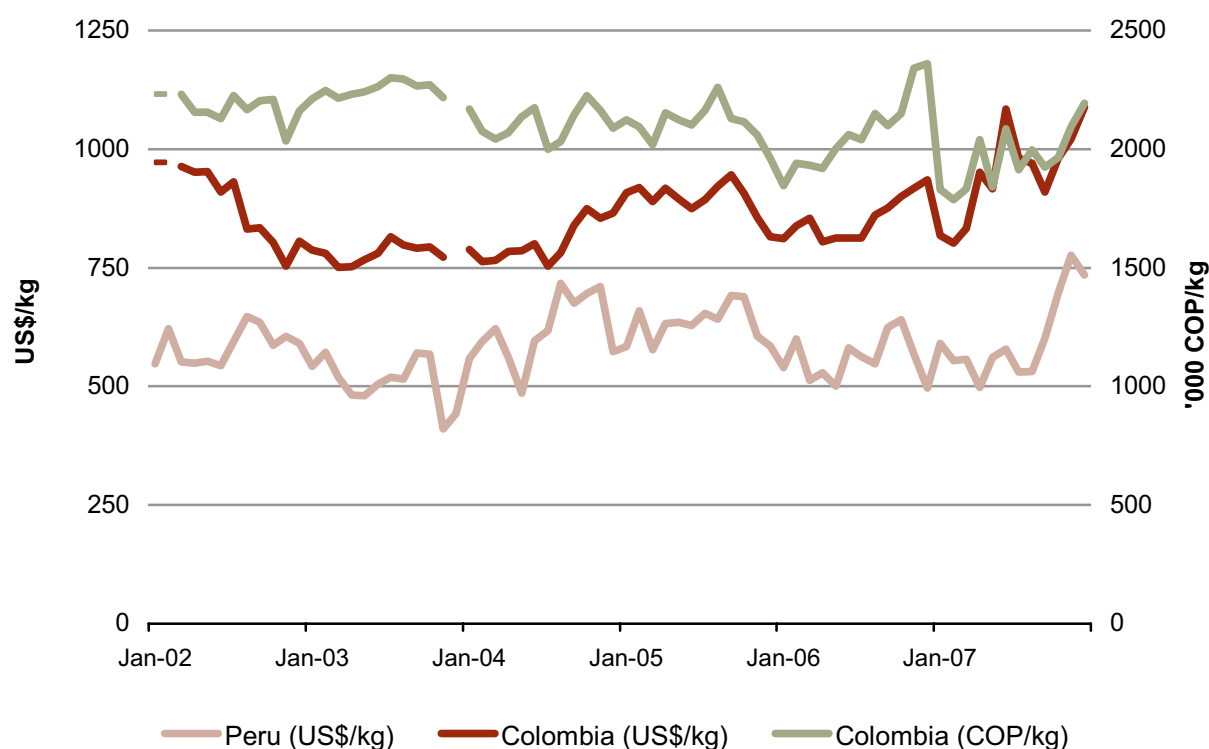
In Peru, the price for coca paste increased on average by 9% from US\$ 551/kg in 2006 to US\$ 600/kg in 2007, mainly due to a steep rise in the last quarter of the year. Despite this increase, the average price of coca paste remained at a lower level than in 2004 and 2005. The wholesale price of cocaine in producing regions increased only slightly by 3% from US\$ 825/kg in 2006 to US\$ 851/kg in 2007. These increases should be interpreted with caution, as the Peruvian sol strengthened against the US dollar in the course of the year 2007.

Between 2002 and 2007, annual prices for coca paste in Colombia were consistently higher than in Peru, on average between 30 and almost 60%. The large price difference is conspicuous as in terms of final export quality of cocaine, there seems to be no major difference. According to US reports, the purity of cocaine seizures originating from Peru has been consistently higher than of cocaine HCl originating from Colombia over the same period. Several factors might have

contributed to this discrepancy in prices, among them differences in coca paste quality, prices of chemical precursors and wages of specialized labour (“cooks”) helping farmers with the processing. Cost factors even more difficult to assess are the influence of armed groups in coca growing areas controlling marketing channels and farm-gate prices and the “risk factor” immanent to illicit and clandestine operations.

Farm-gate prices for coca paste or cocaine base are not available from Bolivia, where farmers are thought to sell coca leaves, directly. The wholesale price of cocaine base in producing regions is reported to be US\$ 900/kg, and thus higher than in Peru and close to the Colombian price level.

Figure 8: Farm-gate price of coca paste in Colombia and Peru (US\$/kg), January 2002 to December 2007



In the absence of detailed information about quality and composition of coca derivatives traded in production areas, prices may not always be comparable. Prices in Colombia refer to pasta básica and in Peru to pasta básica de cocaína lavada.

Wholesale prices for cocaine HCl in Ecuador, where coca cultivation is negligible, were at US\$ 4,000 (2007) much higher than in Bolivia and Colombia, and seemed to stabilize after a decline between 2004 and 2006.

Table 4: Ecuador, wholesale prices for cocaine products (US\$/kg), 2003 to 2006

	2003	2004	2005	2006	2007
Cocaine base	2,500	2,500	1,900	1,900	1,900
Cocaine HCl	5,000	5,000	4,500	4,000	4,000

Source: UNODC Annual Reports Questionnaires, 2003 to 2007.

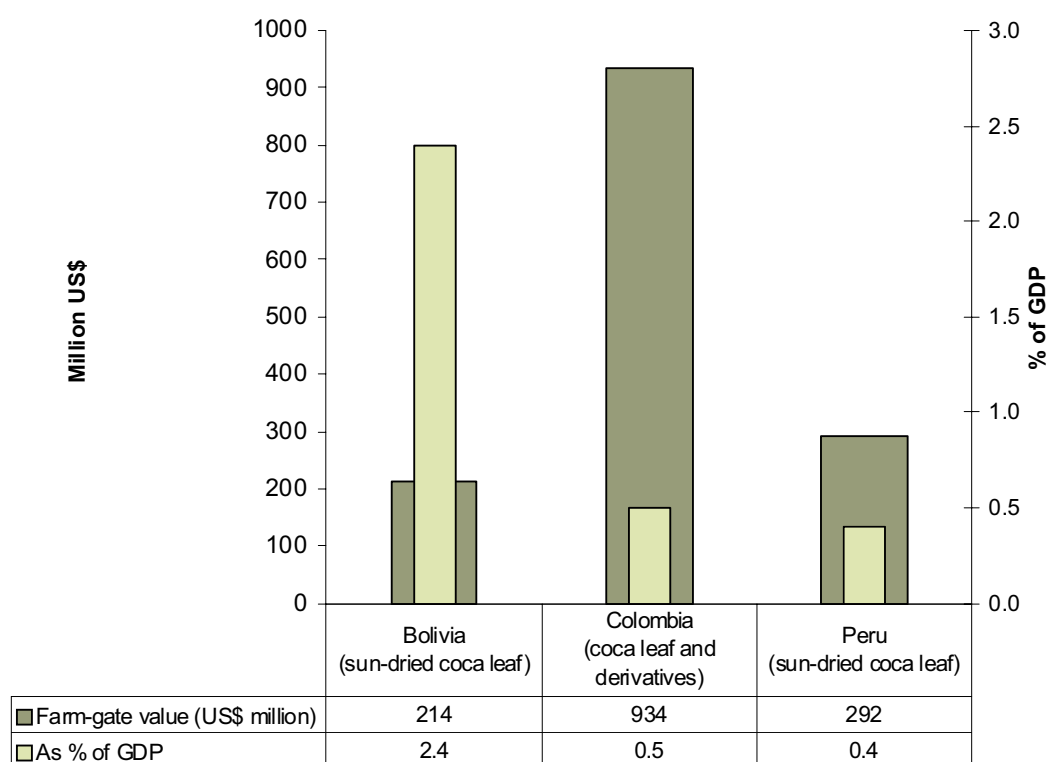
5 FARM-GATE VALUE OF COCA CULTIVATION

Farm-gate values of coca cultivation in Bolivia and Peru are based on potential sun-dried coca leaf production. For Colombia, the farm-gate value is based on the potential production of each product sold by farmers (fresh coca leaf, coca paste or cocaine base). Farm-gate values constitute a gross value, without taking into account the expenses farmers incur for agricultural inputs such as herbicides, pesticides, fertilizers, or for wages.

In 2007, the farm-gate value of coca products increased in all three coca cultivating countries, in Colombia⁶ due increases in farm-gate prices in US dollar terms and in area under coca cultivation, in Peru due to an increase in coca leaf production, and in Bolivia due to the combined effects of an elevated price level and expansion of coca leaf production.

By and large, the economic importance of coca products, expressed as their farm-gate values, remained unchanged in Colombia and Peru where the growth of the national economy kept pace with the increase in farm-gate value. However, in Bolivia the importance of the coca industry grew in 2007, and the farm-gate value of coca leaf as a proportion of the GDP grew from 2.0% in 2006 to 2.5% in 2007.

Figure 9: Potential farm-gate value of coca products, 2007



GDP of 2007 as reported/estimated by the respective Government.

⁶ For technical reasons, the potential farm-gate value of coca products in Colombia is calculated based on the coca area on 31 December, without considering changes in the amount of production due to increases or decreases in the area under cultivation in the course of the year. Therefore, the area expansion in 2007 by 27% contributes to a nominal increase of the farm-gate value. The calculation of the potential cocaine production discussed earlier, however, takes cultivation dynamics into account.

PART 2. BOLIVIA COCA CULTIVATION SURVEY

Back of divider Part 2 Bolivia

FACT SHEET – Bolivia Coca Survey for 2007

	2006	Change on 2006	2007
Coca cultivation	27,500 ha	+5%	28,900 ha
<i>Of which in the Yungas of La Paz</i>	<i>18,900 ha</i>	<i>+5%</i>	<i>19,800 ha</i>
<i>in Chapare</i>	<i>8,300 ha</i>	<i>+6%</i>	<i>8,800 ha</i>
<i>in Apolo</i>	<i>300 ha</i>	<i>0%</i>	<i>300 ha</i>
<i>Of which permitted by Bolivian law 1008*</i>	<i>12,000 ha</i>		<i>12,000 ha</i>
<i>not permitted by Bolivian law 1008</i>	<i>15,500 ha</i>	<i>+9%</i>	<i>16,900 ha</i>
Average annual sun-dried coca leaf yield ⁷			
in Chapare	2,764 kg/ha		2,764 kg/ha
in the Yungas of La Paz	1,294 kg/ha		1,321 kg/ha
in the Yungas, traditional coca growing areas	1,213 kg/ha		1,215 kg/ha
Production of sun-dried coca leaf	48,000 mt	+6%	51,000 mt
Potential production of cocaine	94 mt	+11%	104 mt
as % of global cocaine production	10%		10%
National weighted average farm-gate price of coca leaf (outside state-authorized market)*	US\$ 3.9/kg	+5%	US\$ 4.1/kg
Chapare average farm-gate price of coca leaf*	US\$ 3.2/kg	+19%	US\$ 3.8/kg
Total farm-gate value of coca leaf production	US\$ 180 million	+19%	US\$ 214 million
GDP*	US\$ 8.7 billion	+4.5%	US\$ 9.1 billion
Farm-gate value of coca leaf production as % of GDP	2.0%		2.4%
Value of agricultural sector GDP*	US\$ 1.37 billion	-0.7%	US\$ 1.36 billion
Farm-gate value of coca leaf production as % of value of 2007 agricultural sector	13%		16%
Reported eradication of coca bush*	5,070 ha	+24%	6,269 ha
Reported seizure of cocaine base*	12,779 kg	+17%	14,912 kg
Reported seizure of cocaine hydrochloride*	1,309 kg	+123%	2,923 kg

* As reported by the Government.

⁷ 2007 yield figures are updated by the new cultivation levels across the sampling strata as defined by the 2006 yield study.

ABBREVIATIONS

BOB	Bolivianos (Bolivian currency)
CONALTID	Bolivian National Council for Fighting against Drugs
DIGCOIN	Bolivian National Direction of Coca Leaf Control and Industrialization
DIGECO	Bolivian National Direction of Coca Leaf Commercialization (up to 2005)
DIGPROCOPA	Bolivian National Direction of Development for Coca Growing Areas
DIRECO	National Direction of Agricultural Re-conversion (up to 2005)
FELCN	Special Force against Drug Trafficking
GCP	Ground Control Point
GIS	Geographical Information Systems
GPS	Global Positioning System
ICMP	UNODC Illicit Crop Monitoring Programme
HCl	(cocaine) hydrochloride
UNODC	United Nations Office on Drugs and Crime

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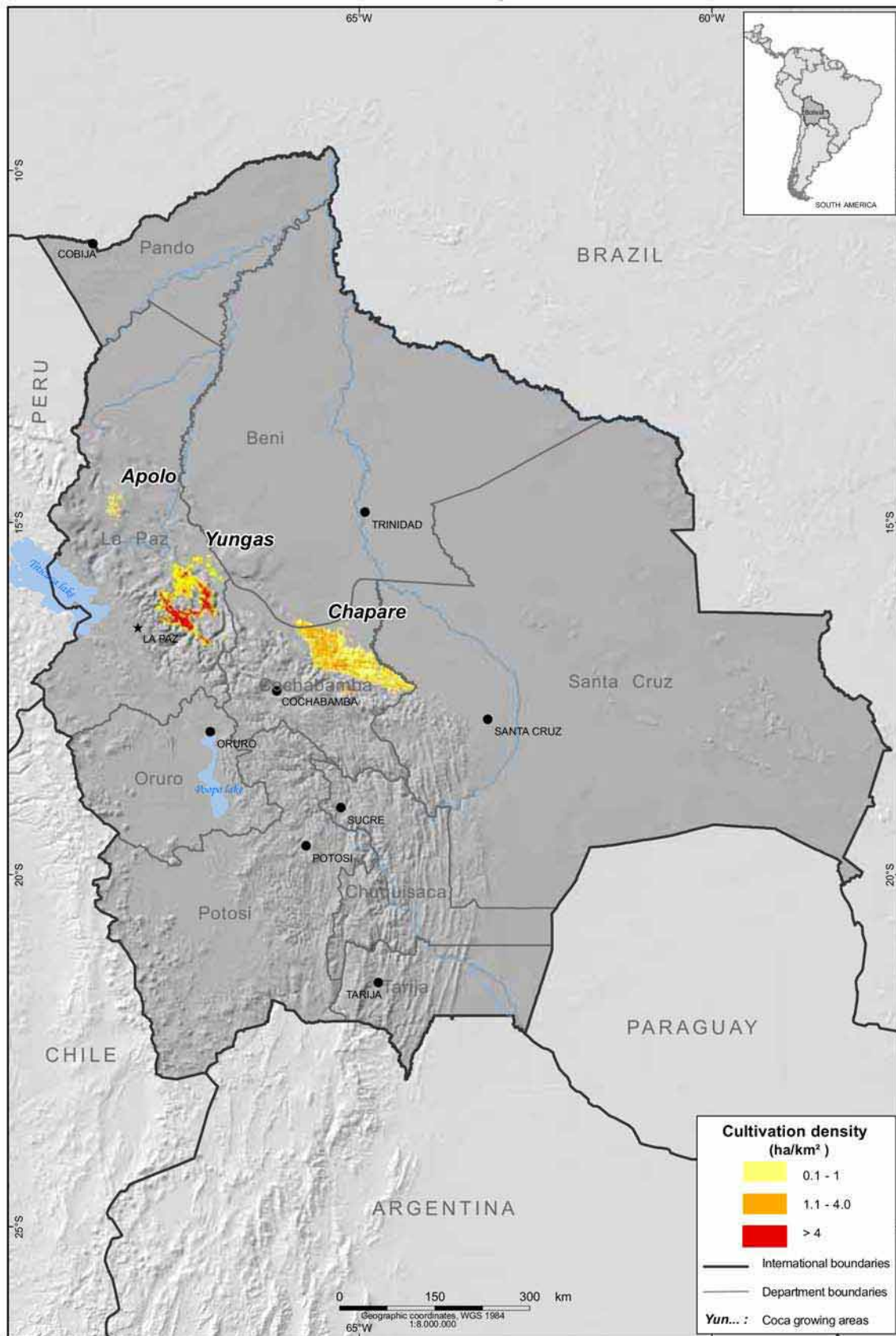
Unless otherwise specified, all figures presented in this report come from the respective National Governments in the context of national monitoring systems supported by UNODC.

The implementation of UNODC's Illicit Crop Monitoring Programme in the Andean countries and the Bolivia survey in 2007 was made possible thanks to financial contributions from the Governments of Austria, Colombia, France, the United States of America, and from the European Commission.

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Map 5: Coca cultivation density in Bolivia, 2007



Source: Government of Bolivia - National monitoring system supported by UNODC.
 The boundaries and names shown and the designation used on this map do not imply official endorsement or acceptance by the United Nations.

1 INTRODUCTION

The objectives of UNODC's Illicit Crop Monitoring Programme (ICMP) are to establish methodologies for the collection and analysis of data on illicit crops and to improve Governments' capacity to monitor these crops in the context of the strategy adopted by Member States at the General Assembly Special Session on Drugs in June 1998. ICMP is currently active in seven countries: Afghanistan, Bolivia, Colombia, Lao PDR, Morocco, Myanmar and Peru.

The Bolivian Government and UNODC launched the project "Land use management and monitoring system in the Yungas of La Paz" in October 2001. Initially, the project focused only on the Yungas of La Paz, but since 2003 it has extended its scope to provide estimates on coca cultivation at the national level. Until 2006, the coca cultivation areas were monitored by satellite imagery, but in 2007 the methodology was enhanced by the use of very high resolution photos taken from an airplane. This report presents the project's findings for 2007.

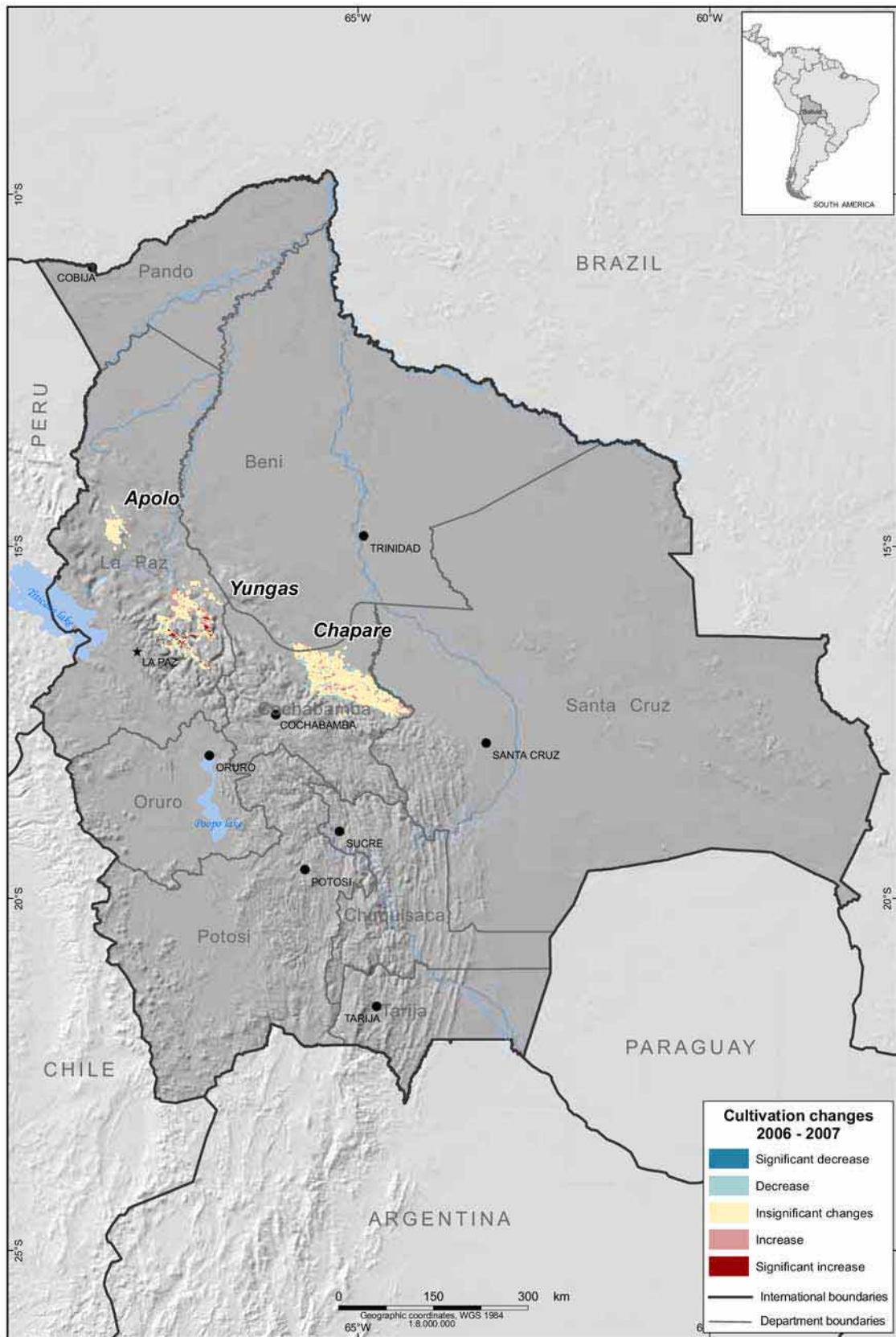
During 2007, the project was implemented in cooperation with the National Direction of Development for the Coca Growing Regions (DIGPROCOCA, former DIRECO), Vice-Ministry of Coca and Integral Development. DIGPROCOCA provided logistical support during the implementation of ground activities, including the collection of a large number of ground control points, mainly in the Chapare area. The Bolivian National Government, through the National Council of Fight against Illicit Trafficking of Drugs (CONALTID) uses the information provided by this project for planning and implementing its strategy for the fight against illicit drug trafficking.

Coca cultivation decreased significantly in Bolivia at the end of the 1990s, following a significant reduction in the area under coca cultivation in the Chapare region. Bolivia is now the third largest coca producer worldwide, far behind Colombia and Peru. Coca cultivation is concentrated in the departments of La Paz (in the areas of the Yungas of La Paz and Apolo) and in the Chapare area (department of Cochabamba).

Bolivian Law 1008 ("Law on the Regime Applicable to Coca and Controlled Substances", 1988) permits up to 12,000 ha of traditional coca cultivation for traditional consumption and other legal uses. Most of this area is located in the Yungas of La Paz. In addition, in October 2004, the Bolivian Government temporarily authorized the cultivation of 3,200 ha of coca in the Chapare region. Law No 1008 does not provide a precise definition of the geographic limits of the traditional coca growing areas, however, the Bolivian Government is preparing a study which is intended to lead to a legal delineation of the area where coca for traditional use may be cultivated.

The National Government is planning to develop a study to determine the national coca leaf demand for traditional purposes. This study is scheduled to begin in 2008, and to provide results by the end of 2009.

Map 6: Coca cultivation change 2006 - 2007, Bolivia



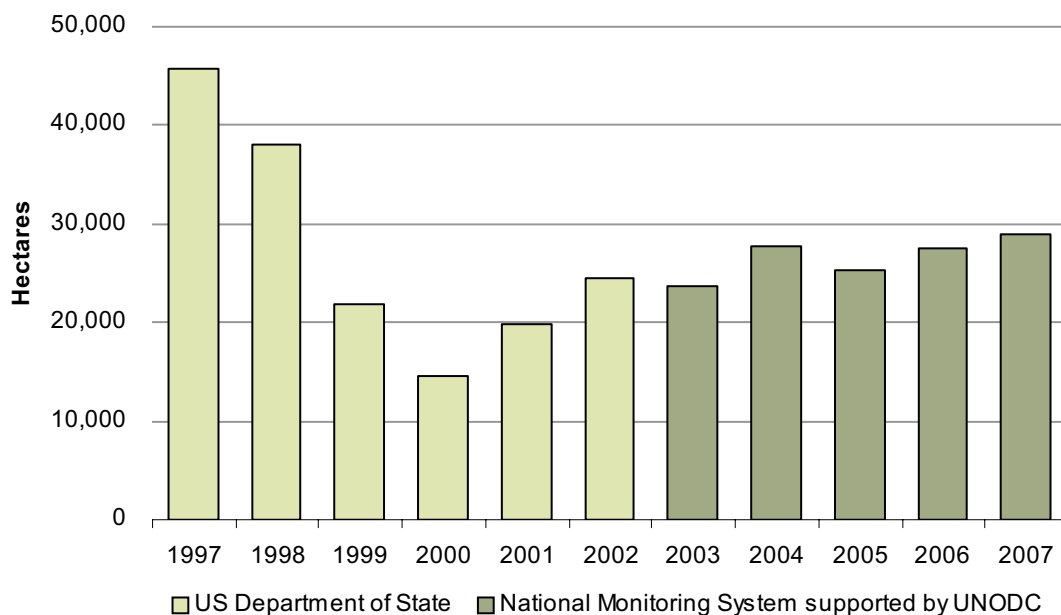
Source: Government of Bolivia - National monitoring system supported by UNODC.
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2 FINDINGS

Coca cultivation

In 2007, the total area under coca cultivation in Bolivia was estimated at 28,900 ha, an increase of 5% over last year's estimate of 27,500 ha. Coca cultivation in areas outside the 12,000 ha for traditional use increased by 9%. The increase at the national level was due to an increase in the main cultivation regions the Yungas of La Paz and Chapare. In the Yungas of La Paz, the increase occurred mainly in the Municipality of La Asunta while other municipalities remained stable. In the Chapare region, the increase occurred mainly in the Southwest part. The project detected that the increase had occurred in areas where eradications were not undertaken. On the other hand, where eradication efforts are implemented, coca levels were observed to have remained stable or to have decreased. In the Yungas of La Paz, low levels of eradication combined with migration processes from the impoverished areas of Bolivia to the Yungas can be the reasons for an increasing trend since 2002.

Figure 10: Coca cultivation in Bolivia (ha), 1997 – 2007



In 2007, coca cultivation increased globally by 16%. Whilst this increase was as a result of increases in all three coca-producing countries, it was mainly caused by the significant increase in Colombia (27%).

Coca cultivation in Bolivia represented 16% of global coca cultivation in 2007, compared to 18% in 2006. Bolivia remained the third largest coca cultivator, behind Colombia and Peru.

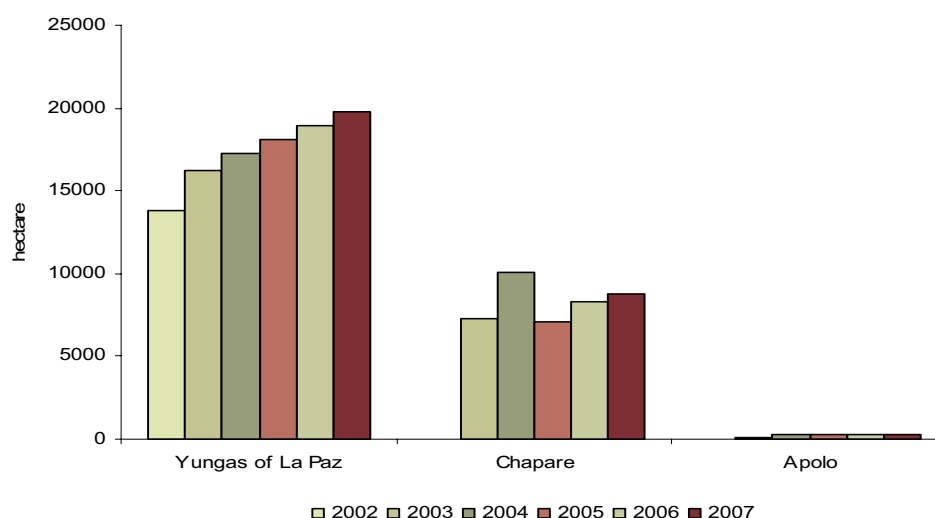
Regional analysis

The increase in coca cultivation at the national level of 5%, from 27,500 ha to 28,900 ha, was the result of a combined increase in the Chapare and Yungas areas. Although these areas showed similar rates of increase, respectively 6% and 5%, the non-traditional coca-growing area in the Yungas expanded by a much larger proportion (13%). The most relevant increase took place in certain isolated areas of Yungas of La Paz, where new settlements were observed. Eradication is not undertaken in these areas.

Table 5: Coca cultivation estimates by region (ha), 2003 – 2007

Region	2002	2003	2004	2005	2006	2007	% change on 2006-	% of 2007 total
Yungas of La Paz	13,800	16,200	17,300	18,100	18,900	19,800	5%	69%
Chapare	n.a.	7,300	10,100	7,000	8,300	8,800	6%	30%
Apolo	n.a.	50	300	300	300	300	0%	1%
Total		23,550	27,700	25,400	27,500	28,900	5%	100%

Figure 11: Coca cultivation estimates by region (ha), 2002 – 2007

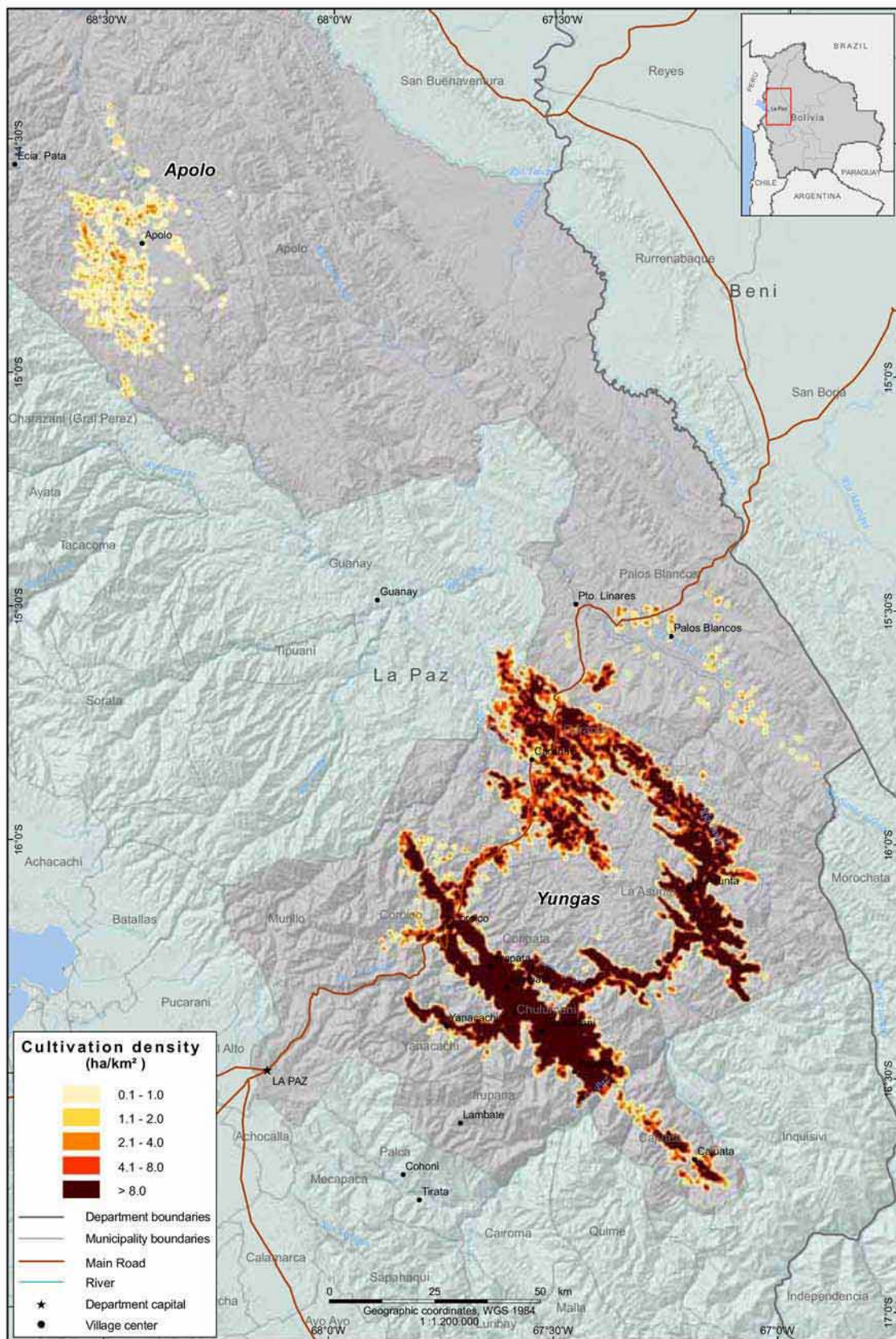


In most of the Chapare region, farmers are cultivating an average of 0.16 ha of coca, locally called “cato”. This is the maximum amount allowed according to an agreement reached between the Government and social organizations of coca farmers in October 2004. Aerial photographs and geo-videos taken over Chapare during the survey clearly show the trend of coca cultivation on fields with the size of one *cato* in most parts of the region.



Cato-size coca field

Map 7: Coca cultivation density in the Yungas of La Paz and Apolo, Bolivia, 2007



Source: Government of Bolivia - National monitoring system supported by UNODC.
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Coca cultivation in the Yungas of La Paz

The Yungas of La Paz, situated at about 150 km from the city of La Paz, at the eastern side of the Andes Range, is a region of uneven relief with steep slopes, turbulent rivers and elevations ranging from 300 to 4,000 meters above sea level. Significant climatic variations are observed even over short distances. Coca bush is predominantly cultivated on narrow terraces built on high gradient hills.



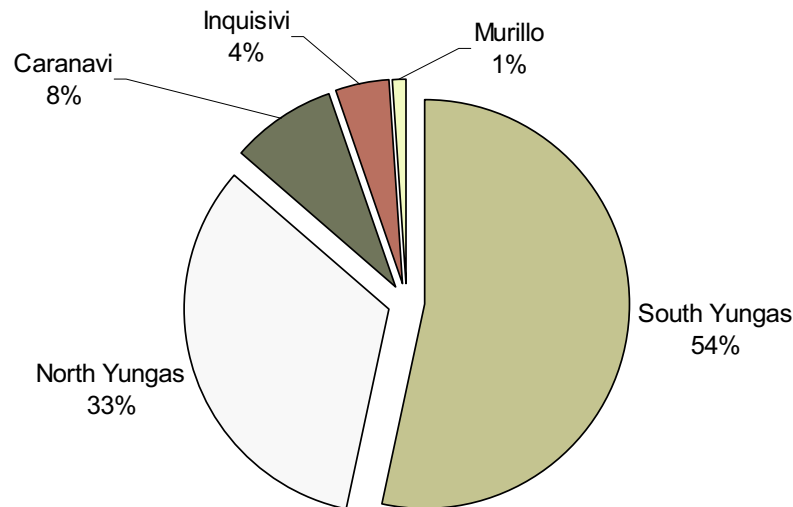
Aerial view of the Northern Yungas

The survey revealed 19,800 ha of coca cultivation in the Yungas of La Paz in 2007; this represents an increase of 5% compared to the 18,900 found in 2006 and follows the trend since 2002. Most of the cultivation continued to be taken place in the provinces of South Yungas and North Yungas, accounting respectively for 53% and 33% of the regional total. The largest annual increase (9%) was observed in South Yungas. The increase in this province is mainly due to the increase occurred in the area of La Asunta, where the project observed once again new settlements of people migrating from Bolivian High Lands. Eradication was not undertaken in this province. For the first time in the monitoring history, Caranavi province showed a decrease (-4%) caused by the eradication efforts; however this province only accounted for 8% of the regional total in 2007.

Table 6: Distribution of coca cultivation in the Yungas of La Paz (ha), 2002 - 2007

Province	2002	2003	2004	2005	2006	2007	% change 2006-2007	% of 2007 total
South Yungas	7,182	8,356	8,867	9,395	9,753	10,588	9%	53%
North Yungas	5,187	5,914	6,166	6,257	6,432	6,532	2%	33%
Caranavi	491	889	1,248	1,381	1,714	1,653	-4%	8%
Inquisivi	741	801	805	807	809	813	0%	4%
Murillo	151	210	217	223	225	229	2%	1%
Rounded total	13,800	16,200	17,300	18,100	18,900	19,800	5%	100%

Figure 12: Distribution of coca cultivation areas in the Yungas of La Paz, 2007



The Bolivian Law 1008 (“Law on the Regime Applicable to Coca and Controlled Substances”, 1988) permits up to 12,000 ha of traditional coca cultivation for traditional consumption and other legal uses. Most of this area is located in the Yungas of La Paz, although the law does not provide for geographic delimitation of the traditional coca cultivation area. Most of the coca leaf produced in the Yungas of La Paz is traded through the coca market, controlled by DIGCOIN, of Villa Fatima in La Paz-city.

Only a small amount of coca fields (300 ha) was eradicated in Yungas in 2007. The eradication efforts were focused mainly in Caranavi, causing a reduction in the cultivated area.

A study on coca leaf yield conducted by UNODC and the Government in the Yungas in 2006 confirmed that farmers were using more sophisticated agricultural techniques in their coca fields, employing more fertilizers, pesticide and mechanical irrigation to improve the yield of their coca fields. In Caranavi, new coca fields established at the expense of primary forest or coffee plantations, benefited from higher yields due to the richer soils.



High level inputs like terrace construction and mechanical irrigation in the Yungas



Orthorectified aerial photo of La Asunta town and surrounding coca fields



Harvesting of coca leaves in the Yungas

Coca cultivation in Apolo

Apolo is located at the northern part of the department of La Paz, on the eastern edge of the Andean mountain range. With relatively dry weather conditions and poor soils, coca fields in Apolo often have a low yield and are cultivated only for about three to five years.

In 2004, DIRECO conducted a cadastral survey of coca cultivation in the Apolo region, measuring *in situ* all of the coca fields located in the region. The DIRECO survey revealed that coca cultivation reached 289 ha in 2004. The UNODC/Government of Bolivia project monitored Apolo completely for the first time in 2004, finding 273 ha of coca cultivation.

In 2007, the project didn't obtain images from Apolo, but undertook a field mission, where some increase in cultivation was observed mainly in the area of Camata River.

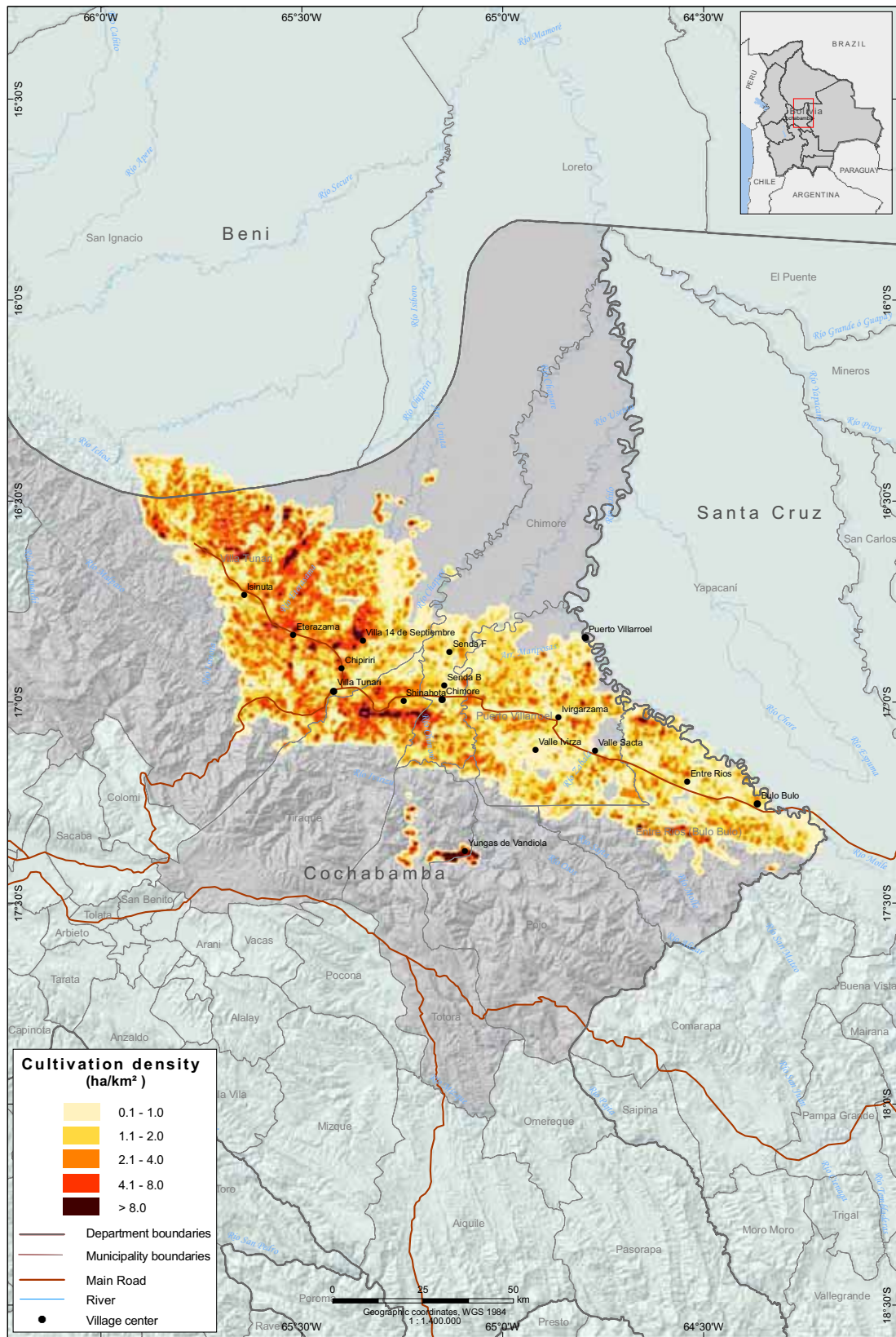
Table 7: Coca cultivation in Apolo region (ha), 2003-2007

Province	Municipality	2003	2004	2005	2006	2007	% change 2006 - 2007
Franz Tamayo	Apolo	50	300	300	300	300	0

Coca cultivation in the Apolo region is traditionally associated with cassava to take advantage of the same furrow for the two different crops. The coca fields in central Apolo are scattered and relatively small (about 200 m²) compared to the new coca fields found in the southern part or elsewhere in the country. Terraces are not used. The coca cultivation techniques and coca leaf sun drying are similar to techniques used in the Yungas area of La Paz.

The northern part of Apolo is part of the Madidi National Park, the largest biosphere reserve in Bolivia. Only a few dispersed and small coca fields were found on the western side of the Madidi Park. In Apolo, coca cultivation is considered traditional according to law 1008. No eradication was undertaken in this area.

Map 8: Coca cultivation density for Chapare, Bolivia 2007



Source: Government of Bolivia - National monitoring system supported by UNODC.
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Coca cultivation in Chapare

The Chapare region is situated in Cochabamba department, and the region is also referred to as the Cochabamba tropics, extending over the provinces of Chapare, Carrasco and Tiraque. In contrast to the Yungas of La Paz, Chapare region has moderate slopes and large rivers. Elevations vary from 300 to 2500 meters, and coca is cultivated between 300 and 1000 meters. The highest mountains are located in the south and the country's large tropical savannas begin in the northern part of Chapare. Temperatures are tropical and the area records the highest precipitation levels in Bolivia.

In the 1990s, the Chapare region held the largest amount of coca cultivation. Following sustained eradication efforts and alternative development programmes, cultivation decreased dramatically but later started to increase again.

Table 8: Distribution of coca cultivation by province in Chapare region (ha), 2003-2007

Province	2003	2004	2005	2006	2007	% change 2006-2007	% of 2007total
Chapare	4,250	5,844	4,094	4,857	4,536	-7%	52%
Carrasco	2,864	3,520	2,312	2,791	3,492	25%	40%
Tiraque	214	723	605	691	777	12%	9%
Rounded total	7,300	10,100	7,000	8,300	8,800	6%	100%

The 2007 survey found 8,800 ha of coca cultivation in Chapare, representing an increase of 6% compared to the 8,300 ha found in 2006. In contrast to last years, the increase occurred mainly in the south-western part of the Cochabamba tropical areas, corresponding to the Carrasco province. Like in former years, the increase took place in areas where no eradication was performed. On the other hand, some decrease was observed in regions where eradication was carried out.



This aerial photo clearly shows the trend to cultivate coca in *catos* (40m x 40m)

It should be noted that political boundaries are not properly defined between the departments of Cochabamba and Beni. For this reason, although some coca cultivation might actually be located

It should be noted that political boundaries are not properly defined between the departments of Cochabamba and Beni. For this reason, although some coca cultivation might actually be located in Beni Department, all of the coca fields identified during the survey along the undefined departmental border were counted as part of the municipality of Villa Tunari, in the Department of Cochabamba.

In past years, farmers of the Cochabamba Tropics used to intersperse or hide coca bushes in order to avoid detection and eradication. These practices are not very common nowadays because of the “*cato*” policy, and most coca fields were found to be free of association with other crops.

It is generally accepted that coca cultivation is done with much more care in Yungas than in Chapare, and the techniques of cultivation differ from those used in Yungas. For example, the seedbeds in Chapare are usually not covered. Since the terrain is flat, there is no need to build terraces. The coca bushes in Chapare are bigger than in Yungas, and are settled with more space in between. The practice of pruning coca bushes does not exist. The association of coca with other crops is sometimes done to take advantage of the same open space, or coca is placed under leguminous trees, which fix nitrogen in the soil, thereby improving coca yield.

In Chapare, the coca leaves are also sun-dried on bare floor before trading, but not with the same care as in the Yungas. According to FELCN, a part of total production is marketed outside of the region, while another part is used for local consumption (chewing and medicines).

Coca bushes in Chapare may last on average 30 years if allowed to develop normally. Isolated, scattered old plants of large dimension have been observed, still yielding substantial quantities of coca leaves. Fertilizers and pesticides are also widely used in the Chapare.



A spot to sun-dry coca leaves in Chapare

Coca yield and production

Based on data collected during the coca leaf surveys carried out in 2005 and 2006 in Bolivia. It has been determined that the annual sun-dried coca leaf yield in the Yungas and Apolo amounted to 1,321 kg per hectare. Applying this yield estimate to the area under coca cultivation interpreted in Yungas and Apolo resulted in 26,552 mt of potential production of sun-dried coca leaf in this region in 2007.

In the absence of any detailed study on coca leaf by the Government of Bolivia and UNODC in Chapare, coca leaf yield estimates are derived from information from the United States Government under "Operation Breakthrough". US Operation Breakthrough found a sun-dried coca leaf yield in Chapare of 2,764 kg per hectare. Using this yield, total sun-dried coca leaf production in Chapare was estimated at 24,323 mt. It should be noted that this estimate represents the potential coca leaf for cocaine production. Due to lack of data, it does not take into account the currently unknown amount of coca leaf from Chapare region that is destined for local consumption (chewing and medicinal preparation). Therefore, the total potential production of sun-dried coca leaf in Bolivia, including production for traditional purposes, was estimated at 51,000 mt in 2007.

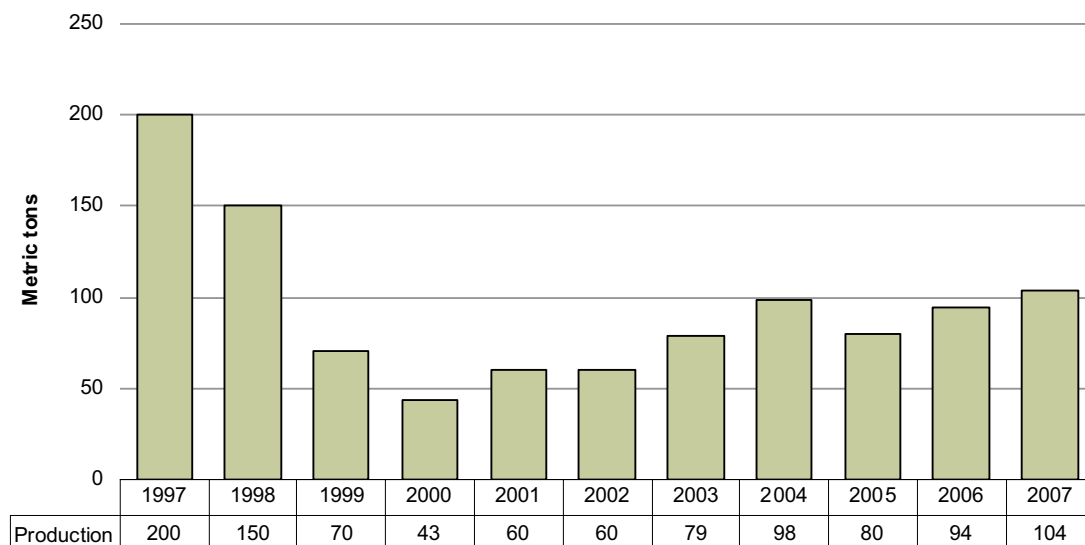
In order to calculate the total sun-dried coca leaf production destined for cocaine production, it is necessary to take into account the coca leaf cultivation for traditional use. Law 1008 authorizes 12,000 ha of coca cultivation in the traditional region. During the latest coca leaf survey, it was determined that according to the location where the traditional cultivation takes place, the sun-dried coca leaf yield amounts to 1,210 kg per hectare. Therefore, the total estimated production of sun-dried coca leaf under law 1008 is estimated at 14,520 mt in 2007. This implies that there were 36,355 mt of sun-dried coca leaf available for cocaine production in Bolivia in 2007.

Table 9: Coca leaf yield and production by region, 2007

Region	Annual coca cultivation (ha)	Annual sun-dried coca leaf yield (kg/ha/year)	Production of sun-dried coca leaf (mt/year)
Yungas* and Apolo	20,100	1,321	26,552
Chapare	8,800	2,764	24,323
Total	28,900	1,765	51,000

* Includes 12,000 ha of traditional coca cultivation

Operation Breakthrough also communicated conversion rates of 370 kg of sun-dried leaf for 1 kg pure cocaine in Chapare and of 315 kg of leaf for 1 kg of cocaine in the Yungas of La Paz. Applying the conversion factors to the total sun-dried coca leaf production for cocaine production, it resulted in 104 mt of potential cocaine production in Bolivia in 2007. This represents an increase in the production of cocaine of about 11% compared to 2006.

Figure 13: Potential cocaine production in Bolivia (mt), 1997 – 2007

Despite the increase of cocaine production in Bolivia, its global share stayed the same, with 10% of the global potential cocaine production of 994 mt. Production continues to be much lower than in the mid nineties, when Bolivia accounted for about a quarter of global cocaine production.

Coca prices and trading

In Bolivia, sun-dried coca leaf trade is regulated by the National Directorate of Coca Leaf Commercialization and Industrialization DIGCOIN, (formerly DIGECO). DIGCOIN controls the quantity and prices of coca leaf traded in the two market facilities authorized by the Government: the market of Villa Fatima in La Paz city and the market of Sacaba in Cochabamba department, close to Cochabamba city.

During 2007, a total of 17,120 mt of coca leaves fell under the control of DIGCOIN, representing an increase of 30% compared to 2006. This increase is partly due to new ways of coca trading introduced by DIGCOIN. Until recently the only mode of transaction for coca was its sale through retailers at market places. In 2007, other transaction venues were introduced, including i) authorized sales by coca farmers to consumers; ii) transactions under agreements; iii) sales by coca farmers to consumers at fixed selling points, and iv) selling in restricted quantities by farmers to the coca-processing industry.

Table 10: Ways and volumes (mt) of coca leaf trading authorized by DIGCOIN, 2007

Way of trade	DIGCOIN Market/Office		
	La Paz	Cochabamba	Total
Retailers at markets	13,024	619	13,643
Authorized exchange	1,219	234	1,453
Direct sale (agreements)	51	46	97
Direct sale (fixed points of sale)	1,791	128	1,919
Provision for industrialization	7	1	8
Total	16,092	1,028	17,120
Percentage	94%	6%	100%

Source: DIGCOIN

As can be observed in the table above, in 2007, the largest amount of coca leaf traded within the state-authorized system, some 16,092 mt or 94%, was traded in Villa Fatima and in DIGCOIN La Paz offices. The remaining 1,028 mt was traded in Sacaba or DIGCOIN Cochabamba Offices.

Once again, the prices of coca leaves at the Villa Fatima market were higher than at the Sacaba market, with respective annual averages of BOB 36/kg (US\$ 4.6/kg) and BOB 32/kg (US\$ 4.1/kg). The annual average weighted price of coca leaves on these two markets was BOB 35/kg (US\$ 4.6/kg) in 2007.

Table 11: Monthly prices and quantities of coca leaf marketed through DIGCOIN, 2007

Month	Chapare: Sacaba market		La Paz: Villa Fatima market		Weighted average	
	Price BOB/kg	Quantity sold (mt)	Price BOB/kg	Quantity sold (mt)	BOB/kg	US\$/kg
January	26	9	27	1,132	27	3.4
February	28	7	30	1,099	30	3.8
March	27	10	30	1,106	30	3.8
April	30	11	33	1,124	33	4.2
May	29	16	32	1,116	32	4.1
June	30	57	33	1,095	33	4.2
July	31	85	37	1,088	36	4.7
August	31	72	37	1,002	37	4.8
September	33	36	41	1,014	41	5.3
October	38	117	43	1,049	43	5.6
November	40	123	41	1,077	41	5.4
December	40	76	42	1,124	42	5.5
Annual average	32	619	36	13,024	35	4.6

Source: DIGCOIN

According to DIGCOIN information, a total of 16,092 mt of traded coca came from the Yungas. Based on the data of the yield study, the equivalent area would be 12,218 ha of coca grown in the Yungas of La Paz. 1,028 mt from the Chapare were traded, with an equivalent area of 381 ha.

Each trader is authorized by DIGCOIN to trade up to 500 pounds (227 kg) of dry coca leaf per month. DIGCOIN's authorization specifies where the coca leaves are bought (Villa Fatima or Sacaba) and the point of final destination for its retail. Coca is retailed in packages of a maximum weight of 15 pounds (6.8 kg).

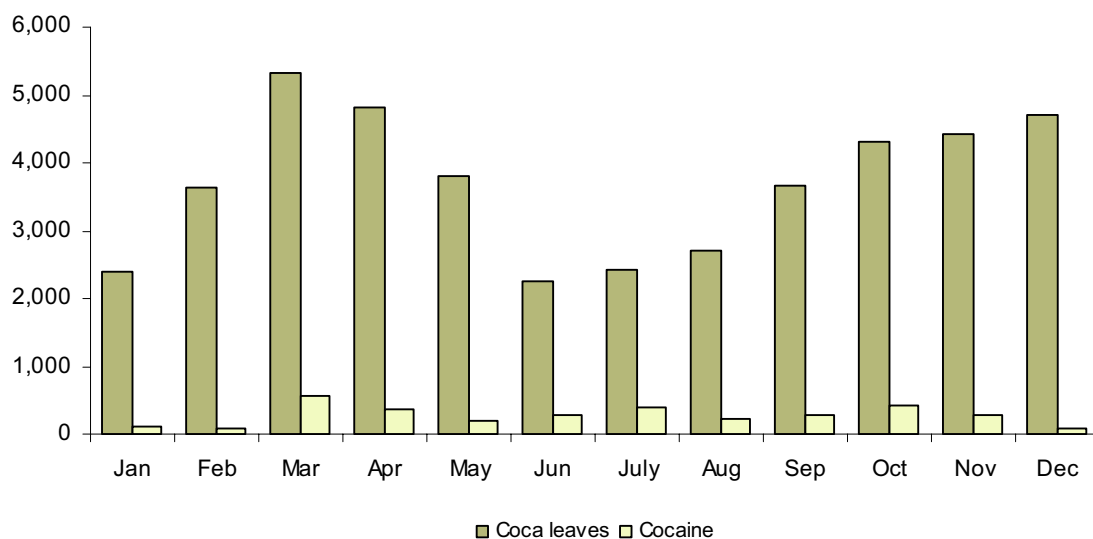
The following map shows the distribution of traded coca leaves throughout the country according to the DIGCOIN registry. As in 2006, in 2007, most of the coca leaves ended up in Santa Cruz department, followed by the departments of Tarija, La Paz and Potosi. There was a significant increase in La Paz department, where the new transaction venues were used to trade to the rural communities of the Altiplano.

In Santa Cruz, coca leaves are supplied mostly for the workers of large scale industrial farms of soy beans and sugar canes who habitually chew it. Coca chewing is also widespread among miners of the departments of La Paz, Potosi and Oruro. An increasing quantity of coca leaves traded in the southern part of the country is smuggled to neighboring Argentina. During 2007, the Argentinean police seized the significant amount of 44 mt of coca leaves and 3.3 mt of cocaine at the Bolivian border.

Table 12: Reported monthly coca leaves and cocaine seizures in Argentina (kg), 2007

Month	Seizure of coca leaves (kg)	Seizure of cocaine (kg)
January	2,382	105
February	3,621	85
March	5,320	564
April	4,814	380
May	3,795	197
June	2,240	284
July	2,425	394
August	2,701	238
September	3,664	281
October	4,301	436
November	4,433	277
December	4,710	87
Total	44,406	3,328

Source: Argentinean National Police Force

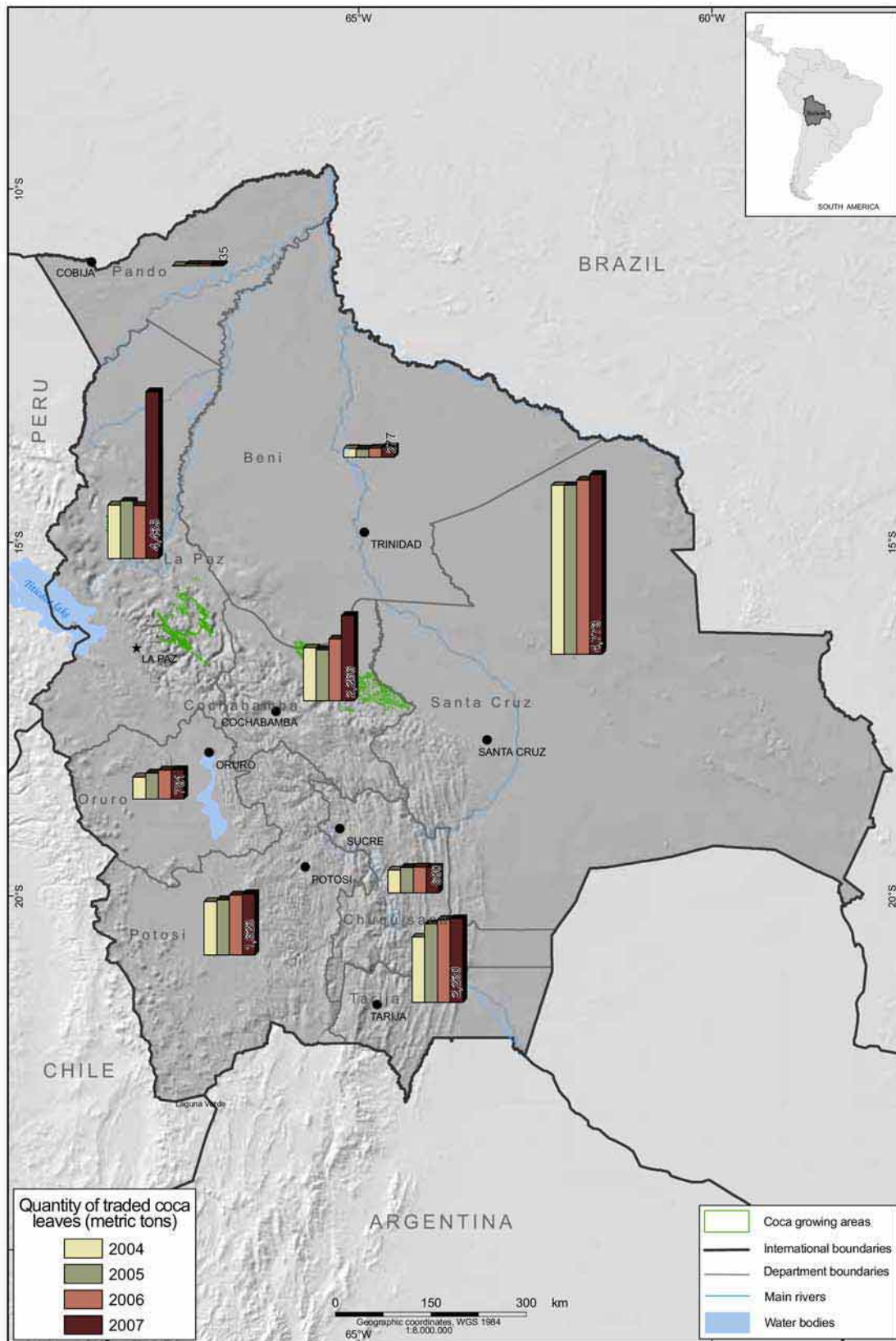
Figure 14: Reported monthly coca leaves and cocaine seizures in Argentina (kg), 2007

Source: Argentinean National Police Force

The total value of coca leaves traded through the control of DIGCOIN amounted to BOB 483 million or US\$ 62 million in 2007, representing a significant increase of 16% compared to 2006.

The volume of trade increased by 30% and the average annual price also increased by 13% (from BOB 31/kg to BOB 35/kg).

Map 9: Coca leaf trading authorized by DIGCOIN, by department, 2007



Source: Government of Bolivia - DIGCOIN - National monitoring system supported by UNODC. The boundaries and names shown and the designation used on this map do not imply official endorsement or acceptance by the United Nations.

Farm-gate prices of sun-dried coca leaf have been collected in Chapare on a monthly basis by DIGPROCOCA (former DIRECO) since 1990 and by the UNODC monitoring project in the Yungas of La Paz since 2004. Average annual prices for coca leaf were higher in the Yungas of La Paz, at BOB 38/kg (US\$ 4.8/kg) than in the Chapare, at BOB 26/kg (US\$ 3.2/kg).

Table 13: Monthly sun-dried coca leaf price* in the Yungas of La Paz, 2007

Month	Municipality of Coripata BOB/kg	Municipality of Chulumani BOB/kg	Municipality of La Asunta BOB/kg	Municipality of Caranavi BOB/kg	Average BOB/kg	Average US\$/kg
Jan	35	34	38	38	36	4.6
Feb	33	34	38	38	36	4.6
Mar	33	35	37	37	36	4.5
Apr	34	34	37	37	36	4.5
May	37	33	37	38	36	4.6
Jun	37	35	39	39	37	4.8
Jul	38	36	39	39	38	4.9
Aug	37	36	40	40	38	4.9
Sep	39	36	40	40	39	5.0
Oct	40	37	41	40	40	5.2
Nov	40	39	41	40	40	5.2
Dec	40	39	41	41	40	5.3
Annual average	37	36	39	39	38	4.8

* Outside the state-controlled trading system.

Compared to 2006, sun-dried coca leaf prices increased slightly in 2007 to BOB 38/kg in the Yungas.

Table 14: Reported monthly sun-dried coca leaf prices* in the Chapare, 2007

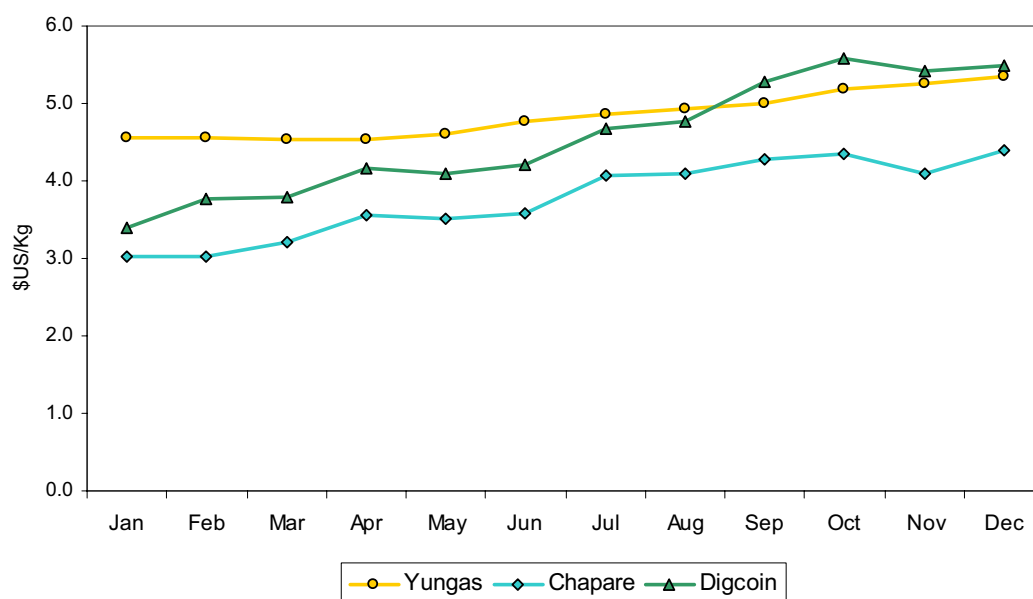
Month	BOB/kg	US\$/kg
January	24	3.0
February	24	3.0
March	25	3.2
April	28	3.6
May	28	3.5
June	28	3.6
July	32	4.1
August	32	4.1
September	33	4.3
October	33	4.4
November	31	4.1
December	33	4.4
Annual average	29.3	3.8

Source: DIGPROCOCA

* Outside the state-controlled trading system.

In contrast to the last two years, prices in Chapare increased significantly from BOB 26/kg in 2006 to BOB 29.3/kg (+13%). The increase in prices paralleled an increase in the cultivated surface, and can be attributed to an increase in the demand of dried coca leaves.

Figure 15: Monthly sun-dried coca leaf price in the Yungas of La Paz, Chapare and markets controlled by DIGCOIN, 2007



Sources: UNODC monitoring project/DIGPROCOCA/ DIGCOIN

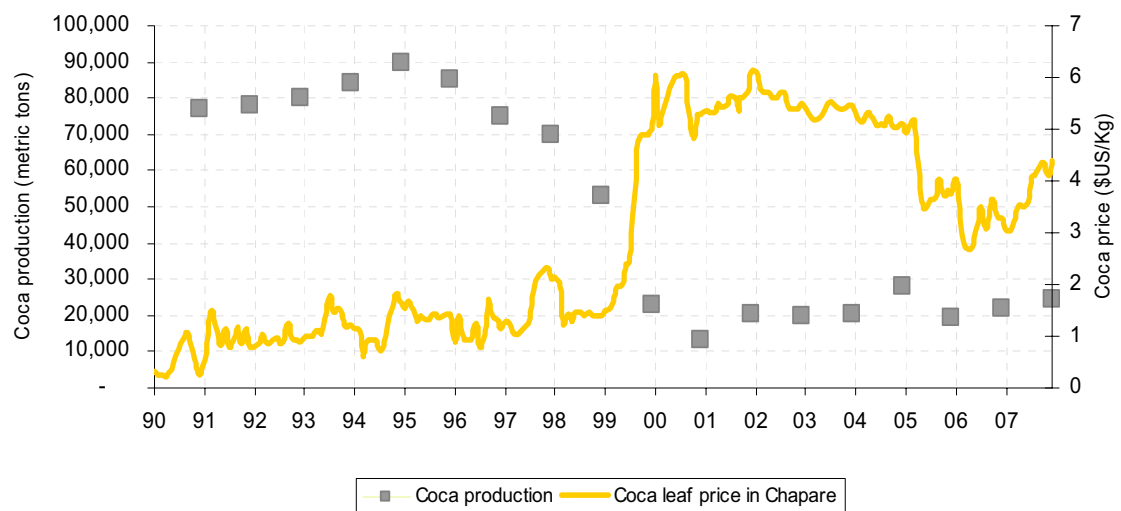
Weighted by production, the annual average price for coca leaf outside the market controlled by DIGCOIN was US\$ 4.1/kg. This was a lower price than that of US\$ 4.5/kg on the market controlled by DIGCOIN. However, at the end of the year, prices from the markets controlled by DIGCOIN were similar, and even higher, than prices outside the authorized markets.

Prices of coca leaves have not been systematically recorded for Apolo. Anecdotal information suggests much lower prices in Apolo than elsewhere in the country, ranging from US\$ 2.5 to US\$ 2.8/kg in 2006. The reason for lower prices in Apolo could be attributed to the remoteness of the region, being far from the main trading centers. Coca leaf production in Apolo (281 mt) was negligible compared to the national total, and was therefore not taken into account in the establishment of the national annual price estimate.

The existence of coca leaf price data from Chapare collected by DIRECO since 1990 provides a picture of long term price trends. Following a strong price rise in 1999 – in line with a strong increase in eradication – sun-dried coca leaf prices reached a peak of US\$ 5.7 /kg in 2000. Prices subsequently fell to the lowest level since 1998 (US\$ 3.2/kg in 2006) and rose again to US\$ 3.8/kg in 2007. However, coca leaf prices in Bolivia continue to be substantially higher than in neighboring Peru (US\$ 2.5/kg).

Table 15: Reported monthly prices of sun-dried coca leaf in Chapare (US\$/kg), 1991 to 2007

Month	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007
January	1.0	-	0.9	1.4	0.9	1.1	1.3	2.0	5.9	5.4	5.7	6.1	5.4	5.3	4.9	4.0	3.0
February	0.8	1.4	0.9	1.3	1.3	1.2	1.5	2.4	6.0	5.5	5.6	5.8	5.3	5.1	5.1	3.3	3.0
March	0.9	1.8	0.7	1.3	0.8	1.4	1.5	2.4	6.0	5.6	5.6	5.7	5.2	5.2	5.2	2.8	3.2
April	1.2	1.5	0.8	1.4	1.1	1.9	1.4	3.7	6.0	5.6	5.7	5.7	5.2	5.3	4.4	2.7	3.6
May	0.9	1.5	1.2	1.4	1.7	2.2	1.5	4.8	5.3	5.3	5.7	5.6	5.3	5.2	3.5	2.7	3.5
June	0.9	1.4	1.6	1.4	1.4	2.2	1.4	4.9	4.8	5.6	5.4	5.6	5.4	5.1	3.5	3.1	3.6
July	0.9	1.2	1.8	1.4	1.3	2.3	1.4	4.9	5.3	5.6	5.4	5.7	5.5	5.1	3.6	3.5	4.1
August	1.0	1.2	1.7	1.4	1.2	2.1	1.4	5.0	5.3	5.7	5.4	5.7	5.5	5.1	3.7	3.1	4.1
September	1.0	1.1	1.5	0.9	1.3	2.1	1.5	6.0	5.4	6.1	5.5	5.4	5.4	5.3	4.0	3.4	4.3
October	1.0	1.1	1.7	1.4	1.2	2.0	1.5	5.1	5.3	6.1	5.4	5.4	5.4	5.0	3.7	3.7	4.4
November	1.1	0.6	1.5	0.9	1.1	1.3	1.7	5.4	5.3	5.8	5.3	5.4	5.4	5.0	3.8	3.3	4.1
December	1.0	0.9	1.3	0.9	1.0	1.4	2.0	5.7	5.5	5.7	5.2	5.5	5.5	5.1	3.7	3.3	4.4
Annual Average US\$/kg	1.0	1.2	1.3	1.3	1.2	1.8	1.5	4.4	5.5	5.7	5.5	5.6	5.4	5.2	4.1	3.2	3.8

Figure 16: Farm-gate prices of sun-dried coca leaf in Chapare and national cocaine production, 1990 to 2007

The estimation of the total farm-gate value of coca leaf production in Bolivia included the total value of the market controlled by DIGCOIN. The farm-gate value of coca leaves outside this market in 2007, amounted to a rounded value of US\$ 214 million.

Table 16: Estimation of the total farm-gate value of coca leaf production, 2007

Region	Coca weighted average price US\$/kg		Coca production (mt)			Coca value US\$		
	Authorized market	Outside authorized market	Total production	Authorized market	Outside authorized market	Authorized market	Outside authorized market	Total value
Yungas	4.6	4.8	26,156	16,092	10,064	73,432,365	48,306,240	121,738,605
Chapare	4.1	3.8	24,323	1,028	23,295	4,232,388	88,521,760	92,754,148
Rounded total			51,000	17,000	34,000	78,000,000	137,000,000	214,000,000

The increase of the coca value in 2007 is attributable to the increase in prices and production in both Yungas and Chapare regions.

The total farm-gate value of coca leaf production in 2007 is equivalent to 2.4% of the projected Bolivian GDP⁸ of US\$ 9.1 billions for 2007. It represents 16% of the projected value of the licit agricultural sector of US\$ 1.36 billions in 2007. These figures suggest that, for the country as a whole, coca production still has an impact on the Bolivian economy, and continues to play an important role within the coca producing regions.

Street prices of cocaine paste and cocaine of unknown purity from the major cities and coca growing regions in Bolivia were also reported by FELCN and are provided in the table below.

Table 17: Reported prices of cocaine base and cocaine HCl (US\$/kg), 2007

City	Cocaine base	Cocaine HCL
La Paz	975	2,050
Cochabamba	1,150	2,000
Santa Cruz	1,250	1,900
Region		
Yungas of La Paz	800	1,100
Chapare	1,000	1,500

Source: FELCN

It should be noted that prices for coca leaves and their derivatives were consistently higher in Bolivia than in neighboring Peru.

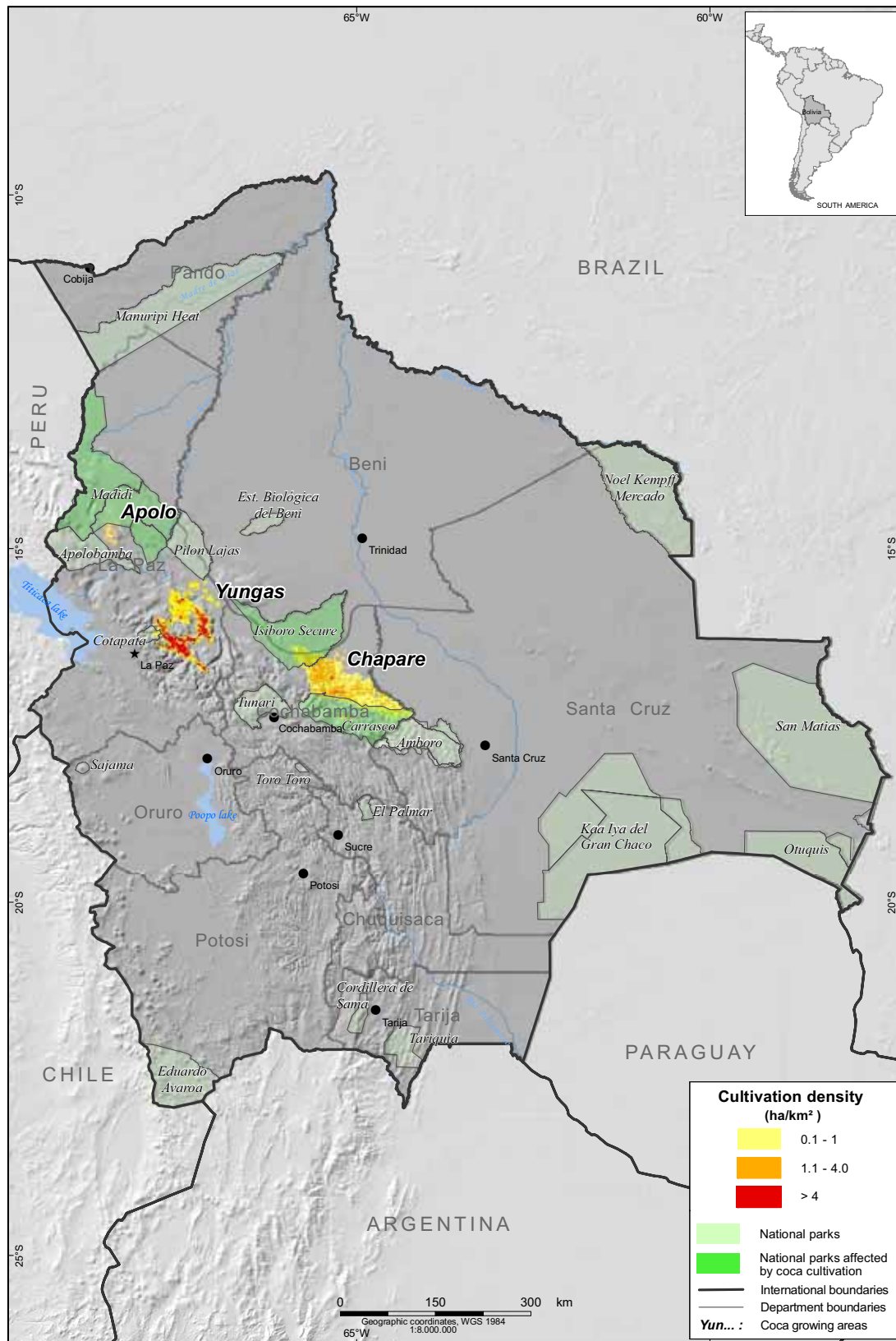
Table 18: Prices for coca leaf and its derivatives in Peru and Bolivia (US\$/kg), 2007

Products	Peru	Bolivia
Coca leaf	2.5	4.1
Cocaine base (in coca producing regions)	600	900
Cocaine HCl*	851	1,800

* Source: As reported by the respective Government.

⁸ Source: INE, 2007

Map 10: Coca cultivation and National Parks, Bolivia 2007



Source: Government of Bolivia - National monitoring system supported by UNODC.
 The boundaries and names shown and the designation used on this map do not imply official endorsement or acceptance by the United Nations.

Coca cultivation in National Parks

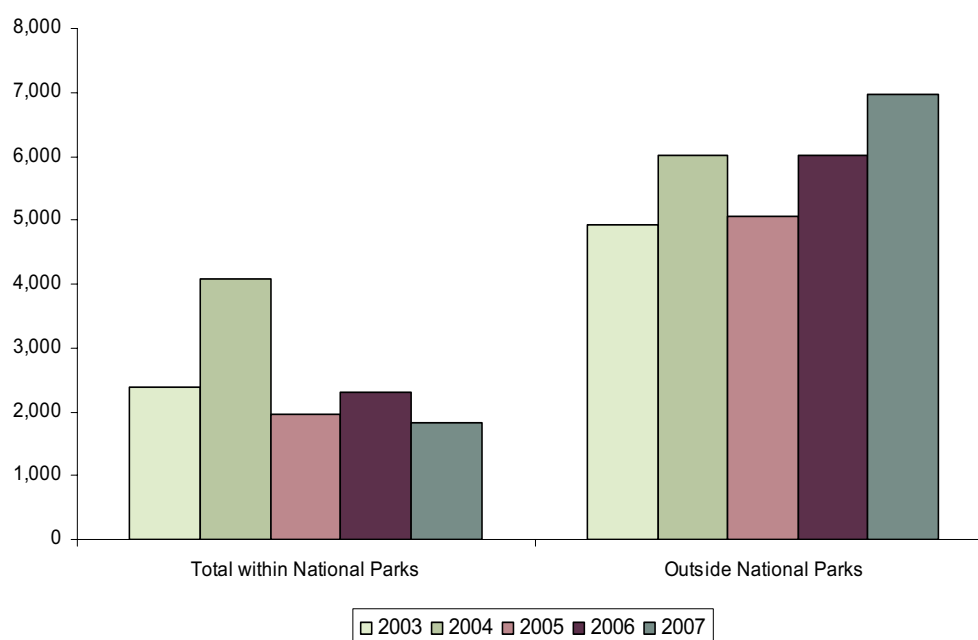
There are 21 protected areas and National Parks in Bolivia, totaling an area of 165,000 sq km, representing 15% of the national territory.

Coca cultivation decreased in the National Parks of Chapare due to eradication efforts in these areas. The main decrease (-32%) was found in Isiburu Secure National Park. Ecosystems of the National Parks are particularly fragile and deforestation for establishment of coca cultivation causes irreversible damage to their environment. Although eradication has been efficient during 2007, it should be noted that the damage to the forest due to coca cultivation is irreversible.

Table 19: Coca cultivation estimates by National Parks in Chapare (ha), 2003 – 2007

Area	2003	2004	2005	2006	2007	% change 2006 - 2007	% of 2007 total
Isiboro Secure National Park	1,605	2,807	1,161	1,451	985	-32%	11%
Carrasco National Park	778	1,257	781	837	830	-1%	9%
Madidi National Park	n.a.	10	10	10	10	0%	0.1%
Total within National Parks	2,383	4,074	1,952	2,298	1,825	-21%	21%
Outside National Parks	4,917	6,026	5,053	6,002	6,975	16%	79%
Rounded Total	7,300	10,100	7,005	8,300	8,800	6%	100%

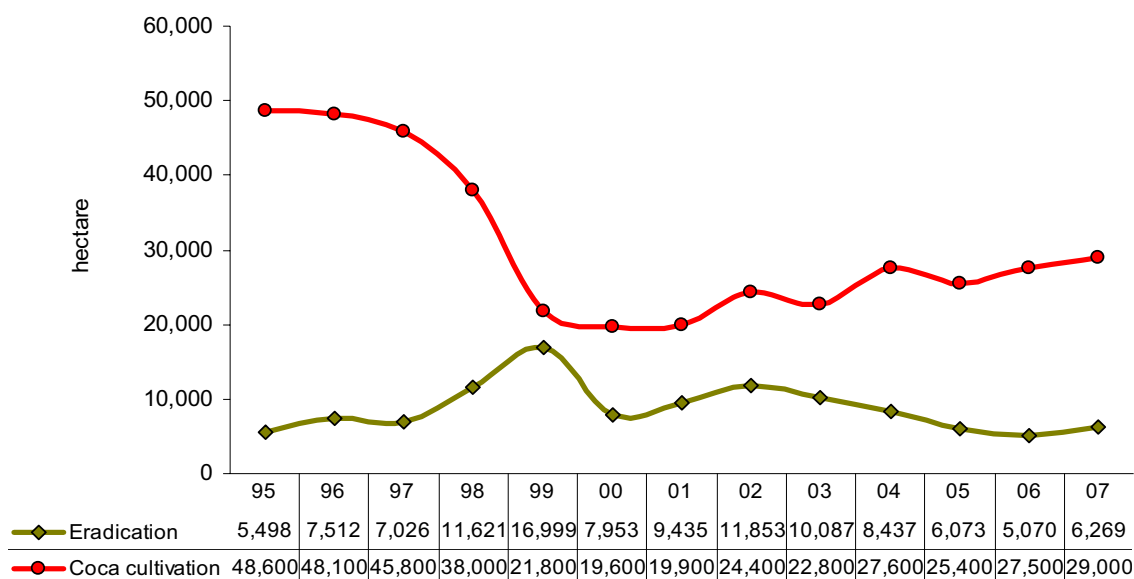
Figure 17: Distribution of coca cultivation in Chapare region inside and outside national parks (ha), 2003 – 2007



Reported eradication

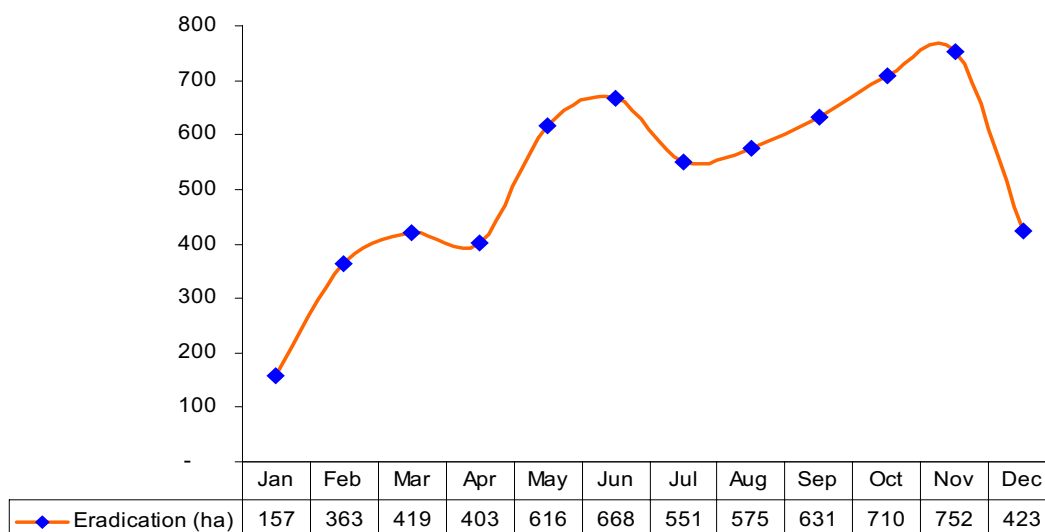
In 2007, the Bolivian Government reported the eradication of 6,269 ha of coca, 24% more than in the previous year. Only 300 ha of coca were eradicated in the Yungas of La Paz, (5%) and 5,969 ha in the Cochabamba Tropics (95%). In Bolivia, no chemical or aerosol agents are used and the eradication of coca cultivation is exclusively manual.

Figure 18: Reported eradication and coca cultivation in Bolivia (ha), 1995 – 2007



Sources: For coca cultivation: UNODC; for eradication: DIGPROCOPA

Figure 19: Reported monthly eradication in Bolivia (ha), 2007



Source: DIGPROCOPA

The Bolivian government also reported the eradication of 7.5 ha of coca seedlings in the Chapare region, an increase of 30% compared to 2006. The eradication of coca seedlings helps to avoid the replanting of eradicated coca fields.

Table 20: Reported monthly eradication of coca seedlings (m²), 2003-2007

Month	2003	2004	2005	2006	2007
January	1,460	1,795	2,748	444	1,077
February	1,415	2,830	4,516	1,907	4,196
March	4,520	3,296	4,320	2,904	4,052
April	4,013	2,936	4,825	3,764	4,014
May	2,352	2,989	3,639	2,691	8,856
June	2,972	5,411	4,737	5,683	8,245
July	5,962	6,963	4,372	7,328	7,595
August	10,140	4,344	5,294	10,035	7,879
September	6,438	3,156	4,010	7,667	7,568
October	9,978	4,470	4,812	7,083	8,299
November	7,280	5,869	4,222	6,166	7,387
December	3,294	5,488	4,862	1,814	5,436
Total	59,823	49,547	52,357	57,486	74,604

Source: DIGPROCOCA



Manual eradication of a coca field in Caranavi

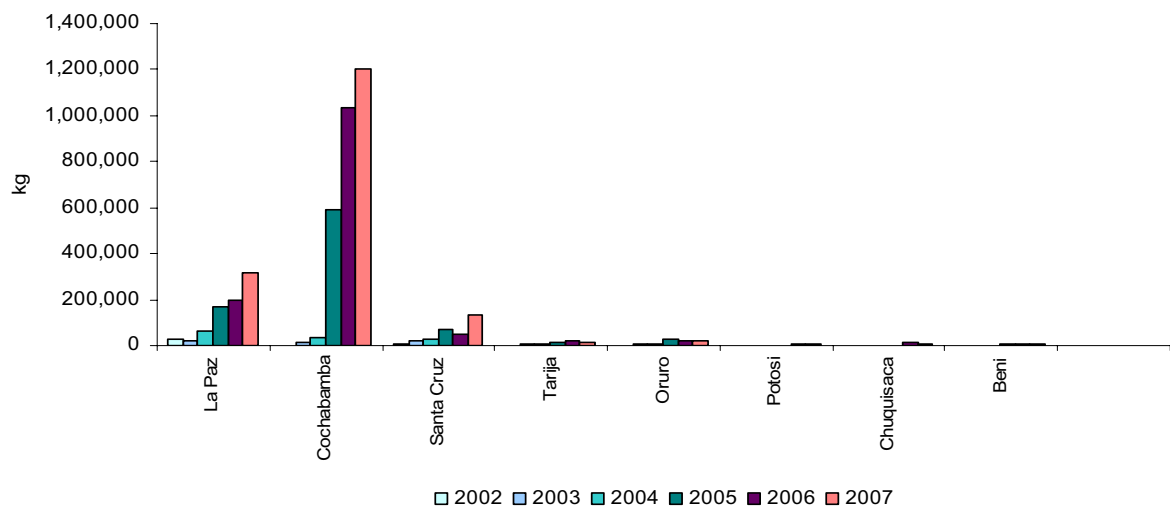
Reported seizures

DIGCOIN, through FELCN, controls the trade of coca leaves within the country, including control over the transport of coca leaves. Coca leaves are seized if transported without a license or outside of the authorized route specified in the license. In 2007, DIGCOIN seized 1,343 mt of coca leaves, representing a significant increase of 27% compared to the reported seizure of 1,058 mt in 2006. The increase in seizure of coca leaf can be attributed to a strengthening of FELCN's special force for the control of coca leaves (Grupo Especial de Control de la Hoja de Coca, GECC), which included introducing control of additional roads, and improvement in equipment and infrastructure.

Table 21: Reported seizure of coca leaves (kg), 2002–2007

Department	2002	2003	2004	2005	2006	2007
La Paz	31,291	22,375	66,396	172,331	197,854	315,463
Cochabamba	214	11,105	37,748	591,803	1,030,834	1,203,767
Santa Cruz	7,343	20,828	30,441	68,508	52,018	130,703
Tarija	1,407	4,451	10,183	16,499	19,604	11,843
Oruro	1,205	4,682	6,120	24,814	21,913	24,393
Potosi	357	1,321	1,942	1,509	4,010	4,999
Sucre	0	1,450	1,448	3,229	11,780	7,013
Beni	728	600	904	7,525	4,778	6,768
Pando	0	0	0	50	271	686
Total	42,544	66,811	155,182	886,268	1,343,062	1,705,636

Source: FELCN

Figure 20: Reported seizure of coca leaves, 2002-2007

Source: FELCN

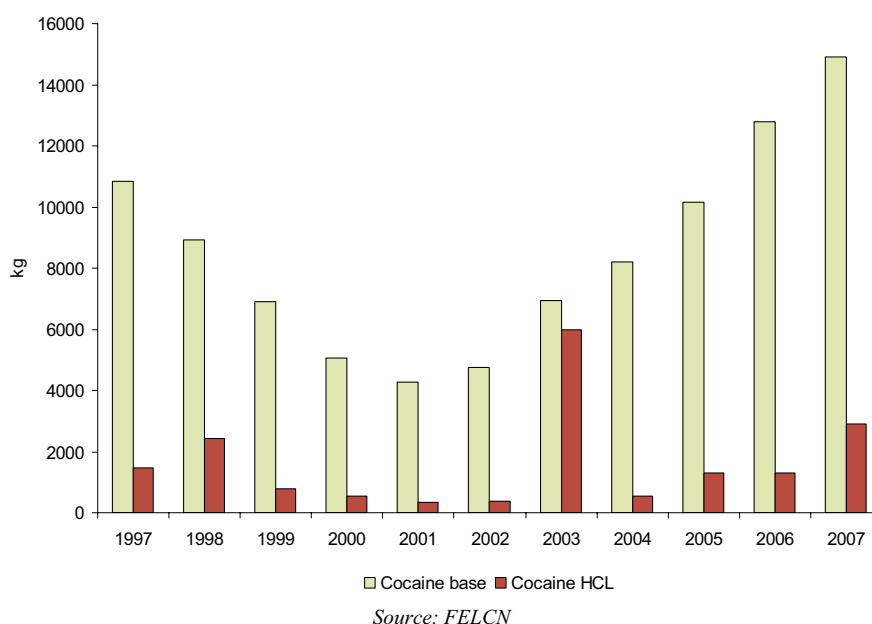
The Special Force for the Fight against Drugs (FELCN) reports annually on drugs seizures. Between 2006 and 2007, there was a significant increase of 17% in reported seizures of cocaine base and more than a doubling of seizures of cocaine HCl⁹.

Table 22: Reported seizure of drugs in Bolivia, 1998-2007 (kg)

Product	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007
Cocaine base	8,906	6,905	5,044	4,280	4,741	6,934	8,189	10,152	12,779	14,912
Cocaine HCl	2,440	802	555	334	362	5,969	531	1,300	1,309	2,923
Heroin	0.8	0	0	0	0	0	0	0	0	0
Cannabis	320	2,160	3,745	7,055	8,754	8,510	28,200	31,390	125,356	423,777

Source: FELCN

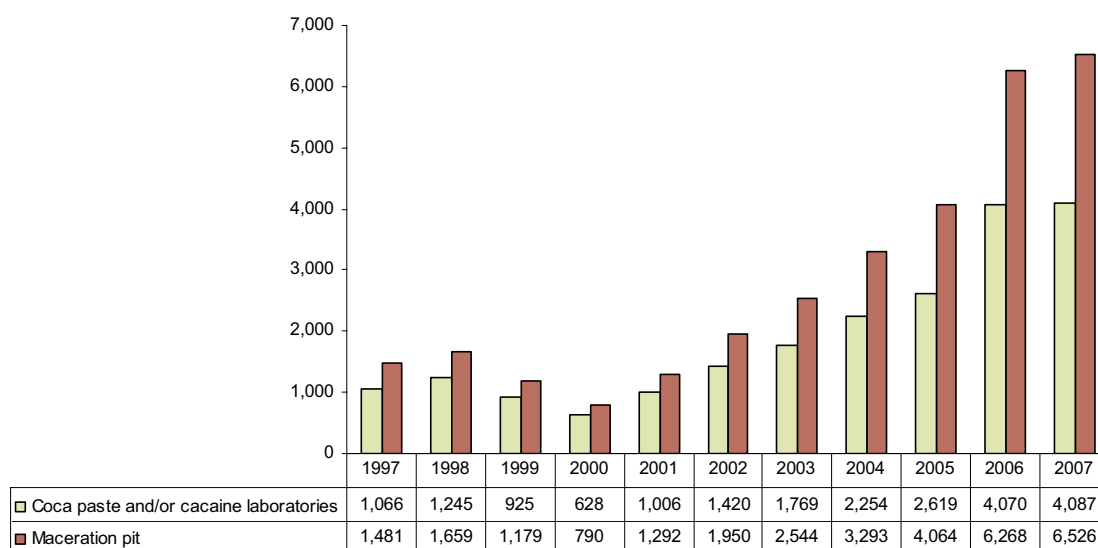
⁹ The peak in seizure of cocaine HCL in 2003 was due to an exceptional operation conducted by FELCN.

Figure 21: Reported seizures of cocaine base and cocaine HCl in Bolivia (kg), 1997-2007

The increasing trend of cocaine base seizures has continued in 2007; the destruction of coca/cocaine laboratories and maceration pits was very similar to the year before and remained at a high level.

Table 23: Reported destruction of clandestine laboratories and macerations pits, 1998-2007

Type	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007
Coca paste and/or cocaine laboratories	1,245	925	628	1,006	1,420	1,769	2,254	2,619	4,070	4,087
Precursors laboratories	15	8	3	2	6	0	3	2	2	2
Cocaine laboratories only	4	3	17	3	1	0	4	3	3	6
Maceration pit	1,659	1,179	790	1,292	1,950	2,544	3,293	4,064	6,268	6,526

Figure 22: Reported destruction of clandestine laboratories/macerations pits, 1997 - 2007

PART 3. COLOMBIA COCA CULTIVATION SURVEY

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FACT SHEET – Colombia Coca Survey for 2007

		2006	Change on 2006	2007
Net coca cultivation (rounded total)		78,000 ha	+27%	99,000 ha
Of which	Pacific region	18,810 ha	+38%	25,960 ha
	Putumayo-Caquetá region	17,220 ha	+23%	21,130 ha
	Central region	12,130 ha	+73%	20,950 ha
	Meta-Guaviare region	20,540 ha	-4%	19,690 ha
	Elsewhere	9,170 ha	+23%	11,270 ha
Reported cumulative aerial spraying of coca bush*		172,026 ha	-11%	153,134 ha
Reported manual eradication of coca bush*		43,051 ha	+55%	66,805 ha
Average farm-gate price of coca paste		US\$ 879/kg COP 2,070,000/kg	+7% -5%	US\$ 943/kg COP 1,959,000/kg
Total farm-gate value of the production of coca leaf and its derivatives		US\$ 683 million	+37%	US\$ 934 million
in % of GDP ¹⁰		0.5%		0.5%
in % of GDP of agricultural sector ¹		5%		5%
No. of households involved in coca cultivation		67,000 households	+19%	80,000 households
Annual household gross income from the production of coca leaf and its derivatives		US\$ 10,194	+15%	US\$ 11,675
Potential production of cocaine		610 mt	-2%	600 mt
in % of world cocaine production		62%		60%
Average wholesale cocaine price*		US\$ 1,762/kg COP 4,155,000/kg	+25% +10%	US\$ 2,198/kg COP 4,567,000/kg
Reported opium poppy cultivation*		1,023 ha	-30%	714 ha
Potential opium latex production		31 mt	+10%	34 mt
Potential heroin production		1.3 mt	+8%	1.4 mt
Average farm-gate price of opium latex*		US\$ 251/kg	+14%	US\$ 286/kg
Average heroin price*		US\$ 9,992/kg	+8%	US\$ 10,780/kg
Reported seizure of cocaine*		127,326 kg	-1%	126,641 kg
Reported seizure of heroin*		442 kg	+21%	537 kg
Reported destruction of clandestine laboratories ¹¹ *		2,270	+4%	2,367

* As reported by the Government.

¹⁰ GDP of the respective year as reported by the Government.

¹¹ Includes laboratories processing coca paste/cocaine base, cocaine hydrochloride, heroin, morphine, potassium permanganate, and non-specified.

ABBREVIATIONS

COP	Colombian Pesos
DANE	National Department of Statistics
DEA	US Drugs Enforcement Administration
DIRAN	Colombian Anti-Narcotics Police
DNE	National Narcotics Office
DNP	National Planning Department
GME	Mobile Eradication Groups
HCl	(cocaine) hydrochloride
ICMP	Illicit Crop Monitoring Programme
INCB	International Narcotics Control Board
IDB	Inter-American Development Bank
NNPS	National Natural Parks System
OAS	Organization of American States
PDA	Alternative Development Programme
PCI	Presidential Programme against Illicit Crops
RSS	Social Solidarity Net
SIMCI	Integrated Illicit Crops Monitoring System
UNODC	United Nations Office on Drugs and Crime
USAID	United States Agency for International Development
US\$	United States Dollars
mt	Metric tons

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 Zully Sossa, Digital Processing Expert
 Maria Isabel Velandia, Digital Processing Expert
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 Leonardo Correa, Field Engineer
 Juan Carlos Parra, Editing Engineer
 Martha Luz Gutierrez, Administrative Assistant
 Javier Espejo, Assistant Engineer
 Maria Ximena Gualdrón, Assistant Engineer
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 Martin Raitelhuber, Programme Officer, Statistics and Survey Section, Vienna
 Javier Teran, Statistician, Statistics and Survey Section, Vienna

The implementation of UNODC's Illicit Crop Monitoring Programme in the Andean countries and the Colombian survey in 2007 was made possible thanks to financial contributions from the Governments of Austria, Colombia, France, the United States of America, and from the European Commission.

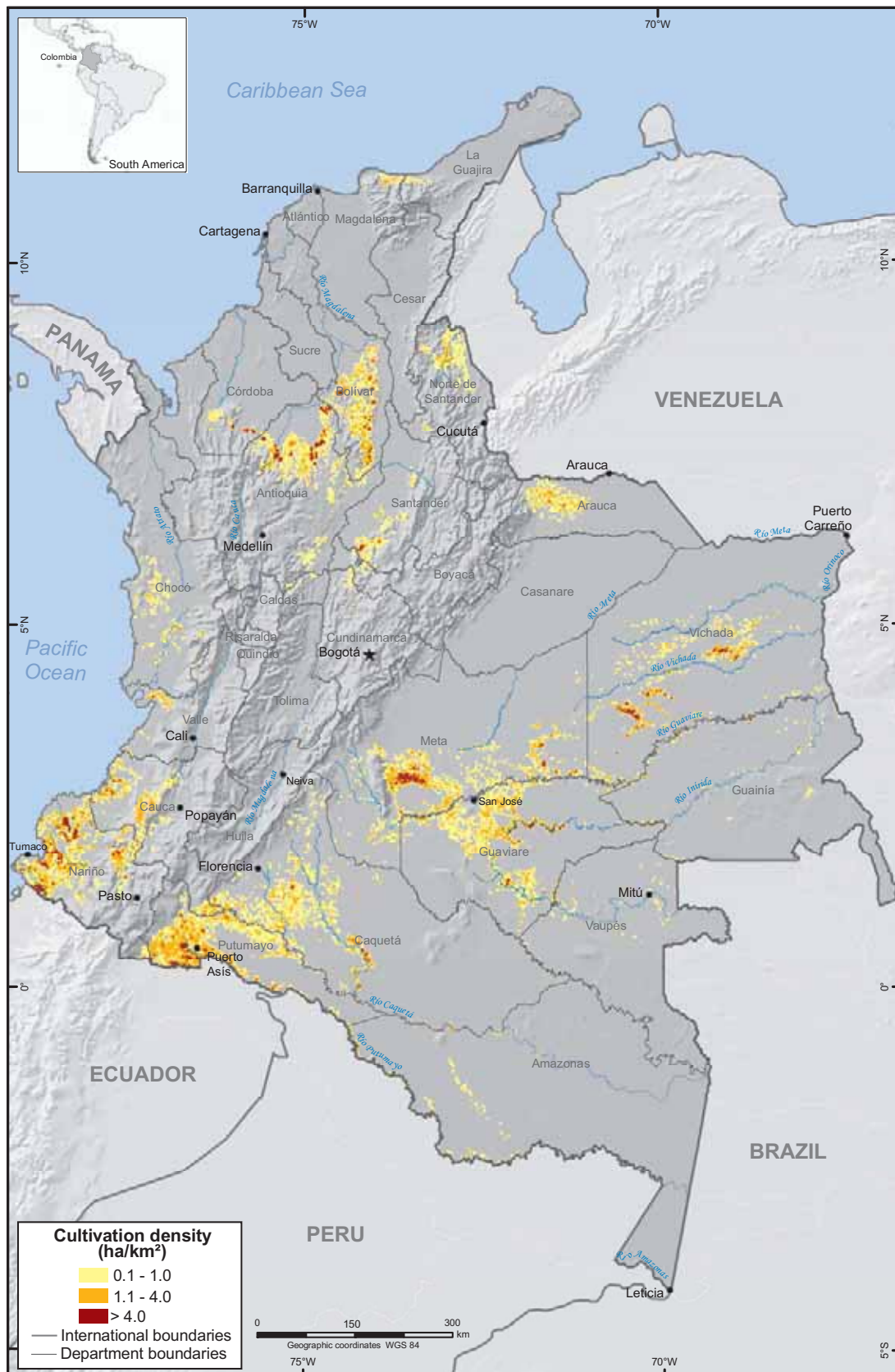
Unless otherwise specified, all figures presented in this report come from the Government of Colombia in the context of national monitoring systems supported by UNODC.

Photo credits: UNODC/SIMCI unless otherwise specified.

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Map 11: Coca cultivation density in Colombia, 2007



Source: Government of Colombia - National monitoring system supported by UNODC
The boundaries and names shown and the designations used in this map do not imply official endorsement or acceptance by the United Nations

1 INTRODUCTION

The objectives of UNODC's Illicit Crop Monitoring Programme (ICMP) are to establish methodologies for data collection and analysis, to increase the governments' capacity to monitor illicit crops on their territories and to assist the international community in monitoring the extent and evolution of illicit crops in the context of the elimination strategy adopted by the Member States at the U.N. General Assembly Special Session on Drugs in June 1998. ICMP presently covers seven countries: Colombia, Bolivia and Peru for coca; Afghanistan, Lao PDR and Myanmar for opium and Morocco for cannabis.

During the 1980's and 1990's, Colombia became the country with the largest illicit coca growing area and cocaine production in the world. Illicit coca cultivation in the country expanded steadily throughout this period, in particular in remote areas of the Amazon basin. Although coca cultivation started to decrease in 2001, Colombia remains the largest coca-growing country in the world.

UNODC has supported the monitoring of illicit crops since 1999, and has produced nine annual surveys through a special satellite based analysis programme called SIMCI (from the Spanish initials). In October 2006, UNODC signed a new agreement with the Colombian government to continue and expand monitoring and analysis work. In this context, the SIMCI II project facilitates the implementation of additional tasks in the framework of an integrated approach to analyze the drug problem in Colombia. The project also supports the monitoring of related problems such as fragile ecosystems, natural parks, indigenous territories, the expansion of the agricultural frontier and deforestation. It provides Geographic Information System support to the government's alternative development projects and its Forest Warden Families Programme.

The new project foresees the creation of an Inter-Institutional Committee permanently assigned to govern the project in order to ensure the transfer of know-how to the national beneficiary institutions. SIMCI II is a joint project between UNODC and the Colombian government, represented by the Ministry of Interior and Justice and the International Cooperation Agency. The national counterpart is the Ministry of Interior and Justice.

The project is managed by a technical coordinator and composed of engineers and technicians: four digital image processing specialists, one field engineer, a cartographic technician, a research and analysis specialist, two assistant engineers and an administrative assistant. The team cooperates with technicians from the Police Antinarcotics Division (DIRAN) and National Parks Administration. It supports several studies and investigations for government and private institutions, related to land use, environment, licit crops, etc. SIMCI provides to the above-mentioned institutions experts, access to its Spatial Information Data Bank, transfer of technology and guidance to achieve their goals. Organizations that benefited from SIMCI support include the National Directorate for Statistics (DANE), local governments, the National Federation of Coffee Growers, NGOs as well as other UN agencies and projects.

The project has developed technical agreements with several national and foreign Universities, to interchange and share knowledge, for training activities and joint projects. Among them are BOKU University in Austria, Zaragoza University in Spain, Universities of Harvard, Michigan and Maryland in USA, Andes, Antonio Nariño and other Universities in Colombia.

2 FINDINGS

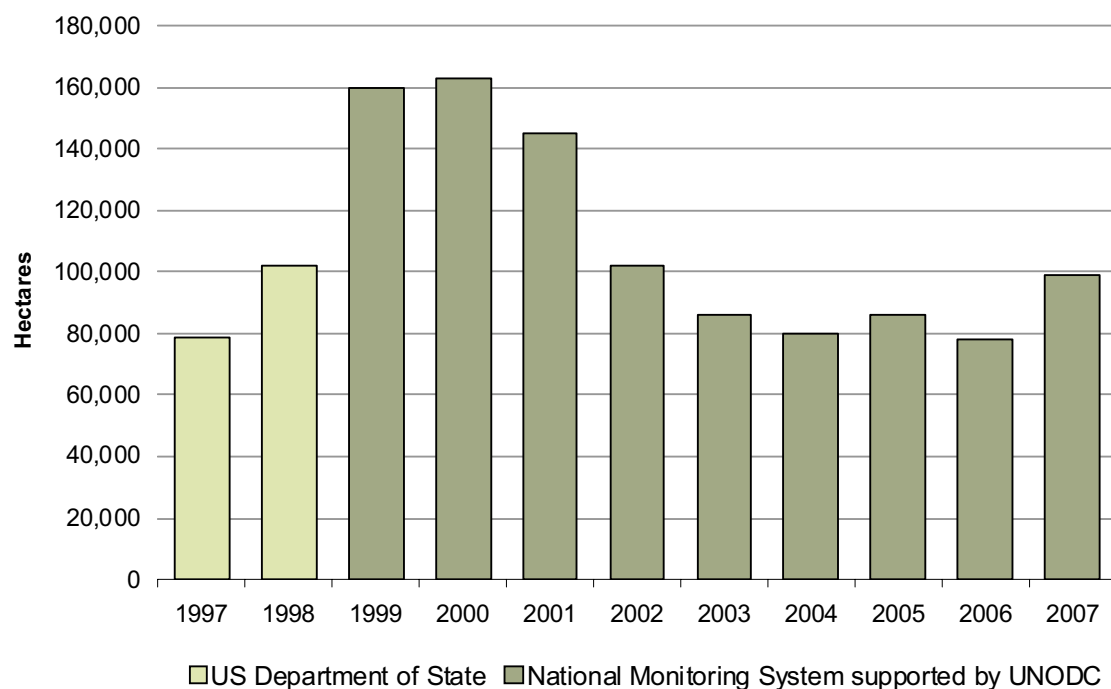
Coca cultivation

National cultivation

In 2007, the total area under coca cultivation in Colombia was estimated at 99,000 ha. This estimate represented a 27% increase in area under the illicit crop compared to 2006 (78,000 ha). This is the first significant increase in coca cultivation after four years of relatively stable cultivation.

Similar to the previous six surveys, the 2007 survey represents the situation as of the end of the year, (31 December 2007). As was the case last year, the survey covered the whole territory and detected coca cultivation in 23 out of 32 departments. In 2007, the area under coca cultivation represents 2% of the agricultural land in Colombia.

Figure 23: Coca cultivation in Colombia (ha), 1997–2007



The increase in area under coca cultivation between 2006 and 2007 took place despite heavy anti-drugs strategies implemented by the Government of Colombia. In 2007, aerial spraying of coca cultivation amounted to 153,000 ha and the Colombian Government also reported additional manual eradication of almost 67,000 ha.

Analysis of coca cultivation changes

Coca cultivation is very dynamic in Colombia. A range of variables can be associated with increases and decreases of the cultivation area over time. Factors such as favorable prices, pressure exerted by armed groups on farmers, the legal economy, and temporary crisis situations can all lead to an increase in the cultivated area. On the other hand, factors such as forced eradication, aerial spraying, improved security conditions, and plant diseases could reduce the cultivated area. This cultivation survey does not endeavor to assess how or to what extent these factors bring about change in the area under coca cultivation. Rather, it shows the situation on a given date of the year (31st of December).

The ten municipalities listed below embrace the largest areas under coca cultivation in Colombia in 2007; they account for 36% of the national coca cultivation and 47% of the national potential cocaine production. Cumaribo, a municipality located in Orinoco region, has not only the largest coca cultivation area in Colombia (7% of the total country), but the highest potential cocaine production (9% of the total country) due to its high yield. It is noticeable that the largest coca growing municipalities presented also the highest increases in area in 2007. In addition, there has not been any significant change in the top 10 ranking of municipalities for the last two years.

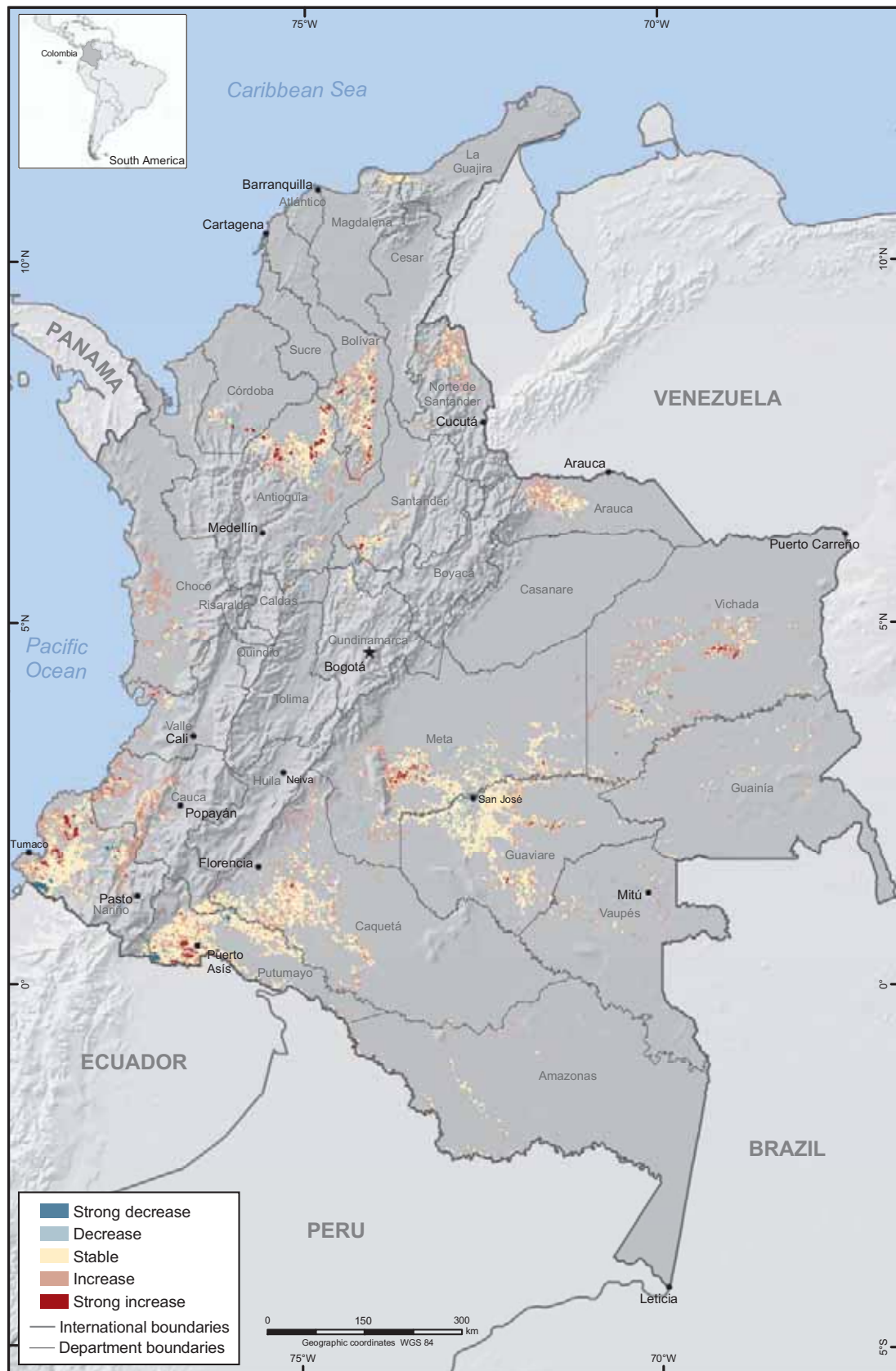
Table 24: The ten municipalities with the largest coca cultivation area and potential cocaine production, 2007

Municipality	Department	Coca cultivated area (ha)	As % of total coca cultivation in Colombia	Potential pure cocaine production (mt)
Cumaribo	Vichada	6,761	6.8 %	57
Tumaco	Nariño	5,135	5.2 %	18
Puerto Asís	Putumayo	4,386	4.4 %	24
Vista Hermosa	Meta	3,759	3.8 %	33
El Retorno	Guaviare	3,210	3.2 %	34
San José del Guaviare	Guaviare	3,160	3.2 %	39
Puerto Rico	Meta	2,638	2.7 %	35
Mapiripan	Meta	2,191	2.2 %	32
Cartagena del Chairá	Caquetá	1,924	1.9 %	12
Olaya Herrera	Nariño	1,864	1.9 %	4
Total		35,027	36 %	288



Manual eradication in Nariño, Source: Accion Social PCI, Government of Colombia

Map 12: Coca cultivation density change in Colombia, 2006-2007



Source: Government of Colombia - National monitoring system supported by UNODC
 The boundaries and names shown and the designations used in this map do not imply official endorsement or acceptance by the United Nations

In absolute numbers, the most important increases of coca crops between 2006 and 2007 took place in the departments of Nariño (+4,653 ha) in the southwest corner of the country, and in the departments of Antioquia (+3,769 ha) and Bolívar (+3,250 ha), both in the central region. The area under coca cultivation in Nariño increased from 15,606 ha in 2006 to 20,259 ha in 2007. The Nariño region contributed with 21% of the total area under coca cultivation in Colombia. Coca cultivation in Nariño became notorious in 2002, when the area increased from approximately 7,500 ha in 2001 to 15,131 ha in 2002. In 2007, Nariño remained the department with the highest area with coca cultivation in the country with 20,259 ha (21% of total cultivation in Colombia); followed by the department of Putumayo with 14,813 ha, which accounted for 15% of the total cultivation.

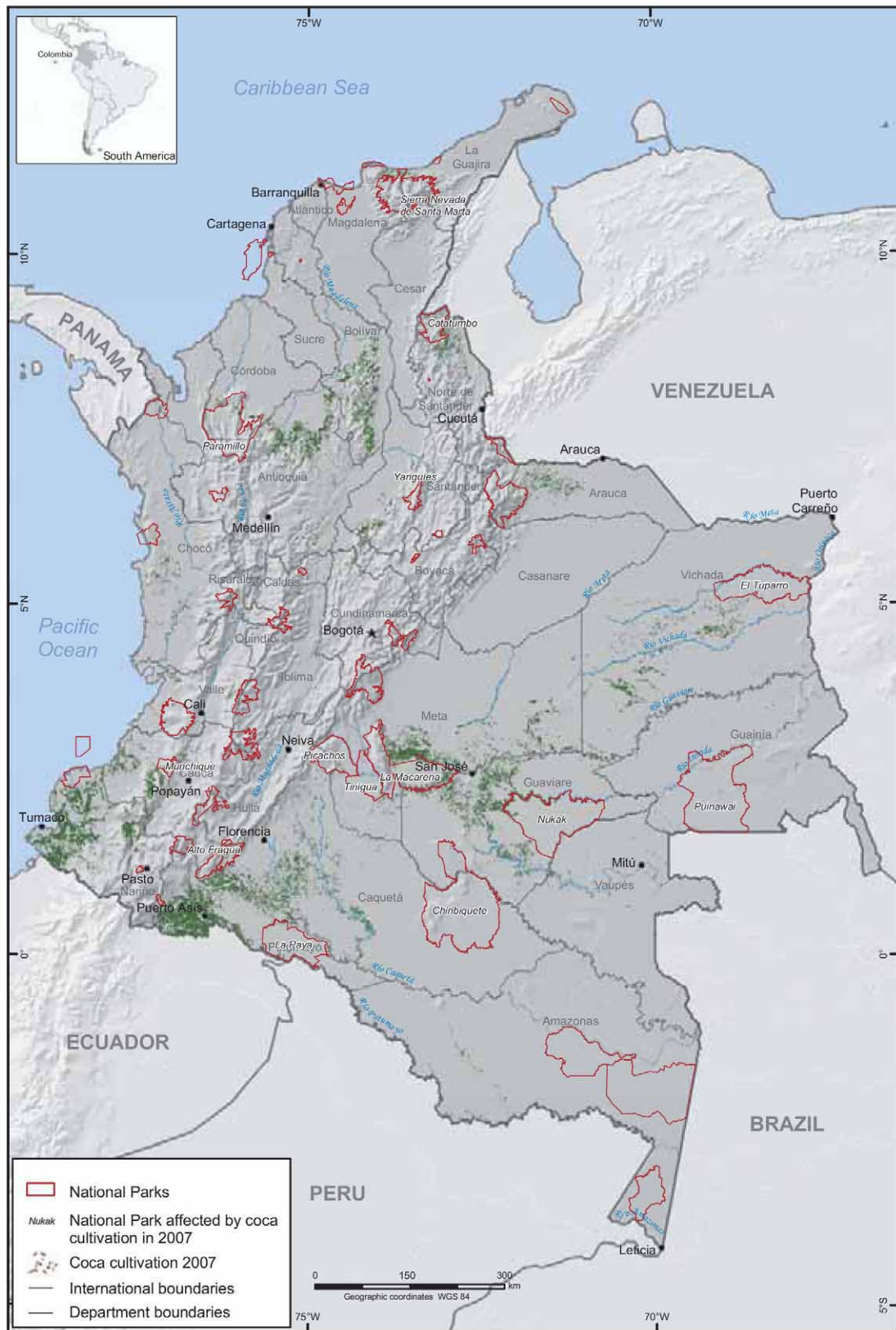
The only reduction in an important growing region took place in Meta department (-677 ha). The department of Norte de Santander, located at the border with Venezuela, was showing a decreasing trend in the period 2004-2006. Unfortunately, in 2007 the area under coca cultivation increased four fold from less than 500 ha in 2006 to 1,946 ha.

As was the case in 2006, Nariño and Putumayo –with a combined increase of over 7,200 ha – remained the two departments with the largest area in terms of coca cultivation, together accounting for 36% of the total country's area under coca cultivation. In fact, 46% of the 2007 cultivation took place in only three departments: Nariño, Putumayo and Meta. The same three departments accounted for 50% of the total cultivation in 2006.

Table 25: Coca cultivation by department (ha), 2002–2007

Department	Dec-2002	Dec-2003	Dec-2004	Dec-2005	Dec-2006	Dec-2007	% change 2006-2007	% of total 2007
Nariño	15,131	17,628	14,154	13,875	15,606	20,259	30%	21%
Putumayo	13,725	7,559	4,386	8,963	12,254	14,813	21%	15%
Meta	9,222	12,814	18,740	17,305	11,063	10,386	-6%	11%
Antioquia	3,030	4,273	5,168	6,414	6,157	9,926	61%	10%
Guaviare	27,381	16,163	9,769	8,658	9,477	9,299	-2%	9%
Vichada	4,910	3,818	4,692	7,826	5,523	7,218	31%	7%
Caquetá	8,412	7,230	6,500	4,988	4,967	6,318	27%	6%
Bolívar	2,735	4,470	3,402	3,670	2,382	5,632	136%	6%
Cauca	2,120	1,443	1,266	2,705	2,104	4,168	98%	4%
Arauca	2,214	539	1,552	1,883	1,306	2,116	62%	2%
N. de	8,041	4,471	3,055	844	488	1,946	299%	2%
Córdoba	385	838	1,536	3,136	1,216	1,858	53%	2%
Santander	463	632	1,124	981	866	1,325	53%	1%
Chocó		453	323	1,025	816	1,080	32%	1%
Guainía	749	726	721	752	753	623	-17%	0,6%
Amazonas	784	625	783	897	692	541	-22%	0,6%
Valle del	111	37	45	28	281	453	61%	0,5%
Vaupés	1,485	1,157	1,084	671	460	307	-33%	0,3%
Magdalena	644	484	706	213	271	278	0%	0,3%
Cundinama	57	57	71	56	120	131	9%	0,1%
La Guajira	354	275	556	329	166	87	-48%	0,1%
Boyacá	118	594	359	342	441	79	-82%	0,1%
Caldas		54	358	189	461	56	-88%	0%
Total	102,000	86,000	80,000	86,000	78,000	99,000	27%	
Department	21	23	23	23	23	23	23	

Map 13: National Parks and coca cultivation in Colombia, 2007



Sources: for coca cultivation Government of Colombia - National monitoring system supported by UNODC; for national parks UAESPNN
 The boundaries and names shown and the designations used in this map do not imply official endorsement or acceptance by the United Nations

Coca cultivation in national parks

The presence of illicit crops in both Natural Parks and Indigenous Territories has been monitored by SIMCI since the 2001 coca survey. The data have been delivered to the competent authorities to enable them to identify actions and projects to be applied for the preservation of its social and environmental characteristics with minimum of harm.

The boundaries of National Parks and Indigenous territories have been provided by the official institutions in charge of their management. In 2005, the limits of National Parks were edited by the monitoring project in cooperation with technicians from the National Parks Administrative Unit. The editing improved the match between SIMCI cartographic material and the official boundaries of the Parks. National Parks boundaries are not always precise and therefore coca cultivation estimated in each of them depends on the accuracy of their delimitation. To enable annual comparison the same boundaries were used for each year.

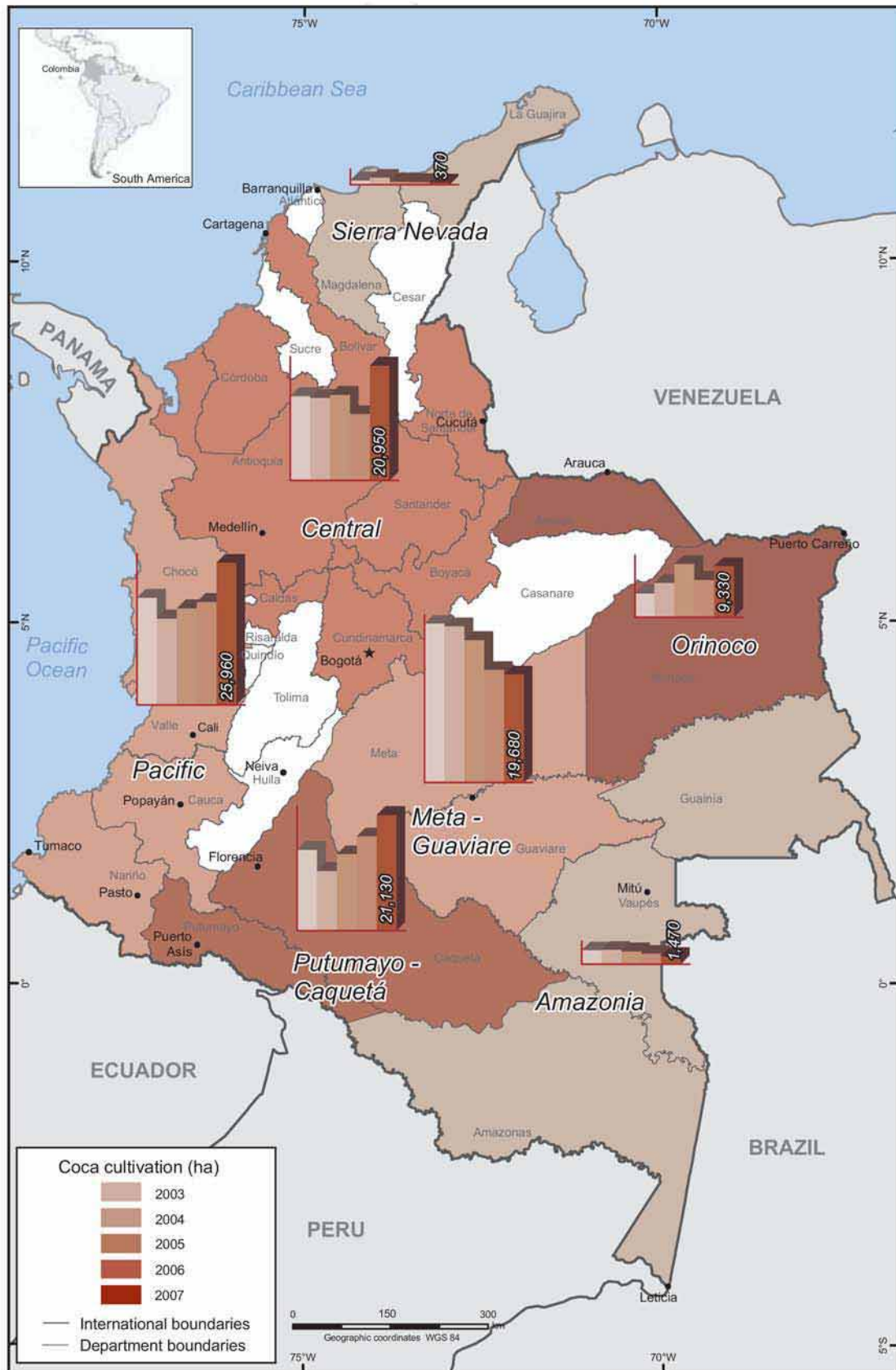
Coca cultivation in 2007 was found in 16 of the 51 National Parks in Colombia. With 3,770 ha in 2007, coca cultivation represented 0.02% of the total area covered by National Parks, and coca cultivation in National Parks represented 4% of the total level of coca cultivation in 2007.

Coca cultivation in National Parks showed an increase of 6% in 2007. This increase was mainly due to a increase in the National Parks of Nukak (+591 ha, or +75% increase), Paramillo (+184 ha or +78%) and Munchique (+49 ha or 817%). Decreases in the areas with coca cultivation were found in many other National Parks. However, for the first time, the National Parks of El Tuparro, Sanquianga and Utria were affected by coca cultivation in 2007.

Table 26: Coca cultivation in National Parks (ha), 2004–2007

National parks	2004	2005	2006	2007	% change 2006-2007
Nukak	1,043	930	779	1,370	75%
Sierra La	2,707	3,354	1,689	1,258	-26%
Paramillo	461	686	236	420	78 %
La Paya	230	728	527	358	-32 %
Sierra Nevada	241	95	119	94	-21%
Tinigua	387	155	122	63	-48%
Munchique	8	13	6	55	817%
Sanquianga	-	-	-	41	-
Catatumbo-Bari	107	55	22	38	73%
Puinawai	139	60	41	26	-37%
El Tuparro	-	-	-	14	-
Yariguíes	-	2	4	12	200%
Utria	-	-	-	12	-
Alto Fragua	14	25	1	5	400%
Los Picachos	15	7	6	3	-50%
El Cocuy	-	-	2	1	-50%-
Selva de Florencia	-	-	2	-	-
Farallones	-	-	-	-	-
Tayrona	1	-	-	-	-
Rounded Total	5,400	6,100	3,600	3,800	6%

Map 14: Coca cultivation by region in Colombia, 2003-2007



Source: Government of Colombia - National monitoring system supported by UNODC
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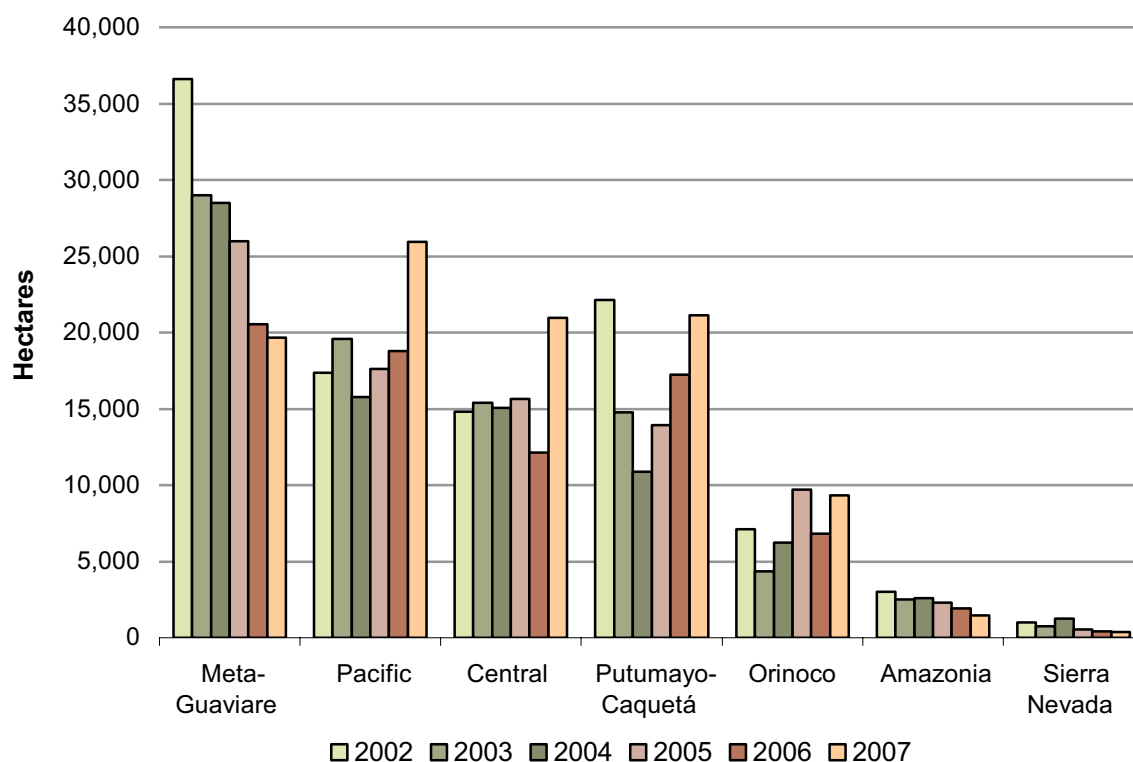
Regional Analysis

In 2007, 68% of coca cultivation in Colombia took place in the coca growing regions of Pacific, Putumayo-Caquetá and Central. The largest increases took place in the Central region (+ 8,822 ha), in Pacific (+ 7,153 ha) –located in the corridor between the western range of mountains and the Pacific Ocean coastal region– and in Putumayo-Caquetá (+3,910 ha) in the southern part of the country bordering Ecuador. Small decreases took place in Meta-Guaviare (- 855 ha, -4%) and in the Amazonian region (-434 ha, -23%) in the southern part of Colombia and in Sierra Nevada, in the North region of the country.

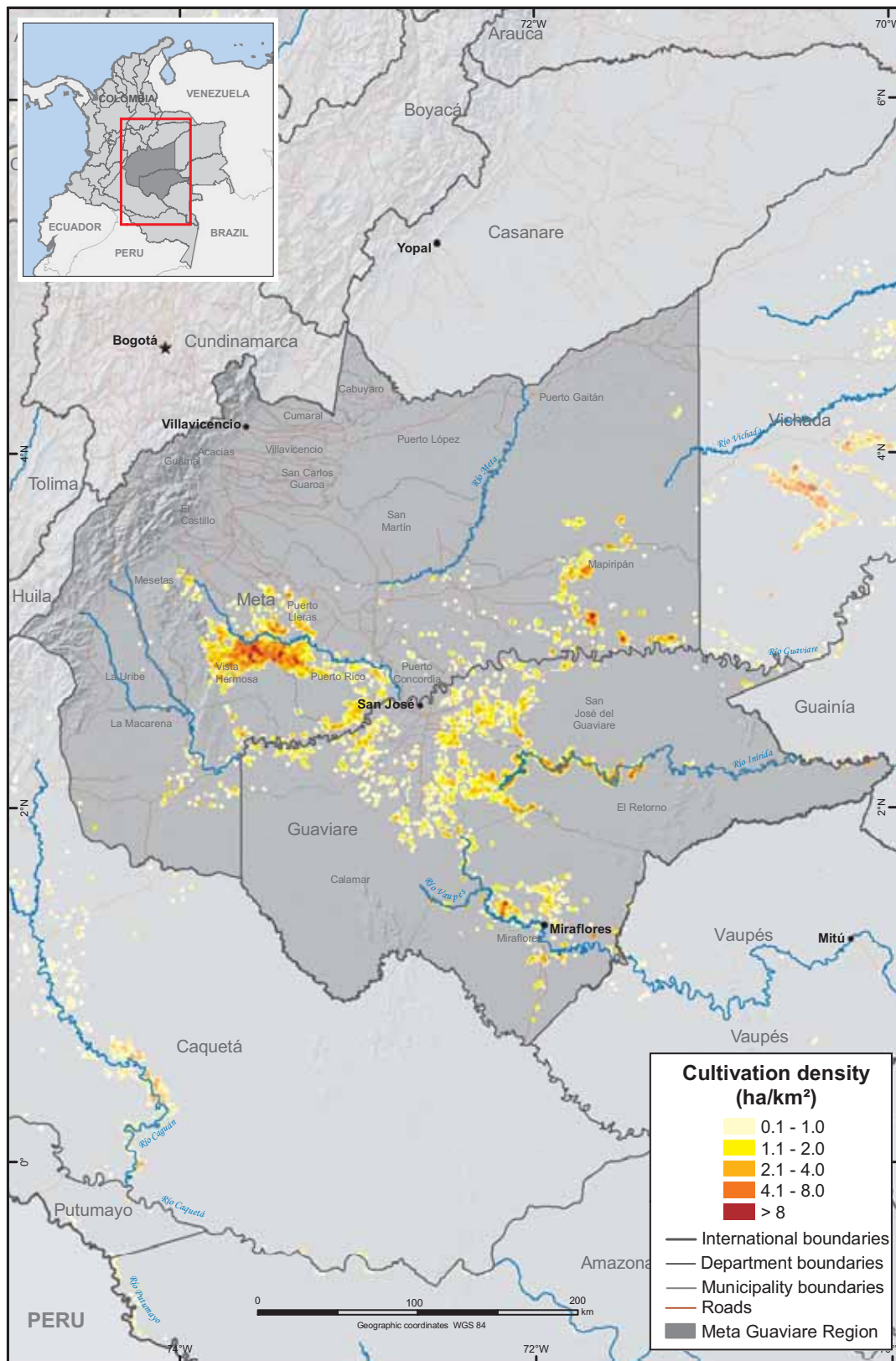
Table 27: Coca cultivation by region (ha), 2002-2007

Region	2002	2003	2004	2005	2006	2007	% Change 2006 - 2007	% of total 2007
Pacific	17,362	19,561	15,789	17,633	18,807	25,960	+38%	26%
Putumayo-Caquetá	22,137	14,789	10,888	13,951	17,221	21,131	+23%	21%
Central	14,829	15,389	15,081	15,632	12,131	20,953	+73%	21%
Meta-Guaviare	36,603	28,977	28,507	25,963	20,540	19,685	-4%	20%
Orinoco	7,124	4,357	6,250	9,709	6,829	9,334	+37%	10%
Amazonia	3,018	2,508	2,588	2,320	1,905	1,471	-23%	2%
Sierra Nevada	998	759	1,262	542	437	365	-16%	0%
Rounded Total	102,000	86,000	80,000	86,000	78,000	99,000	+27%	100%

Figure 24: Coca cultivation by region (ha), 2002-2007



Map 15: Coca cultivation density in the Meta-Guaviare region, Colombia 2007



Source: Government of Colombia - National monitoring system supported by UNODC
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Meta-Guaviare region

The Meta-Guaviare region was traditionally the largest coca producing region. However, the notorious increase of coca cultivation in the Pacific, Putumayo-Caquetá and Central regions and the decreasing trend of Meta-Guaviare since 2005, dropped this region to the fourth place in 2007.

Table 28: Coca cultivation in Meta-Guaviare (ha), 2003–2007

Department	2003	2004	2005	2006	2007	% Change 2006-2007
Meta	12,814	18,740	17,305	11,063	10,386	-6%
Guaviare	16,163	9,769	8,658	9,477	9,299	-2%
Total	28,977	28,509	25,970	20,540	19,685	-4%
Annual trend	-21%	-2%	-9%	-21%	-4%	

In 2004 and 2005, the department of Meta was the department with the highest level of coca cultivation in Colombia. However, it dropped to the third place in 2007, because of a decrease of 36% in 2005-2006 period and 6% in 2006-2007 period.

The department of Meta contributes 11% of the national coca cultivation area. In 2007, the sprayed area of coca cultivation decreased in this region from 25,900 ha in 2006 to 15,527 ha in 2007. Manual eradication also decreased from 5,176 ha in 2006 to 3,768 ha in 2007.

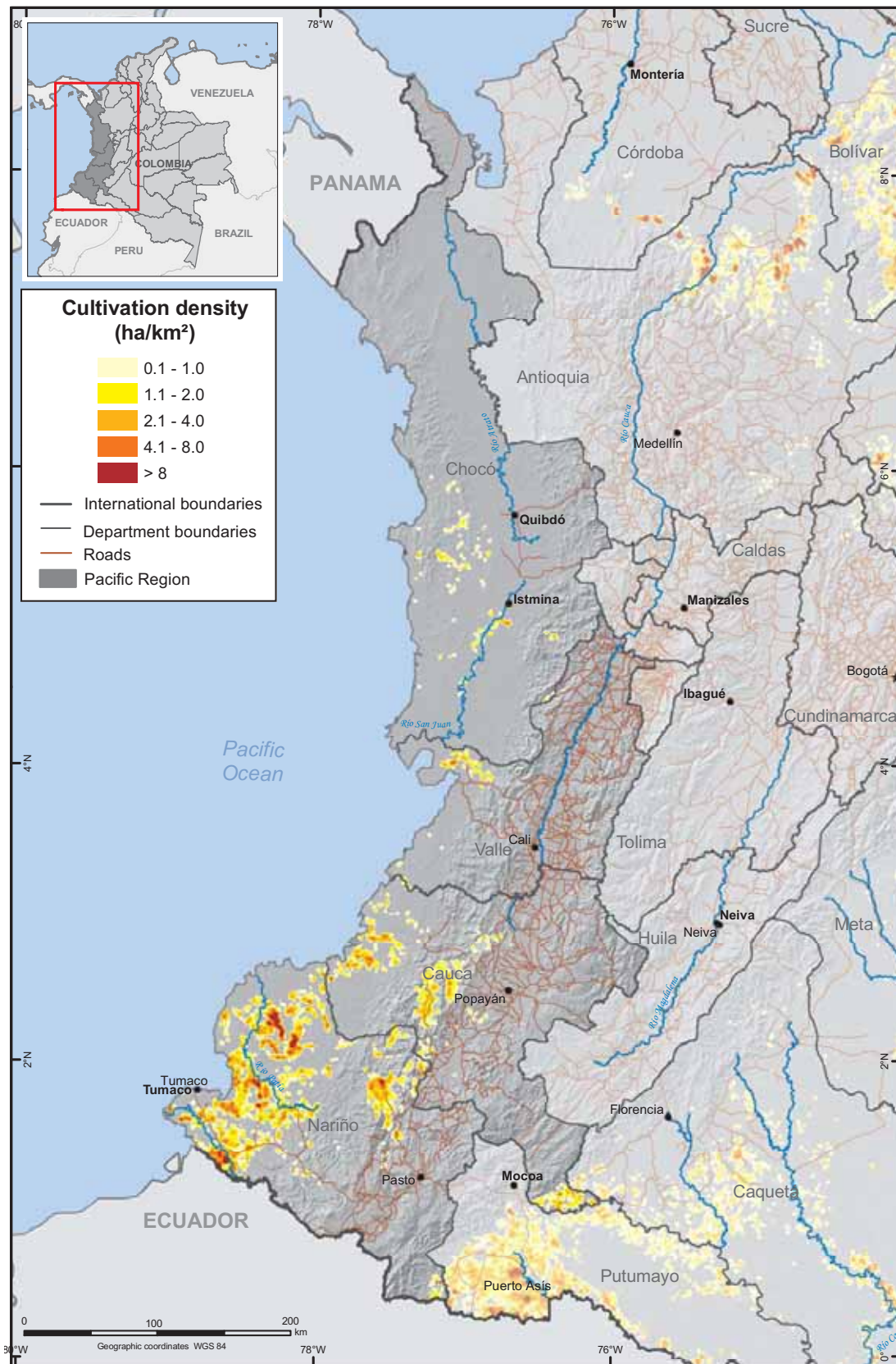
Between 2005 and 2006, coca cultivation in the department of Guaviare increased from 8,658 ha to 9,477 ha (+9%) and remained rather stable in 2007 (-2% or -178 ha). At the same time, aerial spraying decreased from 14,700 ha in 2006 to 11,000 ha in 2007 (-26%) and manual eradication remained stable around 1,100 ha.

The fact that the significant reduction in the area under coca cultivation came along with a reduction of the amount of eradication activities could be attributable to the implementation of the Government of Colombia's 'Consolidation Plan' in the Meta-Guaviare region. The primary goals of the plan are to bring security and stability to the region by strengthening the presence of the state and promoting national and international investment in licit agricultural production.

Among the fourteen national parks surveyed, the National Park of Nukak, located within Guaviare department, had the largest level of coca cultivation within a protected area (1,370 ha in 2007). This represented an increase of 591 ha (+75%) in 2007 as compared to 2006 and replaced the National Park Sierra La Macarena as the protected area with the largest area cultivated with coca.

Guaviare was the department where coca cultivation first appeared in Colombia at the end of the seventies. Since then, coca cultivation remained important in the department. Although a significant decrease was noted in the past few years, this trend was reversed in 2007 when 9,299 ha were detected. Guaviare accounted for 9% of the national total.

Map 16: Coca cultivation density in the Pacific region, 2007



Source: Government of Colombia - National monitoring system supported by UNODC
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Pacific region

Nariño is located in the south-western part of the country, at the border with Ecuador. The geographic features of the region include high altitudes, as well as coastline. This contributed to the spread of cultivation of coca bush and opium poppy, as well as the maritime smuggling of illegal drugs and precursor chemicals through the department.

Table 29: Coca cultivation in the Pacific Region (ha), 2003-2007

Department	2003	2004	2005	2006	2007	% Change 2006-2007
Nariño	17,628	14,154	13,875	15,606	20,259	+30%
Cauca	1,443	1,266	2,705	2,104	4,168	+98%
Choco	453	323	1,025	816	1,080	+32%
Valle del Cauca	37	45	28	281	453	+61%
Total	19,561	15,788	17,633	18,807	25,960	+38%
Annual trend	+13%	-19%	+12%	+7%	+38%	

Coca cultivation in Nariño became significant in 2002, when coca cultivation decreased in the neighboring departments of Putumayo and Caquetá. Between 2001 and 2002, coca cultivation decreased by 40,000 ha in Putumayo and Caquetá, while increasing by 7,600 ha in Nariño. Aerial spraying has been very intensive in Nariño department since 2000, surpassing 30,000 ha in 2003, 2004 and 2007, and reaching a record of 59,900 ha in 2006. In addition, 14,984 ha of manual eradication were reported in 2006, almost twice the reported area in 2006. Despite of the eradication activities conducted during the period 2006-2007, coca cultivation increased by 4,653 ha.

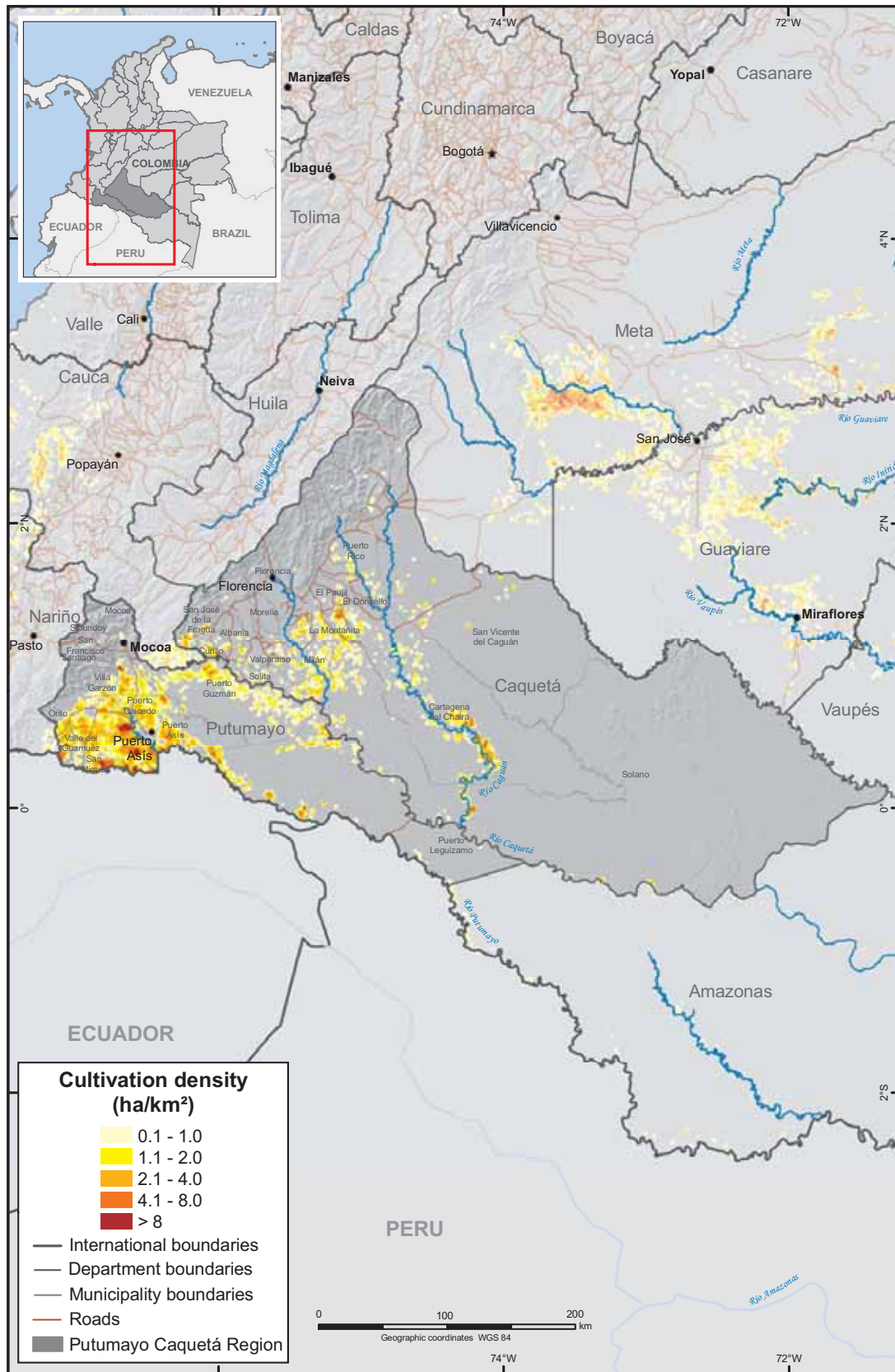
In 2007, coca cultivation was found in 23 of 64 municipalities. With a total of 20,259 ha of coca cultivation, Nariño has the highest amount of land under illicit cultivation with 21% of the total coca cultivation in the country.

Even though the department of Nariño shows the largest amount of coca cultivation, the investment in ongoing alternative development programmes continues to be at a low level, about 6.4% of total budget. In Cauca department, the investment maintained a level of 5.8% of the total national.

As it is the case with neighboring Nariño department, Cauca has a long coastline, high mountain ranges and a mainly rural economy. Following a period of continuous decrease between 1999 and 2006 interrupted in 2005, the increase in 2007 to almost double the area took place when manual eradication decreased from 4,973 ha in 2006 to 1,884 ha in 2007.

Although its capital, Cali, was an important centre for narco-trafficking in the nineties, the department of Valle del Cauca always recorded less than 300 ha under coca cultivation, but it showed a dramatic increase in the period 2005-2007 from 28 ha in 2005 to 453 ha in 2007.

Map 17: Coca cultivation density in the Putumayo-Caquetá region, 2007



Source: Government of Colombia - National monitoring system supported by UNODC
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Putumayo-Caquetá region

In 2000, coca cultivation peaked in Putumayo department at 66,000 ha, represented 40% of the national total. Following four years of consecutive decreases, coca cultivation in Putumayo was estimated at only 4,400 ha or 5% of the national total in 2004. This trend was later reversed. Between 2004 and 2006, coca cultivation increased by 105% in 2005, 37% in 2006, and by 21% in 2007 positioning this department as the second largest in terms of coca cultivation in the country. At the same time, 24,469 ha were manually eradicated which represents an increase of almost five times more than in 2006, while aerial spraying maintained a level of 26,500 ha.

Table 30: Coca cultivation in the Putumayo-Caquetá region (ha), 2003-2007

Department	2003	2004	2005	2006	2007	% Change 2006-2007
Putumayo	7,559	4,386	8,963	12,254	14,813	+21%
Caquetá	7,230	6,500	4,988	4,967	6,318	+27%
Total	14,789	10,886	13,951	17,221	21,131	+23%
Annual trend	-33%	-26%	+28%	+23%	+23%	

The Government's programme "Plan Colombia" to fight against illicit drugs was implemented in 2002 in this department, combining actions of interdiction, aerial spraying, manual eradication and important alternative development projects with acceptable results in the period 2002 to 2004. However, only 7.6% of the 2007 budget of ongoing alternative development projects went to Putumayo, whereas this amount was 35% in the 2003-2005 period. Most of the new coca fields identified in 2007 were re-established on the fields cultivated at the beginning of this decade. The spraying and manual eradication activities in 2007 were particularly intense in this region, but the reseeded and the recovery of old or abandoned coca fields may have compensated their effects.

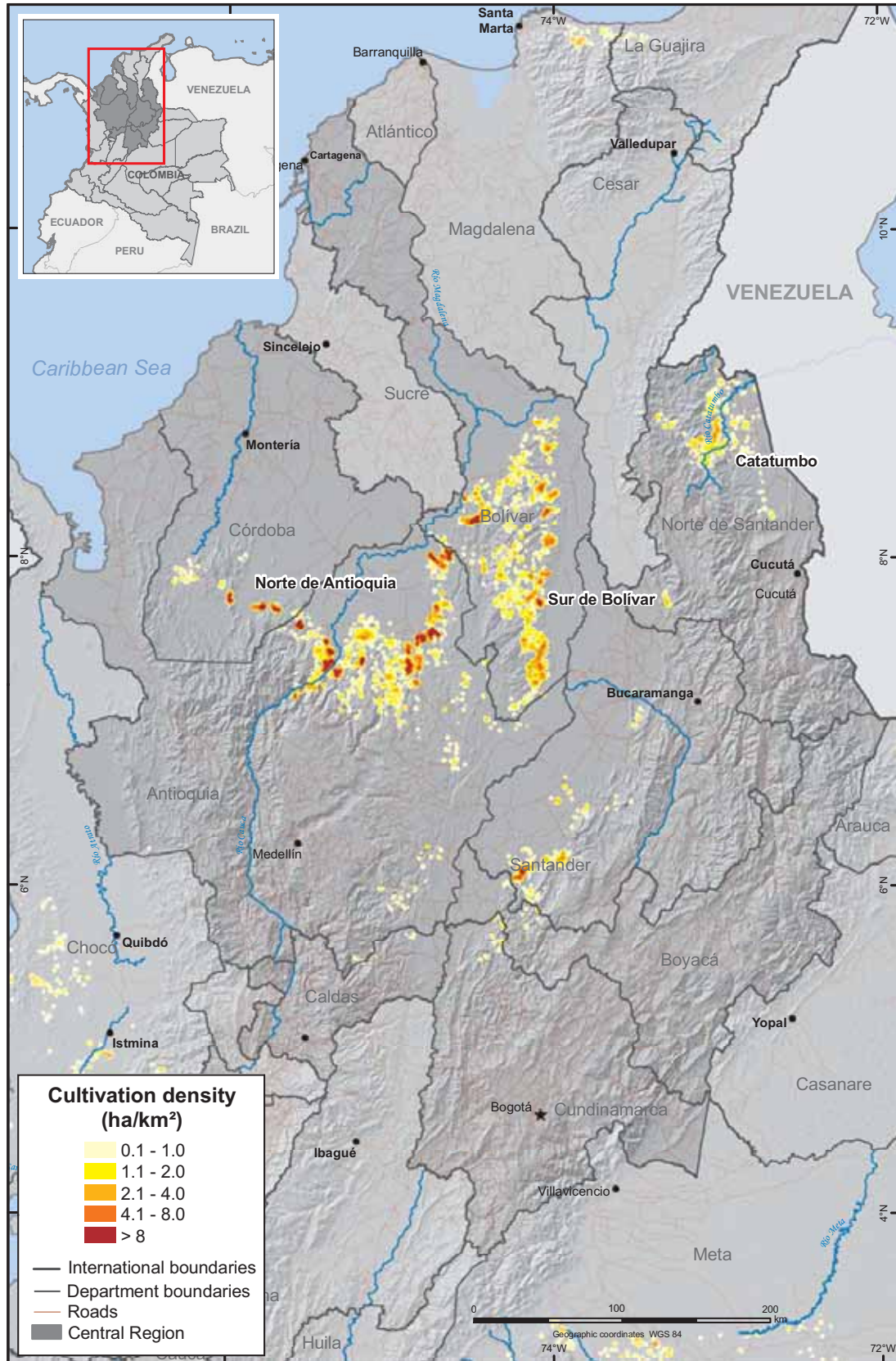
In 2007, in a belt of about 10 km width along the Ecuadorian border that covers about 550,000 ha in the departments of Nariño and Putumayo, 5,200 ha of coca cultivation were found in 2007. This represented a decrease of almost 1,900 ha (or 11%) compared to 2006.

In Caquetá department, coca cultivation peaked at 26,000 ha in 2000 or 16% of the country total. Following intense aerial spraying that started in 1996, coca cultivation decreased to levels around 6,000 ha in the period 2002-2005. In 2006, coca cultivation was at its lowest level at 4,967 ha, but it increased by 1,351 ha reaching 6,318 ha in 2007 representing +27% increase, while the aerial spraying has remained as around 5,000 ha since 2005.



Coca bush in Boyaca, Cundinamarca

Map 18: Coca cultivation density in the Central region, 2007



Source: Government of Colombia - National monitoring system supported by UNODC
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Central region

Since 2002, coca cultivation remained stable at around 15,000 ha in the Central region of Colombia. It decreased to 12,131 ha in 2006, but showed a significant increase of 8,822 ha (78%) in 2007. At the end of the 1990's, Norte de Santander department was one of the most important centers of coca cultivation in the country, accounting for 10% of the country total in 1999. Since then, the Government has been able to drastically reduce coca cultivation in this department, and in 2006 it dropped to less than 500 ha. However, in 2007, coca cultivation showed a very important increase of 1,458 ha, three times more than the amount recorded in 2006 (488 ha).

Table 31: Coca cultivation in the Central Region (ha), 2003-2007

Department	2003	2004	2005	2006	2007	% Change 2006-2007
Antioquia	4,273	5,168	6,414	6,157	9,926	+61%
Bolivar	4,470	3,402	3,670	2,382	5,632	+136%
N. Santander	4,471	3,055	844	488	1,946	+299%
Cordoba	838	1,536	3,136	1,216	1,858	+53%
Santander	632	1,124	981	866	1,325	+53%
Cundinamarca	57	71	56	120	131	+9%
Boyaca	594	359	342	441	79	-82%
Caldas	54	358	189	461	56	-88%
Total	15,389	15,073	15,632	12,131	20,953	+73%
Annual trend	+4%	-2%	+4%	-22%	+73%	

In the department of Bolivar, coca cultivation is concentrated in the South region, known as Sur de Bolivar. Coca cultivation in the department remained relatively stable, accounting for 3% to 8% of the country total in the period 1999-2006. In 2007, coca cultivation increased by 136% (or an increase of 3,250 ha), the highest in the last seven years. Whereas the aerial spraying in this department increased by the considerable amount of 4,388 ha (+165%), manual eradication decreased from 1,952 ha in 2006 to 514 ha in 2007 (-74%).

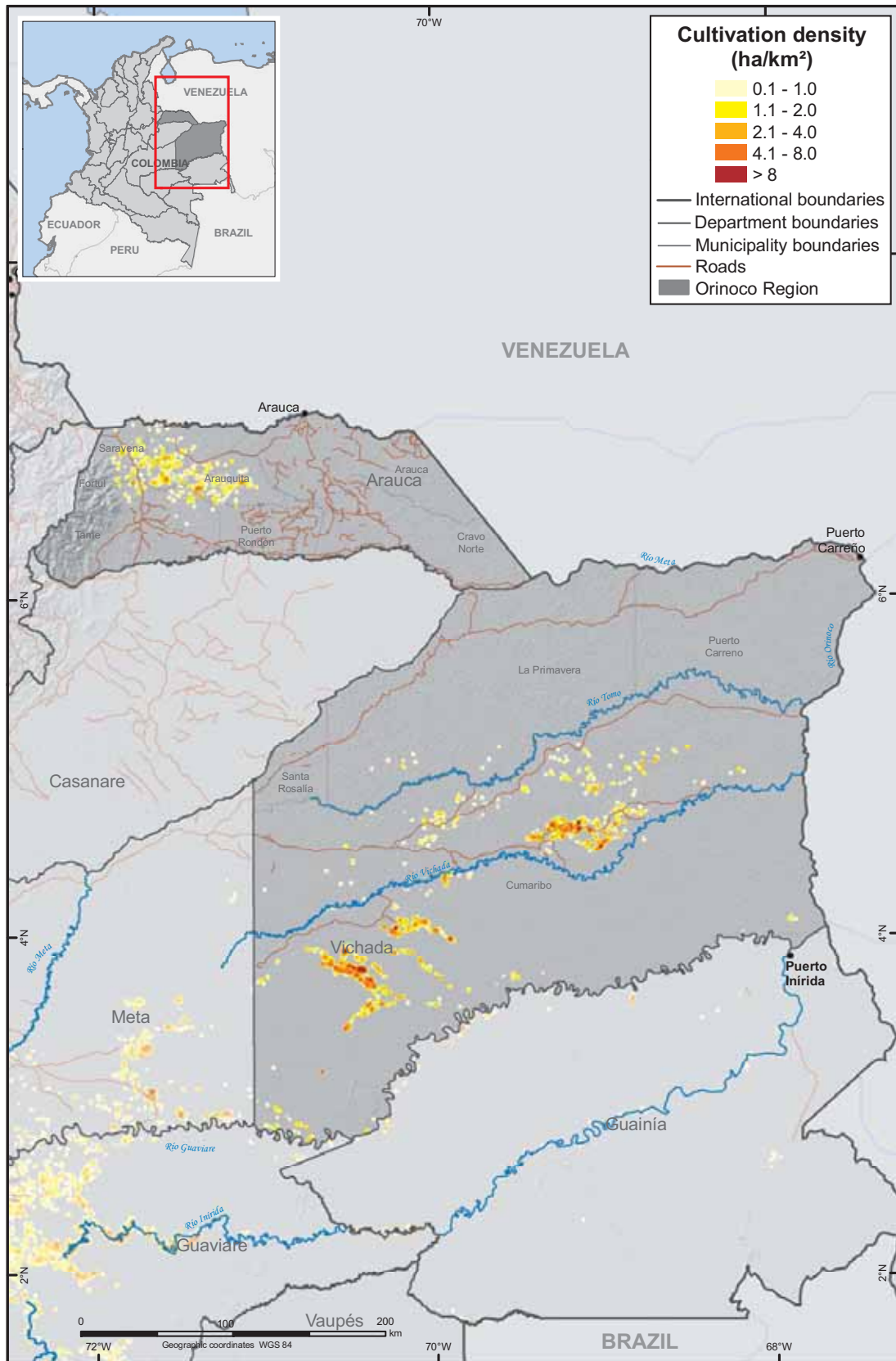
In Antioquia, coca cultivation averaged 3,000 ha between 1999 and 2002. Coca cultivation has been increasing since 2002, from 3,030 ha to 9,926 ha in 2007 (only in the last year there was an increase of 3,769 ha). This increase over the past five years occurred despite the intensification of aerial spraying, which increase from 3,300 ha in 2002 to 27,000 ha in 2007; In addition, manual eradication was conducted in 6,166 ha.

In the department of Caldas, the most important coffee growing area in Colombia, coca cultivation was detected for the first time in 2003 (54 ha). Coca cultivation reached a peak in 2006 with 461 ha and went back to the initial level in 2007. In 2007, aerial spraying decreased from 1,068 ha to 284 ha and manual eradication decreased from 552 ha to 424 ha in 2006.

The department of Cordoba showed an increase of 642 ha in 2007 (+53%). Manual eradication reported in 2007 amounted to 3,141 ha (+47%) and aerial spraying presented a significant increase from 1,800 ha in 2005 to 6,300 ha in 2007.

The departments of Norte de Santander, Antioquia and Santander received the largest share of alternative development funds in Colombia (the 65% in 2006 and the 58% in 2007).

Map 19: Coca cultivation density in the Orinoco region, 2007



Source: Government of Colombia - National monitoring system supported by UNODC
 The boundaries and names shown and the designations used in this map do not imply official endorsement or acceptance by the United Nations

Orinoco region

In Vichada department, near the Venezuelan border, coca cultivation peaked at 9,200 ha in 2001 decreasing to 5,523 ha in 2006 and increasing again to 7,218 ha in 2007.

In Vichada, the most important concentration of coca cultivation can be found between the Tuparro and Vichada rivers in the center of the department. The dispersion of coca cultivation in remote parts of the department increases the time flight and cost of aerial spraying. However, in 2007, a record of 7,193 ha of aerial spraying and 590 ha of manual eradication were reported in this department.

Coca cultivation in Arauca was detected for the first time in 2000 with about 1,000 ha. It rose to 2,000 ha in 2001 and 2002 and after a decrease in 2003-2006, it went back to over 2,000 ha in 2007. In 2003, aerial spraying amounted to 12,000 ha and coca cultivation dropped to 500 ha in December of that year. However, coca cultivation increased in 2007 reaching 2,116 ha despite the increase of manual eradication of 660 ha and of aerial spraying of 2,695 ha.

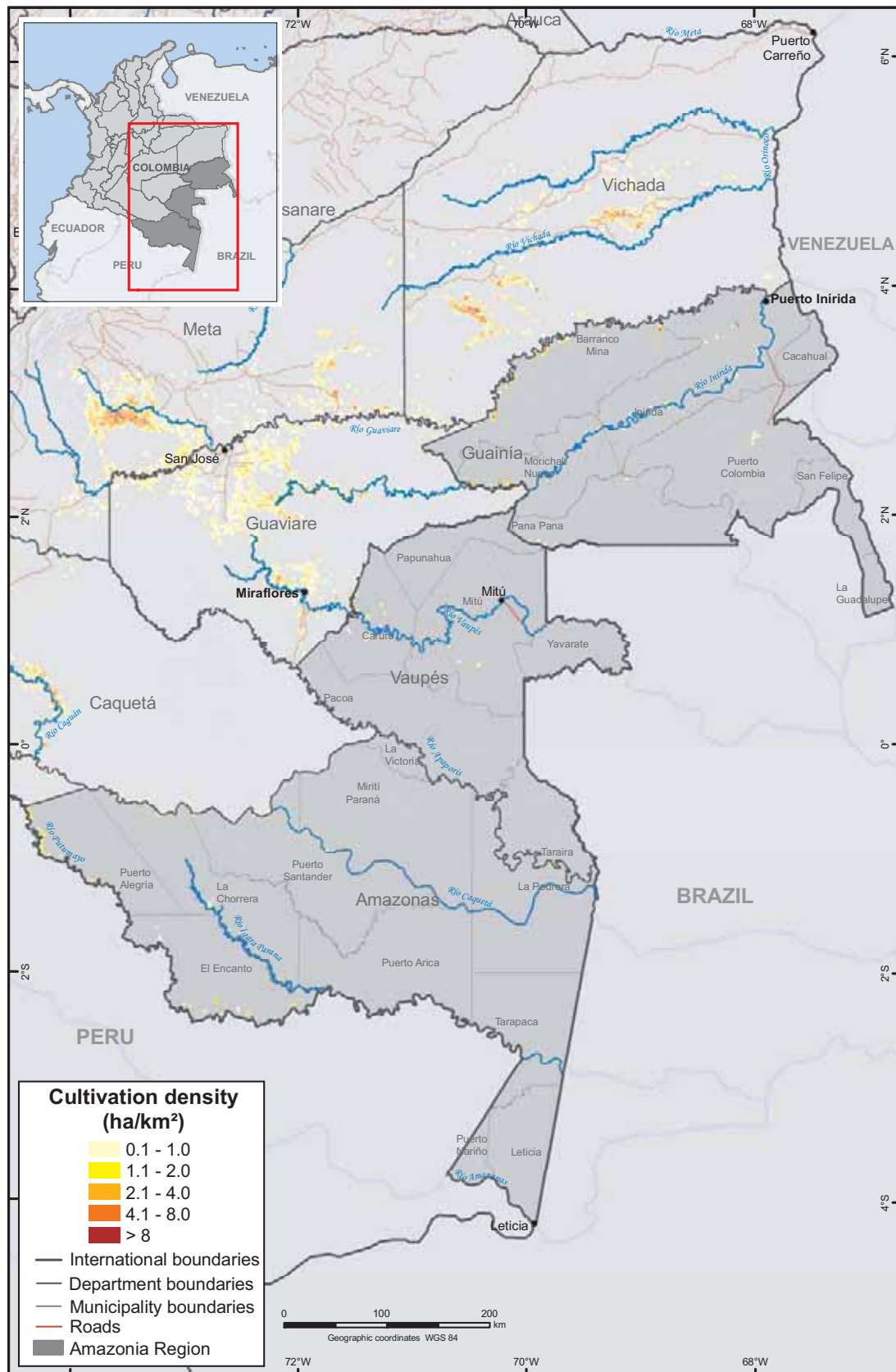
Table 32: Coca cultivation in the Orinoco region (ha), 2003–2007

Department	2003	2004	2005	2006	2007	% Change 2006-2007
Vichada	3,818	4,692	7,826	5,523	7,218	+31%
Arauca	539	1,552	1,883	1,306	2,116	+62%
Total	4,357	6,244	9,709	6,829	9,334	+37%
Annual trend	-39%	+43%	+56%	-30%	+37%	



Coca fields in Arauca

Map 20: Coca cultivation in the Amazonia region, 2007



Source: Government of Colombia - National monitoring system supported by UNODC
The boundaries and names shown and the designations used in this map do not imply official endorsement or acceptance by the United Nations

Amazonia region

As was the case in the Putumayo-Caquetá region, the departments of Vaupes, Amazonas and Guainía belong to the Amazon basin. Although sharing important similarities with Putumayo and Caquetá, these three departments, referred to as Amazon region, have never been important centres of coca cultivation. This is due to the remoteness of the area, as well as to the lack of airport and road infrastructure linking this region to the rest of the country. Consequently, no aerial spraying or manual eradication of coca cultivation was carried out in 2007.

Coca cultivation continues the trend of slow decrease since it was first observed in 2000.

Table 33: Coca cultivation in the Amazonia Region (ha), 2003-2007

Department	2003	2004	2005	2006	2007	% Change 2006-2007
Guainía	726	721	752	753	623	-17%
Amazonas	625	783	897	692	541	-22%
Vaupés	1,157	1,084	671	460	307	-33%
Total	2,508	2,588	2,320	1,905	1,471	-23%
Annual trend	-17%	+3%	-10%	-18%	-23%	



Manual eradication (Courtesy Accion Social PCI)

Sierra Nevada region

The Sierra Nevada region, with the departments of Magdalena and Guajira, has never been an important centre of coca cultivation in Colombia. Coca cultivation remained between 500 and 1,300 ha over the last eight years and after three years of decreases reached the lowest level of 365 ha in 2007. There were no aerial spraying activities and manual eradication amounted to 777 ha in 2007.

The region is also an important tourism centre and hosts the Sierra Nevada National Park. The National Park is one of the most important ecological reserves in Latin America, known for its rich bio-diversity and presence of several ancient indigenous cultures. In 2007, coca cultivation amounted to 94 ha in the Sierra Nevada National Park, a decrease of 21% compared to 2006.

Table 34: Coca cultivation in the Sierra Nevada region (ha), 2003-2007

Department	2003	2004	2005	2006	2007	% Change 2005-2006
Magdalena	484	706	213	271	278	0%
Guajira	275	556	329	166	87	-48%
Total	759	1,262	542	437	365	-16%
Annual trend	-24%	+66%	-57%	-19%	-16%	

Possible areas of new cultivation

The survey covered and interpreted 100% of the national territory, including areas previously not known as being coca-growing regions. In doing so it serves as an early warning system to detect and prevent the spread of coca into new areas.

In 2007, potential small coca fields were detected in remote areas outside the established agricultural areas of the departments of the Orinoco and Amazon River basins. Field verification has not been carried out in these areas because the verification of small and isolated patches of coca cultivation was considered too time consuming and too costly. Therefore, the estimate for coca cultivation in these areas is presented as indicative and was not included in the final estimate. The 2007 survey analyzed 19 Landsat images looking for vegetation having characteristics similar to coca fields. A total of 531 ha were assessed as possible coca cultivation in new areas.

Table 35: Possible coca cultivation in new areas (ha), 2007

Department	Area (ha)
Vaupes	259
Amazonas	197
Guainia	58
Vichada	10
Caquetá	8
Total	531

Coca leaf, coca paste and cocaine base production

The potential production of fresh coca leaf in Colombia in 2007 was calculated by multiplying each regional area under coca cultivation by their annual yield of fresh coca leaf as determined during the 2005 and 2008 coca leaf yield surveys.

The potential production of fresh coca leaf of the area of 31 December 2007 was estimated at 572,800 mt. Assuming 57% moisture content in the leaf, this was equivalent to a total production of 246,300 mt of sun-dried coca leaf in Colombia.

In April 2008, SIMCI¹² carried out a survey in Sur de Bolivar, Catatumbo and Sierra Nevada to collect data on fresh coca leaf yield in 2007, agricultural characteristics of coca cultivation practices, as well as data on the transformation process from fresh coca leaf to coca paste or cocaine base. The survey relied on 435 face to face interviews with coca farmers and several group discussions.

From the analysis of the data collected in the field this year in selected coca growing regions, significant decrease of the fresh coca leaf yield in 2007 as compared to the estimates of 2005 was observed. In Sur de Bolivar, the annual coca leaf yield was estimated at 5,700 kg/ha/year, which is 14% lower than the estimated yield in 2005. In Sierra Nevada, the annual coca leaf yield was 2,900 kg/ha/year, which is 46% lower than the estimated yield in 2005. In Catatumbo, the annual coca leaf yield was 4,200 kg/ha/year, representing a decrease of 9% as compared to the estimate in 2005.

The decrease in annual coca leaf yield in these regions are not well known and further research and analysis will be necessary to better understand the reason behind changes in coca leaf yield. Several factors may play role such as changes in agricultural management, change of plant varieties, plant diseases as well as the possible impact of the forced eradication (manual and aerial spraying), part of the anti-drugs campaigns implemented by the Colombian government.

Table 36: Regional coca leaf yields and regional coca leaf production in Colombia, 2007

Region	Coca cultivation (ha)	Annual coca leaf yield (kg/ha/year)	Upper limit 95% confidence interval (kg/ha/year)	Lower limit 95% confidence intervals (kg/ha/year)	Coca leaf production (mt)
Meta-Guaviare	19,685	9,900	9,200	10,500	194,900
Sur de Bolívar*	19,007	5,700	5,200	6,100	108,300
Putumayo-Caquetá	21,131	5,600	4,900	6,400	118,300
Orinoco	9,334	7,100	6,400	7,900	66,300
Pacific	25,960	2,600	2,300	2,900	67,500
Amazonia	1,471	5,600	4,900	6,400	8,200
Catatumbo*	1,946	4,200	3,900	4,600	8,200
Sierra Nevada*	365	2,900	2,600	3,100	1,100
Total/Average	99,000	5,800	4,925	5,988	572,800

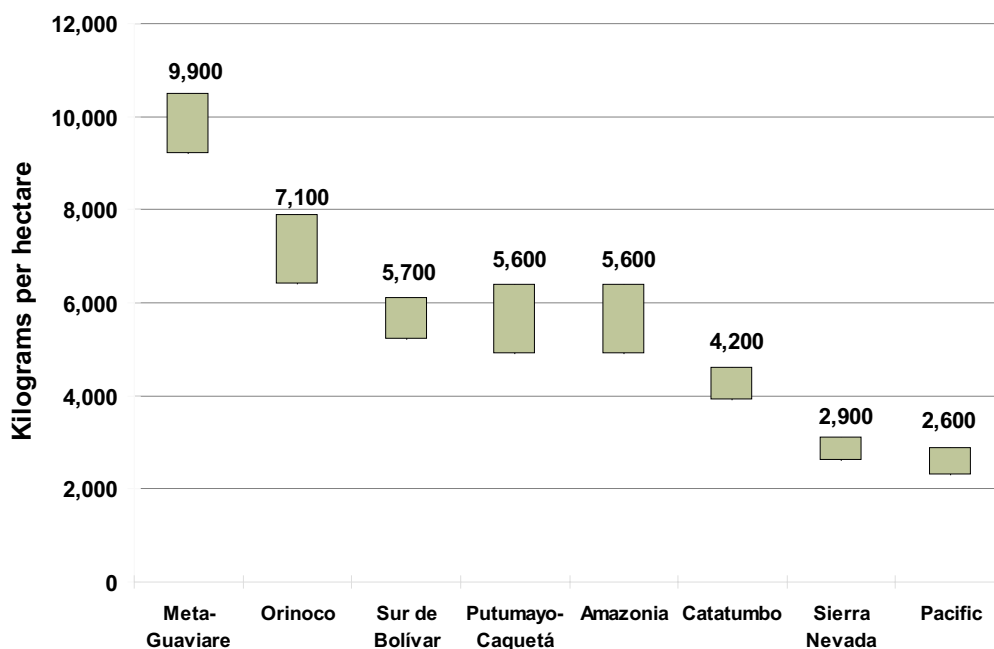
* Coca leaf yields in these regions were determined during the 2008 survey campaign.

Meta-Guaviare is the most productive region in the country, accounting for 34% of the total coca leaf production in Colombia. It is followed by Putumayo-Caquetá (21% of the total coca leaf production) and Sur de Bolivar (19%). In terms of area under coca cultivation, the largest area in 2007 was found in Pacific, accounting for 26% of the total area under cultivation in Colombia.

¹² By subcontracting an agricultural research agency, The Agricultural Assessments International Corporation (AAIC). Survey took place from March to April 2008.

The second largest was Putumayo-Caquetá (22%) and Sur de Bolivar and Meta-Guaviare accounts for 20% respectively.

Figure 25: Regional annual coca leaf yield framed by their confidence interval (kg/ha), 2007



In Colombia, traditional use of the coca leaf can be considered marginal, and virtually the entire coca leaf production is destined for cocaine production. There are various ways to produce cocaine. The overall process is that leaves are processed into coca paste, then into cocaine base, then into cocaine hydrochloride. The farmers can either sell the coca leaves, or process these leaves into coca paste or base. The last step, the processing of the cocaine base into cocaine hydrochloride is not carried out by farmers but in clandestine laboratories.

Coca paste is the first product obtained in the process of alkaloid extraction from coca leaves using sulfuric acid, salts, and kerosene. Therefore, it becomes cocaine sulfate with a high content of organic remnants, pigments, tannins, and other chemical substances. Cocaine base is obtained by dissolving the cocaine sulphate in an acid and adding an oxidant agent (potassium permanganate being the oxidant most often used in Colombia), then adding a base. The resulting substance is precipitated and filtered.



Coca leaves being processed to produce cocaine base in Boyaca

The coca leaf yield surveys¹³ revealed that 46% of the farmers, representing 27% of the total coca leaf production, sell directly the coca leaves, without processing them. Another 30% of the farmers, who represent 28% of the total coca leaf production, processed them into coca paste, and the remaining 28% of the farmers, who represent 45% of the total coca leaf production, process their leaves into cocaine base.

Table 37: Division of labour among coca producers, 2007

Region	% of farmers directly selling fresh coca leaves	% of farmers processing coca leaves into coca paste	% of farmers processing coca leaves into cocaine base
Putumayo-Caquetá	32%	65%	3%
Catatumbo*	86%	13%	1%
Sur de Bolívar*	31%	5%	64%
Sierra Nevada*	91%	4%	5%
Orinoco	15%	0%	85%
Meta Guaviare	9%	26%	65%
Pacific	68%	31%	1%
All regions	46%	30%	28%

* Division of labor in these regions was determined during the 2008 survey campaign.

During the survey, the farmers who processed their coca leaves were asked about the amount of coca leaves and ingredients used, and the amount of final product obtained. The distinction between paste and base is not easy to draw because the terms are often misused by the farmers themselves. In order to distinguish between these two products, it was decided to refer to cocaine base when the farmers reported the use of permanganate potassium or ammonium for processing their leaves, and coca paste when the farmers did not report the use of these products.

Potential cocaine production

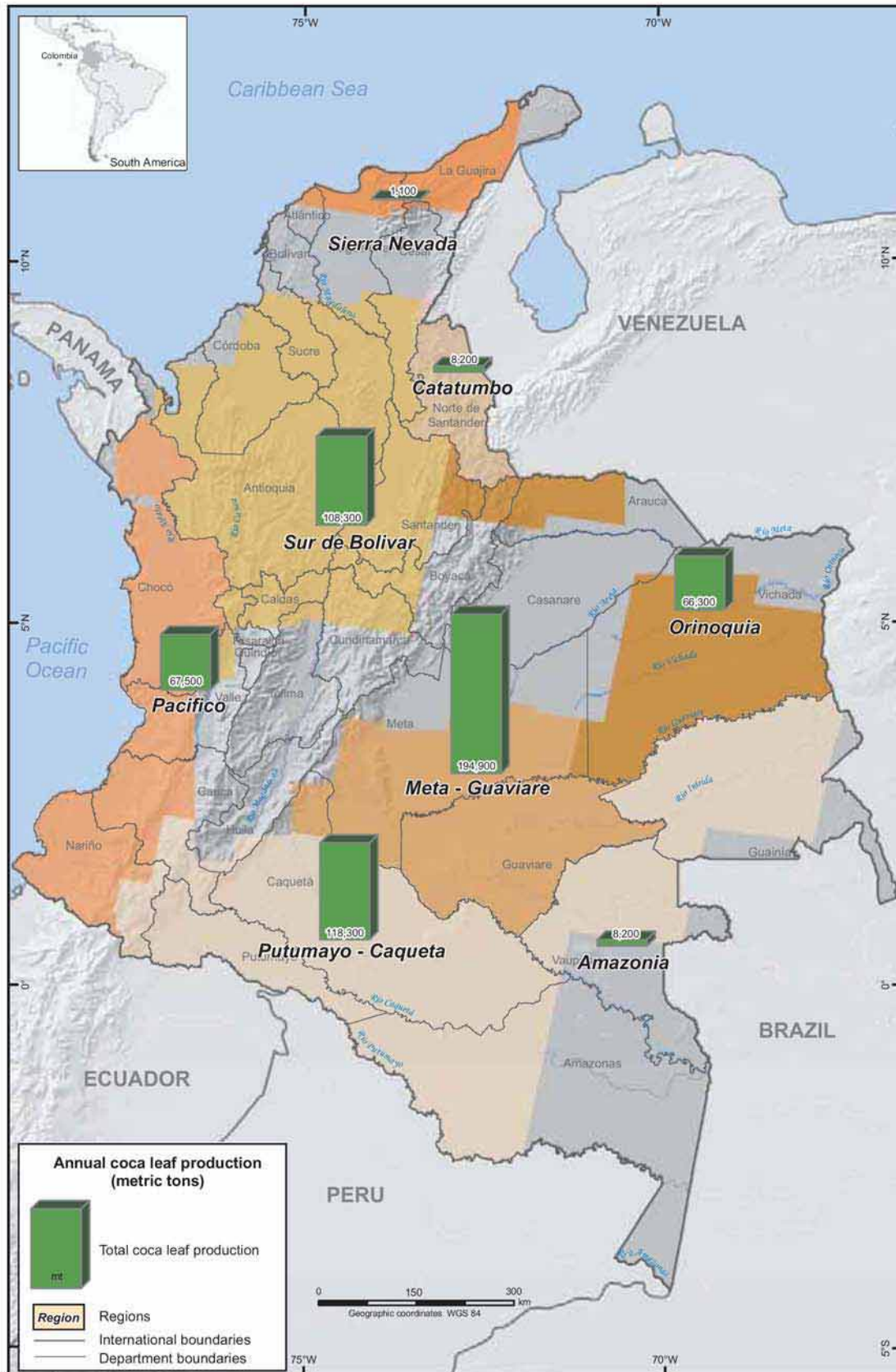
The coca yield survey implemented in 2005 and 2008 focused on obtaining data not only on the yield of the fresh coca leaf but also on the transformation process from fresh coca leaf to coca paste or cocaine base. The data on annual coca leaf yield and the conversion rates of coca leaves into coca paste and cocaine base were combined with the area under coca cultivation estimates to determine the total productions of coca leaf, coca paste and cocaine base.

To determine conversion rates from cocaine base to cocaine hydrochloride, UNODC relied on a external sources. In fact, investigating clandestine cocaine laboratories was not possible because these laboratories are directly in the hands of narco-traffickers. So far, UNODC did not collect any data to estimate the efficiency of these clandestine laboratories nor on the quantity of cocaine hydrochloride that can be produced from coca paste or cocaine base. In addition to the technical difficulties to obtain these data, this kind of survey is also complicated by the existence of several techniques to produce cocaine hydrochloride, and various purity level of the end-product.

Therefore, the UNODC calculation for cocaine production in 2007 relied on its own estimates of cocaine base and on data obtained by the United States' Operation Breakthrough regarding the conversion rates from cocaine base to cocaine hydrochloride and the resulting purity level of cocaine hydrochloride for conversion into equivalent of pure cocaine production.

¹³ Findings refer to the 2008 SIMCI Coca leaf yield in Sierra Nevada, Catatumbo and Sur de Bolívar and to the 2005 SIMCI/DNE coca leaf yield everywhere else.

Map 21: Annual coca leaf production in Colombia, 2007



Source: Government of Colombia – National monitoring system supported by UNODC
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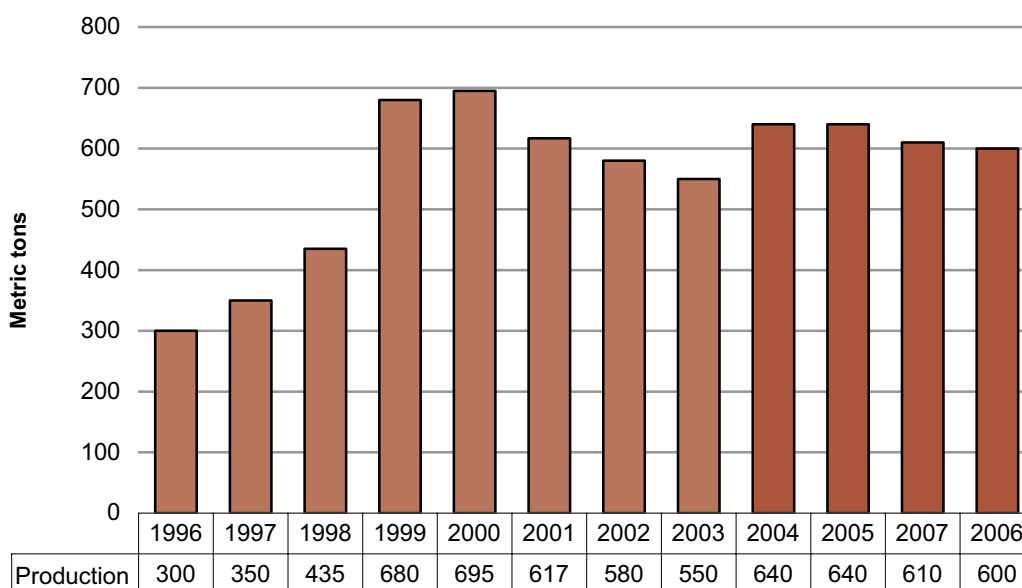
US Operation Breakthrough mentioned a 1:1 conversion rate from cocaine base to cocaine hydrochloride. However, this was obtained from laboratories especially set up for this kind of survey, and thus this conversion rate is likely to correspond to ideal circumstances not always obtained in reality, especially by farmers. The same source also communicated to UNODC that cocaine base contained about 75% of pure cocaine alkaloid and the cocaine hydrochloride contained about 85% of pure cocaine alkaloid. From this data, UNODC derived a 1:0.9 ratio from cocaine base to cocaine hydrochloride. This ratio of 1:0.9 was deemed to apply better to the cocaine base production which corresponded to cocaine base obtained from farmers not working in ideal conditions.

Since 2002, UNODC estimated the cocaine production in Colombia based on the average area of the two cultivation figures recorded as of December of the previous year and December of the current year. This average area was then multiplied by the estimated yield per hectare for each of the regions in order to obtain the potential coca leaf production. This method enables UNODC to take into account that coca fields are harvested more than once in a given year and eradication activities are spread over several months.

Therefore, the average of 2006 and 2006 cultivation areas yields to 525,300 mt of fresh coca leaf, which are equivalent to 783 mt of cocaine base after applying the corresponding conversion factor found during the surveys. This is equivalent to 705 mt of cocaine hydrochloride or 600 mt of pure cocaine. This represented an average pure cocaine yield of 6.6 kg per hectare.

Table 38: Regional cocaine base, cocaine hydrochloride and pure cocaine production, 2007

Region	Cocaine base (mt)	Cocaine hydrochloride (mt)	Pure Cocaine (mt)
Meta-Guaviare	297	268	228
Sur de Bolívar	101	91	77
Putumayo-Caquetá	178	161	137
Orinoco	99	89	76
Pacific	85	77	65
Amazonia	16	15	12
Catatumbo	5	4	4
Sierra Nevada	1	1	1
Total	783	705	600

Figure 26: Potential cocaine production in Colombia (mt), 1996-2007

Note: Cocaine production estimates for 2004 and later are not directly comparable with previous years.

In 2007, at the global level, the potential cocaine production in Colombia represented 60% of the global potential cocaine production of 994 mt.

Table 39: Global potential cocaine production (mt), 1997-2007

	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	Change on 2006
Bolivia	200	150	70	43	60	60	79	98	80	94	104	+11%
Colombia	350	435	680	695	617	580	550	640	640	610	600	-2%
Peru	325	240	175	141	150	160	230	270	260	280	290	+4%
Total	875	825	925	879	827	800	859	1,008	980	984	994	+1%

Source: UNODC World Drug Report 2008.

Note: Production estimates for 2004 and 2005 in Bolivia and in Peru from 2003 to 2005 were revised based on updated information available in 2007. Colombian cocaine production estimates for 2004 and later are not directly comparable with previous years.

Coca prices

Coca leaf, cocaine base and cocaine prices

Coca leaf and cocaine paste prices have remained almost unchanged for the last three years in Colombia. Cocaine prices in US dollars have increased by 25%, from an average of US\$1,762/kg in 2006 to US\$2,198/kg in 2007. However, during the last four years the Colombian Peso has strengthened against the dollar by about 32%. As a result of this appreciation, in local currency (Colombian Pesos, COP), prices of cocaine have increased by approximately 10%, from 4,155,000 COP/kg in 2006 to 4,567,000/kg in 2007.

The changes in prices and purity of drugs are important indicators for the availability of drugs in the market. In 2005, UNODC/SIMCI started the periodic and systematic collection of price data in the first production stages (coca leaf, coca paste and cocaine base). This information is completed with data from the Presidential Programme against Illicit Crops (PCI). The prices of cocaine, cocaine base, morphine and heroin were provided by the antinarcotics police (DIRAN) and were collected by intelligence services in different cities across the country.

Most of the peasants sell coca base, which they have produced in small “kitchen” located in the farm. The processing does not require vast know-how and high level of technology, the latest surveys confirm that in 85% of the cases the peasant does the processing by himself, and only the remaining proportion of farmers hire a “cook” or “chemist” to do the processing. The technical know-how was brought to the farmers during the 90’s by drug-traffickers to facilitate and to increase the commercialization of cocaine.

The prices of coca in different processing stages (coca leaves and coca paste) may be influenced by the aerial spraying and manual eradication, interdiction and the intervention of illegal armed groups, who often impose their prices and conditions on the farmers. In general, it was observed that repressive interventions of the national army have a significant decreasing impact on the prices due to the unavailability of sellers and resellers, although it does not necessarily affect production. On the other hand, extensive aerial spraying or problems due to adverse climate, pests and diseases could have an increasing impact on the prices.

Table 40: Average prices of coca leaf and its derivatives, 2004–2007

Product	2004		2005		2006		2007		% change 2006/2007	
	US\$/kg	'000 COP/kg	US\$/kg	'000 COP/kg	US\$/kg	'000 COP/kg	US\$/kg	'000 COP/kg	US\$/kg	'000 COP/kg
Cocaine	1,710	4,600	1,860	4,315	1,762	4,155	2,198	4,567	+25%	10%
Cocaine base			1,090	2,532	1,038	2,447	1,326	2,752	+28%	12%
Coca paste	810	2,119	910	2,109	879	2,070	943	1,959	+7%	-5%
Coca leaf	1.2	3.3	1.1	2.4	1.0	2.4	1.2	2.4	20%	-

Coca leaf prices

In Colombia, coca leaf is traded as fresh, whereas in Peru and Bolivia, coca leaf is traded as sun-dried. Converted in equivalent sun-dried coca leaf (assuming a moisture loss of 57% from fresh coca leaf to sun-dried coca leaf, as established from the 2004 UNODC survey on coca leaf yield in Peru), coca leaf price in Colombia in 2007 was established at US\$ 2.4/kg, which is about the price of sun-dried coca leaf in Peru (US\$ 2.5/kg) and lower than the prices registered this year in Bolivia (US\$ 4.7/kg).

Coca paste prices

Prices of coca paste increased by 7%, from the annual average in 2006 of US\$ 879/kg to the annual average in 2007 of US\$ 943/kg. However, due to the appreciation of the Colombian Peso against the dollar, in local currency, prices of coca paste decreased from the annual average in 2006 of \$ 2,070,000 COP/kg to the annual average in 2007 of \$ 1,959,000 COP/kg, a reduction equivalent to 5%.

The monthly coca paste in 2007 ranged between \$ 1,788,000 COP/kg and \$ 2,193,000 COP/kg with significant increases towards the end of the year. Variations within a calendar year reflected the anti-drug actions undertaken by the Colombian Government.

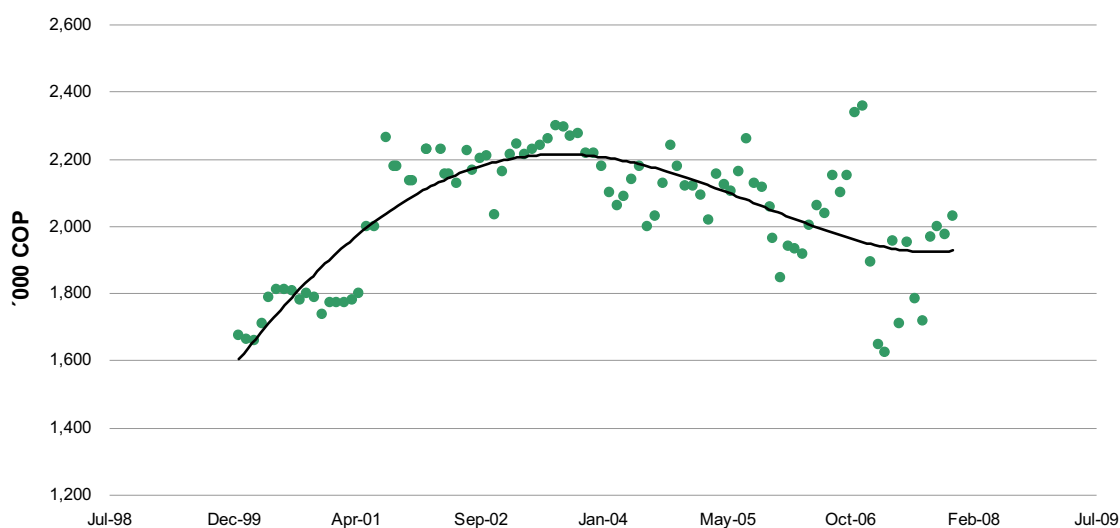
At regional level, the lowest prices in the across the country in 2007 were recorded in Putumayo-Caquetá region. Here, in average one kilogram of coca paste was trade at \$ 1,723,000 COP. In particular, in the Putumayo department, extensive eradication activities were carried out by the Colombian Government; approximately 27,000 ha of coca cultivation were aerial sprayed, and about 24,500 ha of coca cultivation were manual eradicated.

The Pacific region recorded the second lowest price of coca paste; one kilogram of coca paste cost \$ 1,882,000 COP in 2007. This situation occurred despite of the extensive aerial spraying activities, which in 2007 amount to 36,275 ha and 14,812 ha of manual eradication.

The Meta-Guaviare region did not show any significant change during the calendar year despite the eradication actions, the average price was \$ 2,112,000/kg in 2007 (US\$ 1,107/kg). The higher prices were recorded in the Central Region, \$ 2,121,000/kg (US\$ 1.021/kg).

Table 41: Monthly coca paste price in Colombia ('000 COP/kg), 2007

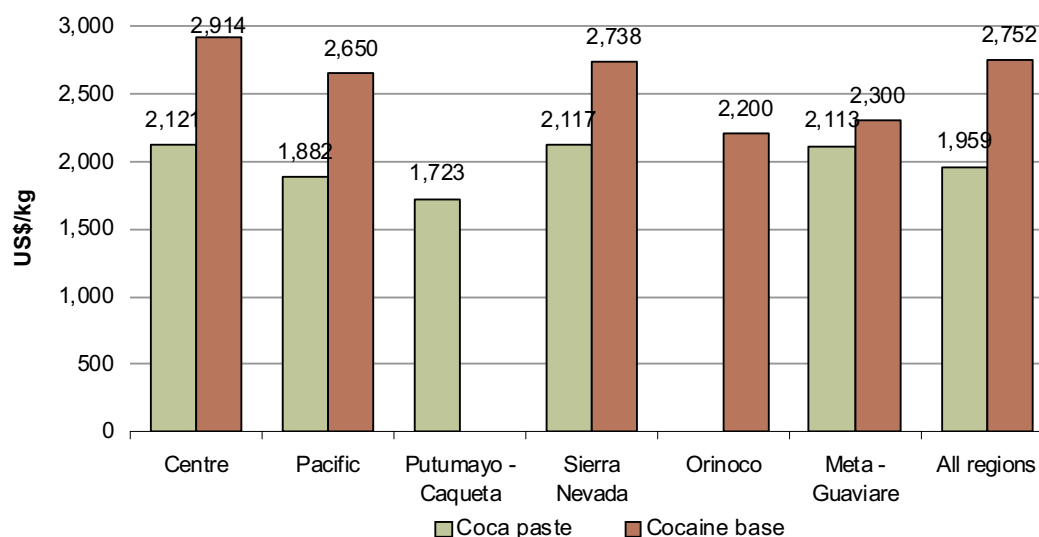
Months	National average	Central	Pacific	Putumayo -Caquetá	Sierra Nevada	Meta-Guaviare
January	1,829	2,000	1,400	1,946	1,700	2,100
February	1,788		1,700	1,550	1,800	2,100
March	1,833		1,850	1,500		2,150
April	2,041	2,294	1,908	1,629	2,200	2,175
May	1,841		1,825	1,590	1,800	2,150
June	2,086	2,154	1,733	1,692	2,800	2,050
July	1,913	1,800		1,739		2,200
August	1,997	2,000	1,800	1,586	2,400	2,200
September	1,925		1,933	1,842		2,000
October	1,964		2,050	1,842		2,000
November	2,093	2,300	2,100	1,879		
December	2,193	2,300	2,400	1,879		
Average COP	1,959	2,121	1,882	1,723	2,117	2,113
Average US\$	943	1,035	905	832	1,019	1,015

Figure 27: Average monthly coca paste prices ('000 COP/kg), Dec 1999-Dec 2007

Cocaine base prices

The collection of prices data and their analysis is complicated by the absence of standard in naming the products, and in the absence of indications on the quality of the products. This is the case for cocaine base and coca paste, which can easily be confused. However, the data on cocaine base, albeit less frequently reported than the data on coca paste, confirmed that cocaine base is a more refined product than coca paste, and that both products can be traded.

There is a difference in price between coca paste and cocaine base due to the complexity and the chemicals added in the production of the latter. The average price of cocaine base in 2007 was \$ 2,752,000/kg (US\$ 1,326/kg). The highest prices were recorded in the Central region and Sierra Nevada. On average, prices of the cocaine base were 40% higher than the prices of coca paste in 2007.

Figure 28: Prices of coca paste and cocaine base by region (US\$/kg), 2007

* Orinoco does not have information on coca paste because the coca is immediately processed into cocaine base. In 2007, cocaine base prices for Putumayo-Caquetá were not available.

Cocaine prices

Because of the clandestine nature of the trade, cocaine prices are less easily collected than prices of coca paste or coca leaf. This explains that fewer data are available for cocaine prices compared to other products. In Colombia, prices of cocaine hydrochloride are collected by DIRAN (the Anti-Narcotics Police), and refer to wholesale prices in the main cities.

Prices may be affected by factors such as supply, anti-drug control measures and purity levels. In connection with the supply, cocaine production has been relatively stable in recent years (average of 600 tons over the past five years). In terms of seizures, after the all-times high record occurred in 2004 and 2005 with 149 and 173 mt respectively, seizures in the past two years remain stable at a total of 127 tons in 2007. The purity level was not investigated in this report.

The average price of cocaine in the past eight years is \$ 4,153,000 COP/kg (US \$ 1,711/kg). Between 2006 and 2007 the average price of cocaine increased in COP from \$4,155,000 to \$4,567,000 per kilogram, equivalent to an increase of 10%. In US dollar, the price rose from \$1,762 to \$ 2,198 (+25%). There were no significant fluctuations in the calendar year and higher prices were found at the Central Regions and Orinoco.

The table below presents the annual averages of cocaine prices since 1991. The prices are presented both in Colombian Pesos (COP) and US\$ as constant price of 1991 to correct for the inflation.

Table 42: Cocaine HCl price in Colombia 1991-2007

Year	'000 COP/kg	US\$/kg
1991	950	1,500
1992	1,020	1,500
1993	1,377	1,750
1994	1,488	1,800
1995	1,232	1,350
1996	1,762	1,700
1997	1,769	1,550
1998	2,101	1,472
1999	2,800	1,592
2000	3,100	1,485
2001	3,599	1,571
2002	4,389	1,532
2003	4,500	1,565
2004	4,600	1,713
2005	4,315	1,860
2006	4,155	1,762
2007	4,567	2,198

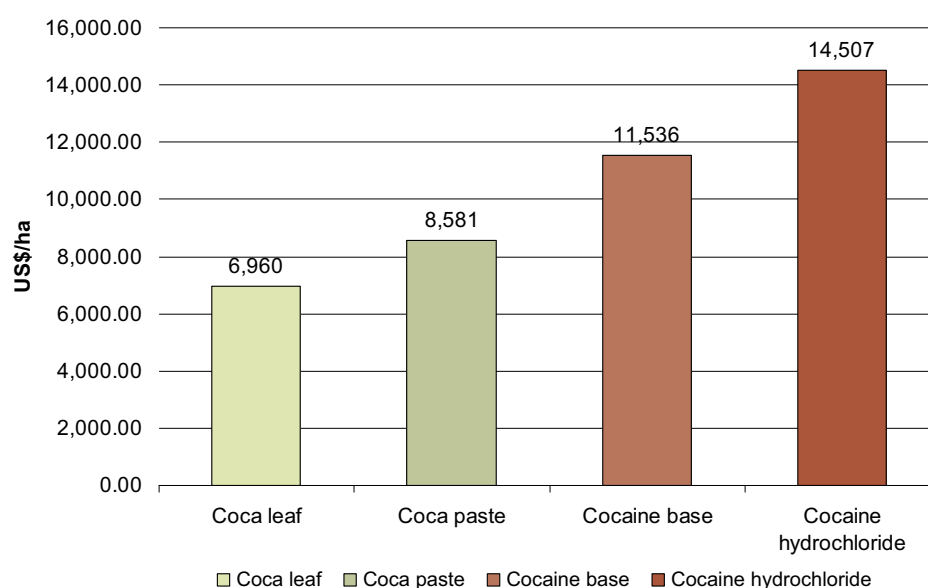
Source: DIRAN

Income per hectare

The data from the monthly survey on prices in Colombia combined with the data from the coca leaf yield survey, enabled UNODC to calculate a theoretical income from the sale of coca leaf, coca paste and cocaine base. The differences between these incomes give an indication of the value-added that farmers have if they produce coca paste and cocaine base. The table below shows a definite increase in the value added at each step of the processing. The value-added of cocaine base (+66%), explains why 49% of the coca leaf production was transformed into cocaine base by the farmers.

Table 43: Potential annual gross income of coca cultivation for different derivatives of coca leaf (US\$/ha), 2007

Derivatives	Annual yield kg/ha	Average annual price US\$/kg	Annual income in US\$/ha	Value-added from coca leaf %
Coca leaf	5,800	1.2	6,960	-
Coca paste	9.1	943	8,581	23%
Cocaine base	8.7	1,326	11,536	66%
Cocaine HCl	6.6	2,198	14,507	108%

Figure 29: Potential annual income per hectare of coca leaf, coca paste, cocaine base and cocaine HCl, 2007

Based on the total production of each item sold by the farmers and the respective prices in 2007, the total farm-gate income value resulting from coca cultivation was estimated at about US\$ 934 million. This value does not take into account the farmers production costs, such as cost of herbicides, pesticides, fertilizers and labor wages. It should also be noted that 47% of this value is made in the Meta-Guaviare region, because of its very high annual yield and high proportion of farmers processing cocaine base.

Table 44: Value of the production of coca leaf and its derivatives at farm-gate level, 2007

Product	kg	US\$/kg	US\$ value
Coca leaf	155,492,000	1.2	186,590,400
Coca paste	264,000	943	248,952,000
Cocaine base	376,000	1,326	498,576,000
Rounded total farm-gate value			934,000,000

The total farm-gate value of production of coca leaf and its derivatives, corresponded to 0.5% of the 2007 GDP of Colombia, which amounted to US\$ 172 billion according to DANE. In 2007, the total farm-gate value of coca cultivation also represented 5% of the agricultural GDP of Colombia, which was US\$ 17.8 billion.

The coca leaf yield survey also enabled UNODC to collect data on the average area of coca cultivation by family. It was found that on average, a household cultivates about 1.25 ha of coca plants. With a total area under coca cultivation of 99,000 ha in 2007, the number of family cultivating coca plants was thus estimated at 80,000.

Table 45: Number of families involved in coca cultivation in Colombia, 2007

Region	Coca cultivation (ha)	Persons per family	Ha per family	Number of families	Number of people
Meta-Guaviare	19,685	5.7	1.30	15,100	86,070
Sur Bolivar	19,007	4.6	2.80	6,800	31,177
Putumayo-Caquetá	21,131	4.2	0.70	30,200	126,840
Orinoco	9,334	4.4	3.70	2,500	11,000
Pacific	25,960	5.1	1.20	21,600	110,160
Amazonian	1,471	4.2	0.70	2,100	8,820
Catatumbo	1,946	5.0	1.30	1,500	7,472
Sierra Nevada	365	5.1	1.83	200	1,020
All regions	99,000			80,000	383,000

Thus, US\$ 934 million evenly distributed among 80,000 families represented an annual gross income per family of US\$ 11,675. With a total of 383,000 people in these families, this was equivalent to an annual per capita gross income of US\$ 2,440. The gross income value does not take into account the production costs, such as cost of herbicides, pesticides, fertilizers and labour wages.



Coca fields in Meta

Supply reduction

Reported forced manual eradication

Forced manual eradication is the responsibility of the Presidential Agency for Social Action. It is executed by the Mobile Eradication Groups (GME) which are groups of farmers and former insurgent armed group members with the help of the Anti Narcotics Police (DIRAN) and the national army.

The campaigns of forced manual eradication of coca cultivation reached record levels in 2007; 66,805 ha of coca cultivation were manual eradicated in 2007, whereas 43,051 ha were eradicated in 2006. Approximately 60% of this year's manual eradication took place in Putumayo (24,462 ha) and in Nariño (14,812).

Table 46: Reported forced manual eradication of coca areas by department (ha), 2007

Department	Manual eradication	% share
Putumayo	24.462	37%
Nariño	14.812	22%
Antioquia	6.127	9%
Meta	3.765	6%
Córdoba	3.141	5%
Santander	2.554	4%
Cauca	1.811	3%
Norte de Santander	1.438	2%
Guaviare	1.042	2%
Boyacá	863	1%
Choco	834	1%
Caquetá	777	1%
Cesar	728	1%
Arauca	660	1%
Vichada	590	1%
Magdalena	572	1%
Bolívar	514	1%
Caldas	424	1%
Cundinamarca	292	-
Amazonas	274	-
Guainia	247	-
Valle	208	-
Guajira	180	-
Risaralda	33	-
Tolima	25	-
Huila	3	-
Casanare	1	-
TOTAL	66,805	100%

Reported forced manual eradication of coca areas, by department, 2007 Sources: PCI- Social Action, National Police

Manual eradication has a major impact on coca production since the bushes are completely uprooted. Replanting means significant costs for the farmer since it takes about 6 months between planting and the first harvest, moreover with low productivity in the initial stage. However, in some eradicated areas, replanting and new coca plantations have been observed and UNODC recommends in its eradication report¹⁴ to accompany eradication with alternative production projects.



Aerial spraying in coca fields in Nariño

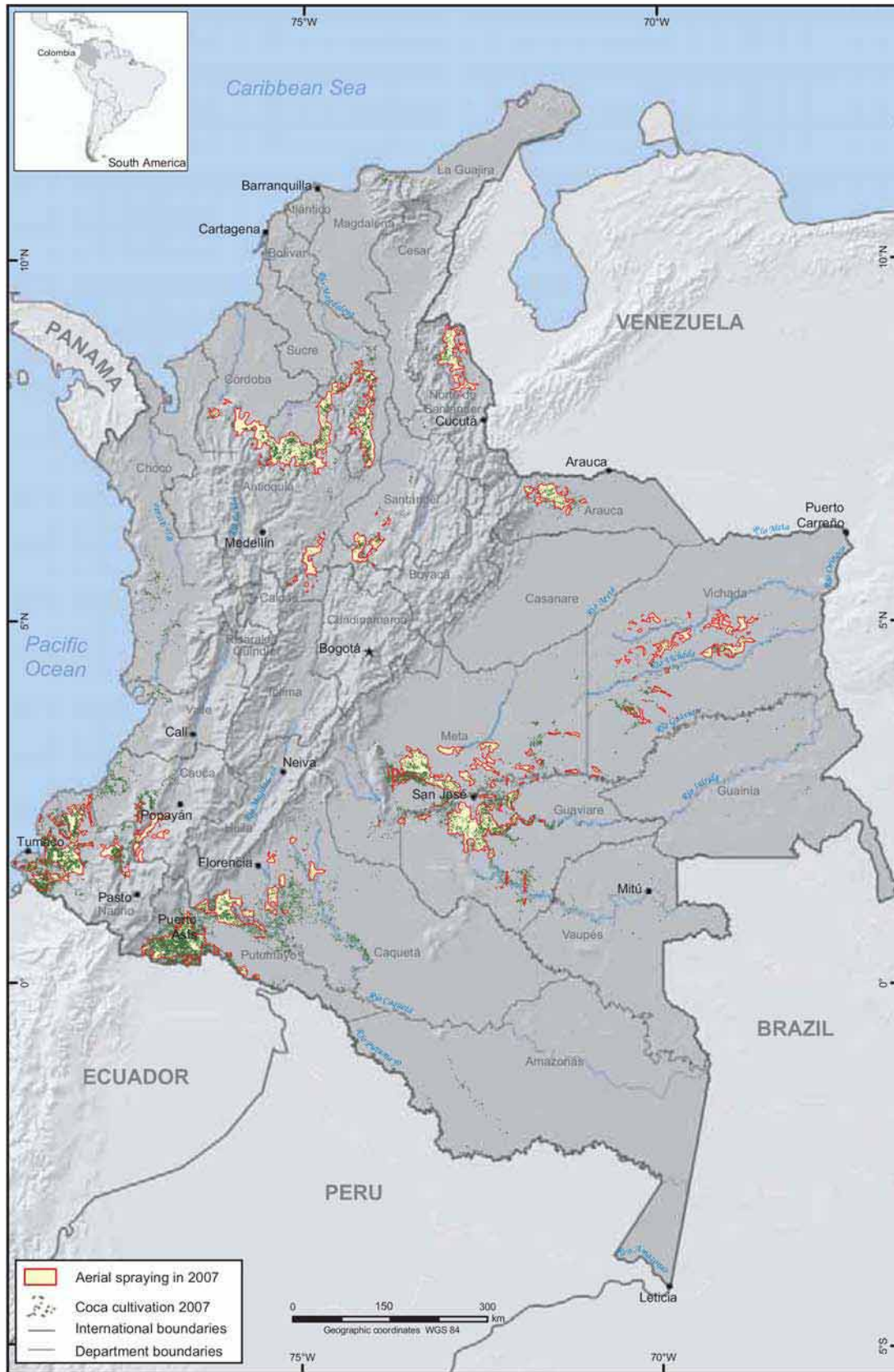
¹⁴ Report on monitoring and assessment of the manual eradication conducted in 2007 (GME)

Map 22: Forced manual eradication and coca cultivation in Colombia, 2007



Sources: for coca cultivation Government of Colombia - National monitoring system supported by UNODC; for manual eradication areas PCI
 The boundaries and names shown and the designations used in this map do not imply official endorsement or acceptance by the United Nations

Map 23: Aerial spraying and coca cultivation in Colombia, 2007



Sources: for coca cultivation Government of Colombia, National monitoring system supported by UNODC; for aerial spraying DIRAN
 The boundaries and names shown and the designations used in this map do not imply official endorsement or acceptance by the United Nations

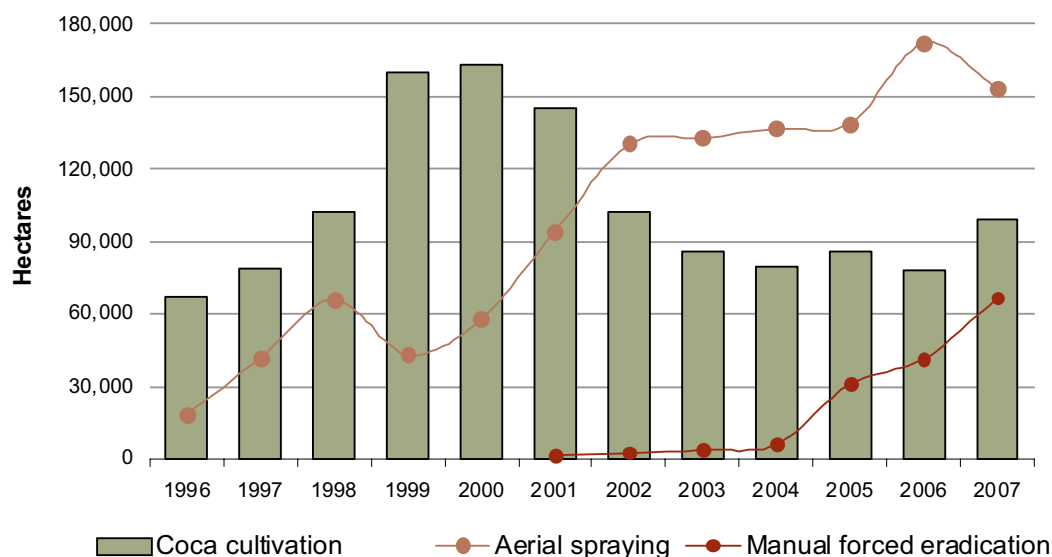
Reported aerial spraying

The Colombian anti-drug strategy includes several measures of control, ranging from aerial spraying, to force or voluntary manual eradication; these measures often times include alternative development and crops substitution programmes. UNODC does not participate in or supervise the spraying activities. All data were received directly from the Anti-narcotics Police (DIRAN).

The spraying programme carried out by DIRAN is done through aerial spraying with a mixture of products called Round Up (primarily composed of an herbicide named glyphosate and a surfactant named Cosmoflux and other additives). In late 2002, the National Narcotics Council approved an herbicide concentration of 2.5 liters per hectare for opium poppy and 10.4 litres per hectare for coca, with a view to increasing the spraying effectiveness rate, which was reported as being 91% in 2004. The chemical mixture has mainly effect over the leaves and not over the roots or the soil, and therefore the bush can be subject of a prune operation at about one foot over the ground to obtain a renewal of the bush in about six months. In 2007, the spraying effectiveness rate was reported as being 88 %.

As shown in the table below, the largest spraying operations in the period 1998-2007 has been carried out in Nariño, Putumayo and Guaviare departments. These are the regions where most of the area under coca cultivation can be found in Colombia. In 2007, DIRAN reported a total of 153,134 ha of coca fields sprayed, this represented a decrease of 11% compared with 2006. The departments of Nariño, Putumayo and Antioquia presented the highest levels of spraying in this year.

Figure 30: Comparison of net coca cultivation and cumulative sprayed and manually eradicated areas (ha), 1996-2007



The cumulative sprayed area is the sum of areas during a given time period (calculated by multiplying the length of flight lines by their width), differs from the effective sprayed area, which disregards the overlap between adjacent sprayed bands and areas sprayed several times in the same calendar year.

Table 47: Aerial spraying of coca cultivation by department and year (ha), 1998-2007

Sources	Environmental Audit of the National Narcotics Bureau		Anti-narcotics Police Department							
	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007
Nariño	-	-	6,442	8,216	17,962	36,910	31,307	57,630	59,865	36,275
Antioquia	-	-	6,259	-	3,321	9,835	11,048	16,833	18,022	27,058
Putumayo	3,949	4,980	13,508	32,506	71,891	8,342	17,524	11,763	26,491	26,766
Meta	5,920	2,296	1,345	3,251	1,496	6,973	3,888	14,453	25,915	15,527
Guaviare	37,081	17,376	8,241	7,477	7,207	37,493	30,892	11,865	14,714	10,950
Vichada	297	91	-	2,820	-	-	1,446	-	5,485	7,193
Bolívar	-	-	-	11,581	-	4,783	6,456	6,409	2,662	7,050
Córdoba	-	-	-	-	734	550	-	1,767	5,588	6,259
Caquetá	18,433	15,656	9,172	17,252	18,567	1,059	16,276	5,452	4,575	5,084
Cauca	-	2,713	2,950	741	-	1,308	1,811	3,292	1,536	3,557
Arauca	-	-	-	-	-	11,734	5,336	2,584	1,400	2,695
Norte Santander	-	-	9,584	10,308	9,186	13,822	5,686	899	1,687	2,683
Santander	-	-	470	-	-	5	1,855	2,042	2,146	1,754
Caldas	-	-	-	-	-	-	190	1,090	1,068	284
Chocó	-	-	-	-	-	-	-	425	-	-
Valle	-	-	-	-	-	-	-	5	-	-
La Guajira	-	-	-	-	-	-	449	572	-	-
Magdalena	-	-	-	-	-	-	1,632	383	-	-
Vaupés	349	-	-	-	-	-	756	340	-	-
Boyacá	-	-	102	-	-	-	-	925	831	-
Cundinamarca	-	-	-	-	-	-	-	43	41	-
Aerial Spraying	66,029	43,112	58,073	94,152	130,364	132,814	136,552	138,772	172,026	153,135
Net Cultivation (ha)	102,000	160,000	163,000	145,000	102,000	86,000	80,000	86,000	78,000	99,000

Source: DIRAN

Once coca fields are sprayed, it takes approximately six to eight months to recover productive crops when the bushes are pruned or replanted. However, when heavy rain occurs or bushes are washed by the farmers immediately after the spraying, the loss in coca leaf can be reduced and the crop recovers quickly. The sustainability of the eradication efforts depends to a large extent on the real alternatives open to the farmers and to the displacement of the cultivation into new and more remote areas of the country (balloon effect).

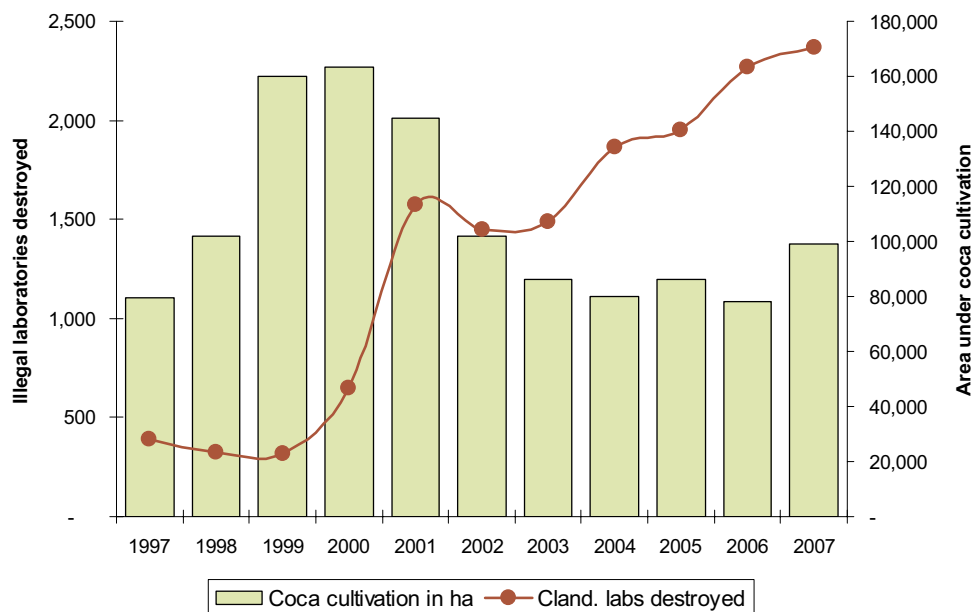
In order to neutralize or reduce the impact of the aerial spraying, several actions are taken by the farmers such as: to plant coca bushes interspersed with other plants, to apply protective substances on leaves, to wash the leaves, to reduce the size of the fields, to rotate coca crops with other licit crops in the same field, etc. The aerial spraying may cause the loss of one or more harvests, the reduction of productivity or the total loss of crops but it has become clear that the impact varies considerably from one region to another and that it is not the only cause for reduction or loss of coca crops.

Reported seizures

UNODC is not involved in the collection of data on seizures and destruction of laboratories. However, the data provided by the Colombian government are presented here in order to show the existence of possible trafficking corridors and allow for a better understanding of the dynamics that surrounds the drug business.

According to DNE, a total of 2,367 clandestine laboratories were destroyed in 2007. Out of these, a total of 2,095 corresponded to laboratories processing coca paste or cocaine base, 265 corresponded to laboratories processing cocaine hydrochloride, 4 potassium permanganate, 2 of heroin and one laboratory producing hydrochloride acid. Compared to 2006, it represented an increase of 4% in the number of illegal laboratories dismantled, demonstrating the constant efforts done by the Colombian Government against illicit drug production and cultivation.

Figure 31: Number of clandestine laboratories destroyed, 1997-2007



Illegal laboratory (courtesy DIRAN)

In the department of Nariño, among the regions with the largest planted areas of coca cultivation in the country, was where the largest number of laboratories that process coca leaf derivatives (basic paste, cocaine base and cocaine) were detected and destroyed¹⁵.

The highest number of cocaine laboratories (“cristalizaderos”) were detected and destroyed in Narino, Norte de Santander, Meta and Valle.

Table 48: Illegal laboratories destroyed by department and by drug type, 2007

Department	Coca paste/base laboratories destroyed	Cocaine laboratories destroyed	Heroin laboratories destroyed	Potassium permanganate laboratories destroyed	Total
Nariño	495	51	2	1	549
Norte de Santander	237	41			278
Meta	240	22		3	265
Putumayo	176	4			180
Cordoba	174	2			176
Antoquia	147	11			158
Vichada	148	2			150
Cauca	119	12			131
Valle	54	36			90
Bolivar	80				80
Guaviare	53				53
Magdalena	29	21			50
Amazonas	39				39
Caquetá	32				32
Boyaca	17	7			24
Cesar	6	17			23
Atlantico		21			21
Santander	10	11			21
Choco	13	2			15
Cundinamarca	7	3			10
Guainia	6				6
Arauca	5				5
Caldas	5				5
La Guajira	1	2			3
Risaralda	2				2
Total	2,095	265	2	4	2,366

Source: DNE

Data provided by the National Narcotics Bureau (DNE) show stable trend between 2006 and 2007 in terms of cocaine seizures (126,641 kg of reported seizures of cocaine in 2007 and 127,326 kg of reported seizures of cocaine in 2006). Most of the seizures happened in the Pacific region, in the departments of Choco, Valle, Nariño and Cuaca.

¹⁵ It is important to associate this with its strategic position due to its proximity to the Pacific Ocean.

Map 25: Drug seizures by department and by drug type, 2007

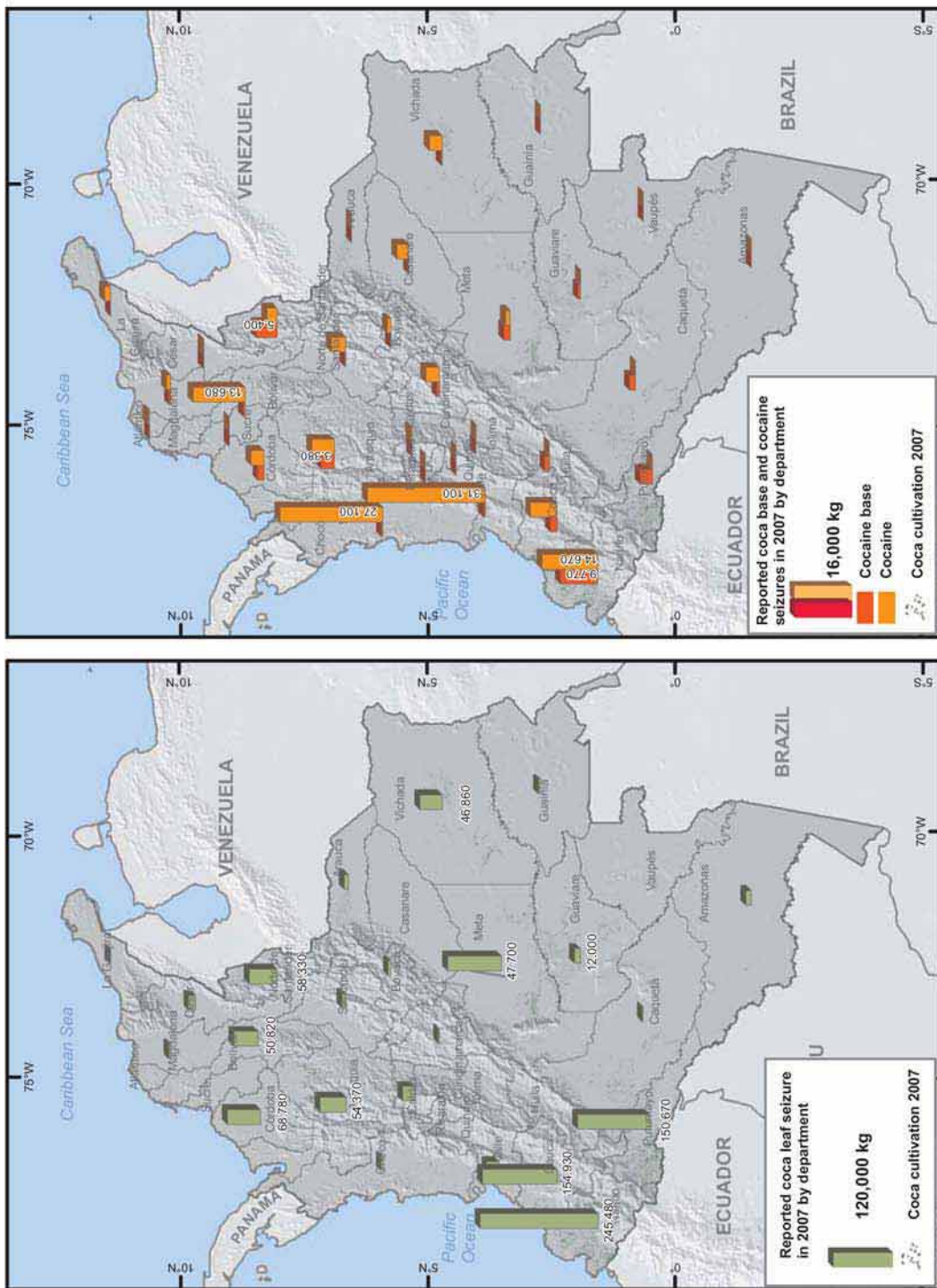


Table 49: Reported seizures of illicit drugs, 2002-2007

Drug	unit	2002	2003	2004	2005	2006	2007
Coca leaf	kg	638,000	688,691	567,638	682,010	818,544	1,064,500
Coca paste	kg	974	2,368	1,218	2,651	5,451	922
Cocaine base	kg	22,615	27,103	37,046	106,491	42,708	33,882
Cocaine hydrochloride	kg	95,278	113,142	149,297	173,265	127,326	126,641
Opium latex	kg	110	27	57	1,632	118	125
Morphine	kg	21	78	39	93	27	8
Heroin	kg	775	629	763	745	442	537
Raw cannabis	kg	76,998	108,942	151,163	150,795	93,745	142,684
Synthetic drugs	unit	175,382	5,042	19,494	148,724	7,888	1,968,857

Source: DNE

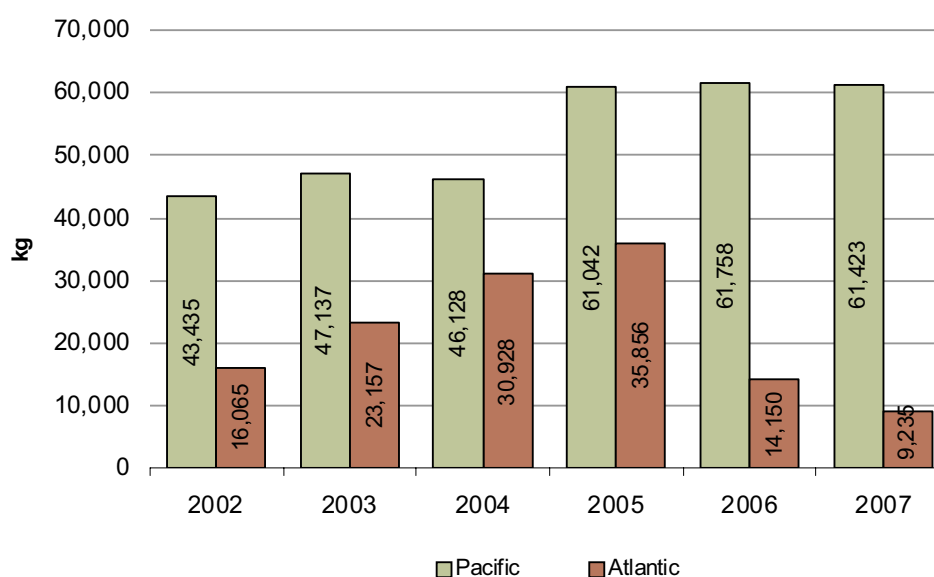
Table 50: Reported seizures of cocaine on the Pacific and Atlantic routes (kg), 2002-2007

Region	2002	2003	2004	2005	2006	2007
Pacific	43,435	47,137	46,128	61,042	61,758	61,423
Atlantic	16,065	23,157	30,928	35,856	14,150	9,235
Total seized on sea	59,500	70,294	77,056	96,898	75,908	70,658
Total seizures	95,278	113,142	149,297	173,265	127,326	126,641
% of seizures on sea	62%	62%	52%	56%	60%	56%

Source: Colombian Navy, Intelligence Division

The Pacific Corridor continues to be the most commonly used route for drug transport (56% of seizures take place at sea).

In connection, heroin seizures showed an increase of 21% over the previous year, going from 442 to 537 kg, which equals to 38% of the potential production of heroin. These were seized mostly in the Central Region (58%) and Pacific Region (15%).

Figure 32: Reported seizures of cocaine on the Pacific and Atlantic routes (kg), 2002-2007

PART 4. PERU COCA CULTIVATION SURVEY

Back of divider Part 4 Peru

FACT SHEET – Peru Coca Survey for 2007

	2006	Change on 2006	2007
Coca cultivation	51,400 ha	+4%	53,700 ha
<i>Of which in</i>			
<i>Alto Huallaga</i>	17,100 ha	+1%	17,200 ha
<i>Apurímac-Ene</i>	15,800 ha	+1%	16,000 ha
<i>La Convención-Lares</i>	12,700 ha	+1%	12,900 ha
<i>Elsewhere</i>	5,800 ha	+31%	7,600 ha
Weighted average sun-dried coca leaf yield	2,200 kg/ha	0%	2,200 kg/ha
Potential production of sun-dried coca leaf ¹⁶	114,100 mt	+2%	116,800 mt
Potential production of cocaine HCl	280 mt	+4%	290 mt
In% of global production	28%		29%
Average farm-gate price of sun-dried coca leaf	US\$ 2.5/kg	0%	US\$ 2.5/kg
Average farm-gate price of coca paste	US\$ 551/kg	+9%	US\$ 600/kg
Average price of cocaine HCl in producing regions*	US\$ 825/kg	+3%	US\$ 851/kg
Potential farm-gate value of sun-dried coca leaf	US\$ 285 million	+2%	US\$ 292 million
Farm-gate value of coca leaves as % of GDP ¹⁷	0.4%		0.4%
Reported eradication of coca cultivation*	12,688 ha	-5%	12,072 ha
Reported seizure of sun-dried coca leaves*	1,067 mt	+74%	1,858 mt
Reported seizure of coca paste*	5,044 kg	+24%	6,260 kg
Reported seizure of cocaine HCl*	14,749 kg	-45%	8,119 kg

* As reported by the Government.

¹⁶ Includes all coca leaf potentially produced. For the calculation of coca leaf available for cocaine production, 9,000 mt of sun-dried coca leaf were deducted from this figure, which, according to Government sources, is the amount used for traditional purposes.

¹⁷ GDP of the respective year as reported by the Government.

ABBREVIATIONS

CADA	Alternative Development Assistance Body
CONTRADROGAS	Committee for the Fight Against Drug Consumption
CORAH	Control and Reduction of Coca Leaf in Alto Huallaga
DEVIDA	National Commission for Development and Life without Drugs
DIRANDRO	Anti-Drugs Directorate, Peruvian National Police
ENACO	National Coca Enterprise
GIS	Geographical Information Systems
GPS	Global Positioning System
HCl	(cocaine) hydrochloride
ICMP	UNODC Illicit Crop Monitoring Programme
NAS	Narcotics Affairs Section, United States Embassy
OFECOD	Drug Control Office, Peruvian Ministry of Interior
UNODC	United Nations Office on Drugs and Crime

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Unless otherwise specified, all figures presented in this report come from the respective national Governments in the context of national monitoring systems supported by UNODC.

Photo credits: UNODC Peru or otherwise indicated.

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This report and other ICMP survey reports can be downloaded from:

<http://www.unodc.org/unodc/en/crop-monitoring/index.html>

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Map 26: Coca cultivation density in Peru, 2007



Source: National monitoring system supported by UNODC - Government of Peru
 The boundaries and names shown and the designations used on this map do not imply official endorsement or acceptance by the United Nations

1 INTRODUCTION

In response to the decisions of the 1998 United Nations General Assembly Special Session on Drugs, UNODC developed and implemented a global Illicit Crop Monitoring Programme (ICMP). Through this programme, UNODC supports Member States in establishing a crop monitoring system to monitor illicit cultivation of coca, opium poppy and cannabis. The Programme is currently operating in Afghanistan, Bolivia, Colombia, Laos, Morocco, Myanmar, and Peru.

In 1998, UNODC started working with DEVIDA to develop a national coca monitoring system in Peru. Using aerial photography, the project produced a detailed mapping (at 1:20,000 scale) of all the coca cultivation areas in 2000. Every year since then, satellite images were used to update the estimates. This report presents the findings of the 2007 Survey.

In Peru, the General Law on Drugs enacted in 1978 prohibits the cultivation of coca and seedlings in new areas within the national territory. This reference to “cultivation” includes the grafting and renovation of existing coca bushes. In 1978, another law established the National Coca Enterprise (ENACO), which has a monopoly on the commercialization and industrialization of the coca leaves. Therefore, the selling of coca leaves to any party other than ENACO is considered illicit by national law.

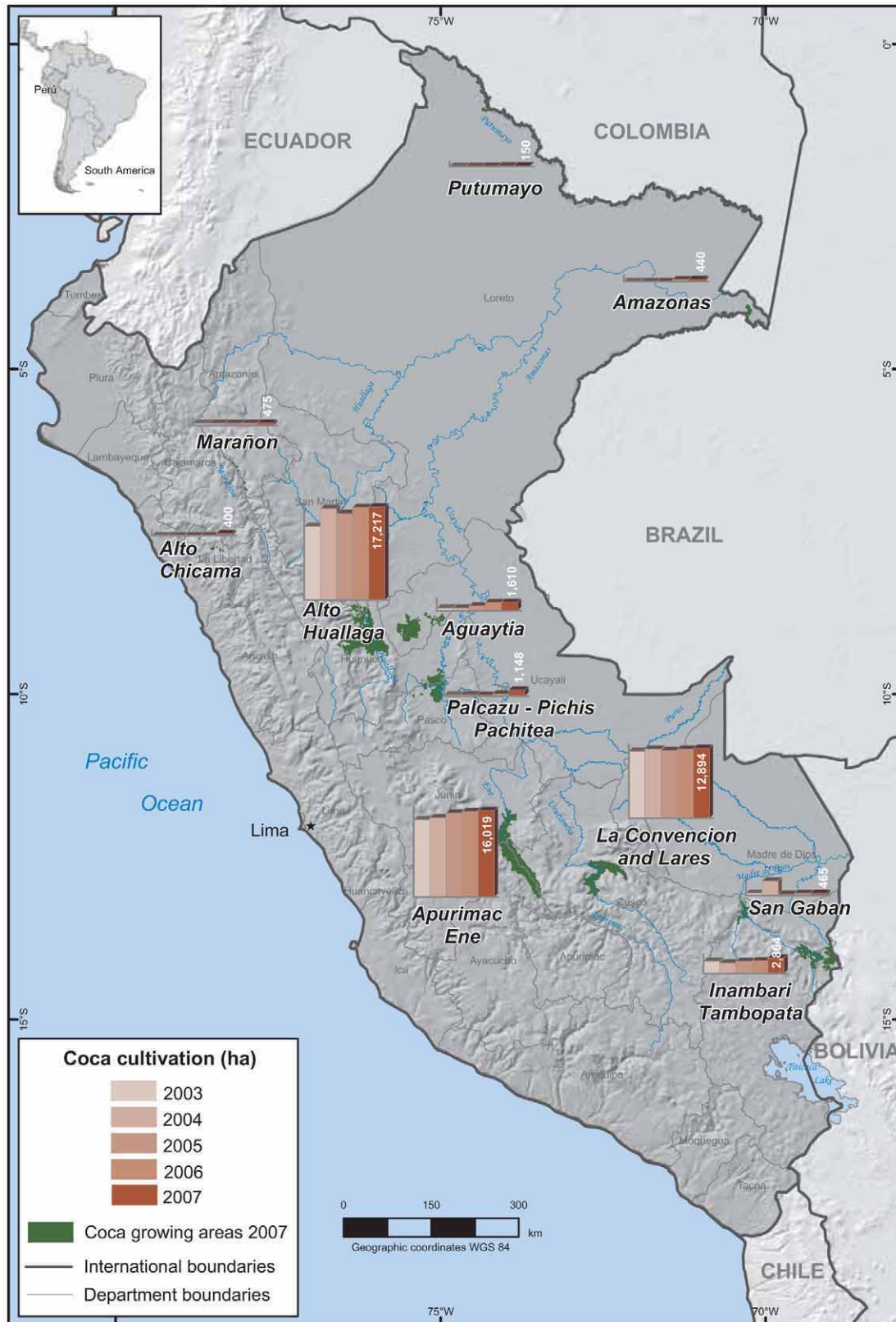
The Government also established in 1996 a Committee for the Fight Against Drug Consumption (CONTRADROGAS), renamed National Commission for Development and Life without Drugs (DEVIDA) in 2002. DEVIDA’s objectives are to design, coordinate and implement policies and activities aimed at national drug control.

Until the mid-1990s, Peru was the world’s main coca cultivating country. Today, it is the second major producer of coca behind Colombia.

The reduction in coca cultivation in Peru in the mid-1990s was linked to the sharp decline in both the coca leaf prices and the demand for Peruvian coca leaf. In 1995, trade in coca leaf on the local market ceased and, from 1996 to 1998, the prices of coca leaf remained lower than its production costs. Farmers abandoned their coca fields and coca cultivation dropped from 115,300 ha to 38,700 ha, or 66%, between 1995 and 1999.

After 1999, coca prices increased slowly while the prices of licit crops (coffee and cacao) decreased. Farmers started to re-activate their abandoned coca fields and coca cultivation rose again in Peru. To some extent, the increase has been contained by the presence of alternative development projects, as well as the introduction of eradication measures, which include both forced eradication conducted by CORAH (Ministry of Interior) and voluntary eradication schemes conducted by DEVIDA. The recent stabilization of coca leaf prices and the increase of prices for licit alternative crops may also contribute to curb the expansion of coca cultivation observed in recent years.

Map 27: Coca cultivation in Peru by region, 2003 to 2007



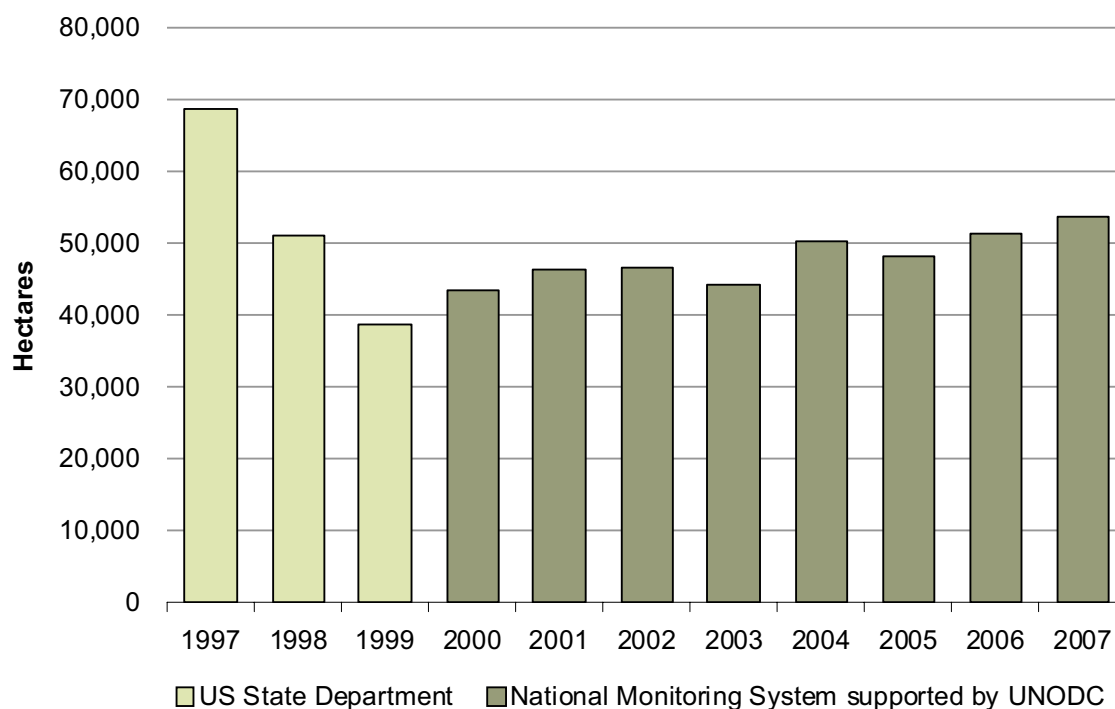
Source: National of monitoring system supported by UNODC - Government of Peru
The boundaries and names shown and the designations used on this map do not imply official endorsement or acceptance by the United Nations

2 FINDINGS

Coca cultivation

In 2007, coca cultivation in Peru increased by 4% and amounted to 53,700 ha. Despite having experienced the second consecutive increase in two years, coca cultivation remained well below the levels registered in the mid 1990s, when Peru was the world's largest cultivator of coca bush. However, Peru remains the world's second largest coca cultivating country behind Colombia.

Figure 33: Coca cultivation in Peru (ha), 1997 to 2007



Regional analysis

Overall, coca cultivation in the three largest regions, which together represented 86% of the total area under coca bush, remained relatively stable and increased only marginally in 2007. In Alto Huallaga, the largest cultivating region, the expansion of coca areas in some parts was balanced off by eradication of coca fields in other parts of that region, resulting in a small overall increase of around 100 ha. The coca area in both Apurímac-Ene and La Convención-Lares grew by around 200 ha each, an increase of about 1%. It is believed that coca leaf produced in Alto Huallaga and Apurímac-Ene is directed towards narco-trafficking, while the production of La Convención-Lares is mainly marketed for traditional purposes.

In 2007, the smaller coca cultivating regions contributed much more to the overall increase both in absolute terms (plus 1,800 ha) and proportionally. Inambari-Tambopata, a coca region close to the border with Bolivia, increased significantly, by 21% or about 500 ha, and amounted to 2,900 ha. This is the third consecutive increase in three years. The small and partly new coca cultivation areas in the North and North East of the country increased moderately but continued to constitute only a small proportion of the overall coca bush area in the country. There is evidence of a reactivation of old coca fields in Alto Chicama, a traditional coca growing area where coca fields had been abandoned years ago.

Figure 34: Coca cultivation by region, 2007

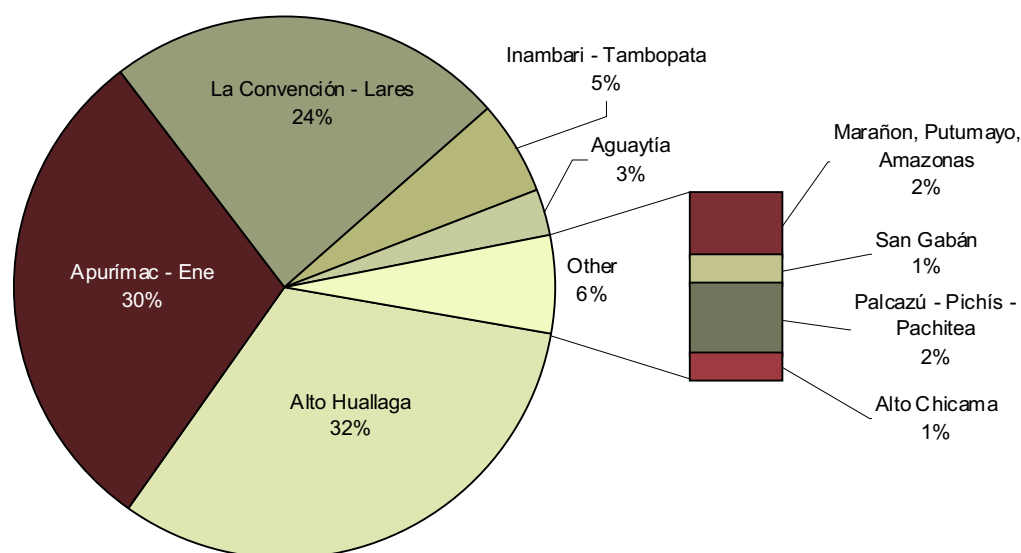


Table 51: Coca cultivation by cultivation region (ha), 2001 to 2007

Region	2001	2002	2003	2004	2005	2006	2007	Change on 2006
Alto Huallaga	14,481	15,286	13,646	16,900	16,039	17,080	17,217	1%
Apurímac-Ene	12,600	14,170	14,300	14,700	15,530	15,813	16,019	1%
La Convención-Lares	13,980	12,170	12,340	12,700	12,503	12,747	12,894	1%
Inambari-Tambopata	2,520	2,430	2,260	2,000	2,250	2,366	2,864	21%
Aguaytía	1,051	1,070	510	500	917	1,570	1,610	3%
Palcazú-Pichís-Pachitea	350	350	250	300	211	426	1,147	169%
Marañón, Putumayo, Amazonas	1,250	1,250	450	500	500	968	1,065	10%
San Gabán	-	-	470	2,700	292	446	465	4%
Alto Chicama	-	-	-	-	-	-	400	n.a.
Rounded Total	46,200	46,700	44,200	50,300	48,200	51,400	53,700	4%

Alto Huallaga

The Alto Huallaga region is located on the eastern side of the Andes mountain range, in the high tropical or subtropical forests of the departments of San Martín and Huánuco. In this region, coca bush is cultivated between 400 and 1,400 meters above sea level. For a fourth consecutive year, Alto Huallaga was the largest coca cultivating region in Peru, and accounted for almost one third of the total area under coca cultivation. Overall, the area under coca bush increased only slightly by less than 1% over 2006.



Steep slopes with coca fields in Ongón, Alto Huallaga

Despite this seemingly stable picture, the situation in Alto Huallaga was rather dynamic in 2007. The disparity widened between the shrinking coca cultivation in the northern part and dense, expanding coca cultivation in the southern part. In the northern and central part of the region, the area under coca bush decreased by over 900 ha as a result of intense eradication activities and the availability of alternatives, which contributed to preventing farmers from re-planting their eradicated fields with coca. A sizeable portion of the farming population seems to have adopted the cultivation of licit crops such as oil palm, cacao and palmito (heart of palm) among others. It is noteworthy that in 2007 in northern Alto Huallaga prices for cacao increased by 50% and for coffee by 15% over 2006, while coca leaf prices decreased over the same period.

However, the coca area in the southern part increased by over 1,000 ha, resulting in a net growth of around 100 ha. The largest expansion in absolute terms took place in the southern most areas of Monzón and Tulumayo with 398 and 442 ha respectively. Agriculture in Monzón is almost exclusively directed towards coca cultivation. Together, these two areas constituted over 83% or 14,400 ha of the total coca area in Alto Huallaga. No eradication was reported in these areas in 2007. Alternative livelihood projects are almost non-existent and access to law enforcement and government representatives in general is difficult, which hinders development activities in this part of the region.

The Ongón area in the northwest of Alto Huallaga along the Mishollo river was again included into the survey in 2007. The roughly 400 ha identified in 2001 were reported eradicated in 2002, and no changes were observed until 2005/2006. According to field observations, some former coca fields have been reactivated, and in 2007, 86 ha of coca were identified.

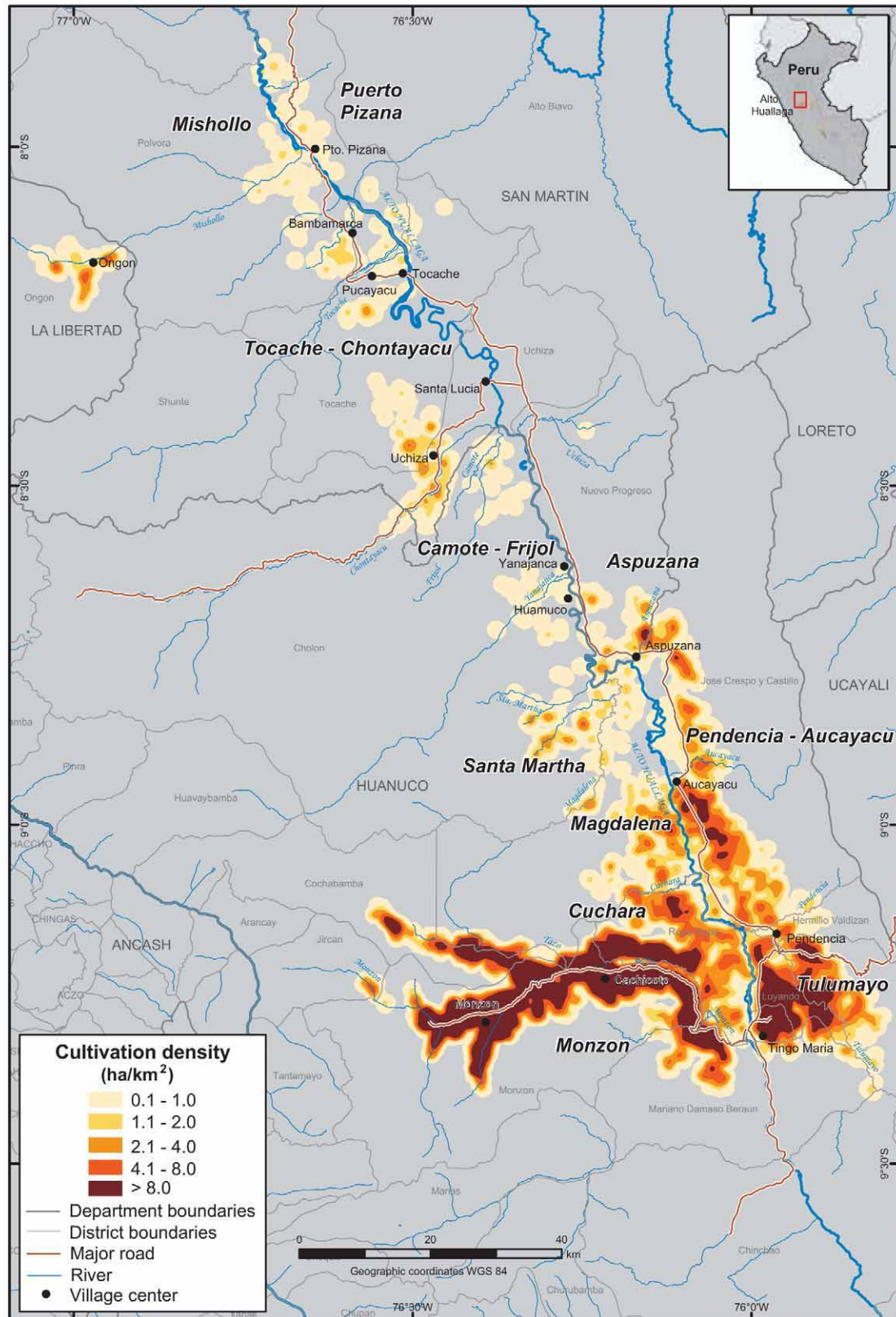


Clearings for coca fields in Monzón, Alto Huallaga



Dense coca fields in Monzón, Alto Huallaga

Map 28: Coca cultivation density in Alto Huallaga, 2007



Source: National monitoring system supported by UNODC - Government of Peru
 The boundaries and names shown and the designations used on this map do not imply official endorsement or acceptance by the United Nations

Apurímac-Ene

The Apurímac-Ene cultivation region is situated in the central part of the country extending over 12,000 sq km in the valleys of the rivers Apurímac and Ene, among the departments of Ayacucho, Cusco and Junin. The relief is uneven, and coca cultivation takes place at altitudes ranging between 550 and 2,000 meters above sea level.

In 2007, Apurímac-Ene remained the second largest coca cultivating region in Peru, trailing closely behind Alto Huallaga. Over the past six years, the coca cultivation area has grown slowly but steadily, from 14,170 ha in 2002 to just over 16,000 ha in 2007. Due to its high yields, which lie over the national average, the region can be considered to be the single largest coca leaf producer in Peru. Coca leaf production is thought to be almost entirely destined for cocaine production.

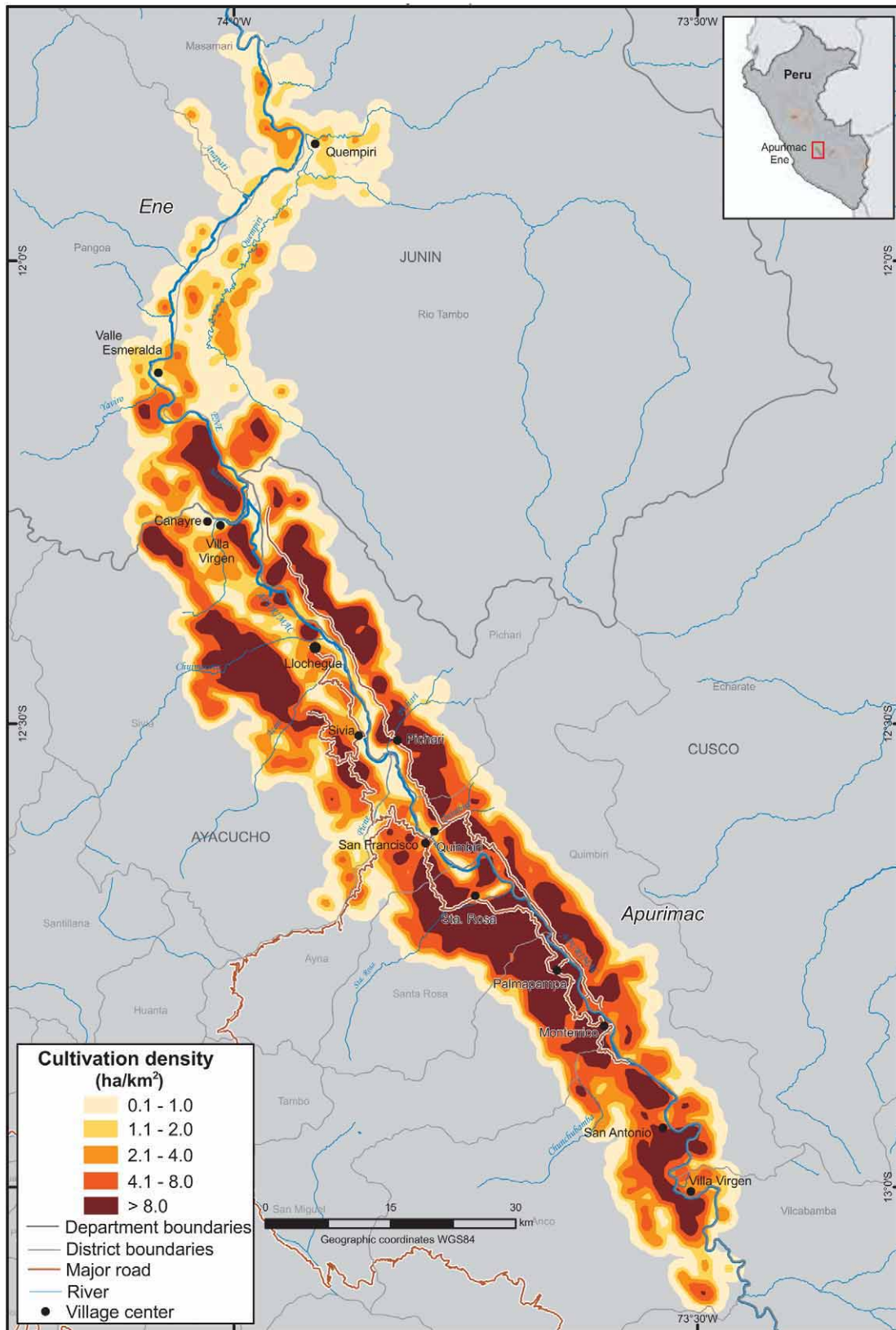
Similar to parts of Alto Huallaga, the political atmosphere in Apurímac-Ene was very tense in 2007. No eradication activities were reported from Apurímac-Ene but interdiction activities against narco-trafficking and cocaine production took place. Trafficker seems to use frequently groups of porters, each carrying 10 to 15 kg, to transport drugs out of the region. These groups have armed protection and use a network of footpaths, which is difficult for police to monitor.

It should be noted that the region, besides being the major coca leaf producer, is also a major producer of coffee and cacao. It remains to be seen whether the recent price increase experienced by these licit crops will continue to prevent further expansion of coca cultivation in the region or even contribute to a reduction.



Sun-drying of coca leaf, Apurímac

Map 29: Coca cultivation density in Apurimac-Ene, 2007



La Convención-Lares

La Convención-Lares, the third largest coca cultivating region in Peru, is situated in the department of Cusco. Coca is mostly cultivated between 800 and 2,000 meters above sea level on the steep mountain slopes of this region. In 2007, almost 12,900 ha of coca fields were identified. Almost the entire coca leaf production is thought to be destined to traditional use.

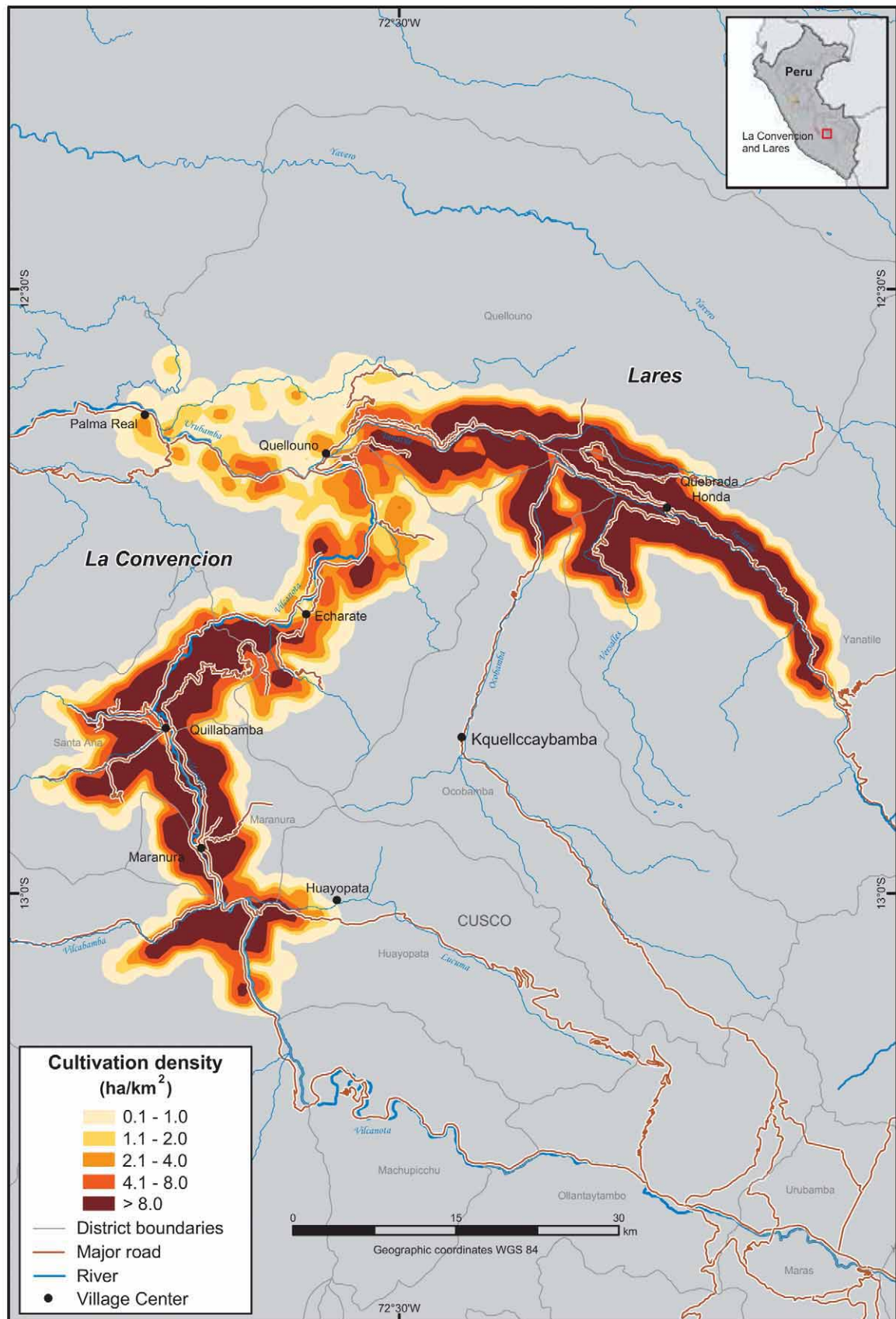
Since 2001, the area under coca bush has been relatively stable. The variations are thought to be due to the practice of pruning the coca bushes periodically after about three to four years rather than an increasing or decreasing area under coca cultivation. Freshly pruned coca fields are not captured with the current survey methodology, since these fields cannot be identified as coca on the satellite images used for the survey.



Coca farmer tending his field, La Convención-Lares

It is believed that coca leaf production from the region is mainly oriented towards traditional uses like chewing, and not towards narco-trafficking. There were no reports of eradication nor destruction of maceration pits or clandestine laboratories in this region.

Map 30: Coca cultivation density in La Convención-Lares, 2007



Source: National monitoring system supported by UNODC - Government of Peru

The boundaries and names shown and the designations used on this map do not imply official endorsement or acceptance by the United Nations



Coca fields in La Convención-Lares

Other cultivation regions

The area under coca in the cultivation regions of Aguaytía increased only slightly in 2007. The area under coca bush in Marañón (situated in the northern part of the Peruvian Andes), Putumayo (close to the Colombia border) and Amazonas (Caballococha) remained relatively stable in 2007. Amazonas, which was included into the survey for the first time in 2006, is a lowland forest area characterized by planes and a slightly undulating landscape. The area is located in the northeastern corner of Peru in the border triangle with Colombia and Brazil close to Leticia in Colombia and Tabatinga in Brazil.

Inambari-Tambopata and San Gabán

Inambari-Tambopata is the largest of the smaller coca cultivation regions. It is located in the East of the country close to the border with Bolivia. In 2007, 2,894 ha of coca fields were identified, an increase by 21% over 2006. The region has access to a highway leading to Bolivia, where coca leaf prices are generally considerably higher than in Peru. The area under coca cultivation in San Gabán increased only slightly in 2007.

Palcazú-Pichís-Pachitea

The valleys of the rivers Palcazú, Pichís and Pachitea are situated in the province of Oxapampa in the department of Pasco. The landscape is predominantly hilly, alternating with flat areas. Coca cultivation is found between 300 and 500 meters altitude. In 2007, the region experienced the largest increase in coca cultivation area in both percentage and absolute terms, from 426 ha in 2006 to 1,147 ha in 2007. However, this is still much below the level reported from the early 1990s.



Recent forest clearing with new coca field, Pichís-Palcazú

Alto Chicama

For the first time, in 2007, the region of Alto Chicama was included in the survey. Alto Chicama is located in the department of La Libertad where coca is mainly cultivated between 800 and 1,500 m altitude. Cultivation was directed towards producing coca leaves for chewing, and mine workers constituted an important consumer base in the region. Several years ago, the coca fields were abandoned, and cultivation of grapes gained more prominence. Recently, some coca fields have been reactivated. However, these plantations are relatively old, show a low plant density, and some coca bushes may be more than 30 years old. A relatively low coca leaf yield can therefore be expected.



Old coca bush in Alto Chicama



Coca field in Alto Chicama

Production of coca leaf and derivatives

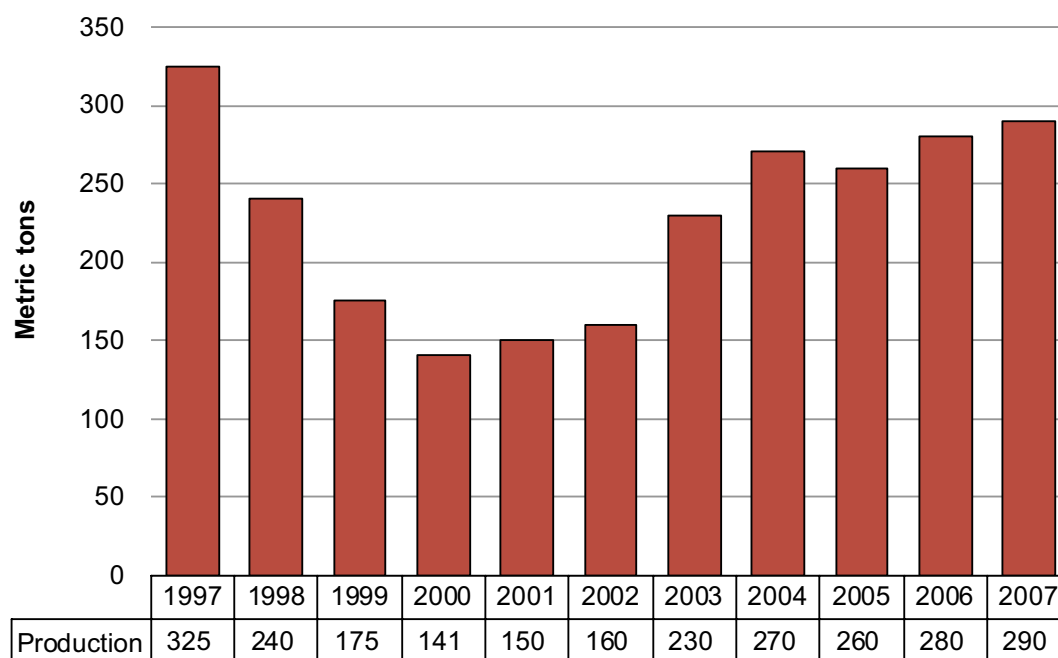
UNODC continuously tries to refine its estimation of coca leaf yields and cocaine production. Due to the problematic security situation in many cultivation regions, access was difficult or impossible, and systematic coca leaf yield studies have not been conducted since 2004. However, results obtained in a selective and non-random research for the main cultivation areas indicate no major changes in coca leaf yield. The regional coca leaf yield estimates for the main coca cultivation regions Apurímac-Ene, Alto Huallaga and La Convención-Lares established by UNODC in 2004 are therefore used to estimate the total coca leaf production in 2007. For the other regions, information obtained previously by UNODC in the years 2000 and 2001 was used.

The total production of sun-dried coca leaf in Peru was estimated at 116,800 mt in 2007. This corresponds to a national weighted average of about 2,200 kg/ha sun-dried coca leaf. The coca leaf production in 2007 was 2% higher than in 2006 (114,100 mt).

According to a study of the National Institute of Statistics and Computer Science (INEI), 9,000 mt of sun-dried coca leaf are used for traditional, commercial and industrial purposes in Peru annually.¹⁸ For the calculation of the amount of coca leaf available for cocaine production, this amount was deducted from the total of 116,800 mt in 2007.

Based on updated information available on conversion rates established by the "Operation Breakthrough", conducted by the United States in 2003 and 2004, 375 kg of sun-dried coca leaf are necessary to produce one kilogramme of cocaine HCl of 100% purity. Applying this rate to the remaining 107,800 mt of sun-dried coca leaf available for cocaine production, 290 mt of cocaine HCl can be produced. Therefore, the total potential production of cocaine HCl was estimated at 290 mt in 2007.

¹⁸ "Encuesta nacional sobre consumo tradicional de hoja de coca en los hogares", INEI-DEVIDA, November 2004.

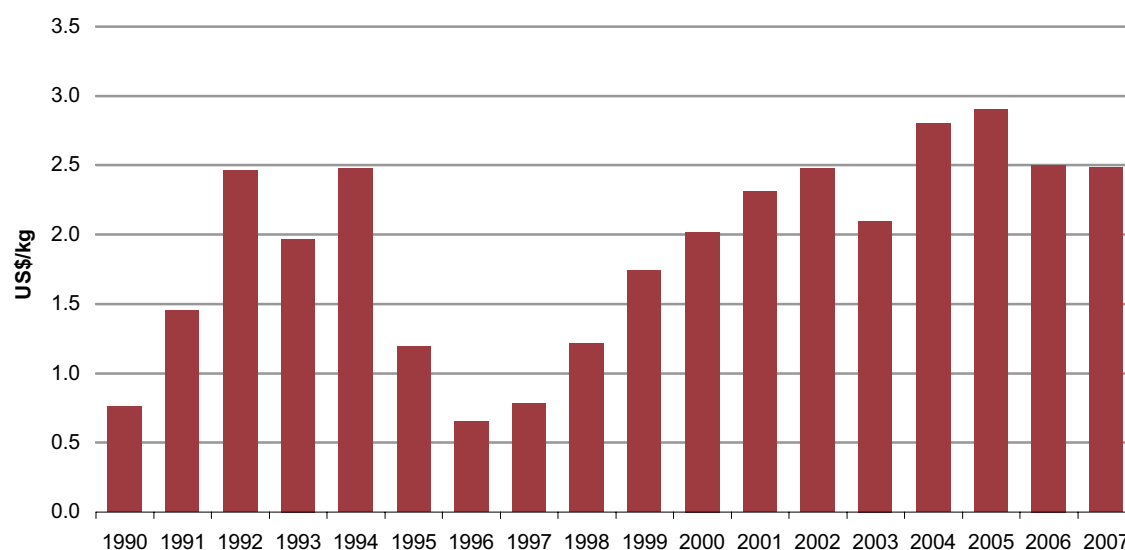
Figure 35: Potential cocaine production (mt), 1997 to 2007

Prices for coca leaf and derivatives

While prices of coca leaf and derivatives had fallen between 2005 and 2006, prices were stable or increased slightly between 2006 and 2007. On average, farm-gate prices for sun-dried coca leaf remained unchanged at US\$ 2.5/kg in 2007. Seasonal variation and regional price differences continue to exist. Inambari-Tambopata, a region en route to Bolivia where coca leaf is traded at a higher price level, had the highest average price of US\$ 3.1/kg, while the lowest average price (US\$ 2.0/kg) was recorded in Apurimac, a large, centrally located coca region linked to cocaine production.



Maceration pit for coca leaves (courtesy DEVIDA)

Figure 36: National average farm-gate price of sun-dried coca leaf (US\$/kg), 1990 to 2007

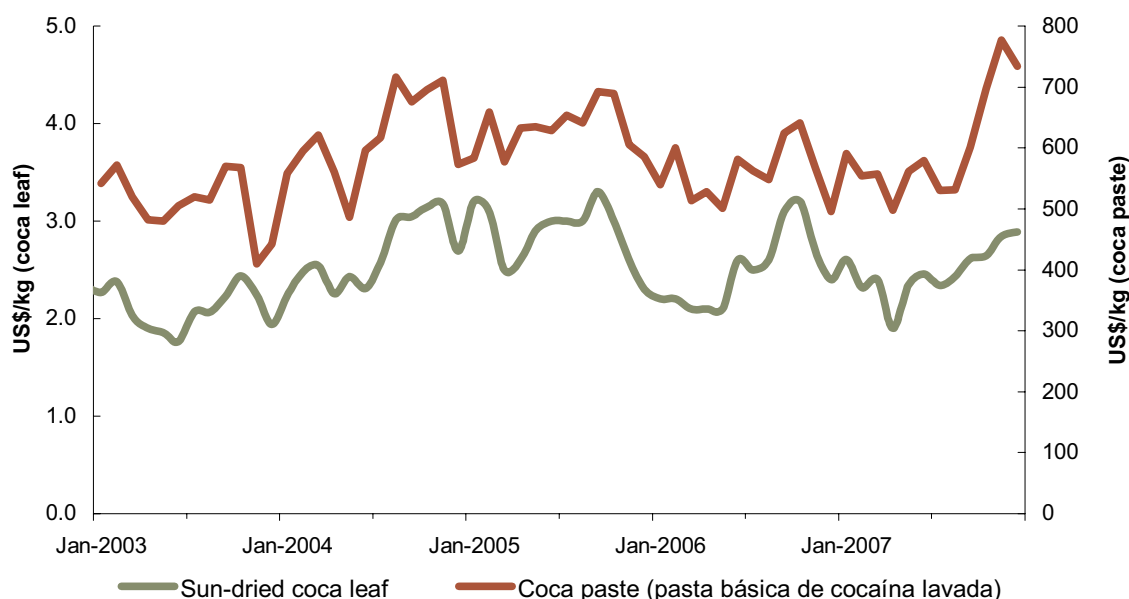
Coca leaf prices differ considerably between regions. This is not surprising considering the fact that transport of the bulky coca leaf between regions is costly and risky due to law enforcement activities. The monthly fluctuations in coca leaf prices are thought to be the result of seasonal variations in the supply of coca leaf. Eradication efforts as well as market disruptions due to law enforcement activities, which cause traffickers to leave some regions temporarily, also play a role.

Table 52: Farm-gate price of sun-dried coca leaf by region (US\$/kg), 2005 to 2007

Region	2005	2006	2007	% change 2006 - 2007
Alto Huallaga: Monzón	3.7	3.0	2.7	-10%
Alto Huallaga: South	3.2	2.6	2.4	-33%
Alto Huallaga: North	2.6	2.4	2.2	-9%
Apurímac	2.2	1.8	2.6	44%
Inambari	2.9	2.8	3.1	11%
Aguaytía	2.6	2.5	2.9	16%
National average	2.9	2.5	2.5	0%

Unlike coca leaf prices, the price for coca paste increased on average by 9% from US\$ 551/kg in 2006 to US\$ 600/kg in 2007, mainly due to a steep rise in the last quarter of the year. Despite this increase, the average price of coca paste remained at a lower level than in 2004 and 2005. The wholesale price of cocaine in production regions increased only slightly by 3% from US\$ 825/kg in 2006 to US\$ 851/kg in 2007. As the Peruvian sol strengthened against the US dollar in the course of the year 2007, the meaning of these price increase is not yet clear.

Figure 37: Monthly average farm-gate prices of sun-dried coca leaf and coca paste (US\$/kg), Jan. 2003 to Dec. 2007



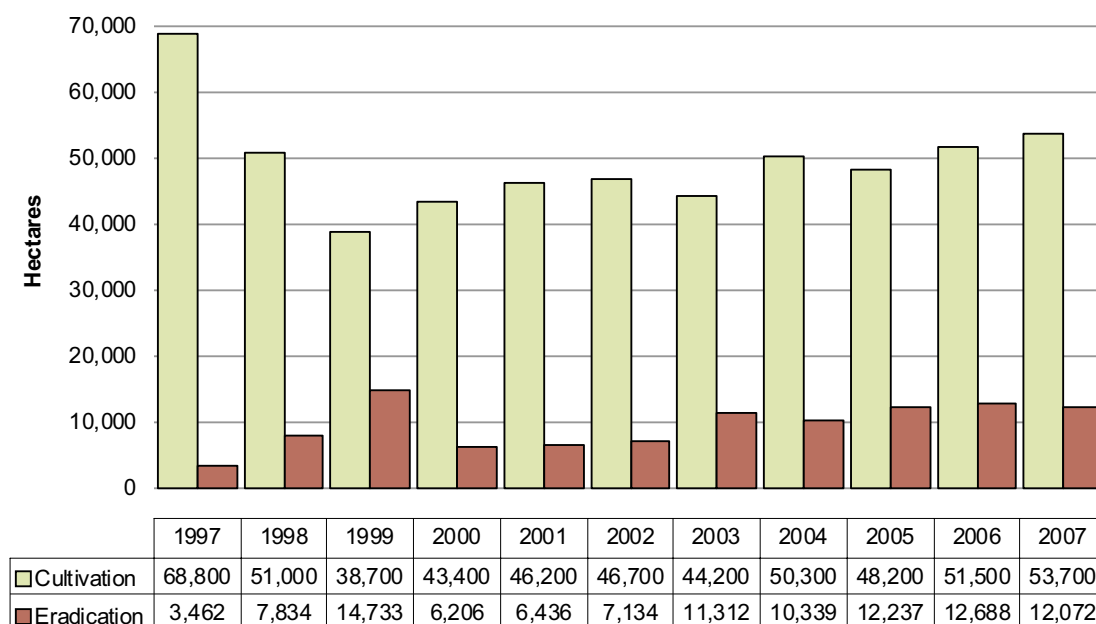
Reported eradication

Eradication of coca bush, which in Peru is done manually, decreased slightly but remained at the relatively high level of over 12,000 ha. In 2007, the Government reported a total of 12,072 ha of eradication, of which 11,056 ha were forced eradication and 1,016 ha voluntary self-eradication.

Eradication activities were intense in the northern parts of Alto Huallaga, where a significant reduction of the area under coca cultivation was achieved. There are indications that eradicated fields in this area have not been replanted with coca, and that the production of licit crops has increased. This increase was supported by alternative livelihood projects but also benefitted from price increases for products such as palm oil and cacao. In some coca cultivation regions, such as Monzón in the southern part of Alto Huallaga or Apurímac-Ene, no eradication was carried out, due to the problematic security situation in these areas.



Eradication of coca in protective clothing for fear of mines (courtesy DEVIDA)

Figure 38: Cultivation and reported eradication of coca bush (ha), 1997 to 2007

Source: Eradication as reported by the Government.

Reported seizures

The majority of the drugs seized in Peru over the last four years were cocaine HCl. In Peru, seizures of cocaine HCl and base declined from 22 mt in 2005 to 20 mt in 2006, about 3% of global seizures. It further declined to only 14 mt in 2007, despite the fact that over the same period potential cocaine production in the country increased. However, it should be noted that 2005 and 2006 were years with exceptionally high seizures. Coca leaf seizures increased considerably in 2007 and reached a record level of 1,900 mt.

In addition to coca products, large amounts of precursor chemicals needed for cocaine production were seized by the authorities, among them potassium permanganate, acetone, hydrochloric acid, and sulfuric acid. Seizures of potassium permanganate, a key ingredient to produce cocaine base, have increased significantly over the past three years and amounted to 1.5 mt in 2007.

Table 53: Seizures (kg), 2003 to 2007

	2003	2004	2005	2006	2007
Coca leaf (sun-dried and macerated)	1,328,347	916,024	1,525,739	1,078,514	1,858,023
Coca paste	4,366	6,330	4,583	5,044	6,260
Cocaine HCl	3,574	7,303	17,814	14,749	8,119

Source: As reported by the Government.

The seizure and destruction of 16 clandestine cocaine HCl laboratories, in addition to 649 laboratories processing coca paste and cocaine base, confirms that the capacity to produce cocaine HCl exists in Peru. A large number of maceration pits (1,079) were also destroyed. Maceration pits are usually located close to the coca plantations and in vicinity to a water source. They are used to prepare the sun-dried coca leaves for further processing into coca paste by soaking the leaves with solubles to facilitate the extraction of cocaine alkaloids at a later stage. Maceration pits are typical for the cocaine production method used in Bolivia and Peru, which is based on sun-dried coca leaf, and are a clear indicator that coca cultivation is linked to narco-trafficking.