Colombia’s Coca Eradication Policy

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Colombia has struggled against illicit coca production for more than three decades, but only in the last ten years has it attempted a response as drastic as the controversial Plan Colombia. In the 1990s, coca production levels exploded due to the assistance of guerrilla groups and paramilitaries, and continued to grow at an increasing rate (Beittel 2012). Plan Colombia, initiated in 1999 through the combined efforts of the American and Colombian governments, directed massive amounts of money to coca eradication and military campaigns against producers. The plan was initially supposed to allocate funding to remedy the underlying conditions that made coca production so attractive to poor farmers in the region. It had the ambitious goal of reducing coca cultivation by 50% in six years (Wyler 2012). However, shortly after the program was put into action, money designated for building infrastructure, providing adequate security and police in the region, developing alternative crop strategies, and other investments in rural development were abandoned in favor of destroying coca crops and military interventions. Unfortunately, the current and past strategies of coca eradication have led to undesirable outcomes, including widening inequality and negative externalities such as environmental damage, displaced persons, loss in agricultural wages, and a dispersion of violence (Rincon-Ruiz & Kallis 2013; Acevedo 2008; Isacson, 2012; Dion & Russler 2008; Beittel 2012). There are few, if any benefits to a strategy focused on coca eradication considering that it has reduced the total quantity of coca cultivation by only a small percentage, and coca output in many regions has increased despite a
decrease in the portion of land devoted to coca farming.

Through an examination of both the raw data and several empirical studies, this article will posit that coca eradication is not only cost prohibitive, but has only moved coca growing to previously unaffected areas of the country. The United Nations Office on Drugs and Crime (UNODC) reports that output has actually increased since 1999. Studies have revealed that coca eradication has serious detrimental consequences, while alternative strategies – those originally envisioned in Plan Colombia – have a greater instance of success. In addition, interventions reducing demand do work; eradication causes the opposite of its intended effect; eradication, and alternative crop strategies by themselves, have small effects, but alternative crop development is less expensive and can deter coca production if profitable; coca cultivation is often shifted to areas with concentrations of biodiversity, which displaces communities; and that access to markets and infrastructure are essential for alternative crop development (Mejía & Restrepo 2011; Dion and Russler 2008; Reyes 2011; Ibanez & Carlsson 2010).

Using economic analysis, this paper elucidates the problem of coca production in Colombia, analyzes the government’s ongoing response via Plan Colombia, and specifically evaluates the policy of coca eradication within that plan. Finally, the paper examines the raw data from Plan Colombia and empirical studies to make sensible alternative recommendations to coca eradication. Section 1 defines the problem within its context; Section 2 debriefs the policy of coca eradication within the framework of Plan Colombia and evaluates its efficacy; Section 3 reviews empirical studies that estimate the effects of coca eradication along with other policies geared at reducing coca production; and finally, Section 4 provides thoughtful alternative policy recommendations that replace coca eradication with more cost-efficient and efficacious strategies.

The problem defined

Coca production in Colombia has been strongly associated with increased violence and political instability throughout the entire country, beginning in the late 1980s and growing exponentially in the 1990s and through the 2000s (Beittel 2012). Coca production is also linked to deforestation, biodiversity loss, pollution and general civil unrest. An additional problem includes the untold healthcare costs associated with treating the drug addicts and abusers, along with the increased violence related to drug conflicts. Coca production also disrupts other licit economic activities and limits investment by international and national corporations due to fears of conducting business in and around the region.

Despite the problems that coca production causes, it only makes up about 0.3% of GDP, down from 1.9% in 2001 (UNODC, Colombia’s Coca Cultivation Survey, 2012). Furthermore, agriculture only makes up 7% of GDP in Colombia, a small fraction within a small fraction overall, but the social and explicit costs of the drug trade are much higher than its economic returns in the current legal environment.

Structure, history and gravity of the problem

It is important at this stage to make the distinction between coca output and coca land cultivation. Coca cultivation refers to the acreage of land dedicated to cultivation of coca; however, cultivation is hard to measure because measurement relies on GPS, satellites, and other technology to guesstimate the amount of land devoted to coca. Since coca is grown in areas that are well hidden by forests or by other crops, the estimates of cultivation are understated. Coca output, on the other hand, refers to the productivity of the land and how much coca is produced within a hectare of land. Output can become more efficient with the use of technology and density of growth and labor, even if total land under cultivation decreases.

Despite the numerous news stories in the 1980’s about the Medellin Drug Cartel, it was not until the guerrilla organizations and paramilitaries began working for the cartels and other producers that the problem became international in focus. Prior to the early-to-mid 1990s, cocaine production was centered in Peru and Bolivia, although it was often smuggled through Colombia (Beittel 2012). Colombia gained its reputation as the world’s top producer of coca in the early 2000s, though it has recently fallen below the production levels of Peru (see chart; Beittel 2012). Coca production grew dominant in the southern region of Colombia states of Putumayo, Caquetá, Meta, Guaviare, Nariño, Antioquia, and Vichada where the F.A.R.C. (Fuerzas Armadas Revolucionarias de Colombia), a communist guerilla organization allegedly representing poor farmers, had set up its primary headquarters (see Map A-UNODC 2012). As of 2011, more than half of the area under coca cultivation (63%) is concentrated in five departments: Nariño,
Between 2006-2009, at the height of Plan Colombia, coca output diminished by approximately 8% according to most estimates. It rose again in 2009 and 2010 and only dropped again recently, falling behind Bolivia and Peru. On the other hand, land cultivation was reduced by approximately 25% over a decade, from 2002-2012, with estimates varying between the U.S. and UN but the causes have not been fully identified yet (see Table 1; UNODC 2012).

Map A: Coca Cultivation Areas in Colombia as of 2009

Table 1: Output per hectare, 1999-2011, UNODC

The coca production problem in Colombia has been extremely intransigent because of many factors, only some of which are obvious. These include demand from the global consumers and internal political strife, including leftist guerrilla movements and other rebel groups vying for power within the region. Contributing to the difficulties is a lack of governmental infrastructure, a police/military presence and decentralization in Colombia’s rural areas, which make up the bulk of the country and where most of the production occurs. Colombia’s overall geography is highly conducive to coca production, not only because of its camouflaged forests, but because of its easy access to other Central and South American countries, and its multiple ports for delivery. Cultural factors also play a role: coca is used by indigenous populations for ceremonies and as a mild stimulant when working at higher altitudes. All of these reasons make production difficult to combat, but the lack of infrastructure, poverty and security in production areas are the dominant forces that exacerbate all of the other contributing factors.

Plan Colombia and the policy of coca eradication

Coca Eradication

Table 2: Eradication and Cultivation, 1999-2011, UNODC
Source UNODC, Coca Cultivation Survey, 2012

Coca eradication is a strategy that includes fumigation of crops or manual removal of the crops (i.e. burning or cutting them down). Aerial fumigation has been used predominantly because it is the most cost-effective method.
effective of all eradication methods, but manual eradication methods have increased recently, especially in
the few areas that have been reclaimed by the Colombian government (see Table 2 above). Eradication
decreased again in 2012 due to security concerns (Beittel 2012). In economic terms, coca eradication is a
supply-side intervention, one that attempts to reduce demand through higher prices and to limit availability
by choking supply.

**Overview of Plan Colombia**

The plan was first discussed in 1998 as a bilateral initiative between former Colombian President Andres
Pastrana Arango and the Clinton administration, and was initially forged with a component to include a
crop substitution for poorer farmers. The original draft was to include aid to address human rights abuses,
sustainable economic growth and private investments in hopes of building up the rural sector of the
country and eliminating the factors that contribute to the problem.

Ironically, the original plan was called “Plan Colombia for Peace,” even though it later focused primarily on
military action. Prior to Plan Colombia, the only policy the U.S. enacted to combat coca production was the
Andean Trade Preference, which allowed local Colombian made products to enter the U.S. market duty-
free to deter coca trade. The U.S. alone spent over $8 billion between 2001 – 2012, and a large portion
has been directed to manual and aerial eradication efforts (Beittel 2012).

The plan was modified several times. In 2002 it was modified by both the Colombia and the U.S. and
became part of a larger initiative for the United States dealing with all the major coca-producing nations,
called the *Andean Trade Promotion and Drug Eradication Act* or *Andean Counterdrug Initiative* (Beittel
2012). Under the initiative, the earlier goals were set aside in favor of military action against coca
distributors and producers, and the destruction of coca fields, either through fumigation or manual
destruction (often used in areas of government control). In 2007, there were small efforts made by the
Colombian government to renew the goals of the original plan through the PNC (National Consolidation
Plan), which was implemented to address lack of social services, security, better schooling, adequate living
standards (health and housing) improving political participation, and reinvesting in rural communities. The
government tried to take back the areas controlled by the drug producers. This initiative has made small
strides in stable regions, but has failed to scale adequately (Isacson 2012; Beittel 2012).

**Results and Critique**

**Problems with the raw data and its interpretation**

Interpretation of large amounts of data can be troubling for finding causal relationships. Because coca
eradication was only one prong of Plan Colombia, it is hard to decouple the effects of coca eradication on
just cultivation and output since interdiction (militarily targeting of narco-terrorists, intercepting the final
products and cutting off financing to the cartels through various methods) was a large part of the
intervention. Additionally, efforts to improve social welfare were made under the PNC to combat the
problem of coca. It also remains unknown what other omitted variables may have affected coca production
or cultivation, such as reduced demand caused by some other factor other than reduced supply (i.e. an
effective addiction program in the U.S.), reduced supply in the end-user country or intermediary countries
down the supply chain, or any other similar shock. It is also problematic to look at areas where coca
eradication took place because cultivation reduced in some areas, moved to new areas, and land plots got
smaller but more productive (Beittel 2012).

Lack of good data continues to be a problem. This is especially troubling when comparing both estimates
of output and cultivation by the UNODC to the U.S. figures, which could be attributable to reduction in land
plots that the U.S. study did not take into account (Congressional Research Office 2012). It could also be
the result in a slight upward bias in data by the U.S., since it has a vested interest in success, whereas the
U.N. has less of one. Of even greater import is the need for a cost/benefit analysis with information about
how much was spent on coca eradication versus military interdiction or smaller programs geared at
infrastructure.

**Unintended Consequences/Externalities**

Some unplanned results of eradication have occurred. Farmers have become more technologically
advanced (usually with the help of the F.A.R.C, E.L.N., or paramilitaries). In order to avoid detection, they have begun interspersing the coca with other crops to hide the coca, and they have begun reducing plot size while increasing productivity of land through new capital and increased labor. Production has moved to new areas, referred to as "ballooning," where degradation of the land has occurred more quickly. Furthermore, many indigenous communities have been displaced because of the fumigation and violence that escalated in new areas where the producers gained a foothold. (Rincon-Ruiz and Kallis 2013)

**Misaligned Incentives**

The new, limited scope of Plan Colombia has not met the farmers’ concerns or public health needs, and the agendas were not the same for the U.S. and Colombia. In 2002, both the U.S. and Colombia began primarily dealing with the symptoms of the problem: narco-terrorists and coca eradication. They stopped trying to eliminate the triggers: structural inequalities and failed and failing infrastructure in the rural departments (Isacson 2012). Since the U.S. was funding most of effort, Colombia was partially subordinated to deal with the narco-traffickers at the expense of infrastructure projects or development programs. There was a lack of focus on demand-side interventions, which have proven to be effective (Mejia and Restropo 2012).

Farmers were left out of the final implementation of Plan Colombia, and their rent-seeking partners (paramilitaries, guerrillas) must fight the initiative to continue their lucrative predation. Since agriculture represents a small portion of economic activity & GDP, it is very possible that the famers’ livelihoods were not the government’s top priority. There are only a few high-yield, high-profit crops for farmers in the area, but the investment outlays on those goods are high, so most growers cannot afford to invest in those crops. The cost to scale up to bigger crops such as coffee is not only too high in terms of capital and lack of savings, but also in terms of access to nearby markets due to poor infrastructure. Currently, there are few crops with both instant access to the market and better returns than coca (Dion and Russler 2008). For smaller farmers, there are also few other opportunities or businesses in the rural sector such as cottage industries or other small business ventures. Without easy access to markets, and sustainable, high value crops, farmers will usually invest in the most stable profit crop, in this case all too often coca (Dion and Russler 2008; Ibanez & Carlsson 2010).

**Price as a proxy for supply**

An increase in a commodity’s price is an indication of demand through a buyer’s willingness to pay, at the wholesale level in this case, and is usually a good indicator of whether output or actual supply has decreased. According to the U.S. and UN data, global and local wholesale prices have remained fairly constant since 2000 (Avecedo 2008). If production was moved or displaced to another coca-producing country by an equally offsetting proportion, price stability might be explained; however, prices in Colombia’s market also remained steady. This indicates that output was not significantly affected, even in Colombia itself. It should also be noted that a small reduction in output or cultivation will not significantly affect wholesale price since production costs are so far below market prices. In 2007, end-user prices rose while purity dropped. However, this trend did not continue and returned to pre-2007 levels (Beittel 2012). It is important to note here that prices for end users may also increase because of supply chain shocks and interdiction in intermediary countries, something that could not be easily explained by eradication (Beittel 2012).

**Table 3: Wholesale and market prices of coca, 2007-2011, UNODC**

![Table 3](image_url)
Overall impact

Plan Colombia as a whole, has achieved mixed results by most estimates. A meta-analysis of all the data proves to be cumbersome, but it appears the costs of eradication far outweigh the benefits. The benefits include a small reduction in cultivation due to this specific policy, as well as reduction in violence coupled with the remote possibility of decreased land cultivation. Interdiction efforts prove more effective than eradication efforts, in terms of explicit and implicit costs, including social costs and externalities such as: environmental damage, displacement of production and increased intensity in production. However this analysis did not evaluate the militarization component of Plan Colombia, which included both targeting narco-terrorists as well as providing a military presence in some regions. The returns on reducing coca production appear to be higher compared to coca eradication, and military invention did seem at least to stem a significant amount of violence. Coca eradication did have some effect on overall cultivation, although the impact could not be easily decoupled from other interventions. Increased international attention and pressure also caused other governments to intervene within their own borders to address the role they played in contributing to the problem on the demand-side, especially the U.S. (Wyler 2012).

There were some positives that came from Plan Colombia. Colombia and the U.S. did benefit from focusing on the problem. Demand in the U.S. fell slightly from 3% in 2006 to 2.2% in 2010, while trade for legitimate economic activities between U.S. and Colombia increased, due at a minimum to duty exemptions (UNODC World Drug Report 2012). Both countries have just recently begun to slowly shift their focus beyond military only or forcible strategies, such as coca eradication, to infrastructure building, as in PNC. Colombia and the U.S. have differing agendas in terms of implementation. Colombia wanted to focus on eradication more, while the U.S. preferred targeting narco-traffickers – which led to coordination issues. Open dialogue about the problem is occurring (Mejia and Restrepo 2011).

Empirical Studies

These empirical studies are divided into two categories: studies on the effects of coca eradication only and studies that compare and contrast coca eradication with other strategies. These studies are highlighted as representative of a larger group of studies with similar results, and therefore are not exhaustive. Studies have been selected for any of the following criteria: their statically rigorous methodology, their recent publication date, whether they were able to find causality link between eradication and an outcome, and the number of citations they received. Most of the studies were comparative studies that compared the effects of eradication policies to other policies.

Coca Eradication standalone studies

Most of the studies that isolate coca eradicate show negative and alarming results. In a study by Reyes (2011), aerial eradication efforts are estimated by the distance they occur from a military base, and military installations are selected for their proximity to airports, not due to their closeness to high target coca production sites. By using this random variable, Reyes is able show that coca cultivation increases the further the fumigator is from the site because of the likelihood of getting shot down, and that fumigators are less likely to target areas that are heavily armed by narco-traffickers. Rincon and Kallis (2013) report that coca production is shifted to new bio “hotspot” areas that increase environmental damage, that people are displaced, complaints of health problems increase, and those most likely to be displaced are from the lowest socio-economic class (i.e. Afro-Indigenous peoples).

Coca Eradication compared with alternative strategies

Studies comparing coca eradication to other strategies find similar results from coca eradication, and most of them find that alternative strategies work better. Using a cost/benefit model, Mejia & Restrepo find that although the social cost of cultivation is higher for Colombia than drug production activities, the marginal cost of eradication is higher than interdiction efforts: $19,000 (U.S. dollars) compared to $7,500 for interdiction (2011). In Dion and Russler’s study, coca eradication only displaces production, but having a state/military presence and viable, high value crops where coca production exists with access to markets, coca cultivation/output is reduced (See Table 3 for summary) (2008). Moreno-Sanchez and Kraybill’s study demonstrates that cultivation increases as a result of eradication, and that plantain farming has a negative correlation with coca planting, suggesting a viable alternative crop (2003).
There are several studies from Marcela Ibanez, all of which indicate that there may be some gains from eradication, but that the costs are high for most of the farmers. Ibanez and Carlsson, in their 2013 study, indicate that eradication can be useful as a deterrent for initial investment in coca production, along with moral beliefs, but that alternative development can work better for at least 40% of those sampled. In a 2010 study, Ibanez and Martinnsen, find that alternative development and eradication have a small effect on cultivation, but that alternative development is more cost effective. The authors use a field experiment and survey-based model to estimate these effects.

One last study of note was by Mejia and Restrepo which implied that increases in demand-side interventions (drug prevention, treatment, etc.) can reduce costs for supply side interventions (interdiction, etc.). This is an important study because it analyzes demand-side interventions, not only supply-side strategies.

<table>
<thead>
<tr>
<th>Independent variables</th>
<th>Description</th>
<th>Impact on coca cultivation</th>
</tr>
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<tbody>
<tr>
<td>Aerial eradication</td>
<td>Percentage of department land area aerially fumigated</td>
<td>-</td>
</tr>
<tr>
<td>State presence</td>
<td>Public administration and community services output (in thousands of constant pesos) divided by the population</td>
<td>+</td>
</tr>
<tr>
<td>Displaced</td>
<td>Number of persons displaced from department of origin divided by the population</td>
<td>-</td>
</tr>
<tr>
<td>Incoming displaced</td>
<td>Number of displaced persons resettling in destination department divided by the population</td>
<td>+</td>
</tr>
<tr>
<td>Corruption</td>
<td>Department government corruption index, 0 to 100</td>
<td>+</td>
</tr>
<tr>
<td>Licit Agriculture</td>
<td>Licit agricultural output (in thousands of constant pesos) divided by rural population</td>
<td>+</td>
</tr>
<tr>
<td>GDP per capita</td>
<td>Department gross domestic product per capita (in thousands of constant pesos)</td>
<td>-</td>
</tr>
<tr>
<td>Market access</td>
<td>Paved roads as percentage of all roads</td>
<td>-</td>
</tr>
<tr>
<td>Poverty</td>
<td>Percentage of population with unsatisfied basic needs</td>
<td>+/-</td>
</tr>
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Lessons from Peru and Bolivia

In 2006, Bolivia implemented a voluntary agreement with coca farmers to allow them to plant a limited amount of coca while the government helped them transition to other crops. In tandem with the agreement, “…the government has implemented hundreds of infrastructure, economic development, institutional strengthening, and social development projects, primarily in coca-producing zones, with an emphasis on consultation with the participating families and food security (FONDAL 2011).” The UNODC reported in 2011 that coca cultivation in Bolivia dropped in all regions. (Ledebur and Youngers, 2013).
In 2002, an alternative development program was started in Peru and since its inception, more than 40,000 hectares of coffee, cacao and palm oil have been planted (UNODC, 2012). Peru finally disbanded its eradication policy in 2011 to evaluate other, more effective policies.

Conclusion and Recommendations

After reviewing an exhaustive quantity of data and studies, the verdict on coca eradication is overwhelmingly convincing: coca eradication is not a cost-effective strategy, and the social costs are too high. Therefore, I recommend that the Colombian government immediately cease its eradication efforts, that the U.S. stop funding them, and that those allocated funds immediately be invested in alternative strategies listed below. Furthermore, Plan Colombia should be revised to include the original goals that address the conditions that make coca production so irresistible to poor farmers. Colombia has recently made strides in this area under the National Consolidation Plan by revisiting the underlying social problems that make coca production attractive to poor rural farmers.

Policy Changes

Stopping eradication without a commensurate strategy or strategies would be like proverbially “throwing in the towel.” Since this paper does not discuss the merits of decriminalization or legalization of these crops, and since that option is neither politically feasible nor one for which we have a good cost/benefit model, it is imperative that the policies that have shown progress be implemented as soon as practicable. I have categorized my recommendations under three broad categories: investment and infrastructure, economic incentives, and security in the region. Each policy should have a short-term, mid-term and long-term component to it.

In the public investment arena, focus on building human capital should be of utmost importance. This includes private and public sector funding for schools, in other economic sectors/activities (i.e. eco-tourism, national parks, other agriculture, sustainable resource industries, etc.) and in access to markets (roads, shipping routes, other transportation hubs), all of which can be phased in incrementally. Also, the U.S., Colombia and all countries that consume a significant share of Colombia’s illicit drugs can invest in drug prevention and treatment.

Economic incentives can be created in a number of ways. For one, incentivizing domestic and foreign firms to conduct business in Colombia through tax breaks or other benefits, can help crowd out the coca industry. Helping farmers transition to high-yield, high value crops with subsidies or through the help of private investment or NGOs would have some impact on coca production. Switching to new crops can occur quickly with the use of short-term subsidies, and the use of GPS yield tracking is a cost-effective strategy.

Finally, security must be a top goal for the Colombian government. This includes an adequate police force in all the municipalities, and a military force until the regions are stable. Also, farmers must have rights over their land, and this must continue to be a priority for the government in the rural areas (GPS systems can be utilized affordably). If Colombia needs short-term assistance with military support, the U.S. could divert funds used for eradication, and this could be privately contracted as well. Colombia should continue the components of National Consolidation Plan (NPC) that exclude eradication such as infrastructure building and rural/alternative development, while continuing the Plan Patriota component of Plan Colombia (military stabilization of the region). These two strategies should continue with the focus on economic development and security of the entire region.

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economic evaluation of plan Colombia CEDE.


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