The distribution of crime harm across the cocaine trade in Colombia

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Doctor of Philosophy

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Student's declaration

I, Juliana Gómez Quintero confirm that the work presented in this thesis is my own. Where information has been derived from other sources, I confirm that this has been indicated in the thesis.

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Juliana Gómez Quintero

Date. 24.03.25

Abstract

This thesis develops a harm-assessment framework to assess the harms associated with the cocaine trade in Colombia, shifting the emphasis from traditional supply and demand reduction strategies to harm minimisation. The framework incorporates three dimensions: the stages of the trade (cultivation, processing, distribution, and commercialisation), the operational crimes that sustain it (e.g., money laundering, violence, deforestation), and the various types of harm generated (e.g., physical, financial, environmental), across multiple domains, including individuals, institutions, and ecosystems.

The thesis is structured around three interrelated studies. First, a crime script analysis maps the stages of the cocaine trade through document analysis of academic literature, grey literature, investigative journalism materials, and expert interviews. Second, expert interviews and a value chain framework are utilised to classify operational crimes, offering a detailed understanding of their role in sustaining the trade. Third, a pilot study employing Multi-Criteria Decision Analysis (MCDA) ranks the stages of the cocaine trade, testing its potential to inform harm assessment.

This research advances the study of organised crime by developing a structured, harm-focused framework that synthesises the stages of the cocaine trade, its operational crimes, and their various harms. The findings deepen our understanding of the trade's complexity and offer methodological contributions by refining crime script analysis and applying a value chain perspective to organised crime. The MCDA-based harm assessment provides a systematic approach to evaluating harm, though it faces challenges in practical implementation, such as difficulties in quantifying harm and accounting for geographical realities. By bridging conceptual, methodological, and practical dimensions, this thesis lays the groundwork towards a harm-reduction approach to drug policy in Colombia and beyond.

Impact statement

This research into the distribution of harms across the cocaine trade in Colombia has potential impacts and implications both within and beyond academia.

Benefits within academia

This study contributes to crime science by advancing innovative methods to assess the harms of organised crime. It builds upon a novel framework for evaluating harms across stages of organised crime, which was developed during my MRes in Security Science (Gómez-Quintero et al., 2023). This framework incorporates primary criminal activities (e.g., drug possession) and operational crimes (e.g., corruption and violence) that sustain the trade. It enriches harm-assessment methodologies and advances the theoretical applications of the Rational Choice Perspective and Crime Script Analysis.

This doctoral research bridges disciplines by integrating the Value Chain Framework from Business Administration and Multi-Criteria Decision Analysis from Operations Research, fostering a multidisciplinary approach. These contributions enhance the academic scholarship in crime science and public policy analysis by systematically examining the broader range of harms caused by the cocaine trade in Colombia. The findings offer new insights that can inform future studies and the development of academic curricula on organised crime, drug policy, and international security.

This research has already influenced my own teaching at UCL. I have delivered lectures on the harms of organised crime into the undergraduate Crime and Security Science programme and postgraduate modules on organised crime and risk and contingency planning.

Benefits outside academia

Beyond academia, the research findings can support policymakers and practitioners in Colombia and internationally. The extensive harms associated with the cocaine trade identified in this research highlight the need for harm-focused, evidence-based counter-drug strategies, shifting the focus from traditional supply-reduction approaches to harm mitigation.

The harm-focused perspective adopted in this work places those harmed by the cocaine trade at the centre of policy considerations. By making these harms visible and evidence-based, the research supports policies aimed at improving the quality of life for individuals and communities historically affected by the cocaine trade and its suppression.

Additionally, the study provides a foundational framework for developing harm indicators that could be integrated into international reports such as the United Nations Office on Drugs and Crime's (UNODC) World Drug Report. This contribution could foster international collaboration and guide more informed global interventions.

Pathways to impact

Findings have been disseminated through presentations at prestigious conferences, including EuroCrim 2022 and the 24H Conference on Global Organized Crime 2024. These engagements have promoted dialogue and knowledge exchange among academics and practitioners.

The empirical foundation of this research—involving interviews and surveys with over 40 experts—has raised awareness of the harms associated with the cocaine trade. Moving forward, targeted dissemination efforts, such as policy papers in Spanish, will ensure accessibility to Colombian and Latin American stakeholders.

Engagement with international forums, such as the United Nations Commission on Narcotic Drugs, can further amplify this work's visibility and influence. Collaborations with policymakers, civil society, and affected communities will facilitate the translation of findings into actionable strategies, driving meaningful change locally and globally.

UCL Research Paper Declaration Form: referencing the doctoral candidate's own published work(s)

1. **For a research manuscript that has already been published** (if not yet published, please skip to section 2):

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   d. List the manuscript's authors in the intended authorship order: **Juliana Gómez-Quintero, Hervé Borrion, Spencer Chainey**
   e. Stage of publication: **submitted to journal, currently in review.**

3. **For multi-authored work, please give a statement of contribution covering all authors** (if single-author, please skip to section 4): **J.GQ. designed the study, conducted the data collection and interviews, carried out the analysis, and drafted the initial manuscript. H.B. guided the study design, reviewed the method and analysis, and refined the manuscript. S.C. provided initial guidance on the study design and contributed to manuscript refinement. All authors reviewed and approved the final version of the manuscript.**

4. **In which chapter(s) of your thesis can this material be found? Chapter 3**

e-Signatures confirming that the information above is accurate
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Candidate: **Juliana G.Q.**
Date: **24.03.25**

Supervisor/Senior Author signature (where appropriate): **Hervé Borrion**
Date: **24.03.25**

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Chapter 3

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Chapter 5

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Contents

Chapter 1. Introduction

> "… the urgent need to rethink the world War on Drugs, a war where Colombia has been the country that has paid the highest cost in deaths and sacrifices. We have moral authority to state that, after decades of fighting against drug trafficking, the world has still been unable to control this scourge that fuels violence and corruption throughout our global community."
>
> ***Juan Manuel Santos - Nobel Lecture*** (2016)

It has been almost six decades since the declaration of the war on drugs by Nixon, yet the illicit drug trade continues to thrive (Coyne & Hall, 2017). In the case of cocaine, coca crops covered an estimated 354,900 hectares worldwide in 2022, nearly three times the estimation for 2012 (UNODC, 2024c). Cocaine stands as the second most used stimulant worldwide after amphetamines, with an estimated 23 million users in 2022 (UNODC, 2024c).

Illicit drug-producing countries face the challenge of addressing all stages of the trade. Colombia, known for its role in the international cocaine trade, is believed to have had a record number of around 230,000 hectares of coca bush in 2022, nearly five times more than the 48,000 hectares estimated for 2012 (UNODC & SIMCI, 2023). The latest report monitoring coca cultivation and cocaine dynamics in Colombia (UNODC & SIMCI, 2023) noted an estimated 24% increase in cocaine production from 2021 to 2022. This increase is believed to be linked to several factors: a greater share of crops reaching peak productivity, boosted by improved agricultural methods and reduced planting density since 2014; adjustments in cocaine hydrochloride production facilities to meet evolving local conditions; and enhanced efficiency in chemical processing, facilitated by easier access to substances (UNODC & SIMCI, 2023). A portion of the cocaine produced annually remains in Colombia, estimated at 3% (Mejía & Rico, 2017), equating to over 52 tonnes sold for consumption in 2022, with a production estimated at 1,738 tonnes (UNODC & SIMCI, 2023). While destination countries like the USA, UK, and Australia concentrate on combating the trafficking and retail distribution of illicit drugs, Colombia, as a drug-producing nation, faces the more complex task of addressing every stage of the drug trade.

These complex challenges highlight a significant gap in the global approach to drug policy. While drug policies traditionally aim to reduce drug use, harm reduction, and control drug-related harm, they often neglect the specific harms generated by the drug trade itself (Caulkins & Reuter, 2009). Historically, drug policies have aimed to reduce drug use through demand reduction strategies, such as educational programmes, supply constriction via crop eradication and

interdiction, and the enforcement of laws against drug use (Caulkins & Reuter, 2009; Greenfield & Paoli, 2017; Strang et al., 2012). Efforts have also been made to mitigate the harms suffered by drug users through measures like needle and syringe programmes and drug consumption rooms (Stone & Shirley-Beavan, 2018; Strang et al., 2012). Policies have sought to address the harms caused by drug users, for example by implementing police interventions to manage the behaviour of intoxicated individuals and by supporting programmes that address related issues such as domestic violence (Caulkins & Reuter, 2009; Strang et al., 2012). However, the goal of reducing the harms produced by the drug trade itself has been largely overlooked (Blaustein et al., 2017; Caulkins & Reuter, 2009; Caulkins & Reuter, 2017; Paoli & Greenfield, 2015).

The cocaine trade in Colombia has engendered diverse and profound harms across various sectors of society. As outlined by the Colombian Truth Commission Report (Comisión de la Verdad, 2022), created to investigate and document the impact of the internal conflict on Colombian society, the narcotics trade has exacerbated violence and armed conflict, perpetuating a cycle of fear and instability through clashes between rival factions and armed groups. Economically, while some communities have seen short-term gains from coca cultivation, the broader impact has been economic distortion and dependency on illicit activities, undermining sustainable development. Socially, the trade has eroded community structures, particularly among indigenous and Afro-Colombian populations, leading to the fragmentation of social cohesion and cultural identity. Environmentally, coca cultivation has inflicted damage on ecosystems. Health-wise, the proliferation of cocaine has exacerbated drug consumption disorders, with millions affected and insufficient access to treatment. Politically, the trade has fostered corruption and compromised governance, infiltrated political institutions and undermined the rule of law. Additionally, coca farmers have faced violence and neglect from the state despite their reliance on coca due to a lack of supportive agricultural policies. Finally, the trade has disrupted land ownership and usage patterns, often intensifying conflicts over land rights and exacerbating issues related to land tenure.

The neglect of harm in drug policy becomes evident when assessing the effectiveness of current drug enforcement strategies. The prevailing approach to narcotrafficking, which treats it as a war, focuses on military tactics, targeting the weakest links in the supply chain, and successive crackdowns on drug lords. This militarised strategy, however, has failed to resolve the problem and may have even exacerbated it, as the depiction of a "war" perpetuates the conflict (Comisión de la Verdad, 2022). Despite substantial efforts to constrict supply, these strategies have proven largely ineffective and inefficient. For instance, increased interdiction has merely shifted narcotraffickers to new areas (Magliocca et al., 2019), and the aerial spraying of coca crops has

not been cost-effective in reducing cocaine production due to minimal control effects (Mejía et al., 2017). Moreover, coca eradication has led to more extensive cultivation by farmers (Moreno-Sanchez et al., 2003), and disruptions to farmers' crops have alienated them, while efforts to regulate chemical precursors have been costly and largely ineffective (Strang et al., 2012). Supply control at the trafficking and retail stages has also faltered, as established markets like that for cocaine remain resilient (Caulkins & Kleiman, 2018; Strang et al., 2012). Furthermore, seizure interventions have had no deterrent effect on drug trafficking organisations (Toth & Mitchell, 2018), and the human and economic costs of enforcement, particularly incarceration, have not led to significant price increases sufficient to deter users (Keefer & Loayza, 2010; Pollack & Reuter, 2014). Additionally, supply control has been associated with increased violence (Castillo et al., 2020; Dell, 2015; Ríos, 2013), as evidenced by heightened violence in Mexico due to cocaine interdiction and targeted executions in enforcement zones. This violence extends to retail drug markets, where disruptions and disputes over sales have intensified (Kerr et al., 2005). Other unintended consequences of supply control strategies include negative environmental impacts, such as deforestation from alternative development programmes (Bradley & Millington, 2008) and as a result of aerial spraying (Rincón-Ruiz & Kallis, 2013), and health issues like respiratory conditions and pregnancy miscarriages from exposure to aerial spraying (Camacho & Mejía, 2017).

Rather than exclusively targeting supply reduction, drug policy could prioritise mitigating the broader harms of the drug trade, as advocated by numerous scholars (Blaustein et al., 2017; Caulkins & Reuter, 2009; Greenfield & Paoli, 2012, 2013; Paoli & Greenfield, 2013; Strang et al., 2012). The harms associated with the drug trade are not necessarily proportional to supply or demand levels. As Caulkins and Reuter (2009, p. 16) observe: 'The fundamental realisation underpinning harm reduction approaches to controlling market-related harms is that there is no necessary relationship between the quantity of drugs delivered and the amount of market-related harm generated'. Moreover, as previously discussed, supply control strategies often contradict harm reduction principles, as they can exacerbate violence (Blaustein et al., 2017). Harms are also unevenly distributed; some drug markets are highly violent, while others exhibit relatively low levels of violence (Caulkins & Kleiman, 2018; Crocker et al., 2019). Given limited resources, prioritising interventions in particularly violent markets could be more effective in mitigating the overall harm caused by the drug trade. Research indicates that drug mules often receive longer sentences than professional traffickers, despite frequently being victims themselves (Fleetwood, 2011). Thus, addressing the heterogeneous distribution of harm requires alternatives to supply-focused strategies. Approaches such as targeting deterrence at violent drug sellers and those

operating in violence-prone markets, and suppressing particularly violent street dealing, offer promising harm-focused alternatives (Caulkins & Kleiman, 2018).

Designing harm-focused interventions and policies to counter the cocaine trade requires a comprehensive harm assessment to guide the allocation of efforts. However, no such tailored assessment for the cocaine trade has yet been developed. The closest existing model is the Harm Assessment Framework (Greenfield & Paoli, 2013), which has been employed to evaluate the harms of cocaine trafficking in Belgium (Paoli et al., 2013). This framework identifies and qualitatively assesses harms across various stakeholders and dimensions related to a stage of organised crime, such as cocaine trafficking. It includes subsequent stages of the organised crime activity as enabling activities, which means that the framework may lack a holistic view of the entire process, potentially leading to double counting of harms when multiple stages are considered (Gómez-Quintero et al., 2023). This limitation is particularly critical for illicit drug-producing countries like Colombia, which must address all stages of the drug trade. A partial application of the Harm Assessment Framework to coca cultivation and processing in Colombia (Greenfield & Paoli, 2022) highlighted several issues. While coca growers and labourers benefit materially from cultivation, their gains are less significant compared to those of middlemen and armed groups. The study found that environmental damage, notably deforestation and pollution, is severe, with only potential for long-term recovery. Earnings of growers and labourers, essential for their livelihoods, have declined due to inflation and market disruptions, while traffickers' demand for land has exacerbated both environmental and material losses. However, this analysis is limited, failing to address the broader spectrum of harms, including violence and corruption, which are crucial for understanding the full impact of the cocaine trade in a complex context like Colombia, characterised by higher levels of corruption and violence (Wilkinson & Ritter, 2020).

In this context, focusing on crime-related harms within the cocaine trade enables more targeted interventions to minimise harm (Sherman, 2007). By focusing on specific criminal activities that contribute to harm within the cocaine trade, law enforcement can utilise their expertise and resources more effectively. For instance, if violence associated with drug trafficking is identified as a major issue, interventions can be designed to disrupt trafficking routes or dismantle the criminal organisations responsible for this violence. Similarly, if money laundering is identified as a major issue, interventions can strengthen financial regulations, enhance international cooperation, and prosecute those involved in illicit financial flows. Addressing broader harms—encompassing social, cultural, economic, and health-related consequences—poses challenges for law enforcement, as they are not always linked to specific criminal activities (Murray et al., 2021). Devising actionable interventions often requires collaboration with other sectors. In contrast,

focusing on crime harms offers law enforcement a clearer, more actionable framework aligned with its core mission, enhancing its capacity to mitigate the negative impacts of the cocaine trade. This approach necessitates a thorough understanding of the cocaine trade in its entirety, including its interconnections with other criminal activities and the diverse harms it inflicts across multiple domains—hallmarks of organised crime. The cocaine trade progresses through distinct stages: cultivation, processing, distribution, and commercialisation. Its operation is intrinsically linked to other crimes, many of which are critical to its persistence (Pascual, 2017). For example, the trade is underpinned by offences such as corruption and money laundering (Europol, 2017), and systemic violence (Goldstein, 1985; Desroches, 2005). It also has the potential to foster additional criminal activities, including forced prostitution, human trafficking (Shelley, 2012) and volume crime (Brown & Smith, 2018). Moreover, the cocaine trade generates a wide spectrum of harms—physical, psychological, material, and reputational—that affect individuals, governments, private sector entities, and the environment (Greenfield & Paoli, 2013, 2022). Therefore, a comprehensive harm assessment must consider all stages of the trade, the crimes sustaining it—herein referred to as operational crimes—and the resultant harms.

Mapping the complexities of the cocaine trade, its operational crimes, and their associated harms poses significant challenges. A primary obstacle lies in the scarcity or inaccessibility of data regarding the crime commission process. Organised crime operates covertly, making it inherently difficult to detect (Hobbs & Antonopoulos, 2014; Pascual, 2017). Populations central to the cocaine trade, such as traffickers, users, and coca growers, are also hard to access (Weisheit, 2015). Furthermore, law enforcement data tends to reflect enforcement-driven metrics, such as seizures and arrests, rather than offering a holistic view of organised crime activities (Windle & Silke, 2019). Such data is often fragmented, incomplete, or of questionable quality, which complicates efforts to elucidate the interconnections between various criminal activities and the cocaine trade (de Bont et al., 2018). Reports from agencies like the UNODC typically emphasise the outcomes of supply control policies—such as eradication, aerial spraying, and interdiction—alongside market variables like prices, coca cultivation, and cocaine production estimates (Maghsoudi et al., 2020; Pardo, 2020; Singleton et al., 2018). However, these sources provide a partial perspective on the range of crimes and harms along the supply chain. Intelligence data fails to offer a comprehensive account of the crime commission process and its associated criminal activities (Chainey & Alonso Berbotto, 2022). Existing harm assessment methodologies often address discrete crime categories. Yet, the harm stemming from organised crime—spanning multiple stages and involving a complex network of criminal activities—demands a multidimensional analytical approach. The absence of relevant quantitative data, such as detailed

crime incidence statistics, further limits the capacity to conduct a rigorous and systematic harm assessment (Crossin et al., 2022).

This thesis develops a framework that integrates the organised crime process, the operational crimes, and the harms they produce. The research aims to enhance understanding of how crime-related harm is distributed throughout the cocaine trade in Colombia.

The central research question driving this study is: **What are the strengths and weaknesses of a framework that integrates the organised crime process, operational crimes, and crime-related harms for assessing the harms of the cocaine trade in Colombia?** To address this overarching question, the research is guided by three sub-research questions:

1. What is the crime commission process of the cocaine trade in Colombia?
2. Which crime types support the various stages of the cocaine trade in Colombia, and how?
3. How can crime-related harms be assessed at each stage of the cocaine trade in Colombia?

This thesis is structured as follows. The literature review in Chapter 2 explores the cocaine trade in Colombia and the responses from law enforcement while also reviewing existing harm assessment literature and identifying knowledge gaps that this thesis aims to fill. The chapter ends with an outline of the research objectives and the approach to addressing them. Chapter 3 presents the first empirical study, which employs a crime script analysis to investigate the progression of the cocaine trade in Colombia, from cultivation to commercialisation. This analysis integrates document and thematic analyses, refined and validated through insights from expert interviews. Chapter 4 details the second empirical study, which identifies operational crimes throughout the various stages of the cocaine trade, drawing on expert interviews. Chapter 5 reports the third empirical study, which pilots a harm assessment survey with experts and evaluates its potential and associated challenges through further expert interviews. Finally, the concluding chapters synthesise the thesis's findings, discuss their implications and limitations, and provide recommendations for future research.

Chapter 2. Literature review

This chapter provides an overview of the cocaine trade in Colombia. It identifies gaps in current research and argues for a detailed crime harm assessment of the trade, and organised crime more generally. The chapter concludes with the research questions and objectives guiding the empirical studies in chapters 3, 4 and 5.

The cocaine trade problem

The first section examines the complexities of the cocaine trade, particularly the challenges faced by producing countries like Colombia. It analyses the trade as a multi-stage process involving various crimes and generating diverse harms. Critiquing the effectiveness of counter-drug strategies, it concludes that traditional supply control measures often fail or exacerbate harm and advocates for a harm reduction approach that more effectively mitigates a broader spectrum of harms.

Harm assessment literature

The second section reviews existing literature on harm assessment, evaluating various approaches to measuring harm. It critiques these methods, highlighting their limitations in capturing the full extent of damage caused by organised crime, especially across its multiple stages and related offences. This review underscores the need for more comprehensive assessment frameworks to address the complex and interconnected nature of organised crime.

Research objectives and analytical framework

The third section defines the research objectives guiding this thesis, highlighting the importance of understanding the cocaine trade as a process, the interconnectedness of related crimes, and the distribution of crime harms across its stages. It explores crime scripts as a tool for mapping the crime commission process, existing classifications of interconnected crimes in organised crime, and Multi-Criteria Decision Analysis (MCDA) for assessing harm across different stages of the trade.

Research questions and contributions

The chapter concludes with a summary of the key findings from the literature review and a statement on how these findings inform the research questions and objectives. This sets the stage for subsequent empirical studies, addressing the identified gaps and contributing to a more nuanced understanding of the cocaine trade and its associated harms.

The cocaine trade problem

Cocaine is the second most widely used stimulant in the world, after amphetamines, with an estimated 23 million users in 2022 (UNODC, 2024c). In 2021, coca bush cultivation was estimated to cover approximately 354,900 hectares globally, nearly three times the amount reported in 2014 (UNODC, 2024c).

The cocaine trade and its consumption generate a range of severe adverse effects, including homicides, violence, corruption, money laundering, environmental damage, and detrimental health impacts (EMCDDA & EUROPOL, 2019; Global Commission on Drug Policy, 2020; UNODC, 2020a). For instance, Cuesta et al. (2017) highlighted that women involved in coca cultivation and cocaine production are subject to gender-based violence, sexual abuse, forced disappearances, displacement, and torture; Traub et al. (2003) reported the severe health risks associated with body-packing cocaine, such as drug intoxication and gastrointestinal perforation. Furthermore, Paoli et al. (2013) examined the use of threats, money laundering, and corruption in the trafficking stages. On the demand side, extensive research has explored and quantified the harms of cocaine use, ranging from minor offences like shoplifting to serious crimes such as homicides (Bean, 2014; Bennett & Edwards, 2015; Bennett et al., 2008; Bonomo et al., 2019; Nutt et al., 2007; Nutt et al., 2010; van Amsterdam et al., 2015; Varano & Kuhns, 2017).

Challenges for producing countries

While consumer countries primarily focus on countering trafficking and retail dealing of illicit drugs, drug-producing countries must address all stages of the drug trade, from cultivation to production, smuggling, and distribution. For example, Myanmar – responsible for 55% of the world's opium cultivation and production (UNODC, 2024c) – must address not only production, processing, and distribution but also domestic opium consumption, which is estimated to comprise 13% of the country's opiate economy (UNODC, 2024b).

Similarly, known for its role in the international cocaine trade, Colombia is the major producer of cocaine in the world (Figures 2.1 and 2.2). Even after an investment of over 10 USD billion for Colombia from the U.S. government in counter-drug efforts since 2000 (Prem et al., 2023), Colombia is believed to have had around 230,000 hectares of coca crops in 2022, almost five times more than the 48,000 hectares estimated for 2012 (UNODC, 2024c).

Figure 2.1
Major cocaine-producing countries

The latest crop monitoring report (UNODC & SIMCI, 2024) indicates that this figure is estimated to be even higher for 2023, at 253,000 hectares. Interestingly, neither Peru nor Bolivia, two other major producers of cocaine, experienced such growth in coca cultivation during this period (Figure 2.2).

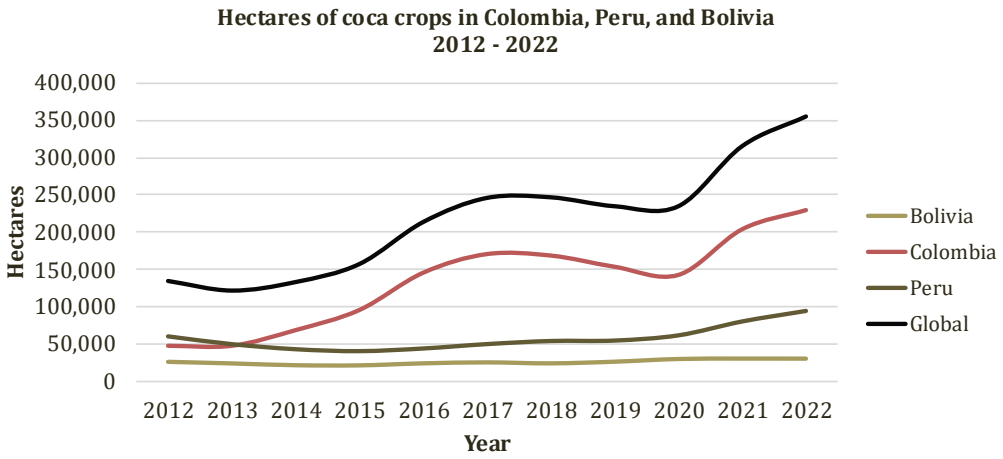


Figure 2.2
Estimated hectares of coca crops in Colombia, Peru, and Bolivia 2012 – 2022 (UNODC, 2024c)

The estimated manufacture of cocaine has also grown exponentially (Figure 2.3). An estimated 1,738 tonnes of cocaine was produced in Colombia in 2022, more than five times the amount produced a decade ago (333 tonnes in 2012). The most recent crop monitoring report (UNODC & SIMCI, 2024) indicates that this figure is estimated to be even higher for 2023, at 2,664 tonnes. Part of the cocaine that is produced annually remains in Colombia. Mejia and Rico (2017) estimate that 3% of the cocaine that is produced stays in the country, suggesting that almost 80 tonnes of cocaine were sold for consumption in Colombia in that year.

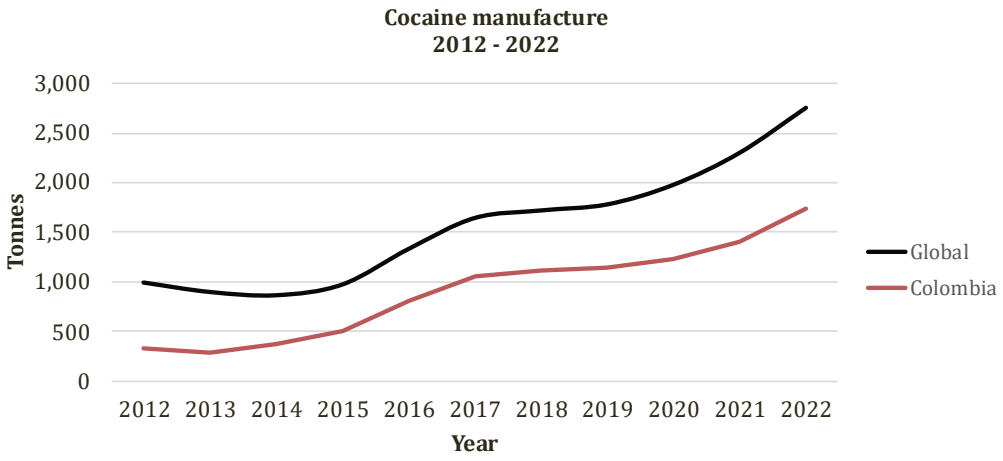


Figure 2.3
Estimated production of pure cocaine hydrochloride, 2012 – 2022 (UNODC, 2024c)

The latest Evaluation of Drug Policy Report for Colombia by the Commission of the Multilateral Evaluation Mechanism (2019) highlights the challenges that drug-producing countries must confront. The authors acknowledge Colombia's efforts in reducing supply, particularly in the production and trafficking stages, as well as in understanding micro-trafficking dynamics and addressing drug abuse. Additionally, it recognises the initiatives implemented to alleviate poverty in areas most affected by drug trafficking, the implementation of youth-focused preventive programmes, and the creation of treatment centres to mitigate drug-related harm. However, the failure of these measures to reduce cocaine production significantly underscores the complexity of the issue for producing countries. Colombia faces the daunting task of designing a comprehensive drug policy that addresses every stage of the cocaine trade. Given the inevitable scarcity of resources, deciding which stages to focus on and how to approach them is important.

The cocaine trade, like many other forms of organised crime such as arms trafficking, poaching, and human trafficking, unfolds through a series of stages. Another key characteristic is its connection to other crimes, many of which are essential to its persistence (Pascual, 2017). These two features are closely tied to the harms caused by the cocaine trade, which are central to the focus of this thesis.

Cocaine trade as a process

As von Lampe (2016b, p. 70) notes that, the cocaine trade is best understood as "a series of production processes connected by voluntary transactions between sellers and buyers, beginning with the coca farmers who market their harvested coca leaves" and culminating in the sale of the processed drug in street markets. In discussing the importance of studying organised crime activities rather than focusing solely on organised crime groups (OCGs), Von Lampe (2016b) uses cocaine trafficking as a prime example of a process-oriented crime (see Figure 2.4). The cocaine trade begins with the cultivation and harvesting of coca leaves. These leaves are processed in nearby laboratories or dried and prepared for transport. In laboratories, the leaves are transformed into coca paste, purified into base, and finally converted into cocaine hydrochloride. This process involves various chemicals, including lime, gasoline or kerosene, sulfuric acid, potassium permanganate, ammonia, hydrochloric acid, and acetone. While all stages of the process—from coca leaves to cocaine hydrochloride—can involve smuggling, the final product, cocaine hydrochloride, is the most smuggled. Smuggling (i.e., intentional illegal transportation of goods, such as illicit drugs, across borders in violation of applicable laws and regulations (Gallien & Weigand, 2021)) occurs through legal cross-border travel or trade, by mail or parcel delivery, or via irregular methods such as tunnels, water vessels, or airplanes. Cocaine is often hidden in personal belongings, within the body, or inside traded goods and parcels. It may also be repackaged, stored, or diluted with other substances during smuggling and later repurified before reaching its destination. Once at its destination, the cocaine is repackaged and further diluted for sale. Common diluents include flour, plaster, amphetamines, caffeine, and anaesthetics (e.g., lidocaine). Wholesale transactions typically occur in secretive locations, while retail sales to consumers occur in private and public settings (von Lampe, 2016b).

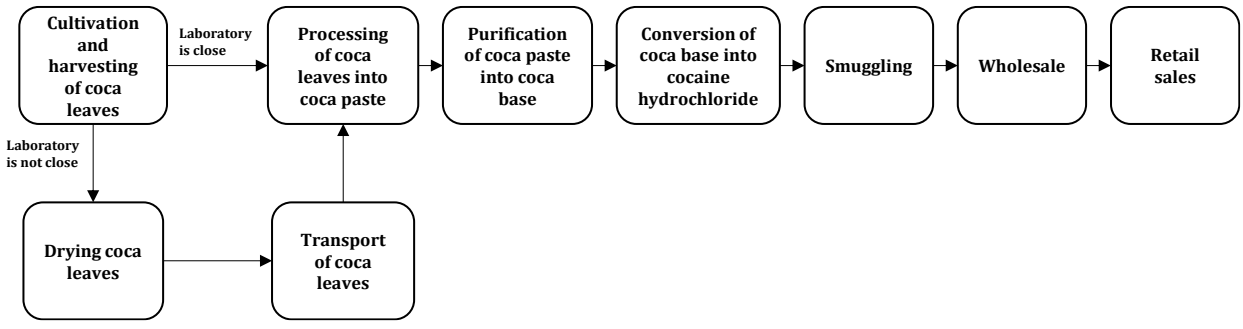


Figure 2.4
The cocaine trade process
Based on: (von Lampe, 2016b)

Crimes connected to the cocaine trade

As with other illicit drug trades, not all activities of the cocaine trade involve drugs (Purvis & Gundur, 2019). Other illegal acts are committed that facilitate its operations, protect its actors, or arise as a consequence of its illicit nature, including corruption, bribery, and violent enforcement of agreements. Naylor (2003) classifies activities in profit-driven crimes, such as the cocaine trade, into two categories: primary and secondary. Primary activities, like the production and sale of cocaine, are directly profit-driven, while secondary activities, such as money laundering and violence, support the execution of primary activities and protect offenders and illicit proceeds (von Lampe, 2016b). A third type of criminal activity is also involved: crimes that are fuelled by the cocaine trade (Gómez-Quintero et al., 2023). Because the cocaine trade is a market-based crime involving the exchange of illegal goods and services between stakeholders (Naylor, 2003), illicit drugs or their proceeds can fund or incentivise other crimes. For instance, drugs can be exchanged for illegal arms, effectively fuelling arms trafficking (von Lampe, 2016b).

Thus, the cocaine trade is both enabled by other crimes and can support additional criminal activities. Corruption, money laundering (Europol, 2017; Gounev & Bezlov, 2010; Hughes et al., 2018; Terenghi, 2020), as well as systemic violence (Desroches, 2005; Goldstein, 1985) are examples of enabling crimes, while forced prostitution, human trafficking (Hughes et al., 2018; Shelley, 2012) and volume crime (Brown & Smith, 2018) are examples of crimes fuelled by the trade.

Established to examine the impact of internal conflict on Colombian society, the Truth Commission acknowledged the deep ties between drug trafficking and the conflict, offering valuable insights into the cocaine trade in its final report (Comisión de la Verdad, 2022). The report details how drug trafficking has significantly influenced political corruption and electoral fraud, with drug money infiltrating political campaigns and undermining democratic institutions. Narcotraffickers have also evaded extradition and manipulated judicial outcomes, enabling their continued operations with relative impunity. The cocaine trade has driven violent crimes and terrorism, including targeted assassinations, massacres, and bombings, particularly during the 1980s and early 1990s, when the Medellín and Cali cartels were involved in intense conflicts. Violence has extended to state actors, targeting police officers and public officials. Money laundering channels drug proceeds through legal channels, including real estate, businesses, and public contracts, further entrenching corruption. Paramilitary and guerrilla groups involved in the cocaine trade have exacerbated violence, leading to territorial disputes, forced displacement, and civilian casualties. Human rights violations, including extrajudicial killings of those perceived

to be involved in or using drugs, reflect a troubling trend of social cleansing. Additionally, institutional corruption has infiltrated state entities such as the police, military, and civil aviation authorities, complicating efforts to address the cocaine trade and its associated crimes.

Several scholars have examined some of these connections in the various stages of the cocaine trade in Colombia (Table 2.1). These studies employ diverse methodologies and data sources, ranging from participant observation and spatial analysis to econometric models, revealing critical patterns of crime convergence and cross-cutting impacts of violence. The findings indicate links between the cocaine trade and various other crimes such as money laundering (Bayona-Rodríguez, 2019) and illegal gold mining activities (Rettberg & Ortiz-Riomalo, 2016).

Table 2.1
Examples of studies about the cocaine trade and associated crimes in Colombia
*Financial Intelligence Reports. **Positive correlations were the main finding for many of the crimes. However, findings varied between cities.

Study	Crimes	Method	Data	Findings
Mantilla (2021)	Drug markets – arms trafficking, prostitution, human trafficking, theft	Participant observation, semi-structured interviews, secondary analysis of open sources	Bronx (drug market in Bogota); 2 years of participant observation 1 year before and in year after crackdown in May 2016; Police reported data	Convergence of the other crimes in the location of the drug market under study
Aschner and Montero (2020)	Production and trafficking of cocaine – Violence	Spatial analysis of cocaine-related activities and facilities	Multiple data (2005 – 2015) from official sources at municipality level.	Violence as a cross-cutting activity to production and trafficking of cocaine
Bayona-Rodríguez (2019)	Illicit coca crops – money laundering	Ordinary Least Squares regression	Panel data; 2000–2013; municipality level of Financial Intelligence Reports. Other multiple data from official sources.	Increase of 1% in hectares of coca crops associated with increase of 3.04% in money laundering value in FIR*
MJD and FIP (2016a, 2016b, 2016c, 2016d, 2016e)	Drug markets – homicides, bodily harm, motorcycle theft, vehicle theft. commercial theft, theft from the person	Risk Terrain Modelling	Crime data from five cities (Barranquilla, Medellin, Cali, Bogota, Pasto)	Positive correlation between location of drug markets and the other crimes**
Mejia and Restrepo (2013)	Coca crops – homicides, forced displacement, land mines	Panel study	Colombian municipalities; 1994 - 2008	Increase in the market value of coca crops increases the other crimes
Rettberg and Ortiz-Riomalo (2016)	Drug trafficking – Illegal gold mining	Participant observation; Interviews	Participant observation in five gold-mining regions of Colombia; 77 interviews to diverse stakeholders including state officials, community, and mining associations	Direct association of mining, refining and commercialisation activities of illegal gold mining with workforce and capital for illicit crops and money laundering

Harms of the cocaine trade

Research on the harms of the cocaine trade remains limited (Pardo, 2020), while substantial attention has been given to understanding the harms of cocaine use (e.g., Bean, 2014; Bennett & Edwards, 2015; Bennett et al., 2008; Bonomo et al., 2019; Nutt et al., 2007; Nutt et al., 2010; van Amsterdam et al., 2015; Varano & Kuhns, 2017). Existing studies on the harms of the cocaine trade identify a range of negative impacts (Table 2.2), including environmental damage from deforestation (Mendoza, 2020; Negret et al., 2019), and social harm stemming from gender-based violence, forced displacement, and torture (Cuesta et al., 2017). Further, the trafficking process contributes to physical, psychological, and financial harm through violence, money laundering, and corruption (Paoli et al., 2013).

Table 2.2
Examples of studies that describe harms of the cocaine trade
*Studies have examined hectares of coca crops in association with intensity of conflict (Mendoza, 2020) or presence of armed groups (Negret et al., 2019)

Study	Method	Data	Harmful activities
Mendoza (2020)	Panel data analysis - Fixed effects generalized moments estimation	Municipality level annual observations of coca crops, deforestation, and conflict intensity; 2006 to 2019	Deforestation*
Negret et al. (2019)	Bayesian weights of evidence (WofE) method	Multiple data (e.g., deforestation, coca crops, presence of armed groups) from Colombian official sources; 2000 to 2015	Deforestation*
Cuesta et al. (2017)	Semi-structured interviews and focus groups supported by social cartography and collective construction of timelines	25 interviews, 4 focus groups (with a total of approx. 30 women involved in some form with the production of cocaine); Putumayo, Colombia; Sept. 2016- Jun. 2017	Gender-based violence, sexual violence, forced disappearance and displacement, and torture
Paoli et al. (2013)	Harm Assessment Framework	18 interviews to experts and 12 interviews to convicted traffickers, records from the Belgian Federal Police and 52 criminal proceedings	Use of violence threat, money laundering and corruption in the trafficking stage

It is important to note that the cocaine trade has also provided certain benefits, particularly for rural communities. While Parada-Hernández and Marín-Jaramillo (2021) acknowledge the risks and violence associated with coca production, their mixed-methods study—conducted between 2018 and 2019 with thirty-one interviews of stakeholders, ethnographic fieldwork in high-coca municipalities, and analysis of official data—found that many women emphasised how coca provided access to goods and services otherwise unavailable through legitimate economic activities. Similarly, the Truth Commission of Colombia (Comisión de la Verdad, 2022) noted that coca cultivation has provided economic, educational, and social benefits to rural communities, which are often inaccessible through traditional agriculture. However, this sector remains the most violently targeted, facing aggression, harassment, and persecution.

The previous sections have discussed the magnitude, complexity, and harmfulness of the cocaine trade globally and in Colombia. The following section presents different policy approaches that have been adopted against the cocaine trade.

Approaches to counter the illicit drugs trade

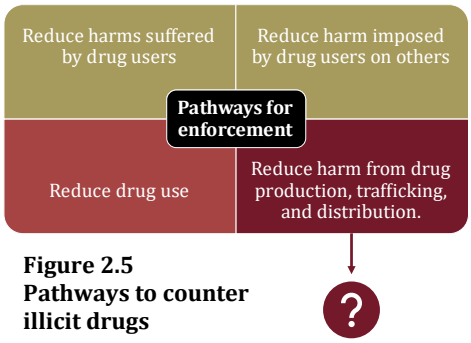


Figure 2.5
Pathways to counter illicit drugs

Caulkins and Reuter (2009) argue that law enforcement can pursue four pathways (Figure 2.5): to reduce drug use, reduce harms suffered by drug users, reduce harms that drug users cause to others and reduce the harms produced by drug trade, such as violence and detriment to the environment. Efforts to counter illicit drugs have aimed to reduce drug use through demand reduction (e.g., with educational programmes), supply constriction (i.e., crop eradication and interdiction) and the enforcement of laws against drug use (Caulkins & Reuter, 2009; Greenfield & Paoli, 2017; Strang et al., 2012). These efforts have also sought to minimise the harms experienced by drug users through measures such as needle and syringe programmes and drug consumption rooms (Stone & Shirley-Beavan, 2018; Strang et al., 2012). Additionally, they have aimed to reduce the harms drug users may impose on others through initiatives like policing intoxicated individuals and domestic violence prevention programmes (Caulkins & Reuter, 2009; Strang et al., 2012). Notably, *efforts to mitigate the harms caused by the drug trade itself have received significantly less attention* (Blaustein et al., 2017; Caulkins & Reuter, 2009; Caulkins & Reuter, 2017; Paoli & Greenfield, 2015).

Given the rising trend in cocaine use and supply, efforts to reduce drug consumption by restricting supply have failed to yield the expected results. Several studies suggest that supply control strategies are ineffective (Moreno-Sanchez et al., 2003; Reyes, 2014; Toth & Mitchell, 2018) and inefficient (Ibanez & Klasen, 2017; Mejía et al., 2017). While some researchers argue that alternative development programmes offer a promising approach (Chouvy, 2013; Higginson et al., 2013), others argue they have not been the primary strategy for controlling coca crops (Garzón-Vergara, 2020) and have lacked a standardised implementation framework (Alimi, 2017), making it difficult to assess their effectiveness. The econometric model of Mejia and Restrepo (2016), using data on coca crops, trafficking and seizures from 2000 to 2008 in Colombia, suggests it is more efficient to target supply at the trafficking stage (via seizures) than at the production stage. However, there is only limited evidence that the human and economic costs of these enforcement strategies, especially incarceration, produce enough of a price increase in illicit drugs to effectively deter potential and existing users (Keefer & Loayza, 2010; Pollack & Reuter, 2014; Strang et al., 2012). Controlling supply at the trafficking and retail stages

is also largely questioned when the market has been well established, as in the case of the cocaine market (Caulkins & Kleiman, 2018; Strang et al., 2012). Table 2.3 lists examples of the studies discussed in this paragraph; see Strang et al. (2012), Pollack and Reuter (2014), and Pardo (2020) for a review and discussion of the effects of supply control drug policies.

Table 2.3
Examples of studies on the effectiveness and efficiency of supply control strategies

Study	Intervention	Method	Data	Findings
Moreno-Sanchez et al. (2003)	Eradication of cocaine crops in Colombia	Econometric linear model	Coca crops, eradication, and prices (1987 to 2001)	Eradication results in farmers cultivating more extensively
Reyes (2014)	Eradication of coca crops in Colombia	Instrumental variables	Coca crops, aerial spraying, and manual eradication (2001 – 2006)	Increase in 1% of eradication produces and estimated increase of 1% in coca crops.
Toth and Mitchell (2018)	Interdictions /Seizures in USA	Qualitative analysis	Interviews to 20 informants from the US DEA	Interdiction/seizure interventions did not have a deterrent effect on drug trafficking organisations
Ibanez and Klasen (2017)	Forced eradication of cocaine crops in Colombia	Estimation of linear fixed effects	331 surveys to local farmers; coca crops and crop eradication (2003; 2005)	Additional eradication of one ha. decreases supply by 0.44 ha.
Mejía et al. (2017)	Aerial spraying of cocaine crops in Colombia	Quasi-experimental regression discontinuity	Location of coca crops within 1-square-kilometer (2000 to 2010); aerial spraying	Additional spraying of 1 ha. reduces crops between 0.022 and 0.03 ha.
Mejia and Restrepo (2016)	Seizures at production and trafficking stages in Colombia	Calibrated theoretical model	Coca crops, trafficking and seizures from 2000 to 2008	It is more efficient to target supply at the trafficking stage (via seizures) than at the production stage.

It is widely accepted that supply control strategies have instigated violence (e.g., Corsaro, 2013; Corsaro et al., 2010; Corsaro et al., 2012). For instance, violence has been exacerbated in retail drug markets by enforcement operations aiming to control supply because of market disruption and disputes over sales (Kerr et al., 2005). Removing kingpins, crackdowns, and targeted executions disrupt drug markets and fuel drug-related violence (Calderón et al., 2015; Dell, 2015; Ríos, 2013). Scarcity produced by interdiction also destabilises markets and is associated with an increase in violence in drug trafficking corridors (Castillo et al., 2020). Table 2.4 summarises the details and findings of the studies mentioned here.

Table 2.4
Examples of studies on the violence instigation effects of supply control strategies

Study	Intervention	Method	Data	Findings
Calderón et al. (2015)	Kingpin removal in Mexico	Difference-in-differences and synthetic group control	Homicide data of Mexico municipalities from 2006 to 2011	Removing kingpins increased drug-related violence and violence within the general population.
Castillo et al. (2020)	Interdiction in Colombia	Theoretical econometric model	Data from Mexico and Colombia from 2006 to 2010	Scarcity produced by cocaine interdiction in Colombia increased violence in Mexico. Cocaine seizures (in tonnes) in Colombia may account for a 10% to 14% increase in violence in Mexico.
Dell (2015)	Crackdowns in Mexico	Regression discontinuity	Homicides from 2006 to 2009 Mexican municipalities	Crackdowns increased violence in the areas of the intervention.
Ríos (2013)	Targeted executions in Mexico	Ordinary Least Squares and case studies	Drug-related homicides in Mexico from 2006 to 2010	Drug-related targeted executions increased when enforcement operations against traffickers were carried out.

Supply control strategies have also caused damage to the environment. A study by Rincón-Ruiz and Kallis (2013) found that increased fumigation reduced coca cultivation in targeted municipalities but was correlated with its expansion in the neighbouring regions. Through case studies and supporting data, they argued that fumigation does not curb deforestation; instead, it shifts production from already-cleared areas to biodiversity hotspots, leading to further primary forest loss. Similarly, Salisbury and Fagan (2013) documented how eradication efforts drove the displacement of coca cultivation to new areas. McSweeney (2015) argue that alternative development programmes have also affected the environment as legal crops require more land than coca cultivation. For example, it has been found that forest clearance increases when farmers are involved in these programmes (Bradley & Millington, 2008). Another adverse effect on the environment is caused by the chemical used to spray coca crops: glyphosate. The use of the substance for antinarcotics operations or agricultural purposes has been prohibited in 39 countries for their potential for toxicity to flora and fauna (Rubiano et al., 2020). Table 2.5 summarises the details and findings of the studies mentioned here; see McSweeney (2015) and Ayres (2020) for a more detailed discussion of the effects of supply control drug policies on the environment.

Table 2.5
Examples of studies on the negative environmental effects of supply control strategies

Study	Intervention	Method	Data	Findings
Bradley and Millington (2008)	Alternative development programmes in Bolivia	Longitudinal spatial and temporal analysis	Land use and forest conversion (1963 – 2003); 43 household surveys (2000 and 2003) in three communities	Forest clearance rates increased when farmers switched from coca crops to substitute legal crops
Rincón-Ruiz and Kallis (2013)	Aerial spraying of coca crops in Colombia	Spatial association and correlation analysis; rapid assessment Nariño, Colombia involving fieldwork and interviews	Aerial spraying and data (municipality level – Colombia) on socio-economic variables (2000 – 2008). 1 month of fieldwork and 18 interviews to multiple stakeholders	Significant spatial correlation between sprayed areas in year n and cultivated areas in neighbourhood municipalities in year n + 1 (n: 2001 to 2007).
Salisbury and Fagan (2013)	Eradication of coca crops in Peru	Spatial and ethnographic analysis; semi-structured interviews	Field work in the far eastern borderlands of Peru (between 2002 and 2008). Fieldwork in two Brazilian valleys (between 2002 and 2004	A cyclic dynamic between eradication efforts, relocation, and cultivation of coca crops.

Some supply control policies have also had adverse health effects on communities. Evidence has been controversial (Ayres, 2020; Rincón-Ruiz & Kallis, 2013; Rubiano et al., 2020). However, the study conducted by Camacho and Mejía (2017) showed that exposure to glyphosate due to aerial spraying campaigns is associated with respiratory and dermatologic conditions and miscarriages (Table 2.6). Other studies have investigated the effects of glyphosate on the health of those exposed to it outside the context of drug law enforcement (see Rubiano et al., 2020 for a discussion on the academic literature).

Table 2.6
Characteristics of study on the negative health effects of supply control strategies

Study	Intervention	Method	Data	Findings
Camacho and Mejía (2017)	Aerial spraying	Fixed effects linear regression of the health production function	Aerial spraying data and medical registers from 2003 to 2007 in Colombia	Exposure to the chemical used for aerial spraying increased medical consultations about dermatology, respiratory conditions, and miscarriages

Drug policy could aim to minimise the harm produced by the illicit drug trade instead of reducing supply, and many have advocated for such an approach (Blaustein et al., 2017; Caulkins & Reuter, 2009; Greenfield & Paoli, 2012, 2013; Levi & Maguire, 2004; Maghsoudi et al., 2020; Paoli & Greenfield, 2013; Pardo, 2020; Strang et al., 2012). The harm-focused approach and its potential benefits are explained below.

Harm focused approach

In its broadest terms, harms are the negative consequences of an act, in this case, crime (Adriaenssen et al., 2018). Greenfield and Paoli (2013) further define harm as "violations of stakeholders' legitimate interests" (p. 866), distinguishing it from the perceived seriousness or costs of crimes. Seriousness combines harm and the offender's culpability (Curtis-Ham & Walton, 2018; Ignatans & Pease, 2015). Adriaenssen et al. (2018) conceptualise crime seriousness as a compound of the wrongfulness (i.e., the severity of norm violations), the severity of harms, and the incidence of the crime and its associated harm. Practically, seriousness does not always align with harm; for example, a crime may be considered more serious due to an offender's history, but the harm caused remains the same regardless of whether they are a repeat offender (Mitchell, 2019). Additionally, studies on the costs of crime encompass more than harm alone, including police, victim services, and crime prevention costs (Heeks et al., 2018).

Harm-focused approaches for crime prevention enable decision-makers to factor in the harmful consequences of crimes to prioritise their efforts, shifting the focus from smaller, crime-count-focused problems to a broader societal focus (Berg & Shearing, 2018; Dorling et al., 2008). This is consistent with academics who suggest that crime count reduction is justified by higher-level goals such as reducing harm (Borrion et al., 2020; Greenfield & Paoli, 2013; Sherman, 2007).

Harm reduction strategies for addressing market-related harms are based on the principle that the quantity of drugs distributed does not inherently determine the level of harm caused by markets (Caulkins & Reuter, 2009). Whilst some drug markets are violent, others display low violent practices (Caulkins & Kleiman, 2018; Crocker et al., 2019). Research has also shown that drug mules typically serve longer sentences than professional traffickers, despite being victims themselves in many cases (Fleetwood, 2011). Blaustein et al. (2017) further argued that supply-focused strategies cannot address the heterogeneity in the distribution of harm, given their contradictory effect on harm reduction.

Adopting a harm-focused approach would mean pursuing the minimisation of drug-related harms (Caulkins & Reuter, 2009), with the reduction in supply or demand being a means rather than an end. Such an approach would require a shift in law enforcement action from, for example, disrupting drug markets and incarceration that ultimately destabilise markets and produce violence to focusing efforts on those that are generating the most harm.

A harm-focused approach could serve drug policy and law enforcement in several ways. Crimes are not equal in terms of the harm they cause; therefore, relying solely on crime counts might lead to a disproportionate focus on less harmful but more frequent crimes (Sherman, Neyroud, et al., 2016). By adopting a harm-focused approach, the most harmful crimes would gain prominence in policy discussions and the prioritisation of resources (Paoli & Greenfield, 2018). Assessing the nature and scale of harm associated with each stage of the cocaine trade could provide valuable insights for developing effective drug policies and allocating resources. For instance, strategies targeting the supply side might prioritise minimising harm rather than merely reducing the overall volume of cocaine production and distribution (Pardo, 2020). Second, this approach would encourage greater consideration of law enforcement actions and their consequences on communities and society (Caulkins & Reuter, 2009). For example, if disrupting drug markets leads to increased violence, alternative harm-focused strategies could focus deterrence on violent drug sellers in violence-prone markets and suppress particularly violent street dealing (Caulkins & Kleiman, 2018). Third, understanding how much harm is associated with an organised crime (e.g. drug trafficking) due to its illicit status could inform decisions regarding its criminalisation (Paoli & Greenfield, 2018). Collectively, **the design of harm-focused interventions and policies to counter the cocaine trade requires a harm assessment that informs how efforts should be focused** (Pardo, 2020). As we shall see in the following, a harm assessment of that sort has not yet been designed.

Harm assessment literature

Cost of crime

Monetary cost is often utilised as a metric to measure the societal harm caused by crime (Wickramasekera et al., 2015). For recent applications of this approach, see Heeks et al. (2018), and Smetanina and Kulyk (2020) and Olavarría-Gambi (2023).

In the context of organised crime, cost estimation has been employed to provide an objective assessment of harm (Greenfield & Paoli, 2013; Paoli & Greenfield, 2013). However, with harms encompassing human lives, corruption, and threats to national stability, assigning economic costs to these dimensions remains challenging and lacks a credible foundation (Levi, 2016). Efforts to estimate the costs of illicit drug abuse (e.g.,Collins & Lapsley, 2008; Miller & Hendrie, 2009; Tait et al., 2018) have faced limitations, particularly in capturing costs at both individual and societal levels (Bonomo et al., 2019). Similarly, studies on the costs of illicit drug supply, such as Mills et al. (2013), often attribute the consequences of drug abuse to organised crime without adequately considering the role of users and their circumstances (Levi, 2016).

A recent study by Heeks et al. (2018) estimated the costs of drug abuse and offences but excluded crimes without direct individual victims—an omission that is significant given the nature of many drug-related offences (e.g., drug production or possession) which lack a clear and immediate target (Eck, 1994; Mehmet, 2009; von Lampe, 2010). Furthermore, the estimation of crime costs must account for inflationary adjustments and the relative harm of low-frequency crimes, which may disproportionately affect overall cost assessments due to their severity despite infrequency (Ratcliffe, 2015).

Weighted indexes

Weighted indexes ponder crime counts with a measure of how harmful (or severe) a crime is. In the 20th century, survey ratings were used to build a weighted severity index to assess the harms of crimes (Rossi et al., 1974; Sellin & Wolfgang, 1964; Wolfgang et al., 1985), and to evaluate the seriousness of offences (Pease, 1988). However, none of these were adopted by law enforcement agencies (Sherman, Neyroud, et al., 2016). More recently, court records (Bangs, 2016; Francis et al., 2005; Sullivan et al., 2019), crime victim surveys (Ignatans & Pease, 2015) and judge expert assessment (Ratcliffe, 2015) have been suggested to assess crime-related harm. However, court records also reflect offender history and mitigating factors that confound harm, crime victim surveys do not capture rare but very harmful events like homicides, and judge expert assessment can be inconsistent across judge panels (Sherman, Neyroud, et al., 2016).

Crime harm index

The Crime Harm Index – CHI – (Sherman, 2007, 2013), the first version of which is known as the Cambridge Crime Harm Index (Sherman, Neyroud, et al., 2016), was devised to ponder crime counts with the harm these crimes produce using a harm metric. Figure 2.6 shows the steps of the CHI. The first step in calculating CHI is to count crimes. As in the HAF, the incidence of crimes is required to assess harm because it will determine the total harm produced instead of the harm produced by one incident. Harm is then calculated per crime type, area, or individual as the product of the crime count and the harm weight. In the case of the Cambridge CHI, the harm weight per crime is based on the starting points of the sentencing guidelines of England and Wales. The last step involves prioritising crimes/areas/individuals to address based on the calculated harm.

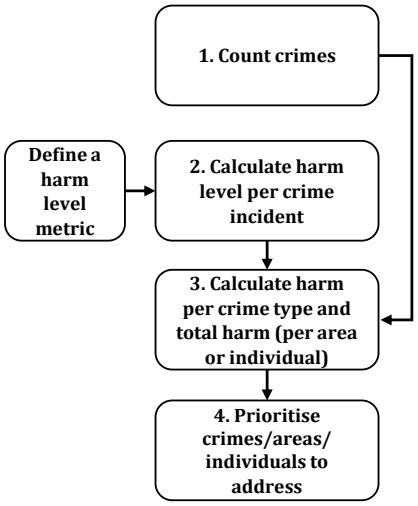


Figure 2.6
Steps in the Crime Harm Index
Steps extracted from: Sherman, (2013)

Not all existing CHIs use starting points of sentencing guidelines. The California CHI (Mitchell, 2019) uses maximum sentences. Others have used actual sentences and controlled for mitigating and aggravating factors of the offenders' history and circumstances of the offence (Curtis-Ham & Walton, 2018; House & Neyroud, 2018). Others have used the average length of sentences (Babyak et al., 2009; Chong, 2019; Taira, 2018). In the absence of sentencing guidelines, judge panels (Rinaldo, 2018) and prosecutor scores (Andersen & Mueller-Johnson, 2018) have been used to create them.

The fact that a CHI has been created for several countries and regions indicates its applicability. CHIs have been created for England and Wales (Sherman, Neyroud, et al., 2016), Western Australia (House & Neyroud, 2018), Queensland (Ransley et al., 2018), Denmark (Andersen & Mueller-Johnson, 2018), Japan (Taira, 2018), Hong Kong (Chong, 2019), California (Mitchell, 2019), Northern Ireland (Macbeth & Ariel, 2019), Nigeria (Ojo & Ojewale, 2019) and Sweden (Kärrholm et al., 2020).

The CHI's range of applications shows this measure's versatility and utility. CHIs have been used to monitor how crime harm changes across time (Andersen & Mueller-Johnson, 2018; Curtis-Ham & Walton, 2018; Sherman, Neyroud, et al., 2016), to understand the space concentration of harm (Bland & Ariel, 2015; Fenimore, 2019, 2020; Macbeth & Ariel, 2019; Norton et al., 2018; Weinborn et al., 2017; Wheeler & Reuter, 2021); to understand harm concentration on offenders (Frydensberg et al., 2019), repeat offenders in family violence incidents (Sherman, Bland, et al., 2016) and for offender triage (Ratcliffe & Kikuchi, 2019); to target resources addressing intimate partner violence (Kerr et al., 2017), live alerts and police responses (Sidhu et al., 2017), and repeat victims (Dudfield et al., 2017). CHIs have also been used to evaluate hot-spot interventions (Ariel et al., 2016; Gibson et al., 2017; Mitchell, 2019), case management interventions of repeated intimate partner violence (Goosey et al., 2017) and gang injunctions (Carr et al., 2017). Sherman and Cambridge University associates (2020) leveraged their expertise and diverse applications to produce a guide on using the CHI for police operational decision-making.

However, CHIs have limitations in assessing the harms of the cocaine trade, as they often exclude organised crime and drug user-related offences, such as possession. They rely on reported crimes, neglecting the harms associated with underreported crimes (Ashby, 2018; Curtis-Ham & Walton, 2018; Hales & Higgins, 2016). The method doesn't account for the complexities of criminal activities across stages and interconnected crimes. Echoing Caulkins and Reuter's (2011) criticisms of unique indexes, Paoli and Greenfield (2018) argued that these tools oversimplify harm assessment, rendering them inadequate for informing sound drug policy decisions.

Expert-based harm rankings

To assess the harms associated with drugs, particularly drug misuse, and to enable cross-drug comparisons, Multi-Criteria Decision Analysis (MCDA) and other survey techniques have been employed to identify and rank harms based on expert opinions (e.g., Bonnet et al., 2020; Bonomo et al., 2019; Crossin et al., 2023; Nutt et al., 2010; van Amsterdam et al., 2015; van Amsterdam & van den Brink, 2010). In line with the methodology outlined in the earliest studies (Nutt et al., 2007; Nutt et al., 2010), experts from academia, research, the public and health sectors, and the judiciary and police have been consulted to score a wide range of drugs based on the harms they cause to individuals and others.

While these rankings offer benefits in terms of replicability and comparability across countries, they have faced criticism for expert bias and for not incorporating users' experiences (Bonomo et al., 2019; Dubljević, 2018). Moreover, their focus has largely been on drug use rather than the entire drug supply chain. The harms considered in these rankings typically include physical, psychological, and social detriments to users, as well as physical and psychological harms to others caused by individuals under the influence of drugs. They also encompass crime, environmental damage, and economic costs, but without specifying the contexts or communities affected. Dubljević (2018) argued that the main challenge in assessing harm lies in the reification of substance-related harms, which overlooks the diverse contexts in which substances are used. For example, given the harm produced along the cocaine trade supply chain, it is essential to consider the context of drug production and its sources. Caulkins and Reuter (2009) emphasised the need to broaden the scope of harm reduction, extending it from drug use to include the harms associated with the production, distribution, consumption, and control of drugs.

Harm assessment of organised crime

Harm Assessment Framework

Designed to assess the harms of organised crime, the Harm Assessment Framework – HAF – (Greenfield & Paoli, 2013) is a more nuanced approach to harm assessment. Figure 2.7 outlines the steps of the framework. The first step involves building a business model of the primary crime activity to understand the operational stages and the accompanying and enabled activities. The authors do not provide definitions of these terms. However, in their application to cocaine trafficking, Paoli et al. (2013) identified import and wholesale distribution or export as key operational stages, money laundering, violence and corruption as accompanying activities, and retail dealing and use as enabled activities. The subsequent steps involve using two taxonomies to identify harms and their bearers, rating the incidence and severity of these harms, prioritising which harms to address, and finally, establishing their causality.

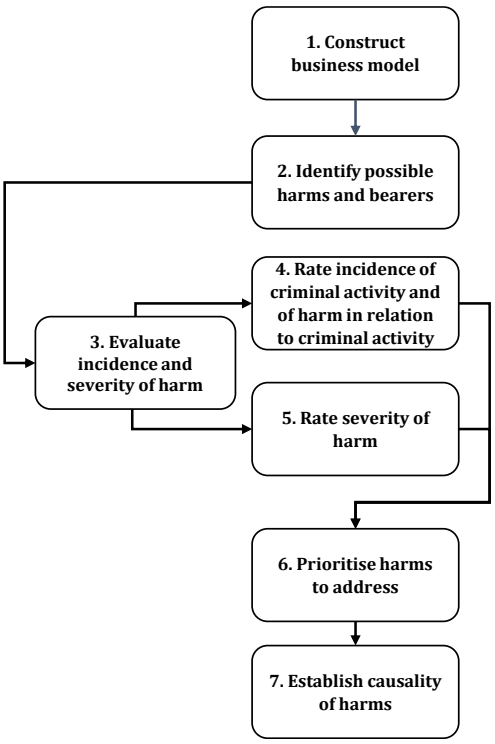


Figure 2.7
Steps of the Harm Assessment Framework
Steps extracted from: Greenfield and Paoli (2013)

The intended purpose of the HAF is to systematise the empirical assessment of harms and assist policy-making (Greenfield & Paoli, 2013). The authors suggest the framework can be particularly useful for comparing crime types, prioritising efforts against the most harmful perpetrators, assessing policy impacts on harm, benchmarking existing sentences, designing sentencing guidelines, and expanding restorative justice programmes.

In the application of the HAF, the authors have demonstrated the applicability of the framework to organised crime, including cocaine trafficking (Paoli, Greenfield, & Zoutendijk, 2013), cannabis cultivation (Paoli, Decorte, & Kersten, 2015), human trafficking (Greenfield, Paoli, & Zoutendijk, 2016), cybercrime (Paoli, Visschers, & Verstraete, 2018), labour exploitation (Davies, 2018) and piracy (Peters & Paoli, 2020).

However, the HAF lacks a 'whole process' view, which involves the possibility of double-counting harm (Gómez-Quintero et al., 2023). In the HAF, activities following the activity of interest are considered enabled. This is the case, for example, of Paoli et al. (2013) in which retail was considered by the authors as an enabled activity of cocaine trafficking. Following this logic, if the HAF were to be developed for each of the stages in the cocaine trade, an enabled activity of growing coca would be processing coca into cocaine, and then an enabled activity of processing coca into cocaine would be transnational distribution. Including harm assessments from the various stages would result in double counting, as activities are accounted for as outcomes of preceding stages and primary activities. This issue is particularly relevant when different government agencies or departments work independently on different stages of the cocaine trade, each producing separate harm estimates that are later aggregated for decision-making. For instance, in Colombia, the Ministry of Defence oversees forced eradication and seizures, while the Ministry of Justice and Law is responsible for drug policy, and other entities such as the Agency for the Renovation of the Territory implement programmes like illicit crop substitution; separate evaluations may inadvertently count the same harms multiple times. Consequently, aggregating harm estimates across all stages and their associated activities is likely to lead to an overestimation of the overall harm (Gómez-Quintero et al., 2023).

In response to Gómez-Quintero et al.'s (2023) critique, Greenfield and Paoli (2023) argued that the HAF's lack of a "whole-process" view should not be interpreted as a call for a single, aggregate numeric assessment of total harm. They pointed out that such aggregate measures would be inadequate due to the incommensurability of harms to different bearers and the risk of losing valuable information, introducing biases, and creating misleadingly precise estimates. However, if Gómez-Quintero et al. (2023) did not refer to this form of aggregation, Greenfield and Paoli maintained that their framework distinguishes between the different phases of organised crime activities. For instance, in their harm assessment of cocaine trafficking in Belgium (Paoli et al., 2013), they divided trafficking into distinct phases (import and export/wholesale) and identified harms for each. They also examined the harms of accompanying activities (e.g., violence, corruption, and money laundering) and enabled activities (e.g., dealing). Despite this differentiation, the HAF still evaluates the totality of trafficking without distinguishing between the stages of the organised crime activity; the severity, incidence and prioritisation assessments of harms are done for the totality of "trafficking" without distinguishing between stages of the organised crime activity. While this approach allows for some differentiation in identifying harms, it still treats accompanying, what Gómez-Quintero et al. (2023) would deem as 'connected crimes' and enabled activities as separate and parallel to the primary trafficking activities. It also fails to account for the varying severity, incidence and priority of harms across stages. For

example, violence could be more severe in the distribution stage, leading to homicides, and money laundering may be far more extensive in distribution than in dealing. By not incorporating connected crimes into the stage-by-stage analysis and by excluding drug dealing as a stage within the illicit drug trade process, the HAF misses the opportunity for a granular harm assessment. This is particularly significant for drug-producing countries, which must address all stages of the illicit drug trade and make informed decisions regarding resource allocation to counter each distinct stage.

In addition to the above limitations, the authors of the framework have judged the conceptual and technical challenges of implementing the framework to be "daunting" (Greenfield & Paoli, 2013, p. 883). Other authors have argued that the harm categories considered by the HAF are difficult to measure (Mitchell, 2019), and overall, to be unfit for operational use because of its complexity despite it being comprehensive (Sherman, Neyroud, et al., 2016).

Organised Crime Harm Assessment method

Gómez-Quintero et al. (2023) introduced a method for assessing the harm of organised crime, using organised crime activities as the unit of analysis. This approach employs the HAF as its foundation to ensure comprehensiveness while integrating the principles of the CHI to enhance its applicability. The method facilitates the assessment of harm across the stages of an organised crime activity and incorporates a taxonomy to identify connected crimes. It extends the CHI concept by calculating a crime harm index level for each stage of an organised crime activity, capturing both the harms associated with the primary criminal activity (e.g., cocaine production) and those caused by related crimes. Figure 2.8 outlines the steps of the OCHAm. The process begins with constructing a crime script for the organised crime activity and its connected crimes, followed by estimating the incidence of these crimes. Next, harm levels are assessed using a harm metric, total harm is calculated according to the Cambridge CHI guidelines, and the stages of the organised crime activity are prioritised for law enforcement interventions.

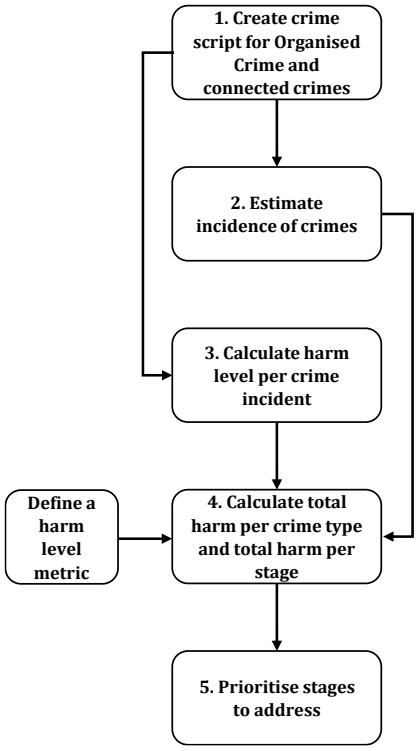


Figure 2.8
Organised Crime Harm Assessment method
Steps extracted from: (Gómez-Quintero et al., 2023)

The OCHAm introduced a taxonomy for crimes associated with organised crime activity. The taxonomy addressed the HAF's inconsistency in identifying stages within an organised crime activity and its limitations in identifying connected crimes. The proposed taxonomy suggests three categories:

1. **Direct crimes,** directly involving the illicit commodity, target or victim, such as recruitment of victims for human trafficking or producing cocaine in the case of the cocaine trade.
2. **Enabler crimes,** supporting direct crimes but replaceable with another enabling activity, such as corruption and money laundering.
3. **Fuelled crimes,** facilitated by direct offences but not necessarily involving the victim, target or illicit commodity, such as funding human trafficking with the proceeds of drug trafficking.

An illustrative application of the OCHAm by Gómez-Quintero et al. (2023), which assessed the harms of the heroin trade into and within England and Wales, demonstrated the method's feasibility. Based on academic literature, the application broke down the heroin trade into stages, identifying the crimes involved at each stage and quantifying the harm associated with these crimes. The findings revealed how different drug-related and connected crimes intersect at various stages, producing distinct harms across the criminal activity's lifecycle.

The development and application of the OCHAm also highlighted key challenges in the harm assessment of organised crime. These included the lack of detailed data on the operational processes of organised crime, difficulties in identifying connected crimes, challenges in estimating their incidence and attributing causality to the primary organised crime activity, and the absence of guidelines for calculating harm weights in jurisdictions where such frameworks have not been established (Gómez-Quintero et al., 2023).

In response to Gómez-Quintero et al.'s (2023) critique of the HAF, Greenfield and Paoli (2023) raised several concerns regarding the application of the OCHAm. Firstly, they surmised that the above challenges to assess the incidence of heroin trafficking and its accompanying and enabled activities were due to the challenges of data collection and the lack of ordinal scales for harm estimation. Greenfield and Paoli emphasised that their framework uses such scales to estimate harms in the absence of precise data, avoiding indefinite delays in assessments. Secondly, they criticised the use of Sherman et al.'s (2016) CHI for estimating severity, asserting that, although low-cost and accessible, reflects sentencing guidelines shaped by political imperatives and does

not accurately measure the actual harms of crimes. In their view, the CHI cannot provide a reliable basis for policy priorities or sentencing, as it combines harm and culpability in ways that may understate harm levels. Finally, Greenfield and Paoli highlighted the OCHAm's failure to incorporate a crucial step in harm assessment—establishing causality. They argued that understanding the relationship between the criminal activity and its harms, including the role of policy and law enforcement practices, is vital for effective harm reduction. They stressed that without this step, policy-makers may miss opportunities to address harms that are directly caused by their own policies, such as the legal status of drugs.

In response to these criticisms, I acknowledge the necessity of establishing causality in harm assessments and agree that, as Greenfield and Paoli (2013; 2023) argue, the legal status of drugs and the policy environment significantly shape the harms associated with organised crime. However, I suggest that it is crucial to separate the harm assessment of organised crime activities from the evaluation of policy and enforcement practices. This distinction is essential because policymakers have direct control over the harms caused by policies, such as coca crop fumigation, but only indirect and uncertain control over the harms caused by illicit drug trafficking. While fumigation is an action carried out by law enforcement under the direction of policymakers, trafficking is carried out by individuals operating outside the law. Therefore, policymakers' ability to influence these two types of harm differs considerably, and a nuanced understanding of their respective contributions to overall harm is necessary for informed decision-making. This distinction is needed for understanding where policymakers can exert control and influence.

Further conceptual and methodological refinement is required for the OCHAm to be broadly applicable beyond its illustrative example. While the method introduces the need for a crime script and a taxonomy to identify connected crimes, it does not specify how to construct such a script or establish criteria for identifying these crimes. Moreover, the authors acknowledged the possibility of expanding the taxonomy with additional categories. For instance, Hancock and Laycock (2010) suggest considering crimes associated with offenders' criminal lifestyles, while others point to the inclusion of policy-induced crimes—those arising from law enforcement or prohibitionist policies (Ratcliffe, 2015; Werb et al., 2011). Such policy-induced crimes, including violence triggered by enforcement actions, highlight the potential unintended consequences of existing drug policies.

Operational crimes, a subset of connected crimes, sustain the cocaine trade across its stages, from cultivation to commercialisation. While connected crimes encompass all acts linked to the trade, operational crimes—such as corruption, money laundering, and systemic violence—specifically protect and enable primary activities. In contrast, fuelled crimes, like arms trafficking or forced prostitution, arise as secondary consequences and are not essential to the trade's operation. Focusing on operational crimes provides a clearer view of the trade's harms, as these crimes are directly tied to its persistence. Unlike the OCHAm framework, which categorises connected crimes as direct, enabler, or fuelled, the operational crimes approach prioritises acts integral to the cocaine trade's sustainability.

Other methods

Alternative methods for assessing the harm of organised crime have been developed, but also have shortcomings. In an evaluation of five law enforcement methods for assessing organised crime harm in Australia, the Netherlands, and the United Kingdom, Tusikov (2012) highlighted issues such as a lack of transparency, vague definitions of harm and organised crime, and doubts over the empirical feasibility of measuring organised crime-related harms. He also questioned whether these assessments could be conducted in a way that meaningfully informs law enforcement decision-making while avoiding undue political interference.

More recently, Mulholland and Cole (2021) compared attribute-focused and harm-focused methods for assessing risks related to organised crime groups (OCGs). Attribute-focused methods examine the characteristics of specific OCGs, such as the types of crime they engage in, the scale of their involvement, and their capabilities, including access to weapons (Mulholland & Cole, 2020). Examples of these methods include the "Sleipnir" method used by the Royal Canadian Mounted Police, "Klerks" (described in Hamilton-Smith & Mackenzie, 2010; Vander Beken, 2004), and "Organised Crime Group Mapping" (explained in Carr et al., 2017; Crocker et al., 2017). Harm-focused methods, on the other hand, focus on the types of harm OCGs may cause (e.g. social, economic, political), but do not consider the specific criminal activities in which they are involved (Mulholland & Cole, 2021). An example of these methods is the Metropolitan Police Service Criminal Networks Prioritisation Matrix reviewed by Hamilton-Smith and Mackenzie (2010). OCGs are typically involved in specific aspects of the criminal process and can be highly dynamic in their roles (Bright, 2017; Bright & Delaney, 2013; Felson, 2006). Concentrating on OCGs alone provides limited insight into the overall crime commission process and the harms that occur across all stages (Purvis & Gundur, 2019), thus limiting the effectiveness of these methods in assessing the harms associated with organised crime.

The MoRiLE (Management of Risk in Law Enforcement) framework (Dowden, 2017), developed and used by the UK Home Office, is a harm-focused tool primarily used for assessing and prioritising risks related to various forms of crime, including organised crime phenomena. It is designed to enable law enforcement agencies to evaluate threats in terms of harm, risk, and vulnerability across a wide range of crime types, allowing for strategic decision-making and resource allocation. There are two models of MoRiLE: the Tactical model, used regularly in daily and weekly tasking to assess operational risks and inform evaluations, and the Thematic model, which helps law enforcement agencies assess strategic risks and guide the strategic assessment process (College of Policing, 2013). The thematic MoRiLE does not focus on specific organised crime groups but assesses harms per thematic issues, such as social, economic, and political impacts, which can encompass organised crime phenomena without the need to examine individual groups in isolation. The framework follows a series of structured steps: identifying and categorising risks, scoring the severity and likelihood of harm, and prioritising actions based on the overall assessment of risk. While it allows for a broad understanding of harm, MoRiLE does not deconstruct organised crime into its constituent stages, nor does it consider the connections between different criminal activities, a gap that is addressed by the OCHAm.

Research objectives and analytical framework

This thesis develops a comprehensive analytical framework to map the complexities of the cocaine trade in Colombia, the operational crimes involved, and the diverse harms it generates. While the Organised Crime Harm Assessment method (OCHAm) (Gómez-Quintero et al., 2023) incorporates the organised crime process and connected crimes in assessing harm, its application remains underdeveloped. As highlighted in the literature review, further conceptual and methodological advancements are required, particularly in constructing a detailed crime script for organised crime activities and narrowing the focus to operational crimes. Moreover, in the absence of comprehensive crime records for drug trafficking—such as those used in Crime Harm Indexes—a novel approach to harm assessment is needed. This approach must integrate the crime script, systematically incorporate identified operational crimes and appraise the harms across stages. Overcoming these challenges involves addressing several hurdles.

The first challenge is the inaccessibility and fragmentation of data, which hampers the understanding of the crime commission process in organised crime activities. Data on the crime commission process is often incomplete or unavailable due to the covert and undetected nature of organised crime (Hobbs & Antonopoulos, 2014; Pascual, 2017). Furthermore, the populations of interest—such as drug traffickers, users, and coca growers—are challenging to access

(Weisheit, 2015). Law enforcement data, which primarily reflects the outcomes of enforcement actions (e.g., arrests and seizures), provides a limited view of organised crime dynamics (Windle & Silke, 2019). This data is frequently fragmented, incomplete, and of variable quality, making it difficult to determine how crimes connect to drug trade activities (de Bont et al., 2018). Official reports from organisations such as the UNODC tend to focus on the outcomes of supply control policies—such as eradication, aerial spraying, and interdiction—and market indicators like prices, coca crop cultivation, cocaine production estimates, and drug use patterns (Maghsoudi et al., 2020; Pardo, 2020; Singleton et al., 2018). Intelligence data often lacks a comprehensive account of the crime commission process or the connected crimes involved (Chainey & Alonso Berbotto, 2022). This limitation hinders efforts to construct a rich picture of organised crime activities' operational dynamics.

A second challenge lies in the identification of operational crimes. Although connections between drug trade activities and other crimes have been studied, a systematic framework for identifying operational crimes specific to the cocaine trade remains underdeveloped. Developing such a framework requires clarifying the concept of operational crimes and addressing the hidden nature of organised crime activities, which complicates the attribution of crimes to the drug trade (Singleton et al., 2018). For instance, in their review of data sources for analysing drug-related homicides, de Bont et al. (2018) highlighted the difficulty in determining whether specific homicide incidents were connected to the drug trade. Similarly, the absence of detailed accounts of crime commission processes impedes efforts to assess whether a crime is operationally linked to drug trade activities. A systematic approach to identifying operational crimes is essential for advancing harm assessment and designing effective counter-drug policies.

A third challenge involves appraising the harms caused by organised crime across its various stages. This task is particularly complex due to the covert nature of organised crime – and therefore the lack of data, the diversity of harms it produces, and the methodological hurdles in attributing and quantifying these harms (Paoli & Greenfield, 2013). The inherent subjectivity in defining and measuring harm introduces normative and cultural biases, while the incommensurability of harm types makes comprehensive quantification elusive (Caulkins & Reuter, 1997; Paoli & Greenfield, 2013). Nevertheless, developing a practical and actionable harm assessment framework is critical. Such a framework must account for the diverse and context-specific nature of these harms, integrate both tangible and intangible effects, and address the gaps in data and method.

This thesis will address these hurdles and design a framework incorporating processes and operational crimes to assess the harms of the cocaine trade. Ultimately, the results will contribute to understanding how harm is distributed across the cocaine trade in Colombia. To this end, I have devised three research objectives:

1. Identify and analyse the events that make up the crime commission process of the cocaine trade in Colombia.
2. Identify and analyse the operational crimes in the cocaine trade in Colombia.
3. Develop and pilot a harm assessment tool to evaluate the distribution of crime-related harms across the stages of the cocaine trade in Colombia.

The following sections discuss the concepts, theories and frameworks that will address the research objectives of this thesis.

Depicting the crime commission process

Crime scripts are a helpful tool to identify and explain the events that make up the crime commission process of the cocaine trade in Colombia. Cornish (1994) borrowed the *crime script* concept from cognitive science to provide an analytical tool detailing the crime commission process in its different stages. Crime Scripts can be potential or planned, meaning they describe hypothetical or intended actions, or performed, meaning that they provide realistic descriptions of the crime commission process (Borrion, 2013).

Crime scripts have been used to understand various crimes, and organised crime has greatly benefited from their use (Leclerc, 2017) as they allow the capture of their complexity (Cornish & Clarke, 2002). In their systematic review, Dehghanniri and Borrion (2019) identified eight broad crime categories (cybercrime, corruption and fraud offences, robbery and theft offences, drugs offences, environmental crime, violent crime, sexual offences, and others) where crime scripts have been used to identify potential prevention measures (Dehghanniri & Borrion, 2019).

In this thesis, crime scripts will be useful to address the challenge of understanding the crime commission process of the cocaine trade in Colombia. Crime scripts, "designed to provide a standardized, systematic and comprehensive understanding of crime-commission processes" (Leclerc, 2017, p. 119), will be used to produce a procedural model of the cocaine trade that allows understanding how different criminal drug-related activities unfold across the different stages. A performed crime script will be the most suited to understand the actual operation of the cocaine trade.

The development of a crime script for the crime commission process in the cocaine trade in Colombia will serve as a baseline for understanding how harm distributes across different stages. This approach will also address existing knowledge gaps in the academic literature on crime scripts and the illicit drug trade. Crime scripts have mostly been used to describe the crime commission process to later identify potential crime prevention measures. They have also been used to describe one or some of the stages of the illicit drug trade, but none have been developed as a comprehensive account of all stages of the illicit drug trade. To date, no crime script has been created for the systematic identification of the crimes that are associated with the main criminal activity. The geographical range in the application of crime scripts has also been limited. These gaps are discussed below.

The application of crime scripts to the drug trade has served various purposes, but none have addressed how harm is distributed throughout the crime commission process. Some studies have used crime scripting to describe criminal activities (Lavorgna, 2014; Luong, 2019; Mantilla, 2021; Sytsma & Piza, 2018) and find variations between different modus operandi (Le, 2013). Others have used it to devise crime prevention measures (Chiu et al., 2011; Hancock & Laycock, 2010; Jacques & Bernasco, 2013; Leontiadis & Hutchings, 2015) and to identify environmental facilitators and inhibitors (Sytsma et al., 2021). Crime scripts have also being used to assess the adaptability of offenders´ modus operandi to new legislation (Vidal & Décary-Hétu, 2018). Others have combined crime script analysis with social network analysis to understand how criminal networks evolve in time and function (Bright, 2017; Bright & Delaney, 2013), and to identify the most effective points to disrupt the network (Duijn et al., 2014). No crime script to date has been used to depict across the crime commission process how other crimes are connected to the central activities of the topic of study, and how harm is distributed across the process.

Crime scripts about drug trafficking have examined the crime commission process at specific stages within the illicit drug trade (e.g., production, trafficking, wholesale and sales). Still, none of them have looked at all stages. Studies have addressed the *production* of ecstasy (Chiu et al., 2011), methamphetamine (Bright, 2017; Bright & Delaney, 2013; Chiu et al., 2011; Vidal & Décary-Hétu, 2018) and cannabis (Duijn et al., 2014). Studies have also addressed *drug trafficking across borders* for heroin (Le, 2013; Luong, 2019) and methamphetamine (Luong, 2019), *within countries* for methamphetamine (Bright, 2017; Bright & Delaney, 2013) or undetermined illicit drugs (Hancock & Laycock, 2010), *on the Internet* for synthetic drugs and new psychoactive substances (Lavorgna, 2014), and for illicit sales of prescription drugs (Leontiadis & Hutchings, 2015). Other studies have focused on *drug markets* in Amsterdam (Jacques & Bernasco, 2013), Newark in USA (Sytsma et al., 2021; Sytsma & Piza, 2018) and in Bogota, Colombia (Mantilla,

2021). Of these applications, only two explore the crime commission process for more than one stage in the drug trade (Bright, 2017; Bright & Delaney, 2013) to understand how criminal networks change their function over time.

The cocaine trade involves context and substance-specific characteristics that warrant a study that focuses on these singularities. However, none of the above studies have examined the cocaine trade specifically. The cocaine trade has common features with other illicit drugs such as a supply chain like process that involves production, transportation, wholesaling, and retail sale (Purvis & Gundur, 2019). More commonalities may be found between the cocaine trade and the heroin trade given that both are processed substances derived from an organic component, coca leaf in the case of cocaine and opium poppy in the case of heroin (Purvis & Gundur, 2019). However, the contexts where the heroin trade and the cocaine trade develop are dissimilar. While cocaine production is concentrated in South American countries, heroin is mainly produced in Myanmar, with other countries in Southeast Asia and Latin America also producing this drug (UNODC, 2024c). The networks for heroin and cocaine trafficking have also been found to be different, the latter being more compact than the other (Chandra & Joba, 2015). The dynamics of prices of heroin and cocaine have also shown to be distinct (Groshkova et al., 2018). While some insight can be gained from existing studies, creating a crime script for the crime commission process of the cocaine trade would provide new and more relevant knowledge about the mechanics of the cocaine trade in Colombia.

Consistent with Natarajan´s (2016) remark on the scant attention of researchers to crime problems in non-developed countries, the geographical scope of crime script analysis for drug trafficking has been limited. Research has concentrated mainly in Europe (Duijn et al., 2014; Hancock & Laycock, 2010; Jacques & Bernasco, 2013; Lavorgna, 2014), Australia (Bright, 2017; Bright & Delaney, 2013; Chiu et al., 2011; Le, 2013), and USA (Lavorgna, 2014; Sytsma et al., 2021; Sytsma & Piza, 2018; Vidal & Décary-Hétu, 2018). A limited number of studies have taken place in Southeast Asia (Luong, 2019) and South America, namely Colombia (Mantilla, 2021). Crime scripts can be used to understand the cocaine trade in Colombia, extending the geographical scope of their use.

Identifying operational crimes

Crime scripts are also helpful in addressing the challenge of identifying operational crimes. Crime scripts lend to characterising the interconnectivity among crimes in organised crime. In recognition of this connectivity, Cornish (1994, p. 179) classified the concatenation of scripts for different crimes as "end-to-end" (when a crime leads to another), "up-and-down" (the vertical integration of illicit markets), or "side-by-side" (when crimes occur in the same places). He also discussed how complex crimes arise because of the concatenation of scripts. In these cases, the logistical requirements involve the commission of new crimes. In the case of the cocaine trade and its process-like feature, production, distribution, and sales constitute "end-to-end" concatenated scripts. Given its connectivity feature, these are also concatenated with "up-and-down" scripts of crimes that occur to facilitate the trade. As discussed previously, examples of these enabler crimes are corruption, money laundering (Europol, 2017) and systemic violence (Goldstein, 1985; Desroches, 2005). Additionally, new synergistic links might develop when performing primary criminal activity, creating or facilitating new criminal opportunities, or allowing existing opportunities to be exploited differently (Cornish, 1994). Again, the connectivity of the cocaine trade adds yet another dimension to the concatenating of scripts, as some crimes will be fuelled – and hence connected – by this trade. Examples of these crimes are forced prostitution, human trafficking (Shelley, 2012) and volume crime (Brown & Smith, 2018).

Previous studies based on crime scripts have suggested that more crimes are usually involved in the crime-commission processes besides the main illicit drug-related activity under analysis. However, none have used a conceptual framework to identify operational crimes. Recognising that "crimes generate other crimes" is relevant for crime prevention for "interpreting crime data, prioritising issues, and estimating levels of harm associated with any given crime" (Cockbain & Laycock, 2017, pp. 11, 12). In discussing how to prevent a crime, one may find that intervening at a point in the crime commission process might disrupt the primary criminal activity and cut down the opportunities for committing other connected crimes. For example, Hancock and Laycock (2010) mentioned several other crimes instrumental in the crime-commission process aside from their primary research subject – drug trafficking. They include bogus front companies, corruption, threat of violence, disposal and concealing funds unlawfully, use of unregistered cars and illegal residence in the country. Chiu et al. (2011) also identified the use of false identifications and phoney companies to produce methamphetamine in clandestine laboratories in Australia. Mantilla's (2021) study on a drug market in Bogotá identified a convergence of crimes—arms trafficking, prostitution, human trafficking, and theft—but did not employ a systematic method to identify or explore their connection to the main criminal activity.

Hancock and Laycock proposed that in addition to crime scripting the main criminal act (i.e., drug trafficking), the criminal lifestyle of the offenders and the organised crime network should be mapped to account for the complexities of OC activities (Hancock & Laycock, 2010). They argue that such an approach "allows for the formulation of responses that focus on the existence of the groups/ networks, the mechanics of the offence and the overarching lifestyle components" (Hancock & Laycock, 2010, p. 177). They further claimed that crime scripts provide the opportunity to "break down the process of offending both horizontally in terms of its step-by-step actions and laterally by addressing its component parts, lifestyle and crime group" (Hancock & Laycock, 2010, p. 188).

In this thesis, the crime commission process of the cocaine trade will be broken down both horizontally across all the stages (from production to sales) and laterally, which means understanding the crimes that sustain the main criminal activity instead of the lifestyle and crime groups as suggested by Hancock and Laycock (2010) – see Figure 2.9 Such characterisation will then be used to understand how harm is distributed across the crime commission process. This depiction of the cocaine trade addresses von Lampe's (2016a) critique regarding the limited understanding of how criminal activities operate. By providing such insights, it seeks to enhance the effectiveness of harm assessments in guiding policymakers and law enforcement in developing strategies to combat organised crime and optimise resource allocation.

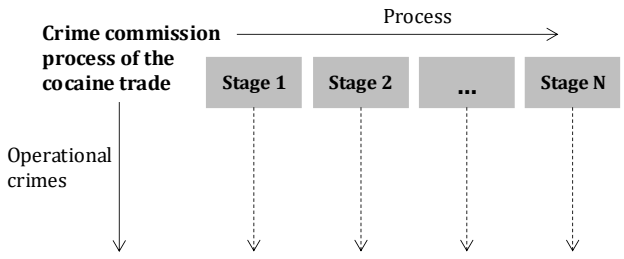


Figure 2.9
Horizontal and lateral dimensions for breakdown of the crime commission process of the cocaine trade

However, work still needs to be done to develop a framework to systematically identify crimes that sustain an organised criminal activity – i.e., operational crimes. Naylor (2003) discriminates between primary and secondary crimes, with the latter being those that support the first (e.g., money laundering). Other types of connected crimes could include those fuelled by the primary activity and, eventually, those that arise from law-enforcement action (Gómez-Quintero et al., 2023). Goldstein (1985) classified the drugs-violence nexus into psychopharmacological violence, economic compulsive violence and systemic violence. Others have further disaggregated the systemic crime dimension into organisational violence, transaction-related violence, and third-party-related violence (Reiss & Roth, 1993). Goldstein's framework excluded all non-violent crimes and aggregated all violent crimes occurring within drug markets and

distribution networks into the systemic violence category without detailing the varying natures of these crimes. For example, some crimes might be directly related to the activity (e.g., producing cocaine), others might be facilitating the activity (e.g., corruption to be able to purchase chemical precursors), and others might be enabled by the activity (e.g., illegal prostitution financed by proceedings from the drug trade). Reiss and Roth's classifications were also concerned with the drug–trade–violence nexus, leaving out other types of non-violent crime. Bean (2014) suggested that there are three possible connections between drugs and crime: drug use leads to crime, crime leads to drug use, and drug use and crime have a common aetiology. Within the last category, Bean argues that some crimes arise because of the current illicit drug prohibition policies and others where drug use and crime are part of an individual's lifestyle but have no other connection. However, Bean focuses on understanding the connection between drug *use* and crime; he does not examine the connection between drug trade and crime. The taxonomy of connected crimes of the OCHAm (Gómez-Quintero et al., 2023) does consider other types of crime. As discussed in the harm assessment section of this review, the taxonomy of connected crimes distinguishes between direct crimes (the main criminal activity), enabler crimes (crimes that support the main criminal activity), and fuelled crimes (crimes that are supported by the main criminal activity).

Identifying operational crimes involves the additional challenge of determining whether a crime is associated with the drug trade (Gómez-Quintero et al., 2023). Understanding the underlying decision-making processes may explain this connection. The Rational Choice Perspective - RCP (Cornish & Clarke, 1986) situates the choice and decision-making of offenders at the core of criminal behaviour (Cornish & Clarke, 2017). The theory dictates that criminal behaviour is purposive, rational and crime-specific (Cornish & Clarke, 2014). The implications of these are that criminals do not have stable offending dispositions; instead, they commit crimes to fulfil their interests and needs; that is, they do not commit crimes for the sake of committing them. Being rational means offenders select the best way to achieve their goals within restrictions and uncertainties. Because of this purposiveness and rationality, criminal decision-making is specific as offenders will have different needs, goals, and restrictions, and hence, each of them will choose to commit various crimes. Understanding decision and choice as central to the crime commission process also allows for broadening the focus from the central criminal event to the decision-making process before and after it (Cornish & Clarke, 2017).

RCP is particularly well suited to study organised crime (Bullock et al., 2010) and utilitarian offences like drug trafficking (Desroches, 2005). As argued by Cornish and Clarke (2002) organised crime is purposive, distances itself from other crimes that seem to be driven more by spontaneous and non-controllable means, functions like a business, exhibiting organisation,

planning and decision-making as central to the crime activity, and requires crime-specificity. With the RCP, the authors argue that two potential pitfalls are avoided: 1. To focus more on the characteristics of OCGs than on the crime events as such and 2. To ignore the specificities of different crime types within organised crime.

While RCP has been criticised, these criticisms do not compromise its applicability to organised crime (Cornish & Clarke, 2002). The criticisms of RCP have addressed the definition of "rationality" in decision-making, assuming Cornish and Clarke suggested perfect rationality and not bounded rationality (Leclerc & Wortley, 2014; Wortley & Tilley, 2017). Criticisms have also versed over RCP not addressing those crimes that do not seem rational, like violence and sex crimes; however, crime decisions can be motivated by motives other than economic factors (Cornish & Clarke, 2017). Nevertheless, the rationality of expressive crimes is not a relevant criticism for this research as the drug trade is primarily instrumental (Desroches, 2005).

Several studies have provided evidence of the rational decision-making of offenders involved in the illicit drug trade. For example, Zaitich (2002) studied the perceptions of Colombian cocaine traffickers on the Rotterdam port and found evidence to suggest that they act as rational actors and that they continuously assess the risks of their actions and strategies to minimise risk. Another example is the qualitative study of Toth and Mitchel (2018) on the effectiveness of interdiction and seizure interventions, which found that drug trafficking organisations adapt strategically to such measures, ensuring their illegal products continue to reach consumer markets. The applications of RCP for crime prevention are reflected most notably in the use of Situational Crime Prevention to reduce crime and the later development of crime scripts (Leclerc & Wortley, 2014). Crime scripts were developed as an analytical tool to detail the crime commission process and have since provided evidence of the relevance of RCP (Cornish & Clarke, 2017).

RCP will be used in this thesis to investigate the activities that offenders perform in the cocaine trade and understand the mechanisms that explain how other crimes sustain the primary criminal activity. For example, RCP could explain why traffickers resort to corruption to minimise the risks of getting caught, why violence is used to protect their businesses, or how getting involved in other types of crimes either minimises the risks (by diversifying criminal operations) or enhances the rewards.

Appraising the distribution of crime harm across stages

Multi-Criteria Decision Analysis (MCDA) offers a framework for systematically evaluating and comparing the harms caused by organised crime across its various stages. Its structured approach is particularly valuable for decision-making, as it integrates multiple objectives, accommodates uncertainty and subjectivity, and enhances transparency and accountability (Sahoo & Goswami, 2023). It promotes transparency and accountability by offering a structured framework for decision-making, which enhances scrutiny and oversight (Dubljević, 2018; Sousa et al., 2021). Moreover, it allows taking into account the perspectives of various stakeholders, which enhances decision-making by offering a comprehensive and inclusive approach (Sahoo & Goswami, 2023).

As discussed, drug-producing countries like Colombia must address all stages of the cocaine trade, from cultivation and processing to distribution. Given the limitations of supply-reduction policies, a shift towards harm reduction presents a viable alternative. Understanding harm at each stage of the cocaine trade can inform intervention priorities by identifying the most critical points for policy action. For instance, where market disruptions may escalate violence, harm-reduction strategies can focus on deterring violent offenders rather than applying indiscriminate suppression measures (Caulkins & Kleiman, 2018).

MCDA provides a valuable tool for ranking the stages of the cocaine trade based on the severity of harm, allowing policymakers to prioritise interventions where they are most needed. A detailed assessment of the harms at each stage would further support the development of targeted, evidence-based strategies to mitigate the most damaging consequences of the trade. In this sense, I argue that by identifying which stage(s) should be prioritised for intervention, MCDA could facilitate the design of more effective and focused harm-reduction policies.

A necessary component of MCDA is developing appropriate decision criteria. The criteria used by Nutt et al. (2007; 2010) in their influential studies on drug harm assessment and subsequently adopted by other researchers (e.g., Bonnet et al., 2020; Crossin et al., 2023; van Amsterdam et al., 2015), primarily focus on harm to the drug user and harm inflicted *by* users on others. These criteria are divided into two main categories: Harm to the individual and harm to others. *Harms to the individual* criteria include drug-specific and drug-related mortality, physical and mental health damage, dependence, impairment of mental functioning, loss of tangibles, and loss of relationships. The *harms to others* criteria encompasses injury to others, crime, environmental damage, family adversities, international damage, economic cost, and community cohesion/reputation.

While these criteria are valuable for assessing the harms associated with drug *consumption*, they are less suitable for comprehensively assessing the harms generated by the *supply side* of the cocaine trade. As noted, these criteria are largely user-centric, focusing on the direct effects of drug use and the immediate consequences of user behaviour. They neglect several key supply-side harms, including harms from violence, corruption and environmental degradation. Furthermore, the harms associated with cocaine production and trafficking are often geographically concentrated in specific regions, primarily in Colombia and other Latin American countries. The Nutt et al. (2007; 2010) criteria, developed in a UK context, do not adequately capture these geographically specific harms.

To address these limitations, a different set of criteria is needed that explicitly considers the supply-side impacts of the cocaine trade. Informed by Von Hirsch and Jareborg (1991), Greenfield and Paoli's (2013, 2022) harm taxonomy offers a more appropriate framework. This taxonomy categorises harm into four primary domains, acknowledging their impact on different bearers:

- **Harms to functional integrity:** Encompassing physical, psychological, and intellectual damage to individuals, and operational integrity damage to entities or the environment.
- **Harms to material interests:** Including financial or economic losses, property damage to individuals, and negative impacts on the material assets of entities.
- **Harms to reputation:** Resulting from actions or events that negatively affect the perception of an individual or entity.
- **Harms to privacy and autonomy:** Involving the violation of an individual or entity's privacy or unauthorised access to personal information.

Greenfield and Paoli emphasise that these harms can be experienced by various "bearers," categorised as individuals (which could potentially include animals), private-sector entities (including non-governmental organisations and businesses), government (encompassing all local, regional, and national state entities – executive, legislative, or judicial), and the environment (including both the "social environment" concerning relationships between individuals and institutions, and the "physical environment").

I consider that "domains" is a more appropriate name than "bearers." The concept of 'bearing' harm implies sentience and suffering, which applies to humans and some animals but is debated when extended to the environment. As White (2008) notes, the question of who or what constitutes a victim of environmental harm remains complex, with some definitions focused on human impacts, while others include non-human entities and ecosystems. I propose using

'domains' to avoid this debate and maintain neutrality. This approach recognises the environment as a key area impacted by criminal activity, without assuming it experiences harm like sentient beings.

Greenfield and Paoli's (2013) taxonomy is valuable because it facilitates the crucial distinction between criminal acts (the offences themselves) and their resulting harms (the negative consequences). Policymakers and academics have generally regarded crime as a singular form of 'harm', with limited efforts to differentiate the consequences of different types of criminal activities (Paoli & Greenfield, 2013). The taxonomy allows us to move beyond simply counting crimes and analyse the diverse harms they generate. For instance, illegal deforestation can lead to a range of harms, including harm to functional integrity, such as the loss of biodiversity and an increased risk of landslides affecting human populations, and harm to material interests, such as the loss of timber resources for local communities and economic losses for legitimate forestry businesses. public corruption, such as bribing officials to facilitate drug trafficking, harms functional integrity (e.g. weakened state institutions and eroded public trust), material interests (e.g. misappropriation of public funds), and reputation (e.g. damage to a country's international standing). By separating acts from their consequences, the taxonomy facilitates a more nuanced analysis of crime's impact, essential for developing targeted harm reduction strategies (Paoli & Greenfield, 2013). This allows policymakers to target the specific harms that must be addressed rather than simply focusing on suppressing the criminal acts themselves.

To effectively apply MCDA to rank the stages of the cocaine trade, it is necessary to develop decision criteria that account for both the types and levels of harm at each stage of the supply chain. Using Greenfield and Paoli's (2013) taxonomy as a framework within an MCDA approach makes it possible to assess the distinct harms associated with cultivation, processing, distribution, and commercialisation. This allows for a more granular analysis of harm distribution across the supply chain and facilitates the identification of critical intervention points for counter-drug policies. To fully integrate it into an MCDA framework, decision criteria must incorporate a quantitative measure of harm. One way to achieve this is by assessing the harm levels within each domain. For example, decision-makers can evaluate the level of harm to the functional integrity of individuals, institutions, or the environment at each stage of the cocaine trade, enabling a comparative assessment of harm intensity across different domains.

In this thesis, I will explore the potential for and challenges of using MCDA and the harm taxonomy proposed by Greenfield and Paoli (2013) to appraise harm across the different stages of the cocaine trade and incorporate operational crimes into the harm assessment.

Research questions and contributions

The literature review has provided an overview of the scale, complexity, and harmfulness of the cocaine trade in Colombia, highlighting its persistence, the failure of current policies, and the urgent need for a comprehensive harm assessment to guide the prioritisation of drug policy resources. The cocaine trade's connections to other crimes and their diverse harms require a tailored harm assessment method.

This thesis introduces a framework that integrates the organized crime process, operational crimes, and the resulting harms. The study seeks to deepen the understanding of how crime-related harms are distributed throughout the cocaine trade in Colombia and to explore how these insights can inform and refine the design of more effective counter-drug policies.

The proposed framework addresses three layers: stages, operational crimes, and harms (Figure 2.10). This thesis will develop the framework by identifying and analysing the crime commission process within the cocaine trade, examining the criminal activities supporting its various stages, and exploring the application of MCDA to assess the distribution of crime harms throughout the cocaine trade. The research will be structured around three studies, each with its own research question and objective (Table 2.8).

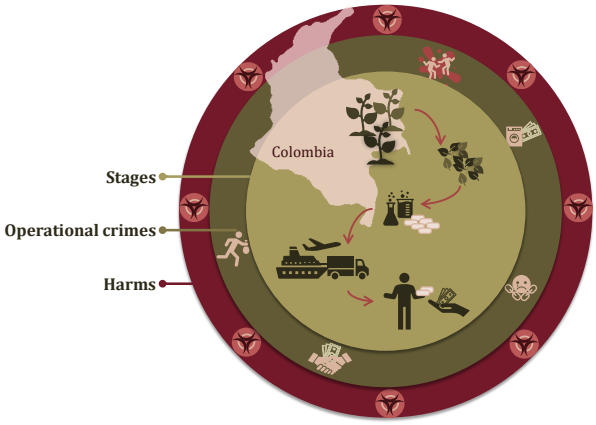


Figure 2.10
The three layers of the framework for assessing crime harms of organised crime

Table 2.8
Research questions and objectives

Research questions		Research objectives
RQ1	What is the crime commission process for the cocaine trade in Colombia?	**Identify and analyse the events that make up the crime commission process of the cocaine trade in Colombia.** Script the cocaine trade process from cultivation to commercialisation within Colombian borders, identifying key activities, conditions, and individuals involved.
RQ2	Which crime types support the various stages of the cocaine trade in Colombia, and how?	**Identify and analyse the operational crimes in the cocaine trade in Colombia.** Catalogue and describe criminal activities at each stage of the cocaine trade, exploring the mechanisms behind these connections.
RQ3	How can crime-related harms be assessed at each stage of the cocaine trade in Colombia?	**Develop and pilot a harm assessment tool to evaluate the distribution of crime-related harms across the stages of the cocaine trade in Colombia.** Identify relevant harm criteria, assess the extent of harms at each stage, and provide recommendations for leveraging the tool to inform counter-drug policies.

Chapter 3. A crime script of the cocaine trade in Colombia

Introduction

Cocaine production is at an all-time high, with Colombia continuing to be the leading global supplier[1]. The latest UNODC coca census for Colombia estimated that cocaine production in 2023 amounted to 2,664 tonnes, produced from 253,000 hectares of coca crops (UNODC & SIMCI, 2024). This is five times more crops and more than nine times more cocaine than the estimates for 2013. While Colombian cartels are notorious for exporting cocaine around the world, it is less known that about 3% of the production (80 tonnes) stays in the country for domestic consumption (Mejía & Rico, 2017). In addition to the health harms associated with cocaine use, the cocaine trade also generates significant levels of violence, corruption, money laundering, and environmental destruction (EMCDDA & EUROPOL, 2019; Global Commission on Drug Policy, 2020; UNODC, 2020a).

While destination countries like the USA, UK, and Australia focus on combating trafficking and retail distribution, drug-producing nations such as Colombia must address all stages of the trade: cultivation, processing, distribution, and commercialisation. The Evaluation of Drug Policy Report for Colombia by the Commission of the Multilateral Evaluation Mechanism (2019) highlights the country's efforts in reducing supply, particularly at the cultivation and trafficking stages, and in tackling drug abuse. These include poverty alleviation programmes in coca-growing regions, preventive measures targeting youth, and treatment centres. However, the continued high volume of cocaine production demonstrates the ongoing challenges for producing countries.

To unpack the complexity of crime, scientists increasingly rely on a technique known as crime scripting and analysis (Cornish, 1994). Crime scripts are knowledge structures that represent the sequential logical steps involved in committing a crime. These procedural models can be used to highlight 'the choices and decisions made by offenders before, during and after committing a specific type of crime', and are 'designed to provide a standardized, systematic and comprehensive understanding of crime-commission processes' (Leclerc, 2017: 119). Relevant to my aim, crime scripts were found especially useful in understanding the activities of organised crime groups (Chainey & Alonso Berbotto, 2022; Hancock & Laycock, 2010; Leclerc, 2017).

[1] The UNODC (2024c) estimated that Colombia grew 65% of the global estimate for coca bush, followed by Peru (27%) and Bolivia (8%) in 2022.

This study employs crime script analysis to characterise the Colombian cocaine trade, spanning from coca cultivation to end-user distribution, while also examining the trade conditions. By scripting each stage within Colombia, I aim to offer a comprehensive understanding of the process. This chapter maps the cocaine trade stages and presents a refined framework for crime scripting, incorporating a systematic search strategy and a structured format for a concise yet comprehensive representation.

A crime script of the cocaine trade in Colombia across all stages offers numerous advantages for both comprehension and policy formulation. Firstly, it provides a panoramic view of the phenomenon and sheds light on the interconnectedness of different elements within the trade. This, in turn, can facilitate the identification of crimes and harms associated with the trade, both within and across stages. It can help law enforcement agencies and policymakers identify critical nodes of the trade. It is, therefore, a helpful step towards designing and evaluating counter-drug interventions, facilitating evidence-based decision-making and resource allocation across the different stages. Furthermore, the crime script is a foundation for comparing crime scripts of other illicit drug trades.

The research question for this study is: **What is the crime commission process for the cocaine trade in Colombia?** The objective of this study is to identify and analyse the events that make up the crime commission process of the cocaine trade in Colombia. I begin by reviewing the literature on crime scripts and their application to drug trafficking. Then, I describe the method used to script the Colombian cocaine trade, which is then analysed to explore its dynamics within the Colombian context.

Crime scripts

In this chapter, I use crime scripts to identify the decision-making processes and contextual factors involved in the cocaine trade in Colombia. Findings of (pseudo) rational behaviour in drug trafficking suggest that analysing criminals' decisions can help us understand the phenomenon. Purvis and Gundur (2019), emphasised the adaptability of drug traffickers to changing supply dynamics, interdiction risks, and market competition. Cocaine traffickers at the port of Rotterdam used insider knowledge and organisational cooperation to evade detection and enhance their smuggling operations (Staring et al., 2023). Drug trafficking organisations are known adjust their strategies in response to law enforcement efforts (Toth & Mitchell, 2018). These behaviours support the hypothesis that offenders assess the utility of their actions, leading me to adopt the Rational Choice Perspective as a theoretical framework for this research.

Introduced by Cornish (1994), these event models delineate the sequential steps and decision points inherent in criminal activities. Borrowed from cognitive science, crime scripting and analysis provides a structured approach to understanding performed crime commission processes, but also planned and potential ones (Borrion, 2013). Crime scripts can be crafted at various levels of abstraction, from the most specific instances known as *tracks* to more general ones termed *metascripts* (Cornish, 1994). These descriptions can be visualised through tables, flowcharts, or textual narratives (Dehghanniri & Borrion, 2019). Tables show detailed components for each scene but cannot depict activity flows. In contrast, process diagrams can represent more complex connections between and within scenes (e.g., Sytsma & Piza, 2018).

Published scripts about drug trafficking

Table 3.1 summarises the features (e.g., substance of interest, stages of the drug trade and settings) of published research on the illegal drugs trade, including but not limited to the cocaine trade. These studies, spanning from 2011 to 2023, have all used a script-based approach to reveal the procedural aspects of illicit drug trades. All of them show that these trades comprise interconnected stages, typically commencing with *growing* and *processing* in the case of plant-based drugs like cocaine or heroin or *manufacturing* in the case of synthetic drugs. Subsequent stages involve *distribution* and *commercialisation*, encompassing wholesale and retail sales (Purvis & Gundur, 2019). Despite the breadth of research, there remain critical gaps in understanding, as highlighted by Staring et al. (2023), who emphasise that there is limited knowledge of logistical processes in source and transit countries. Of these 17 studies, only two, conducted by Staring et al. (2019, 2023) and van Santvoord and van Ruitenburg (2022), have specifically analysed cocaine smuggling during the distribution stage in the Netherlands. Only one (Mantilla, 2021) has examined the illicit drug trade in Colombia, with a focus on the Bronx - a notorious hub of illicit activity in Bogotá, marked by rampant drug trafficking, crime, and extreme poverty. Interestingly, none of the studies have comprehensively scripted the cocaine trade across all stages within Colombian borders.

Table 3.1
Overview of crime script studies on drug trafficking

Study	Substance	Stage	Setting
Bright and Delaney (2013)	Methamphetamine	Manufacturing, distribution, commercialisation	Australia
Chainey and Guererro (2019)	Opium	Cultivation, processing	Mexico
Chiu et al. (2011)	Ecstasy and methamphetamine	Manufacturing	Australia
Duijn et al. (2014)	Cannabis	Cultivation, distribution	Netherlands
Jacques and Bernasco (2013)	Unspecified	Commercialisation	Netherlands
Jardine (2021)	Unspecified	Commercialisation	Internet
Joyce (2023)	Unspecified	Commercialisation	Internet
Lavorgna (2014)	Recreational drugs, synthetic & new psychoactive substances	Production, distribution, commercialisation	Internet; Italy, Netherlands, and USA
Le (2013)	Heroin	Distribution	Australia
Leontiadis and Hutchings (2015)	Illicit use prescription drugs	Commercialisation	Internet
Luong (2019)	Heroin and methamphetamine	Distribution	Laos and Vietnam
Mantilla (2021)	Unspecified	Commercialisation	Colombia
Morgenthaler and Leclerc (2023)	Unspecified	Distribution, commercialisation	Australia
Staring et al. (2019, 2023)	Cocaine	Distribution	Netherlands
Sytsma and Piza (2018)	Unspecified	Commercialisation	USA
van Santvoord and van Ruitenburg (2022)	Cocaine	Distribution	Netherlands
Vidal and Décary-Hétu (2018)	Methamphetamine	Manufacturing	USA

The cocaine trade involves context and substance-specific characteristics that warrant a study focusing on these singularities. For example, the contexts where the heroin trade and the cocaine trade develop are highly dissimilar. While cocaine production is concentrated in South American countries, heroin is mainly produced in Afghanistan, with some production also in Southeast Asia and Latin America (UNODC, 2021). The networks for heroin and cocaine trafficking have also been found to be different, the latter being more compact than the other (Chandra & Joba, 2015). Groshkova et al. (2018) showed that heroin prices vary much more across countries than cocaine prices. Heroin markets are less efficient possibly reflecting a larger number of dependent users who are less sensitive to price changes. As a result, the price of heroin tends to reflect a country's wealth more closely, whereas cocaine prices are generally more consistent and aligned with both quality and economic factors. Overall, cocaine markets are more stable and predictable, while heroin markets exhibit greater price discrepancies.

There are also differences among cocaine-producing countries. For instance, Bolivia, the third-largest producer of cocaine, exhibits notably lower levels of violence compared to Colombia. Grisaffi (2021) posits three reasons for this contrast: 1. Participation in the illicit trade is widespread in Bolivia; 2. The trade operates with a predominantly entrepreneurial ethos, devoid of coercive elements; and 3. In areas lacking state presence, unions serve as mediators to resolve conflicts. Identifying these contextual nuances and opportunity structures not only sheds light on why Colombia persists as the principal global cocaine producer (UNODC, 2020b) but also highlights the need for a comprehensive examination of the crime commission process within Colombian borders. As highlighted in the introduction, adopting a comprehensive view of the cocaine trade is essential for a nuanced understanding of this trade. Although existing literature provides valuable insights into various aspects of the illicit drug trade, there is a need for a more systematic and structured representation of the cocaine trade, particularly within Colombia. This study aims to address this need by using crime script analysis to outline the cocaine trade across all stages within Colombian borders. By organising this information into a crime script, I aim to provide a clear and systematic overview of the entire process, highlighting the benefits of a structured approach to understanding and combating the trade.

Method

To achieve the study aim, I developed and analysed a crime script of the cocaine trade within Colombia. The purpose was to better understand the processes involved in transforming coca leaves into various end-user products and the intrinsic conditions of the trade across all stages, from cultivation to commercialisation. I adopted a four-step approach: First, I searched for relevant documents (from academic literature, grey literature and investigative reports) and assessed their quality to select suitable data for this study. Next, I conducted a thematic analysis to analyse the data and produce an initial crime script following an analytic deductive approach. I then conducted expert interviews to refine and validate the script. Finally, I assessed the quality of the resulting script using Borrion's (2013) criteria.

Document search and selection

A systematic search was conducted to identify relevant documents, drawing explicit inspiration from systematic review studies within the field of crime science (Cockbain et al., 2018; Dehghanniri & Borrion, 2019; Tompson & Belur, 2016). Three types of documents were considered: academic articles, grey literature (e.g., reports, policy papers, working papers) and other material (books and documentaries) based on investigative reporting. Peer-reviewed academic articles undergo revision to ensure publication quality (Pappas & Williams, 2011),

expectedly yielding high-quality findings. 'Grey literature', however, is carried out by practitioners or financed by organisations that gain no advantage from publishing their findings in peer-reviewed journals (Tompson & Belur, 2016) but can provide valuable insights. Findings from investigative journalism that can involve months or even years of work and collaborative teams of reporters and researchers can also provide helpful information not revealed by other sources (Borins & Herst, 2020; Clarke & Schultze, 2005; De Burgh, 2008; Sosnowski et al., 2020).

Figure 3.1 summarises the document search and selection strategy that resulted in the documents selected for analysis. Academic literature was identified via keyword search in academic databases. Grey literature and investigative journalism documents were sourced using a manual search strategy. Additional investigative reporting material known to the authors was also included. Backwards and forward search was applied to all the selected documents to identify further material. Selected studies were then assessed for authenticity, credibility, representativeness and meaning (Scott, 2014).

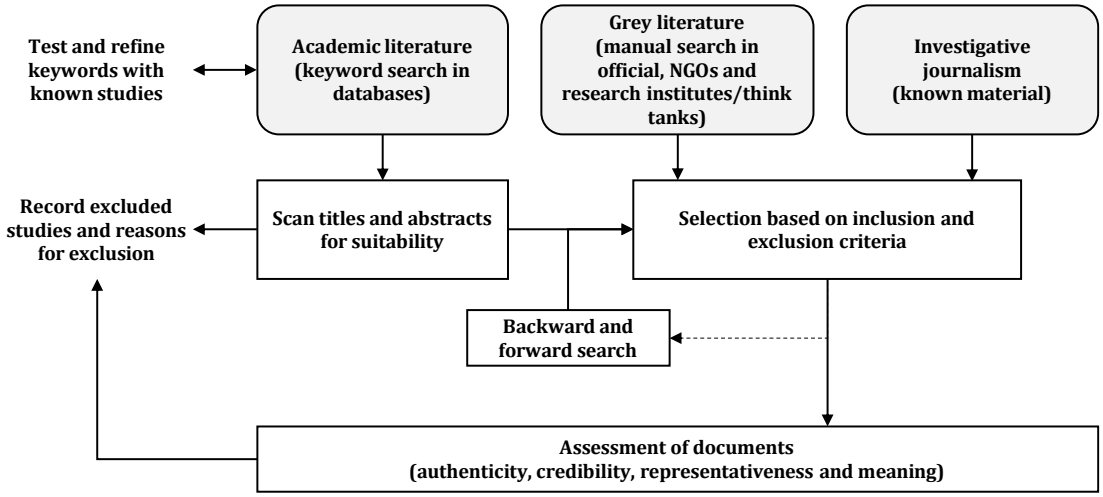


Figure 3.1
Document search and selection strategy
The dashed line denotes the process of conducting backward and forward research scanning on selected documents, which led to the discovery and selection of additional relevant literature. Unlike the solid lines representing direct document flow, this step augments the selection process by identifying supplementary materials for inclusion in the assessment phase.

Inclusion criteria

As shown in Table 3.2, document selection was purposeful, targeting pieces that contained rich descriptions about the crime commission process of cocaine trade in Colombia. For currency, only documents that reported data collected after the 30 November 2016 were selected. This date corresponds to when the Colombian Congress ratified the signature of peace agreements between the Government and the guerrilla group Revolutionary Armed Forces of Colombia (FARC). The signature was followed by the demobilisation of FARC, which greatly altered crime dynamics,

including the cocaine trade (Massé & Le Billon, 2018; Murillo-Sandoval et al., 2020; Norman, 2018). To avoid language bias, I considered documents in English or Spanish (Stern & Kleijnen, 2020). When multiple publications of the same study were found, only the most relevant document with substantial empirical content was included, as in Cockbain et al. (2018). Given the focus on activities of the cocaine trade and not on organised crime groups, studies that solely focused on the organisational characteristics of organised crime groups were excluded. Botany or chemistry studies detailing medical or biological aspects of coca leaves or cocaine were also discarded.

Table 3.2
Inclusion criteria for document search

Inclusion criterion	Description
1. Publication date	Between 1 December 2016 and 12 December 2021. Start day is after the ratification of the signature of peace agreements (see broad relevance criteria). The end date is when the document search began.
2. Accessibility	Full text available.
3. Broad relevance	Addresses present day cocaine trade practices and uses data collected after 30th of November 2016 – Date the Congress of the country ratified the signature of peace agreements between the Colombian Government and guerrilla group FARC.
4. Specificity	Contains information specifically about cocaine trade. Documents may mention other substances but there needs to be data specific about cocaine trade. In the case of studies about drug markets, this criterion is levied given that markets are not usually drug-specific (e.g., Jacques & Bernasco, 2013; Mantilla, 2021; Sytsma & Piza, 2018)
5. Geography	Concerns cocaine trade activities within Colombian borders.
6. Language	English or Spanish (the official language in Colombia)
7. Empirical data	Empirical data includes detailed descriptions of cocaine trade-related activities documented in academic literature, grey literature (reports, policy papers, working papers, etc.) available online and material (books, documentaries, media) based on investigative reporting. Theoretical, conceptual, and normative pieces were excluded.
8. No double counting	Only the most relevant document with substantial empirical content was included for multiple publications of the same study.

Academic literature

Figure 3.2 describes the concepts used to identify academic documents through keyword search (Tompson & Belur, 2016). The initial keywords focused on three key concepts: substance, context, and study type. The search specifically targeted studies detailing the cocaine trade in Colombia. By employing the overarching concept of "substance," the search ensured relevance to cocaine-related studies without necessitating the specification of individual crime types. Following a refinement process, it became evident that most identified studies pertained to the illegal aspects of the cocaine trade, aligning closely with the objectives of the current study, as opposed to less pertinent topics such as the biological composition or medicinal effects of cocaine.

A keyword survey study[2] guided the selection of terms for the 'substance' concept. In the cocaine supply chain, the substance undergoes various transformations. Participants (n=12) were queried about the raw materials (inputs) and end products (outputs) at the different stages in the cocaine trade, resulting in the identification of keywords for the 'substance' concept, including coca leaf (or leaves), coca paste or coca base[3], cocaine, cocaine powder, cocaine hydrochloride[4], crack crystal or crack cocaine[5], coke[6], and basuco or bazuco[7]. Subsequent refinement, informed by published studies (see for example, Jacques & Bernasco, 2013; Mantilla, 2021; Sytsma & Piza, 2018) expanded the 'substance' search terms to include "drug," acknowledging that studies on cocaine production and distribution are substance-specific. In contrast, those focusing on drug markets often encompass various illicit drugs. The selection of keywords for retrieving research on the cocaine trade was guided by the concept of 'study type,' encompassing methods like crime script analysis, logistics approaches (Sieber & Bögel, 1993) and ethnographies (Weisheit, 2015).

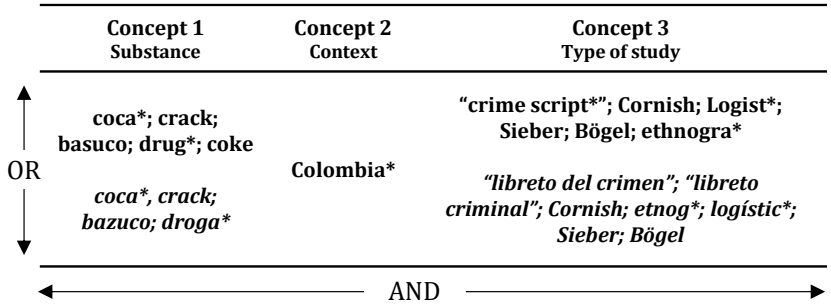


Figure 3.2

Schematic illustration of the combination of search terms across the different concepts and Boolean operators (based on Tompson & Belur, 2016 adaption of Hammerstrøm, K. (no date)).
Speech marks "" were used to specify that the exact phrase was needed and * were used as truncations to allow the search for different endings for the search term (e.g., coca, cocaine). Spanish terms in square brackets [ ].

[2] A keyword survey was carried out to build a rich pool of keywords related to cocaine trade that did not rely solely on the knowledge of the researcher. The keyword survey asked about stages, stakeholders, activities, inputs, outputs, equipment, locations and places, interventions, and other relevant keywords to cocaine trade in Colombia. The form asked for keywords in English and Spanish. Members of the Latin America and the Caribbean Unit of the UCL Jill Dando Institute of Security and Crime Science (n=24) were invited to participate during the week of the 8th of March 2021. They were either current or former MSc or PhD students with expertise in security and crime science, and either Caribbean, Latin American or researching topics in the region. Half (n=12) of them answered the survey.

[3] Intermediate forms of the substance before becoming cocaine.

[4] The official name for the salt form of cocaine.

[5] "cocaine base obtained from cocaine hydrochloride through conversion processes to make it suitable for smoking" UNODC (2020b, p. 47)

[6] A street name for cocaine. See Motta-Ochoa et al. (2017)

[7] Bazuco, "derived from the Spanish for 'dirty trash of cocaine', is a psychoactive by product of cocaine production, a residual paste left at the bottom of the barrel after the pure drug has been produced" Daniels (2015, p. 1027)

In total, 1216 documents were identified from ProQuest (81), Scopus (95), Web of Science (49) and Google Scholar (991) (Table 3.3). The large number of documents retrieved from Google Scholar is due to the impossibility of limiting the search to the title and abstract[8]. The identified titles and abstracts were then reviewed against the inclusion criteria. Most of the retrieved documents were not relevant to the cocaine trade. For example, some focused on medical drug treatments or other illicit substances (e.g., marijuana). Other excluded documents fell outside the selected time frame, were conducted in locations outside of Colombia, or addressed drug policy without providing detailed insights into the criminal activity itself. Only seven academic literature documents remained from the initial 1216. A backward search identified one additional academic document (Blattman et al., 2024)[9].

Table 3.3
Academic documents identified in the four sources

Source	No. of documents
ProQuest	81
Scopus	95
Web of Science	49
Google Scholar	991

Grey literature

A manual search was performed to find documents in grey literature. Websites of official sources, NGOs, and think tanks related to the cocaine trade in Colombia were examined. The authors produced a list of data sources with the advice of an expert[10] with more than 10 years of experience working on drug policy in Colombia. Their suggestions were added to the initial list, resulting in the final list shown in Table 3.4. 14 documents were selected as a result of this search.

[8] The search was conducted using Publish or Perish due to Google Scholar's limitations in performing advanced searches with Boolean operators and truncation

[9] The document was initially found as a pre-print made available in 2021. It has since been updated to its peer-reviewed version.

[10] The expert is fluent in English and Spanish and has participated in drug policy design processes for Colombia and in international drug policy forums.

Table 3.4
Websites of official sources, NGOs, and think tanks where hand search was performed to retrieve relevant grey literature documents

Official Sources	NGOs and Research Institutes/Think Tanks
• UNODC – Integrated System for the Monitoring of Illicit Crops (SIMCI) • Drug Observatory of Colombia (Ministry of Law and Justice of Colombia) • Ministry of Defence of Colombia • International Centre for Strategic Studies against Drug Trafficking (CIENA) (National Police of Colombia)	• Centre for Studies in Security and Drugs (CESED) – University of los Andes • Foundation Ideas for Peace (FIP) • DeJusticia • Mama Coca • IndePaz • WOLA – Washington Office on Latin America • World Drug Commission • TNI Drugs and Democracy • Drugs & (dis)order.org

Investigative reporting

In addition to information obtained from academic and grey literature, I conducted a manual search of reputable sources and investigative reporting. Two sources were consulted. First, Insight Crime, a "non-profit think-tank and media organisation" offering perspective garnered from on-the-ground research and engagement with legal and illegal actors (InsightCrime.org). Second, an episode on cocaine from the television documentary series "The Business of Drugs" (Abu-Saada & Brown, 2020), featuring interviews with growers and traffickers in Colombia.

Other books were initially considered that contained detailed information on the cocaine trade. However, they did not meet the inclusion criteria. These included, for instance, the first edition of "Narconomics" (Wainwright, 2017), which is primarily focused on Mexico and was published in 2016, before the targeted timeframe. Similarly, works like "Kilo" (Muse, 2020) and “Borderland Battles” (Idler, 2019) commenced fieldwork before 2016, making it challenging to discern data collected pre- and post-peace agreement signings.

Quality assessment of documents

All documents selected for analysis underwent a comprehensive quality assessment (Merriam & Tisdell, 2015). Scott's (2014) criteria of authenticity, credibility, representativeness, and meaning, guided this evaluation. *Authenticity* involved verifying the completeness and authorship of documents. *Credibility* assessment ensured documents provided a clear data collection explanation and included direct examples of primary data. *Representativeness* was evaluated based on whether the documents encompassed the study's population of interest and gathered data from diverse stakeholders. Lastly, an assessment of *meaning* focused on whether the documents explained concepts and study contexts and included direct examples of primary data. Following the evaluation, one investigative reporting document was excluded.

In total, 30 documents were selected for analysis, including 7 academic articles, 14 reports from grey literature, and 6 investigative journalism pieces. 3 additional documents were identified through backward and forward searches. These searches utilised citation analysis and Google Scholar, identifying one more academic document and 2 investigative journalism pieces. Collectively, the chosen documents covered all stages of the cocaine trade, as shown in Table 3.5. Annexes 1 and 2 present the list of selected documents and a breakdown of the quality assessment.

Table 3.5
Number of documents relevant to each stage

Stage	Academic (8)	Grey-literature (14)	Investigative reporting (8)	Total (30)
Cultivation	5	6	4	15
Processing	3	7	6	16
Distribution	1	7	5	13
Commercialisation	2	1	1	4

The collected documents provided data on 18 (56%) of Colombia's administrative departments. In terms of cultivation, the documents focused on four regions with the highest levels of coca crops: Putumayo (n = 8), Cauca (n = 6), Nariño (n = 3), and Norte de Santander (n = 3), and Valle del Cauca (n = 3). Collectively, Putumayo, Cauca, Nariño, and Norte de Santander emerge as the four departments in Colombia with the highest estimated levels of coca crops (UNODC & SIMCI, 2024). Documents about the processing stage centred on Cauca (n = 8) and Putumayo (n = 6), followed by Nariño (n = 4), Norte de Santander (n = 3), and Vaupés (n = 3). Overlap between documents on cultivation and processing is expected, as processing sites are usually near cultivation areas (UNODC & SIMCI, 2023). Four of 13 documents did not specify where the data was collected regarding the distribution stage. Among the remaining studies, four detailed how cocaine is smuggled out of the country through maritime ports (Abu-Saada & Brown, 2020; Cajiao et al., 2018; Hernández-Mora, 2017b) and terrestrial routes (van Uhm & Grigore, 2021). The remaining studies described the internal distribution of cocaine within Colombia. Commercialisation was the least covered stage. Only three documents outlined commercialisation dynamics in major urban areas of Colombia, including Bogota (Pulgarín Morales, 2020), Medellin (Blattman et al., 2024), and Santa Marta (Alcaldía Distrital de Santa Marta - Secretaría de Salud del Distrito de Santa Marta & UNODC, 2018), and one document did not specify any departments. Annex 3 lists the locations and stages of the cocaine trade covered by each study.

Thematic analysis

Analysis followed the six steps proposed by Clarke and Braun (2013), synthesised by Clark et al. (2021) as familiarisation, initial coding, theme identification, theme revision, theme review, theme definition and theme evidencing. The analysis followed a deductive approach, the systematic process of identifying themes from qualitative data beginning with existing theories or concepts, which are then applied to qualitative data analysis. In this case, analysis was guided by a crime script framework (Cornish, 1994), underpinned by the Rational Choice Perspective (Cornish & Clarke, 1986) as discussed in the background section.

I familiarised myself with the content of the documents. Subsequently, initial coding (Saldaña, 2015), also called open coding, was performed to develop a range of codes describing the data (Merriam & Tisdell, 2015; Vollstedt & Rezat, 2019). This coding stage focused on descriptive coding – indexing of the data's content – and process coding – emphasising observable and conceptual actions (Saldaña, 2015). Previous studies by Tompson and Chainey (2011) and Chainey and Alonso Berbotto (2022) used a template featuring a list of elements within a crime script. Guided by these, a data collection form was developed to align initial coding with the study's objectives, gathering information on the activities and contextual conditions across the four stages of the cocaine trade: cultivation, processing, distribution, and commercialisation. Themes were then identified across documents and reviewed iteratively (Clark et al., 2021), and a form was designed to collate the data from initial coding into the different stages of the cocaine trade. Lastly, themes were defined through the narrative presented in the results section of this chapter and evidenced using quotes extracted from the documents. In addition to the narrative, a flow diagram was created to illustrate the crime commission process of the cocaine trade across the different stages.

To ensure transparency and traceability, a detailed log was maintained to document various aspects of the research (Bachman & Schutt, 2013; Merriam & Tisdell, 2015). This log contained dates and keyword combinations used in searches, details of retrieved documents, reasons for inclusion/exclusion in the analysis, coding procedures, and all researcher decisions made during the study.

Interviews of experts

To refine the crime script, semi-structured interviews were conducted with 15 experts, following the recommendations of Chainey and Alonso Berbotto (2022), among others (e.g. van der Valk et al., 2020). These experts had at least five years of experience investigating various stages of the cocaine trade. They represented diverse backgrounds, including academia, non-governmental organisations, law enforcement, government institutions, and independent research or investigative journalism. All interviews were recorded and transcribed with the participants' consent.

The interviews utilised a graphic elicitation approach, presenting participants with the crime script and inviting them to suggest additions (for completeness), deletions (for accuracy and parsimony), and other modifications (for accuracy and precision). Noted for its effectiveness in extracting expert knowledge (Cheng, 1996), this method focuses discussions on a common framework—the crime script (Bravington & King, 2019; Ford & Sterman, 1998). Graphical representations provide concise overviews of complex topics like the cocaine trade, eliciting unique insights from participants (Crilly et al., 2006).

Expert interviews also contributed to validating the script, enhancing the quality of the results (Bowen, 2009; Merriam & Tisdell, 2015; Peters, 2020). Interviews were conducted sequentially, with feedback from each participant promptly integrated into the crime script before the subsequent interview, thereby refining its content iteratively. Validation was achieved after three interviewees successively confirmed that no further adjustments were deemed necessary.

Ethical considerations, consent, and data management

This study received approval from the Departmental Ethics Committee of the UCL's Security and Crime Science Department, and steps were taken to ensure adherence to ethical guidelines and regulations (see Annexes 4 and 5). Experts consented to recorded interviews (see Annexes 6 and 7 for the participant information sheet and consent form). The recordings were stored on my laptop, transcribed and deleted to ensure confidentiality. I excluded any identifying information from the transcripts. I scanned notes and graphical data and saved them without personal data. I recorded participants' roles and expertise, including years of experience and sector affiliation (e.g., academia, NGOs, law enforcement, public sector), in a separate document for documentation purposes. The interviews conducted for this study were part of a broader data collection effort and were also used in the second empirical study. Ethical approval, consent procedures, and data management followed the standards outlined here.

Quality assurance

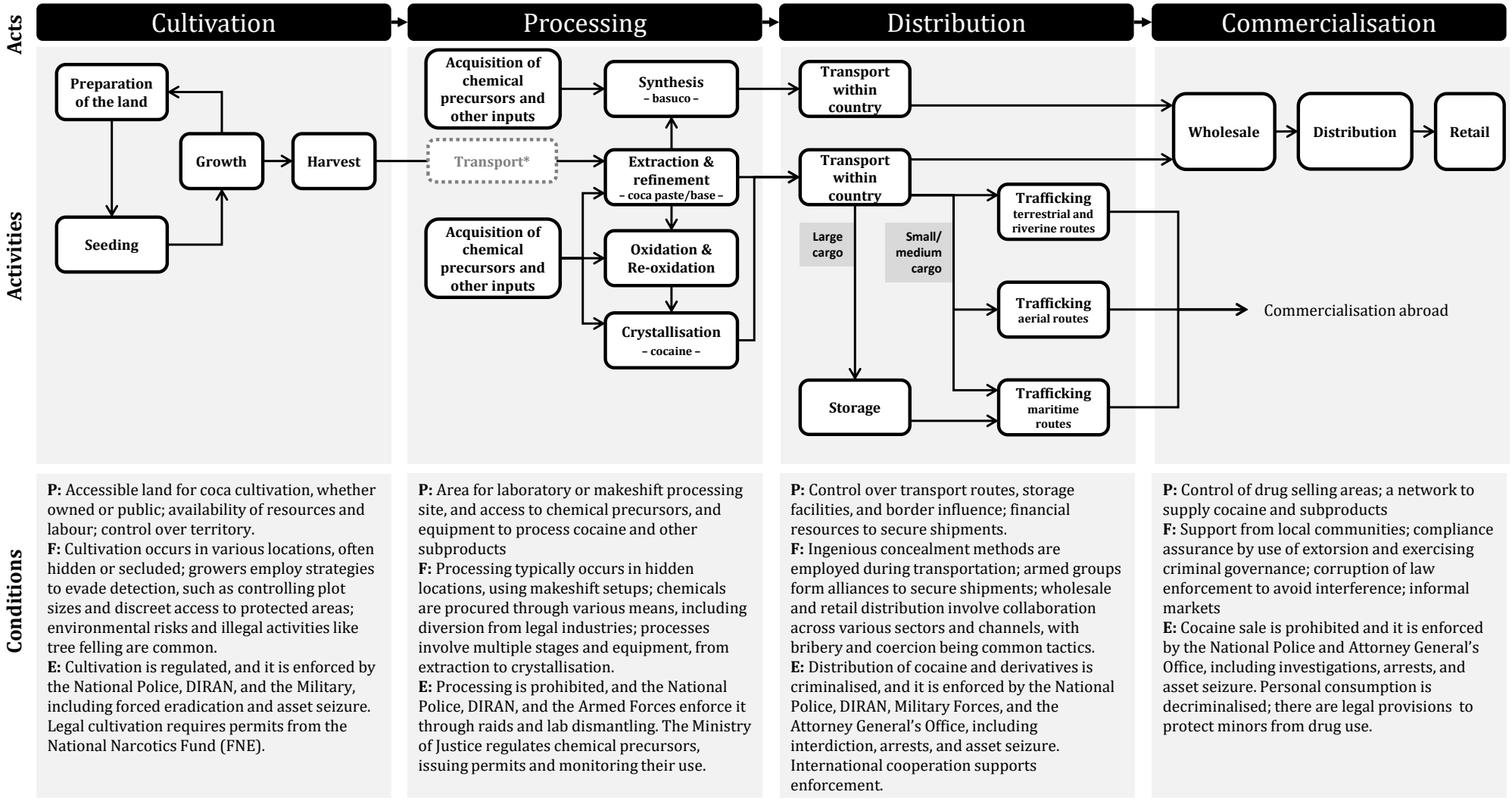
Ensuring the accuracy and reliability of crime scripts is paramount for their utility and reproducibility. To date, evaluations have focused on the quality and completeness of the data used to construct the script but not on the script itself (Dehghanniri & Borrion, 2019). To address this gap, I employed the quality assurance criteria outlined by Borrion (2013). This involved systematically evaluating the crime script's clarity, accuracy, comprehensiveness, and suitability. This assessment ensures that the script is logically structured, accurately reflects the crime phenomenon, covers relevant aspects and is suitable for its intended application (Borrion & Dehghanniri, 2023), i.e., to comprehensively characterise the Colombian cocaine trade, encompassing all stages from coca cultivation to end-user distribution.

Results

Figure 3.3 presents an overview of the cocaine trade crime commission process in Colombia. Conditions are categorised into three groups: prerequisites for activities, facilitators aiding their execution, and enforcement conditions (Tompson & Chainey, 2011)[11]. Table 3.6 lists the roles of individuals across the different stages of the cocaine trade.

The crime commission process is delineated into four acts: cultivation, processing, distribution, and commercialisation, with the latter encompassing both wholesale and retail activities. The consolidation of wholesale and retail stages into one is attributed to limited data availability, particularly concerning wholesale activities. This aligns with existing literature highlighting the clandestine nature of the wholesale segment, posing challenges for research due to a scarcity of participants (Eck & Gersh, 2000; Reuter, 2014). The following narrative provides a detailed analysis of the findings, emphasising the conditions influencing each stage. It synthesises information from documents and interviews, incorporating references to relevant studies where applicable.

[11] Enforcement conditions are detailed in Annex 8.



P: prerequisites; **F:** facilitators; **E:** enforcement

*Transport does not always occur. Harvested coca leaves may be processed by the same harvesters or transported to nearby sites.

Figure 3.3
Crime script summary of the cocaine trade in Colombia

Table 3.6
Roles of Individuals in the Cocaine Trade Stages

Individuals	Stages				Role
	Cult.	Proc.	Dist.	Comm.	
Landowners	■				Provide land for coca cultivation.
Small-scale growers	■				Cultivate coca crops on a small scale.
		■			May be involved in basic processing tasks.
Leaf pickers/harvesters (*Raspachines*) /labourers	■				Hired to pick coca leaves during harvesting and perform various other tasks in cultivation.
		■			May be involved in basic processing tasks.
Armed groups	■				Control territory, enforce compliance, and provide security for cultivation sites.
		■			Protect processing sites and enforce compliance.
			■		Secure transportation routes and storage facilities, facilitate logistics for trafficking abroad, and enforce compliance within the distribution network.
Drug traffickers	■				Own and oversee large-scale coca farms.
		■			Oversee extraction, refinement, and processing stages; procure chemicals and oversee processing operations.
			■		Oversee transportation, storage and trafficking of cocaine. Enforce compliance within the distribution network.
				■	Supply narcotics to retailers and coordinate logistics.
Chemists (*Quimiqueros*)		■			Specialised in chemical processes involved in cocaine production.
Emissaries		■			Representatives of drug traffickers who travel to processing sites to verify the requisite purity before dispatching the product.
Commissioners			■		Coordinate transportation and ensure smooth delivery of cocaine; they also establish the buying price.
Coordinators/note-takers (*apuntadores*)			■		Facilitate transactions and communication between parties. They act as brokers in the process of collecting cocaine from various drug traffickers.
Investors/Invisibles			■		Insure transportation and operations against risks. They also invest in the transportation, storage, and distribution of cocaine and generally provide financial support to the drug trafficking operation.
Smugglers/Mules/ Drug runners			■		Transport cocaine across borders or within the country.
Gangs and dealers				■	Control retail drug markets and enforce territory. Sell drugs at the street level. Dilute or "cut" the drugs with other substances, both psychoactive and non-psychoactive, to increase the quantity and boost profits.

Cultivation

Coca fields in Colombia are situated both in plain sight and in hidden locations. They are often found near municipalities, within protected natural reserves, or in secluded areas away from urban areas. Small-scale cultivation is carried out by individual growers, including those from indigenous and Afro-Colombian communities. Some growers cultivate coca on their own land, while others grow it in public areas, including natural parks. This is partly because these communities, including indigenous and Afro-Colombian individuals, settled in these areas before they were designated as protected. In other cases, growers travel to protected areas to cultivate coca crops. Large-scale coca farms, on the other hand, are typically owned by drug traffickers.

The absence of formal land ownership reduces the risks and costs associated with coca cultivation. If growers do not own the land, the potential repercussions of detection are limited to losing the crops, not forfeiting any land ownership rights. Those who grow coca on public land perceive lower risks, as they believe there are no specific stakeholders overseeing the land to prevent illicit activities (Bernal et al., 2020).

Growers employ various strategies to avoid detection by authorities. A common one involves controlling the size of coca plots (UNODC & SIMCI, 2021). Another is to access protected areas discreetly. For instance, some growers reportedly navigate through natural reserves by boat, turning off the motor and rowing quietly for about 15 minutes before concealing their boat with vegetation (Narváez Remuy, 2019). If their illicit activities are discovered, growers may resort to bribery to prevent crop removal.

Before coca crops can be cultivated, the land must first be cleared of weeds and debris, often involving illegal tree felling, particularly in protected natural parks. The timber from these illegally felled trees is frequently sold on the black market. Land preparation also involves obtaining supplies such as fertilisers through an informal credit system, where agricultural suppliers provide products on informal credit to be repaid once the harvest is sold. Tools like chainsaws, machetes and axes are used in land preparation processes. After preparing the land, coca crops are planted using seeds or stalks obtained through informal credit systems or from neighbours. Growers select coca varieties based on availability and productivity[12]. Some maintain seedbeds to grow new plants, replacing old ones continuously or those destroyed by fumigation or law enforcement. Some even resort to bribery to prevent the uprooting of their crops.

[12] Productivity regarding how many leaves they produce and how much of the coca alkaloid they can extract later in the processing stage.

Coca crops reach peak productivity between 2 to 4 years, prompting growers to replant once this cycle ends. Throughout growth, crops are often fumigated. However, the chemicals used for fertilisation and fumigation pose environmental risks. Waste from packaging, including fertilisers and fumigating agents, is left on the land, contributing to environmental contamination.

Following growth, coca plants are harvested. Known as "la raspa", this process entails manually removing the leaves from the coca plant. The crop owners perform this task and hired harvesters. Commonly referred to as "raspachines" or "jornaleros", these temporary workers are hired during harvesting seasons, travelling between sites as needed; they may also perform various tasks other than leaf picking, like helping to prepare the land for seeding. Harvesters wrap cloth around their hands to protect them from injury and irritation. Payment for raspachines is based on the mass of the harvested leaves. Equipment for harvesting includes duffel bags and burlap sacks for packing the leaves. Raspachines are provided with essential amenities such as sleeping mats and food for the duration of their work. After harvesting, the leaves are sold to makeshift labs for conversion into paste, the initial processing stage. Harvested coca leaves are typically carried by pack animals to nearby sites, where they can be processed, sometimes by the same harvesters.

Reports from 2023 indicate a variation in prices at this stage, from as high as 1.37 USD to 0.52 USD per kilogram, putting farmers under significant economic strain and contributing to hunger; this price decline contrasts with the continued demand for cocaine and the stability of prices abroad (Doherty, 2023). Researchers from the Washington Office on Latin America (WOLA) suggest several factors behind this decline, including an increase in coca crops in Bolivia and Peru, changes in military and police leadership, the takedown of top criminals, the erosion of hierarchy within armed and criminal groups, and criminal organisations establishing their own cultivation and distribution networks, with some shifting from cocaine production to precious-metals mining (Isacson, 2023).

For coca growers, cultivating coca provides a means of survival and educational opportunities for their families. The consistent demand for coca leaves and paste and the ease of commercialisation enable growers to sustain themselves in regions lacking legal crop commerce infrastructure. An example of the difficulty in the commercialisation of legal crops, over growing coca, was expressed by one harvester (Narváez Remuy, 2019, p. 71, translated),

> I don't cultivate chagra – the indigenous term for legal crops – or sócalo. I grow around 300 plantain plants and yield about 200 bunches. However, there's no market for it. Transporting it to Puerto Asis – the nearest town – takes four hours, or to Puerto Leguízamo – another nearby town – it's a three-hour journey by river. It's expensive. Even if I find a buyer, it's often not worth the effort, resulting in losses and sunburn for no gain.

In other cases, harvesting coca becomes a means to maintain a certain lifestyle. Another harvester remarked, "I work to afford branded clothes like Tommy Hilfiger, American jeans, quality shoes, a good motorcycle, an iPhone, and to travel to Neiva, Pitalito, and Medellín. I enjoy fine beers like Corona and Old Parr whiskey" (Narváez Remuy, 2019, p. 71, translated).

Processing

Processing coca leaves into cocaine involves three steps: extraction and refinement, oxidation and re-oxidation, and crystallisation. This process is demand-driven, with input material acquired as needed. Drug traffickers procure the chemicals necessary for processing paste, base, and cocaine through various means, including diverting chemicals from the legal industry, contraband, and clandestine production.

During extraction, the coca alkaloid is separated from the leaves by chopping them and mixing them with quicklime or cement, sometimes with the addition of a fertiliser. The mixture is stirred and then poured into plastic bins, where it undergoes further processing with chemicals, such as gasoline, sulfuric acid, water, sodium bicarbonate, acetone, and caustic soda, to produce coca paste. Refinement involves converting the coca paste into coca base by mixing it with potassium permanganate (perga), and cooking and drying it. Some of this product is then processed into basuco. Extraction and refinement typically occur in makeshift shacks at large coca growing sites or specialised locations known as "cocinas" or "chongos". The equipment includes plastic bins, choppers, cloths, scales, and sticks. Coca leaves may be processed into paste and base either by coca growers, labourers, or specialised chemists known as "quimiqueros." In various regions including the Pacific, Putumayo-Caquetá and Amazon, specialists often collect leaves from various growers and process them. In contrast, in other areas, growers handle the processing themselves. Once processed, the coca base or paste is collected and stored at farmhouses, then transported via motorcycles or public transport to buyers appointed by drug traffickers (also called "commissioners"). It is them who determine the purchasing price. The average prices for 1 kg of coca paste and 1 kg of coca base in 2022 were 1,731,800 Colombian pesos (approximately 401 USD) and $2,554,000 (approximately 591 USD), respectively (Observatorio de Drogas de Colombia, 2022).

The process advances to oxidation/re-oxidation and crystallisation following extraction and refinement. Oxidation/re-oxidation is a chemical procedure to achieve higher purity levels, using substances such as sulfuric acid, ammonia, and potassium permanganate. Like extraction and refinement sites, re-oxidation facilities are often shacks situated in large coca-growing areas or specialised locations. The equipment used in these sites includes washers, rudimentary filters, and stoves.

Crystallisation is the last step and requires additional substances and more sophisticated equipment. Crystallisation sites are strategically concealed in challenging-to-reach places close to water sources, including jungles, mountains or mangroves. Equipment essential for this stage includes double boilers, ovens, microwaves, dryers, large lamps, and rustic filters. At this point, emissaries of drug traffickers travel to processing sites to verify the requisite purity before dispatching the product. The average price for 1 kg of cocaine was 5,243,200 Colombian pesos (approximately 1214 USD) (Observatorio de Drogas de Colombia (ODC), 2022).

Distribution

Once cocaine is produced, it is transported along various routes, including rivers, terrestrial paths, and roads, within the country. To secure it, armed groups often form alliances and operational pacts, especially with drug traffickers, both domestically and across borders. Cocaine is ingeniously concealed during transport, sometimes concealed within timber acquired legally or illegally. Drug traffickers oversee its distribution, either for exportation or domestic wholesale and retail distribution. Concealment methods for smuggling cocaine across borders are diverse and sophisticated, including ingesting cocaine capsules or affixing them to the human body (referred to as "mules"), concealing within containers or other cargo at airports and ports, in postal packages, luggage, or employing camouflage or chemical masking techniques. However, the practice of ingesting cocaine poses significant health risks and dangers to the individuals involved (Traub et al., 2003).

Large quantities of cargo are typically stored in "nurseries," which are houses and warehouses strategically located near departure points for shipment via maritime routes. The shipment process involves the collaboration between various individuals. The Gulf Clan ("Clan del Golfo"), for instance, are an armed group notorious for playing a pivotal role in the logistics of this stage, handling the storage and transportation of cocaine abroad while managing the influx of profits. They collect cocaine from different traffickers and levy a fee for shipment services rendered.

Additionally, as Cajiao et al. (2018: 17, translated) explain the Gulf Clan possess the financial means to bribe authorities to expedite the shipping process:

> Apart from sending their production, they are in charge of gathering drugs from different drug traffickers (small, medium or large) who are charged 15% of the value of the shipment to send it to destinations such as Italy, Spain or other countries (…) the 'Clan del Golfo' controls the ports of departure for the drug and has the economic capacity and international contacts to bribe the authorities and facilitate the transit of large drug shipments.

Individuals known as coordinators or note-takers, referred to as "apuntadores" in Spanish, serve as brokers in the process of collecting cocaine from various drug traffickers. They establish contact with intermediaries or are contacted themselves to arrange for the collection of cocaine for shipment. These coordinators take on the responsibility for the shipment and coordinate with entities such as the Gulf Clan. Additionally, they arrange for the shipment to be insured by individuals willing to invest in the operation. These investors may not be directly involved in or knowledgeable about the specifics of drug trafficking operations. Interviewee 5 highlighted how many individuals working in various professions around the world indirectly benefit from the cocaine trade: "They are not familiar with the crops, but they have the capacity to invest, and through a broker, they invest in the business (…) People in suits, quietly living all over the world and making money from this stuff." (translated). Interviewee 15 referred to these individuals as the "invisibles," describing them as entrepreneurs who become involved in the cocaine trade because of their business ventures rather than direct criminal ties.

In the event of a lost shipment, the note-taker must compensate the drug traffickers using the insurance payout. The insurance payout refers to a financial compensation provided to drug traffickers in the event that a shipment is lost or seized. The payout ensures that the traffickers or intermediaries do not incur a complete financial loss, as the insurance covers a portion of the shipment's value. Small to medium-sized shipments are clandestinely transported via maritime, aerial, terrestrial, or riverine routes by armed groups, drug traffickers, and dissidents from former FARC-EP factions. Maritime shipments typically depart from ports and coastal areas aboard large ships, speedboats, sailboats, fishing vessels, submersibles, and semi-submersibles. Other exit points include international airports, illicit aircraft, and formal and informal terrestrial crossings.

The distribution phase of the cocaine trade is intertwined with various illicit activities, including the construction of illegal infrastructure, corruption through bribery and money laundering, and the pervasive threat of violence. Armed groups in regions with limited road networks, such as the Amazon, have established clandestine roadways to streamline the distribution process. Proceeds from drug trafficking are often laundered through illicit mining operations, while intermediaries and distributors use channels like chain stores to conceal the illegal origins of their funds. Collaboration with corrupt customs officials enables note-takers to identify available containers and their destinations, with additional bribery ensuring that containers evade inspection by law enforcement.

Violence, ranging from intimidation to outright murder, is a common tactic employed by drug traffickers and armed groups to enforce compliance within the distribution network. In one interview, a coordinator revealed the grim reality of the trade: "We've lost numerous colleagues and friends. Failed shipments result in significant casualties. Without this fear, criminal organisations would lose their grip, and everyone would attempt to exploit them" (Hernández-Mora, 2017b, translated).

Territorial control by armed groups and its involvement in cultivation, processing, and distribution stages

Conflicts for territorial control over strategic areas for cocaine trade (from cultivating areas to trafficking corridors) have risen between armed groups after the signature of the peace agreements and the subsequent demobilisation of the FARC-EP guerrilla group (UNODC & SIMCI, 2021). These include groups consolidated by dissidents, that is, previous members of FARC-EP that did not demobilise and submit to the justice system (UNODC & SIMCI, 2021). Armed groups control cocaine trade areas for cultivation, processing and distribution. FIP and adelphi (2021) explained that the expansion of coca cultivation for drug trafficking and the resurgence of trafficking routes have exacerbated insecurity in several regions. This decline in security is driven by conflicts between illegal armed groups and criminal organisations competing for control over key areas for illicit crop production and cocaine trafficking routes.

These territorial struggles fuel a cycle of violence and fear, as control over territory enables armed factions to dominate all aspects of the cocaine trade, including land seizures, coca leaf pricing, and the coercive recruitment of individuals, ranging from farmers to indigenous and Afro-Colombian communities. Even minors are targeted, with organised criminal groups exploiting them for recruitment to perform activities such as extortion, drug production, smuggling, forced sex work, assassination, and frontline combat roles (Charles, 2021b).

Authorities can also be intimidated. For example, a shipment coordinator said that drug-traffickers would meet customs and antinarcotics police officers and offer them 30 million pesos for 'collaborating' with them (about US$7000), and then added: "when you are handed 30 million pesos for meeting you, you know that you can die if you don´t accept them" (Hernández-Mora, 2017b).

Furthermore, the imposition of armed groups often obstructs governmental initiatives, leading to a dearth of development opportunities for affected communities. This imposition is compounded by the pervasive threat of violence, compelling many to flee their homes in search of safety elsewhere. Community members are hemmed in this environment by intimidation and restricted mobility. At the same time, those who dare to oppose the status quo face dire consequences—illustrated by the chilling warning that even advocating against environmental destruction could result in lethal reprisal (Van Dexter & Visseren-Hamakers, 2020). Moreover, the proliferation of cocaine-related activities not only erodes the cultural fabric of indigenous and Afro-Colombian societies but also fuels a surge in addiction among community members. In this context, organised crime groups wield a complex image, perceived by some as protectors, business partners, or even arbiters of social justice, yet simultaneously regarded as adversaries to peace and stability (van Uhm & Grigore, 2021).

Commercialisation[13]

Cocaine, basuco, and, to a lesser extent, coca paste/base are trafficked within national borders. Likened to crack cocaine, basuco is predominantly traded within borders due to its lower cost and heightened addictive potency compared to cocaine, as noted by Interviewee 4.

The wholesale and retail of these substances are controlled by drug traffickers who supply dealers operating in various settings, including public areas, tourist spots, and event venues. Minors are often coerced or groomed into becoming drug runners and dealers. The sale and purchasing of cocaine typically occur through trusted networks and are often arranged via social media platforms, although deception between buyers and sellers is uncommon. Moreover, retailers frequently "cut" (i.e., dilute) the drugs with other substances, both psychoactive and non-psychoactive, to increase the quantity and boost profits. Retail transactions, such as purchasing homes and cars, also occur in public and private settings. As noted in the processing

[13] Most of the data coded for this stage is based on the account found in Blattman et al. (2024) about gangs in Medellin. Therefore, this section first provides a summary of this account. The narrative is then complimented with data found in the other documents.

stage, the average price for 1 kg of cocaine was 5,243,200 Colombian pesos (approximately 1214 USD) (Observatorio de Drogas de Colombia, 2022) in Colombia. For comparison, the price of 1 kg of cocaine in 2021 was 34,611 USD in the United Kingdom and 30,500 USD in the United States (UNODC, 2024a).

In Medellin, the wholesale drug trade is overseen by powerful figures known as "Razones," who supply narcotics to retail gangs referred to as "Combos." Razones establish long-standing relationships with the combos in their territories, exerting control over pricing and coordinating drug distribution, while allowing the combos to maintain autonomy and choose their own leadership (Blattman et al., 2024). Combos maintain territorial control within their areas of operation using various tactics, such as bribing police to enable uninterrupted drug sales and other illicit activities, enforcing debt payments, mediating community disputes, and engaging in loan sharing and extortion. Alongside these illegal activities, they foster loyalty and protection among residents, shielding them from law enforcement, internal conflicts, and rival gangs. The following quotes are illustrative of these dynamics:

> …the neighbors love us, do not rat us out to the tombos [cops], watch us doing our stuff and do not interfere, and let us know when the police are coming. (Blattman et al., 2024, p. 14)

> …the police station is across from our headquarters, and they never bother us. They know where our drug corners are and who works there. That's why it's important to keep the neighborhood calm: if nothing bad happens, the police don't squeeze us and let us work. (Blattman et al., 2024, p. 14)

Discussion

As Colombia remains the world's foremost cocaine producer, understanding the crime commission process and the contextual conditions facilitating it becomes imperative to facilitate the design of counter-drug policy and interventions. This chapter systematically compiled reliable information on the various stages of the cocaine trade in Colombia since November 2016. It has highlighted the activities, the diverse roles of individuals, and the conditions facilitating the trade, including the influence of armed groups. The aim was to present this information in a useful structured format to understand the trade better. Four stages were scripted: 1. Cultivation, wherein growers cultivate coca crops and harvest coca leaves; 2. Processing, where growers and drug traffickers refine coca leaves into paste or base, subsequently transformed by specialists into cocaine; 3. Distribution, encompassing the domestic dispersal of cocaine by traffickers; and

4. Commercialisation, where traffickers and gangs engage in wholesale and retail transactions with end-users.

The interplay of armed groups, environmental degradation, health risks, and corruption profoundly shapes the cocaine trade in Colombia. Throughout the trade's stages, from cultivation to distribution, these groups exert control through violence, coercion, and forced recruitment, including of vulnerable populations. Environmental damage results from toxic chemicals, deforestation, and illegal road networks, while health impacts arise from harvesting, chemical exposure, smuggling, and the consumption of adulterated cocaine. In the form of bribery, corruption facilitates these criminal activities by mitigating detection risks. The combination of these factors, alongside the strategic control of trade processes by armed groups and gangs, fosters a thriving cocaine trade. This analysis aligns with the UNODC & SIMCI's (2023) report, which highlights the role of strategic locations, institutional fragility, and armed group dominance as key factors in Colombia's cocaine trade.

The comprehensive crime script developed in this chapter combines insights from various sources, including academic literature, grey literature, investigative journalism, and expert interviews. This integrative approach yields several notable benefits. Firstly, it consolidates scattered data, providing a more holistic portrayal of the cocaine trade in Colombia. By corroborating findings from various sources (30 documents + 15 interviews), the script confirms existing knowledge regarding the processes involved in the cocaine trade and the pervasiveness of territorial control and violence (e.g., Mejia & Restrepo, 2013; Millán-Quijano, 2020) and corruption (e.g., Thoumi, 2012) across different stages of the trade. Including expert perspectives enriched the analysis by introducing nuanced insights not necessarily reflected in published reports. For instance, the incorporation of basuco—a derivative of cocaine—is a testament to how expert contributions enhance the comprehensiveness of the script, shedding light on aspects of the trade often overlooked in mainstream literature.

Our study underscores the value of applying crime scripting and analysis to the cocaine trade within Colombia. While existing literature has explored various facets of the cocaine trade, my approach involved systematically identifying and appraising information about the various aspects of the trade and organising it into a single, coherent document. The contribution lies in offering a structured and systematic overview of the entire crime process and demonstrating an approach that others can use to represent complex criminal activities such as illegal trade.

The produced crime script is a versatile tool for understanding, combating, and mitigating the impacts of the cocaine trade. It offers a comprehensive understanding of the crime commission process, allowing for the identification of patterns and differences across trade stages—from cultivation to commercialisation. This nuanced understanding lays the groundwork for identifying operational crimes and harms at each stage. The study's findings indicate that the cocaine trade involves a wide range of criminal activities beyond the direct cultivation, processing, distribution, and sale of cocaine and its derivatives. These include corruption, bribery, violent offences, and environmental transgressions. Aligned to Greenfield and Paoli's (2013, 2022) harm taxonomy for organised crime harm, the findings reveal that the cocaine trade causes various types of harm—such as physical and material damage—across different domains, including individuals, the environment, and government institutions. I argue that the crime script can be used to more systematically identify crimes linked to the cocaine trade and associated harms, thereby enriching our understanding of the trade's criminal implications and harmful effects. The study's findings also show how risks are mitigated through tactics like bribery and exploitation of remote regions, and the existence of economic incentives, limited law enforcement access, and community loyalty despite logistical challenges and the threat of violence. From a situational crime prevention standpoint (Clarke, 1980), the script represents a critical tool for the structured identification of vulnerabilities and intervention points throughout the cocaine trade. As such, it might be helpful to those tasked with identifying strategic ways to disrupt the trade, appraising current counter-drug policies, and facilitating evidence-based decision-making and resource allocation. Additionally, this script can be integrated with other frameworks that cover stages beyond Colombian borders, such as Staring et al.'s (2019, 2023) crime script on cocaine smuggling in the Netherlands. This integration can enhance international cooperation and support efforts to combat transnational organised crime networks involved in drug trafficking. Lastly, the script is a foundation for comparative analysis with other illicit drug trades and organised criminal activities, enhancing our understanding of commonalities and differences across contexts and informing targeted intervention and prevention strategies.

This study also contributes methodologically to the field. Traditionally, the generation of crime scripts has been characterised by intuitive methods, lacking adherence to a strict and recognised scripting protocol (Dehghanniri & Borrion, 2019). Numerous crime script studies relying on Open-Source Intelligence (OSINT) lack a systematic and explicit procedure for document search, selection, and analysis (see comparison of studies in Annex 9). In this research, I employed a method inspired by Chainey and Alonso Berbotto (2022), making several modifications to refine the approach. While I followed their method of identifying and selecting documents using OSINT and coding the data through thematic analysis, I introduced enhancements to the document

search strategy by incorporating systematic review methods. Unlike their reliance on Google searches, my study focused on academic databases for scholarly literature, relevant grey literature sources, and investigative journalism materials. It also incorporated information elicited through expert interviews. These interviews verified activities and connections, streamlined the crime script by eliminating activities that do not consistently occur (e.g., transport between harvest and extraction), and incorporated activities not identified in the thematic analysis (e.g., synthesis of basuco). Finally, I evaluated the crime script using the quality assurance criteria proposed by Borrion (2013). The proposed method shares some features with the framework outlined by Borrion and Dehghanniri (2023). Both approaches emphasise a systematic progression from data collection and information extraction to script development, visualisation, and rigorous verification and validation processes. Dehghanniri and Borrion (2019) advocated more structured approaches to crime scripting to enhance confidence in the resulting scripts and identified methodological deficiencies for rectification. Embracing best practices in content analysis, I have endeavoured to offer a detailed and explicit protocol to ensure replicability, clear sampling and selection criteria, and refinement of keywords for the search (Lacy et al., 2015). In sum, my methodological approach aligns with the call for structured methods in crime scripting, aiming to enhance the robustness and replicability of findings while also addressing methodological shortcomings identified in the literature.

Examining the crime script also provided valuable insights into the relevance of Borrion's (2013) quality assurance criteria. Utilising these criteria led us to uncover elements of the crime script that may have otherwise been overlooked during its development. For example, the criterion of "typology" compelled us to assess the nature of the script—whether it was enacted, planned, or another variant—while "context" demanded a thorough delineation of the contextual environment in which the crime script unfolds. The script's adequacy in terms of parsimony, completeness, precision, and ambiguity was enhanced through iterative revisions by the authors and expert interviews. However, arriving at a specific assessment for each attribute proved challenging. These challenges arose from the lack of a comparative reference for my crime script or a specific assessment method beyond describing my approach to crafting it. For instance, ambiguity could be evaluated by examining how different individuals interpret the script. The quality assurance criteria originate from requirements engineering, where a distinct user or client anticipates a specific design. Adapting them to crime-related issues and scientific inquiry may require further refinement and customisation. The current application of these criteria to crime scripting and scholarly research underscores the necessity for ongoing development and adaptation to ensure their relevance and effectiveness in these contexts.

Like all research endeavours, this study is not devoid of limitations. Documents were not explicitly crafted for this study's objectives, which may lead to incompleteness, misalignment with research aims, biases, and challenges in assessing authenticity and accuracy (Merriam & Tisdell, 2015; Peters, 2020). However, as outlined in the method section, I thoroughly evaluated document sources, with any deemed lacking in quality or trustworthiness discarded. To address potential gaps in information, I used a template which outlined that the cocaine trade comprises four stages: cultivation, processing, distribution, and commercialisation, the last of which is composed of two main activities: wholesale and retail. Following Cornish's guidance (1994), the template facilitated the identification of knowledge gaps, particularly in the wholesale and retail stages.

While existing crime scripts focusing on illicit drug commercialisation offer valuable insights (Bright & Delaney, 2013; Jacques & Bernasco, 2013; Mantilla, 2021; Sytsma & Piza, 2018), it is important to acknowledge the diversity of drug markets. These range from seemingly serene locales like the Red-Light District (Jacques & Bernasco, 2013) to the notably violent open-air markets such as the Bronx market in Bogota (Mantilla, 2021), and those near educational institutions (Willits et al., 2015). Although interviewees didn't provide detailed specifics, they alluded to a wide array of drug markets in Colombia. Another gap in understanding pertains to how the cocaine trade operates in cyberspace. Only one document (Pulgarín Morales, 2020) briefly mentioned the use of social networks to facilitate dealings with drug dealers in Colombia, lacking further elaboration. However, some research (e.g., Dolliver et al., 2018; Foley et al., 2019; Rawat et al., 2022) and the UNODC (2023) have highlighted the substantial role of cyberspace in drug trafficking. Insight from Lavorgna's (2014) crime script on internet-mediated drug trafficking in the United States, Netherlands, and Italy, and Leontiadis and Hutchins' (2015) script on the commercialisation of prescription drugs for illicit drugs on the Internet may offer partial understanding. Other crime scripts focusing on drug markets on the darknet (e.g., Jardine, 2021; Joyce, 2023; Morgenthaler & Leclerc, 2023) could provide valuable insights. However, the applicability to a developing country like Colombia, with distinct internet access and usage patterns, necessitates caution (Giommoni et al., 2024; OECD, 2017).

Another limitation of this study is the reliance on a single coder for the thematic analysis, precluding inter-rater reliability assessment. While efforts were made to enhance the credibility and trustworthiness of the findings through rigorous coding procedures, ongoing reflexivity and expert interviews, multiple researchers' lack of independent coding may introduce a potential source of bias or subjectivity in interpreting the data (Clark et al., 2021). The qualitative nature of this study limits the generalisability of findings to other contexts, affecting external validity.

This study has paid limited attention to money laundering, a significant aspect of the cocaine trade. While the primary focus of this research has been on the material flows of the cocaine trade—tracing the movement of coca leaves, coca paste, base, and cocaine through its various stages—money laundering plays a crucial role in facilitating and sustaining these activities. van Santvoord and van Ruitenburg (2022), have offered valuable insights into the financial dimensions of cocaine trafficking, particularly through a 'financial crime script' which tracks the proceeds, costs, and means of payment for criminal organisations. Building on this work, Snaphaan and van Ruitenburg (2024) advanced the concept of financial crime scripting by proposing a method and framework that widens the scope of traditional crime scripting. While crime scripting allows for the generation, organisation, and systematisation of knowledge regarding the procedural aspects of crime commission, Snaphaan's framework integrates a financial perspective, zooming in on the money flows associated with various profit-driven crimes. This study provides a different perspective, focusing on the material flows of the cocaine trade, in contrast to the financial focus of these studies. The aim of this research was to provide a panoramic view of the material activities involved in the trade, and, as such, it did not prioritise money laundering, which is more accurately categorised as an operational crime. However, the importance of money laundering within the broader cocaine trade cannot be overlooked. The next chapter of this thesis will address this gap by identifying and examining the operational crimes that sustain the trade, including money laundering, thereby offering a more comprehensive understanding of the entire criminal process. Future research could benefit from integrating insights from material flow scripts and financial crime scripts, fostering a more holistic analysis of the cocaine trade.

Conclusion

This study presents a comprehensive crime script of the cocaine trade in Colombia, analysing its processes and facilitating conditions. Through a systematic review of academic literature, grey literature, investigative journalism, and expert interviews, the research reveals the complex interplay of actors, activities, and factors driving this illicit trade.

Findings emphasise the influence of armed groups in controlling territories and impacting various stages of the trade, posing considerable challenges for counter-drug efforts. The environmental damage, health risks, and corruption associated with the cocaine trade further underscore the need for comprehensive interventions.

This study contributes a structured and systematic representation of the cocaine trade in Colombia, filling a gap in existing research. It demonstrates the value of crime scripting as a tool for understanding complex criminal activities and refines existing crime scripting methodologies by advocating for more rigorous and transparent research practices.

Despite limitations related to secondary data and potential biases, this research provides a valuable foundation for future investigations and informs the design of targeted interventions. The developed crime script can facilitate international cooperation in combating drug trafficking and contribute to a deeper understanding of the broader implications of the cocaine trade.

Future research should address identified knowledge gaps, particularly regarding the wholesale stage and the role of cyberspace, and further explore the application and refinement of quality assurance criteria for crime scripts. By advancing our understanding of the cocaine trade, we can contribute to more effective strategies for disrupting this illicit industry and mitigating its associated harms.

Chapter 4. Operational crimes driving the cocaine trade in Colombia

In the preceding study, I developed a detailed crime script outlining the activities involved in the cocaine trade in Colombia. The script is used here to identify the crimes that directly support each stage of the cocaine trade, from cultivation through to commercialisation. These are referred to as *operational crimes*.

Introduction

The Truth Commission's report (2022) on drug trafficking and conflict in Colombia highlights the deep entanglement of the cocaine trade with various crimes, many of which are not drug-specific, including political corruption, judicial manipulation, assassinations, bombings, money laundering, and human rights violations. Before the publication of the report, scholars already examined these associations, focusing on specific crimes or stages of the cocaine trade. Bayona-Rodríguez (2019) investigated the link between coca crops and money laundering while Rettberg and Ortiz-Riomalo (2016) explored the intersection of cocaine trafficking with illegal gold mining. Others concentrated on the commercialisation stage. Mantilla (2021), for example, investigated the relationships between drug markets, sex trafficking, and arms trafficking. The Ministry of Justice and Law of Colombia (MJD) and the Foundation Ideas for Peace (FIP) (2016a, 2016b, 2016c, 2016d, 2016e) examined associations between drug markets and homicides, assaults, and theft. Collectively, these studies show how diverse approaches can be used to reveal the pervasive nature of crime in the cocaine trade.

The United Nations Office on Drugs and Crime (UNODC) and the Drug Observatory of Colombia (DOC) understand that assessing the harms caused by the cocaine trade requires identifying the criminal activities associated with illicit drugs in Colombia. The UNODC-DOC (2015), therefore, initially attempted to compile a list of drug-related offences in the country. Comprising 58 drug-related criminal activities, the list was drawn by systematically examining 373 articles[14] in the Colombian Penal Code (Congress of Colombia, 2000a). The inclusion of a crime type on this list was based on three criteria: (1) a connection to the supply or demand of illicit drugs or the generation of profits within the drug trade, as evidenced by references to keywords such as *production, transformation, obtaining the final product, and commercialisation* (supply); *possessing or carrying quantities exceeding the personal dose or the provisioning dose* (demand);

[14] The universe of criminal types in the Colombian Penal Code concerned those described from Article 101 to Article 473, including the modifications and additions stipulated by law up to December 31, 2014.

or *revenues or earnings derived from drug sales, reinvested into the trafficking chain, laundered into the legal economy, or used to finance other crimes* (profits), (2) references made to illicit drugs in their definitions, and (3) the facilitation of the illicit drug trade. However, the third criterion did not specify the mechanisms that facilitate the cocaine trade, which implies that the criminal activity that is drug-related relies to some extent on the coders' understanding and assumptions about the cocaine trade. Moreover, the UNODC-DOC list goes beyond the scope of this doctoral study as it covers crimes related to any drug or toxic substance, not just cocaine. It also includes crimes with indirect or parallel links to the drug trade, making it harder to identify direct connections to the cocaine trade. According to the UNODC-DOC (2015), crimes with indirect links can be committed with or without the presence of drugs, while those with parallel links may involve drugs but can also be committed independently of them. Furthermore, the list extends to transnational crimes listed in the Colombian Penal Code (Congress of Colombia, 2000a).

While existing harm assessment frameworks help understand the harms associated with cultivation (Greenfield & Paoli, 2022) and trafficking (Paoli et al., 2013), they do not provide a systematic method for identifying the operational crimes that facilitate the cocaine trade. Other classifications, such as those developed by Goldstein (1985) and Reiss and Roth (1993), focus on violent crimes, overlooking other offence types (e.g., financial crimes). Recent efforts by van Uhm et al. (2021) to classify associations between drug trafficking and wildlife crime are limited in scope as they only consider associations between commodity-based organised crimes. Naylor (2003) and Gómez-Quintero et al. (2023) have proposed more nuanced classifications that distinguish between primary and secondary crimes and direct, enabling, and fuelled crimes. This study adopts the latter approach, focusing specifically on the crimes that belong to the operational stages of the cocaine trade (direct crimes) and those that support it (enabling crimes). However, these frameworks could be further detailed to show the mechanisms linking direct and enabling crimes to the cocaine trade, as this would help clarify how specific enabling crimes—such as financial crimes or corruption—sustain and facilitate the trade, thus aiding in the design of more targeted interventions and policies.

Cornish's (1994) classification of crime scripts into 'end-to-end,' 'up-and-down,' and 'side-by-side' offers a valuable perspective for understanding how operational crimes are connected to broader criminal activities. While this study does not build on Cornish's framework, it is worth briefly reviewing his classification to situate this research within the wider context of approaches to categorising criminal activities. Cornish's 'end-to-end' scripts refer to sequences of activities, where each step logically follows the previous one to achieve a final criminal outcome. In the context of the cocaine trade, the previous chapter demonstrated how cultivation, processing,

distribution, and commercialisation form 'end-to-end' concatenated scripts**.** 'Up-and-down' scripts describe hierarchical relationships between criminal activities, where one supports or facilitates another within a broader structure. For example, the illegal procurement of chemical precursors for cocaine processing exemplifies an 'up-and-down' concatenation, as acquiring these chemicals is crucial for the subsequent step of cocaine production. In contrast, 'side-by-side' scripts involve criminal activities that occur in parallel within the same environment but are not necessarily dependent. The operation of drug markets in crime attractor areas (Brantingham & Brantingham, 1995) illustrates 'side-by-side' crimes, where various illicit activities (e.g., illegal gambling, prostitution, drug dealing) coexist and reinforce each other without being sequential or hierarchical (see, for example, Mantilla, 2021). Following Cornish's definition, 'side-by-side' crimes fall outside the scope of this study since they do not play a direct operational role. Cornish (1994) also suggests that synergistic links may create new criminal opportunities or alter existing ones. For instance, van Uhm et al. (2021) showed that wildlife trafficking sometimes relies on pre-established drug trafficking routes. While Cornish's framework provides useful insights into the interconnections between crimes, it primarily focuses on structural relationships rather than the specific operational roles of crimes within the cocaine trade. As such, this study does not adopt Cornish's approach but instead draws on frameworks that distinguish between direct and enabling crimes to examine the cocaine trade's operational dynamics.

The research question for this study is: **Which crime types support the various stages of the cocaine trade in Colombia, and how?** This chapter seeks to identify and analyse the operational crimes in the cocaine trade in Colombia. To achieve this, experts were interviewed, and their insights were integrated with crimes identified through crime script analysis in the previous chapter, the UNODC-DOC list, and the Colombian Criminal Code. The Rational Choice Perspective (Cornish & Clarke, 1986, 2017) guided the analysis, particularly in understanding offenders' motivations and decision-making processes. Porter's value chain framework (1985) was employed to examine the process-oriented nature of the cocaine trade (Cardoso et al., 2022; Gottschalk, 2009) and the crimes that facilitate its various stages.

Integrating rational choice and the value chain framework to examine operational crimes

The approach adopted in this study is underpinned by the assumption that criminal behaviour in the cocaine trade is goal-driven. In line with the rational choice perspective, I hypothesise that many operational crimes—such as illegal procurement, recruitment, or smuggling—are committed to support the trade's functioning and help the perpetrators maximise their rewards

or reduce the risks involved. Decisions to procure chemical precursors for processing or using violence to maintain control over distribution networks, for instance, can be seen as direct responses to the trade's operational requirements. However, to understand why these specific crimes are committed and how they contribute to the overall functioning of the cocaine trade, I propose to adopt the value chain framework. This framework, alongside the Rational Choice Perspective, will be used to identify the trade's operational requirements and reveal how offenders satisfy them by committing crimes (Figure 4.1).

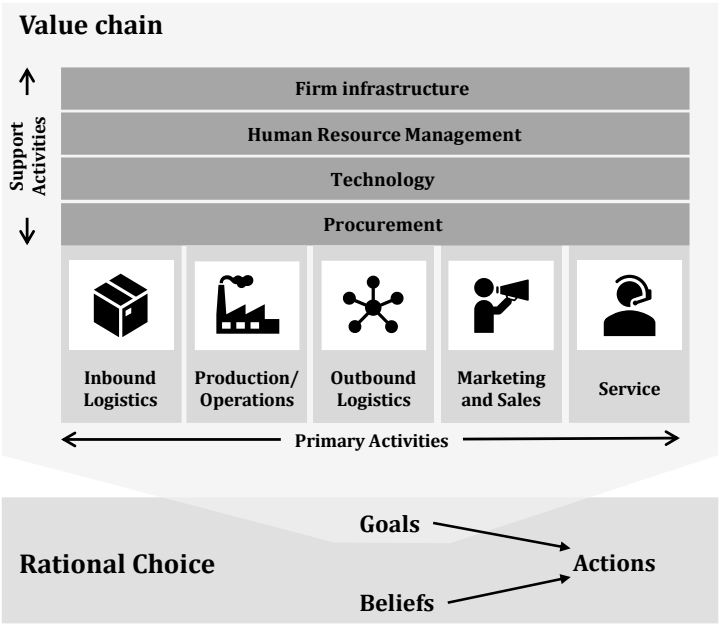


Figure 4.1
Identifying operational crimes by combining the Rational Choice Perspective and the Value Chain Framework

Rational Choice Perspective

As discussed in the literature review chapter, the Rational Choice Perspective (Cornish & Clarke, 1986) is central to criminal behaviour analysis. This theory posits that criminal actions are purposive and (mostly) rational, driven by the goals, beliefs, and constraints faced by offenders (Cornish & Clarke, 2017). Offenders commit crimes to achieve specific objectives rather than acting out of stable dispositions or irrational impulses. As Bullock et al. (2010) and Desroches (2005) concluded, this perspective is particularly applicable to organised crime and utilitarian offences like drug trafficking. Evidence from studies such as Zaitich's (2002) and Toth and Mitchell (2018) highlights that offenders involved in the cocaine trade make calculated decisions to manage risks and optimise outcomes, supporting the applicability of rational choice theory in examining the commission of operational crimes.

Value Chain Framework

Porter's (1985) Value Chain Framework examines the sequence of activities within an organisation that contributes to creating and delivering a product or service. It distinguishes between *primary activities*, which are directly involved in the physical creation of a product or service and its delivery to customers, and *support activities*, which facilitate the efficient operation of primary activities and each other. Primary activities include inbound and outbound logistics, production and operations, marketing and sales, and customer services, while support activities encompass technology development, human resources management, procurement and firm infrastructure. The firmwide functions include general management, planning, finance, accounting, legal, government affairs, and quality management (Porter, 2008).

The crime script developed in the previous chapter and other publications can illustrate the primary and support activities of the cocaine trade's value chain across all four stages: cultivation, processing, distribution, and commercialisation (see Table 4.1).

Table 4.1
Examples of primary and support activities in the cocaine trade

		Cultivation	Processing	Distribution	Commercialisation
Primary activities	**Inbound logistics**	Management of equipment and agricultural inputs	Transport and storage of chemical precursors		
	Production /Operations	Grow coca bush, pick leaves.	Transform coca leaves into coca base/paste, bazuco, and cocaine		
	Outbound logistics			Transport of cocaine and sub-products across borders	Transport of cocaine and sub-products to dealers and consumers
	Marketing and sales	Pricing of coca leaves	Branding of processed cocaine Tik Tok to promote cocaine processing	Pricing of cocaine and sub-products according to the distribution stage	Advertisements of drugs online
	Customer service			Brokerage service to ensure cocaine shipments	Establishment of dealer-user relationship
Support activities	**Firm infrastructure**	Planning of future crops	Quality control	Management of proceeds	Governance by criminal gangs
	Human resource management	Recruitment and management of labourers		Recruitment and management of 'mules'	Recruitment and management of dealers
	Technology development	Tech. to improve the productivity of coca bush, to protect coca bush from pesticides and aerial spraying	Tech. to improve alkaloid extraction from leaves and to produce chemical precursors	Tech. to smuggle and transport cocaine and sub-products	Tech. like darknet marketplaces to reach consumer markets.
	Procurement	Procurement of equipment and agricultural inputs	Procurement of chemical precursors	Procurement of transport and storage facilities	Procurement of transport and storage facilities

Primary activities within the cocaine trade's value chain are essential to the direct production and distribution of cocaine. **Inbound logistics** involve receiving and storing inputs such as agricultural products, coca leaves, and coca paste. Moving on to **production and operations**, the transformation of coca leaves into paste and base occurs, followed by the refinement into cocaine. **Outbound logistics** include collecting, storing, and distributing cocaine and related products to buyers, facilitated by logistics, storage, and transport facilities, as detailed in Aschner and Montero (2020). **Marketing and sales** activities encompass setting prices and promoting cocaine through various channels, including social networks. For instance, Fuller et al. (2023) discuss advertisement strategies employed online to commercialise cocaine. Social media platforms like TikTok have also been used by coca growers, with videos produced by cocaine processors aiming to 'humanise Colombia's cocaine workers,' as noted by Singh (2021) in their BBC news press release. **Customer service** involves brokerage services and establishing dealer-buyer relationships based on trust, as discussed in Taylor and Potter (2013).

Support activities underpin and enhance the effectiveness of the primary activities in the cocaine trade. **Firm infrastructure** activities include planning, gang governance, and quality control measures. For instance, the purity of coca bases is standardised through the reoxidation procedure, and emissaries verify the quality of the product at processing sites before making purchases. **Human resource management** is integral across all stages of the cocaine trade, from leaf pickers during cultivation to dealers during commercialisation. **Technology development** plays a crucial role, with advancements such as optimised cultivation practices and concealment tactics enhancing productivity and smuggling efforts, including the use of submersibles for drug trafficking, as evidenced by UNODC & SIMCI (2023), the Colombian Navy (Armada de Colombia, 2020), and Rojas-Sanchez et al. (2020). Unmanned marine vehicles, which Colombian and Mexican groups have pioneered, are also reported to be employed in cocaine trafficking (Hernández Gutiérrez, 2024). The rise of darknet platforms like Silk Road marked a transformative criminal innovation that revolutionised drug distribution by enabling anonymous online sales through encrypted communication, cryptocurrency payments, and global marketplaces, complicating law enforcement efforts (Aldridge & Décary-Hétu, 2014). Finally, **procurement** involves securing essential resources and equipment throughout the value chain, such as agricultural inputs, chemical precursors, and processing equipment.

The following sections empirically demonstrate how operational crimes can be identified by analysing the cocaine trade in Colombia through the lens of the value chain framework and shedding light on the operational requirements that offenders must satisfy.

Method

This study sought to identify and examine the crimes that directly contribute to each stage of the cocaine trade in Colombia. For this, an initial set of operational crime types was elicited from experts and refined through a multi-step process. The interview data were integrated with the findings from the crime script analysis, validated against the Colombian Penal Code (Congress of Colombia, 2000a), and compared with the list drawn by the UNODC-DOC (2015). The resulting list was then analysed, using the rational choice perspective and the value chain framework, to reveal the mechanisms linking all identified operational crimes to the trade.

Interviews

Selection of participants

A purposive sample comprising 26 experts (21 Colombian and 5 international) – identified through the document analysis conducted in the previous chapter and recommendations from an expert[15] with over 10 years of experience in Colombian drug policy – were invited to participate in the study. Among them, 15 (27% female) – including 13 Colombian and 2 British – agreed to be interviewed. Bringing a broad range of perspectives on the stages of the cocaine trade, the group included 5 researchers or consultants at non-governmental agencies (5, 33%), 4 public servants (27%) (e.g., from the Ministry of Justice and Law), 2 investigative journalists specialising in drug trafficking in Colombia (13%), and 1 law enforcement officer (6%) (from the Antinarcotics Division of the National Police). All participants had at least five years of experience in the cocaine trade, with 66% (10 participants) having 11 to 20 years of experience (Figure 4.3).

[15] Fluent in English and Spanish, the expert has participated in drug policy design processes for Colombia and in international drug policy forums.

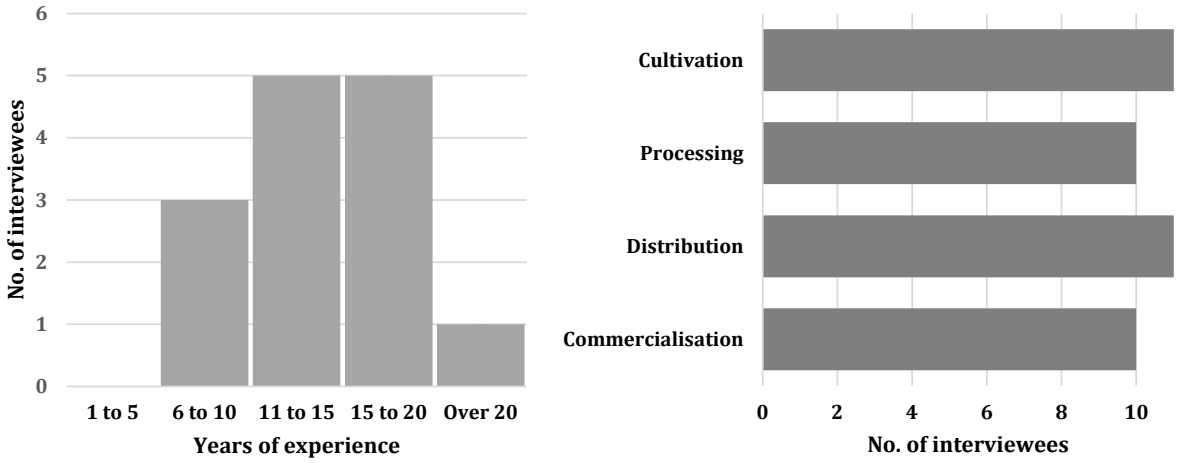


Figure 4.3
Years of experience of interviewees (left); Number of interviewees with expertise about each stage of the cocaine trade (right)

Interview protocol[16]

An interview protocol was designed and piloted with the aforementioned expert. Interviews (13 in Spanish, 2 in English) were conducted online (11) and in person (4) over 10 months (August 2022 - May 2023). Participants were asked to draw upon their expertise to identify crime types that supported the cocaine trade. The crime script, which detailed the activities involved in the cocaine trade, was used as a visual aid to focus the interviews and facilitate the elicitation of operational crimes, consistent with evidence that visual tools can enhance expert interviews and information elicitation (Bravington & King, 2019; Cheng, 1996).

Ethical considerations, consent, and data management

This study was approved by the Departmental Ethics Committee of UCL's Security and Crime Science Department, with measures taken to ensure compliance with ethical guidelines and regulations (see Annex 5). The interviews analysed here are the same as those conducted for the crime script analysis study in the previous chapter. Ethical approval, consent procedures (Annexes 6 and 7), and data management adhered to the same standards (see Chapter 3 for details).

[16] The interviews were conducted in two consecutive stages. The first stage focused on refining and validating the crime script, as detailed in the previous chapter. The second stage aimed at identifying crime types supporting the cocaine trade in Colombia. Consequently, this section details the second stage of the interviews.

Analytic strategy

The analytic strategy followed the six steps depicted in Figure 4.4: (1) extract crimes relevant to the cocaine trade from interview transcripts; (2) compile a preliminary list adding the crimes identified through crime script analysis; (3) revise the list against the Colombian Penal Code (Congress of Colombia, 2000a) to ensure accurate legal naming and classification of crimes; (4) compare the refined list with the UNODC-DOC (2015) list of drug-related crimes to ensure comprehensive coverage; (5) identify and select crimes that directly contribute to the operational stages of the cocaine trade within Colombia; and (6) examine the mechanisms that link these crimes to the cocaine trade using the rational choice perspective and the value chain framework.

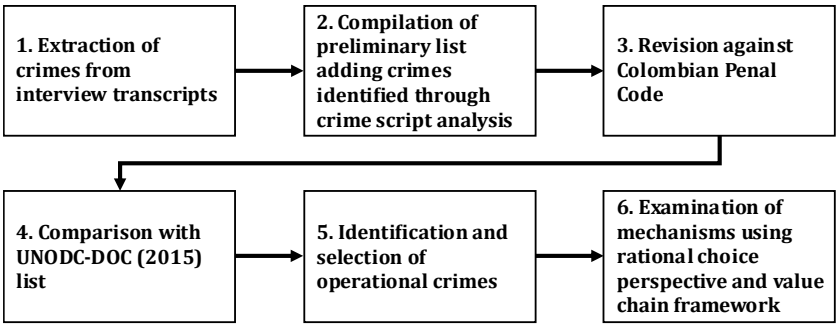


Figure 4.4
Analytic strategy for identifying and examining operational crimes in the cocaine trade

Extraction of crimes from interview transcripts

I began by reviewing each of the 15 interview transcripts to identify criminal activities relevant to the cocaine trade. For each activity, I extracted key quotations from the transcripts. I recorded the contextual information necessary to understand the nature and motivations behind the crimes supporting various stages of the trade. I systematically documented the extracted data using structured forms to ensure consistency and organisation. Each form corresponded to a specific transcript, categorising the identified crimes and their associated quotations according to the stages of the cocaine trade.

Once the data was recorded, I conducted a comparative analysis across all the forms to identify recurring crime types and patterns. This allowed me to recognise commonalities across the interviews. For consistency, I consolidated synonymous terms, such as "murders," "killings," and "homicides," into a single category (e.g., "homicides"). Finally, I synthesised the information into comprehensive forms for each stage of the cocaine trade.

Compilation of preliminary list

Next, I integrated the transcript analysis findings with the crime script analysis results outlined in the previous chapter. This process generated a preliminary list of operational crimes.

Revision against the Colombian Penal Code

The preliminary list of crimes was reviewed against the Colombian Penal Code (Congress of Colombia, 2000a) to improve the accuracy of naming and classification. This step was critical because the terminology used by experts or in documents seldom aligned with formal legal definitions. Cross-referencing these crime types with the Penal Code refined the list for legal accuracy and consistency. This process also helped differentiate between specific incidents and broader crime categories. For instance, the Penal Code distinguishes between "civilian casualties" resulting from armed group confrontations, which are classified as acts of war or conflict-related violence, and "homicides," which typically involve intentional killings linked to personal disputes or criminal acts. Though both involve the loss of life, they are treated as distinct crime types under Colombian law.

During this process, I also addressed variations in the level of abstraction across the identified crime types. Some crimes mentioned in the Penal Code were overly specific or overlapped with others, necessitating their aggregation into broader categories based on shared underlying actions or intent to enhance clarity and coherence. For example, the land-grabbing category encompassed three legal definitions—Land Invasion, Invasion of Areas of Special Ecological Importance, and Illegal Appropriation of the Nation's Wastelands. These crimes were grouped because they all involved the unlawful appropriation or use of land not belonging to the perpetrator, despite differences in the specific context or legal classification. This aggregation streamlined the list while preserving key distinctions for legal or analytical purposes.

Conversely, I also encountered cases where further disaggregation of crime types was necessary due to differences in mechanisms. For instance, I divided the Penal Code's "Trafficking of substances for narcotics processing" into more specific categories: trafficking of medicines used to cut cocaine, counterfeiting of such medicines, the use of front companies to traffic chemical precursors, clandestine production of chemical precursors, contraband of substances used in narcotics processing, and diversion of chemical precursors from domestic trade.

This review also led to the inclusion of five activities suggested through crime script analysis or interviews, but not explicitly recognised as crimes in the original list.

Comparison with the UNODC-DOC (2015) list

I compared the refined list with the UNODC-DOC (2015) list to ensure its completeness, which revealed discrepancies and led to adding 19 more crime types. After comparing the refined list with the UNODC-DOC (2015) list to ensure its completeness, I added 19 more crime types. These additions were made for two key reasons: First, some crimes were explicitly or implicitly suggested in the interviews or crime scripts but had not been initially recognised or classified as distinct crimes. For example, "Construction of semi-submersibles or submersibles for drug trafficking" and "Handling stolen goods (hydrocarbons)" were identified as critical mechanisms in the cocaine trade and its related crimes. Second, other crime types had not been mentioned in the interviews or crime scripts but were included because they appeared on the UNODC-DOC (2015) list. Given that this list specifically addresses drug-related crimes, these additions ensured that my categorisation was comprehensive and aligned with international frameworks.

Identification and selection of operational crimes

Table 4.2 lists the exclusion criteria used to identify operational crimes in the cocaine trade. The selection of the 48 crime types was consulted and validated with a Colombian crime researcher and lawyer with more than 10 years of experience. His expertise was instrumental in improving my understanding of legal definitions, particularly those related to bribery and public and private corruption. For instance, I had initially excluded certain crimes named in Spanish that included terms such as *prevaricato* and *favorecimiento* (both referring to forms of public corruption), *omisión de control* (failure of private-sector individuals to report suspicious financial transactions linked to money laundering), and *cohecho propio* (a specific form of bribery). His insights corrected these oversights and ensured the inclusion of these crime types. Furthermore, his review reaffirmed my decision to exclude crimes under reason 2 of the exclusion criteria, "Law enforcement facilitation or obstruction," such as *culpable facilitation of escape*.

Table 4.2
Exclusion criteria used to identify operational crimes in the cocaine trade

Exclusion Criteria	Description
1. Peripheral association with the cocaine trade	Crimes with only a tangential association with organised crime or the broader criminal landscape, without a discernible role in the operational spheres of the cocaine trade (i.e., criminal portfolio/confluent/fuelled crimes)
2. Law enforcement facilitation or obstruction	Crimes that primarily involve facilitating or obstructing law enforcement efforts rather than directly contributing to the operational processes of the cocaine trade.
3. Outside the scope	Crimes associated with the demand side of the cocaine trade, transnational actions, or substances different from cocaine

All crime types lacking a discernible role in these stages were excluded, even if they had tangential links to organised crime or the broader criminal landscape. This included crime types such as wildlife trafficking, which did not have any association with the cocaine trade other than as part of the criminal portfolio of an organised crime group (OCG), or theft, which may occur in areas where cocaine trade activities develop but do not directly contribute to the trade itself; or arms trafficking, which the cocaine trade may fuel. Crimes related to the demand side of the trade, transnational actions, or other substances were also excluded. Finally, certain crimes, such as favouring and failure to denounce a private individual, were systematically excluded due to their indirect association with the cocaine trade, as they primarily involve facilitating or obstructing law enforcement efforts rather than contributing directly to the trade's operational stages. The list of included and excluded crimes can be found in Annexes 10 and 11.

Examination of mechanisms

I examined the operational crimes using the value chain framework and rational choice perspective. I sought to determine how they individually contributed to or facilitated specific primary or supporting activities within the value chain framework across the stages of the cocaine trade.

Results

In total, I identified 48 types of crime that directly contribute to the cocaine trade in Colombia. I classified each crime type according to i) the stages of the cocaine trade it impacts and ii) the specific function it serves within the value chain. Recognising the diversity of activities within the firm infrastructure category, I further divided this category into three subcategories: governance, finance, and planning. These subcategories represent supporting functions within the cocaine trade. *Governance* refers to activities that maintain the continuity and resilience of the trade; *finance* involves managing and safeguarding illicit profits, and *planning* encompasses strategic organisation and execution of operations. The identified crime types were then mapped to the appropriate subcategories based on the specific function they support within the cocaine trade. The 48 crime types and their classifications are detailed in Figure 5. The results are then examined to understand the connections between these crimes and the cocaine trade.

The results are presented in three sections. the first examines the distribution of crime types across the four stages of the cocaine trade and their value chain functions; the second explains how operational crimes drive activities within the value chain, supported by expert interviews; and the third discusses crimes not included in the operational crime list. I have categorised these as criminal portfolios, fuelled crimes, and confluent crimes.

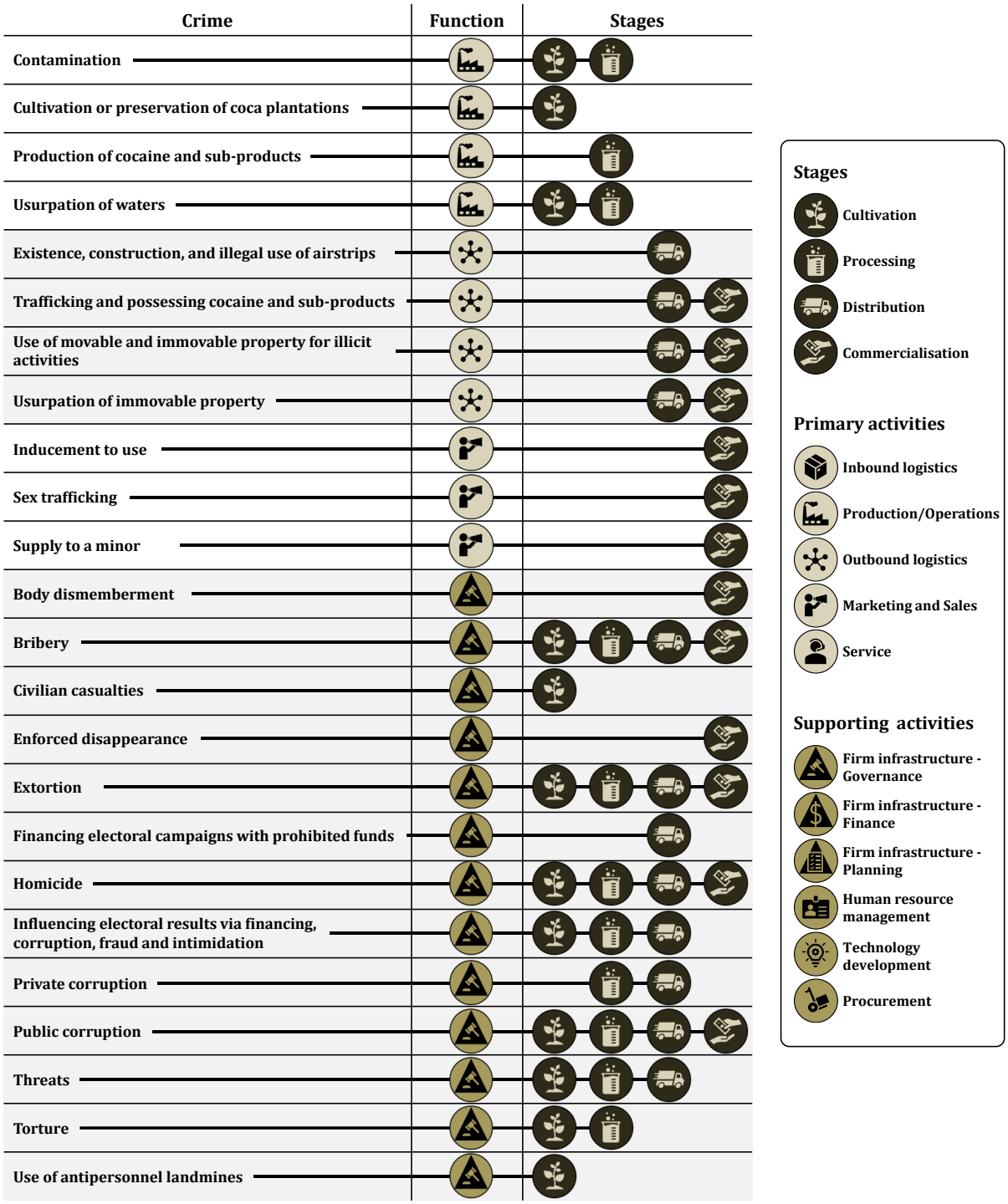


Figure 4.5
Classification of crimes related to the cocaine trade across value chain functions and stages

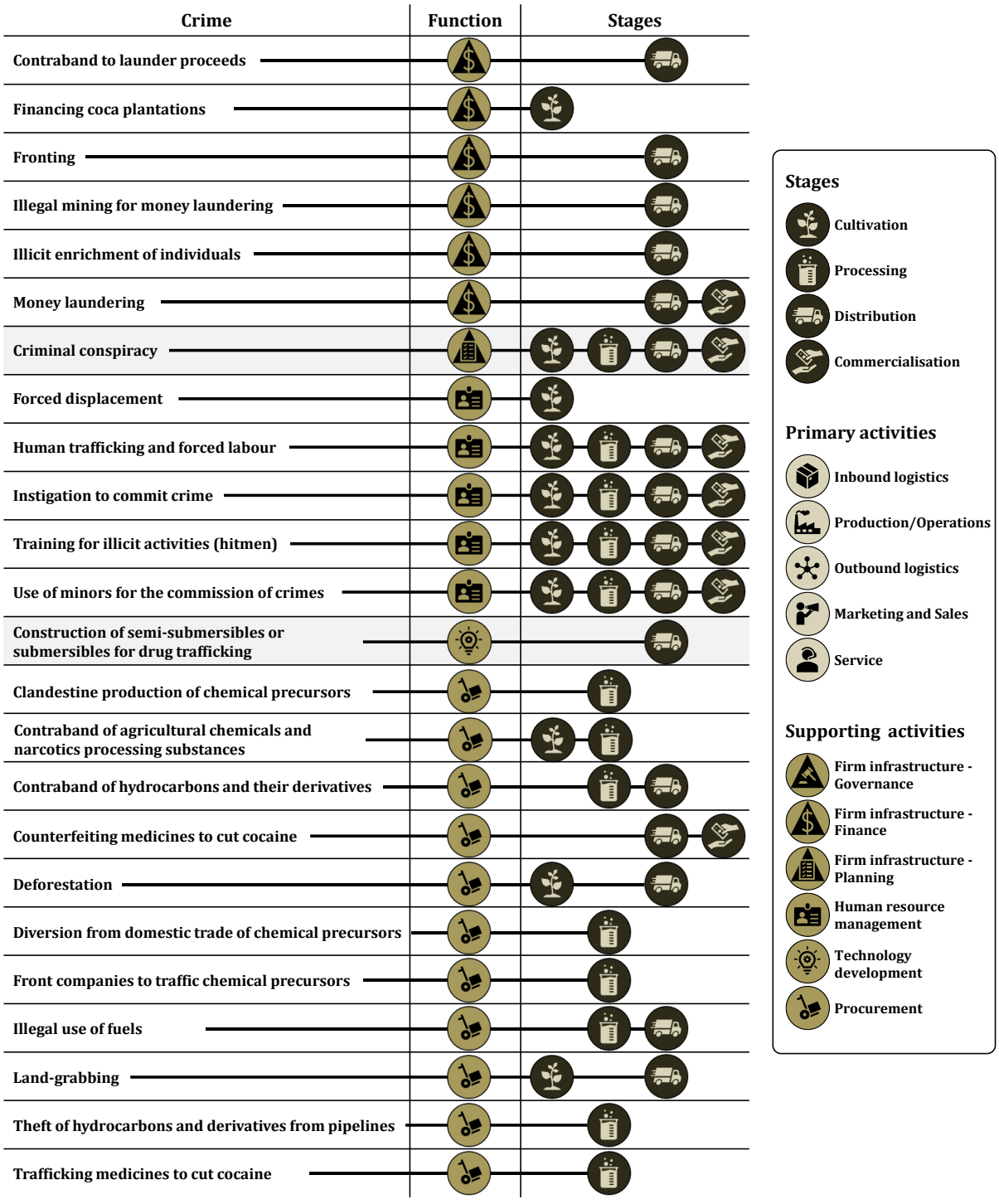


Figure 4.5 (continued)
Classification of crimes related to the cocaine trade across value chain functions and stages

Crime types across stages and functions

Tables 4.3 and 4.4 present the number of crime types identified across the stages and functions of the value chain framework. The following analysis focuses on crime types rather than crime events. By counting crime types and calculating their percentages across functions, we can understand how criminal activities are structured to sustain the cocaine trade. It is important to note, however, that the same crime type (e.g., homicide) can be found across multiple stages of the cocaine trade. Conversely, each crime type is mapped to a single function (e.g., production/operations, human resource management, etc.). While this approach provides a clear framework for analysis, it is important to note that some crime types could serve multiple functions. In the discussion section, I address this potential limitation.

Table 4.3 shows that the distribution stage exhibits the greatest variety of crime types (28), followed by processing (23) and cultivation (21). Conversely, commercialisation shows the fewest (19). Supporting functions (37) are associated with over three times more crime types than primary functions (11). The ratios between the crime types classified under primary and supporting are similar across all stages (approximately 1:6), except for commercialisation, which has more crime types classified under primary activities and fewer classified under supporting activities than the other stages. A detailed breakdown of the factors driving this pattern is provided in Table 4.4.

Table 4.3
Distribution of operational crime types in the cocaine trade between primary and supporting activities across all four stages

Value chain function	Across all stages		Cult.		Proc.		Dist.		Comm.	
	No.	%	No.	%	No.	%	No.	%	No.	%
Primary activities	11	23%	3	14%	3	13%	4	14%	6	32%
Supporting activities	37	77%	18	86%	20	87%	24	86%	13	68%
Total crime types	**48**	**100%**	**21**	**100%**	**23**	**100%**	**28**	**100%**	**19**	**100%**

Table 4.4 presents the distribution of operational crime types in the cocaine trade across value chain functions and stages. Crime types were found to support production/operations (4), outbound logistics (4), marketing and sales (3), but none were found in inbound logistics and service. Most crime types were classified under firm infrastructure – governance (13) and procurement (11) for supporting activities. Some crime types were classified under firm infrastructure—finance (6) and human resource management (5). The categories with the fewest crime types were firm infrastructure—planning (1) and technology development (1).

Table 4.4
Distribution of operational crime types in the cocaine trade across value chain functions and stages

	Value chain function	Across all stages		Cult.		Proc.		Dist.		Comm.	
		No.	%	No.	%	No.	%	No.	%	No.	%
Primary activities	Inbound logistics	0	0%	0	0%	0	0%	0	0%	0	0%
	Production/Operations	4	8%	3	14%	3	13%	0	0%	0	0%
	Outbound logistics	4	8%	0	0%	0	0%	4	14%	3	16%
	Marketing and Sales	3	6%	0	0%	0	0%	0	0%	3	16%
	Service	0	0%	0	0%	0	0%	0	0%	0	0%
Supporting activities	Firm infrastructure – Governance	13	27%	9	43%	8	35%	8	29%	6	32%
	Firm infrastructure – Finance	6	13%	1	5%	0	0%	5	18%	1	5%
	Firm infrastructure – Planning	1	2%	1	5%	1	4%	1	4%	1	5%
	Human Resource Management	5	10%	4	19%	3	13%	4	14%	4	21%
	Technology development	1	2%	0	0%	0	0%	1	4%	0	0%
	Procurement	11	23%	3	14%	8	35%	5	18%	1	5%
	Total crime types	**48**	**100%**	**21**	**100%**	**23**	**100%**	**28**	**100%**	**19**	**100%**

The cultivation and processing stages exhibit similar distributions of crime types, primarily involving governance-related offences, procurement crimes, and human resource exploitation (e.g., bribery, extortion, forced labour, human trafficking). Environmental crimes like deforestation and contamination are also prevalent in these stages. Distinctively, the processing stage shows the highest concentration of crime types (8) linked to procuring chemical precursors and other substances. Distribution presents the greatest variety of crime types (28), spanning logistical operations (e.g., trafficking via airstrips) and financial crimes (e.g., money laundering). Commercialisation, with 19 crime types, centres on sales, marketing, and governance, including extortion, inducement to use, sex trafficking, and enforced disappearance.

Although each stage of the cocaine trade involves unique crime types, many crimes—such as bribery, extortion, and human trafficking for sexual or labour exploitation—recur across multiple stages. Notably, 'firm infrastructure'—the governance function—accounts for the highest proportion of crime types (27%). This governance function is maintained through various crimes, including corruption, violence, and political interference. Figures 4.6 and 4.7 provide a visual representation of how all the operational crime types are distributed across the stages of the cocaine trade.

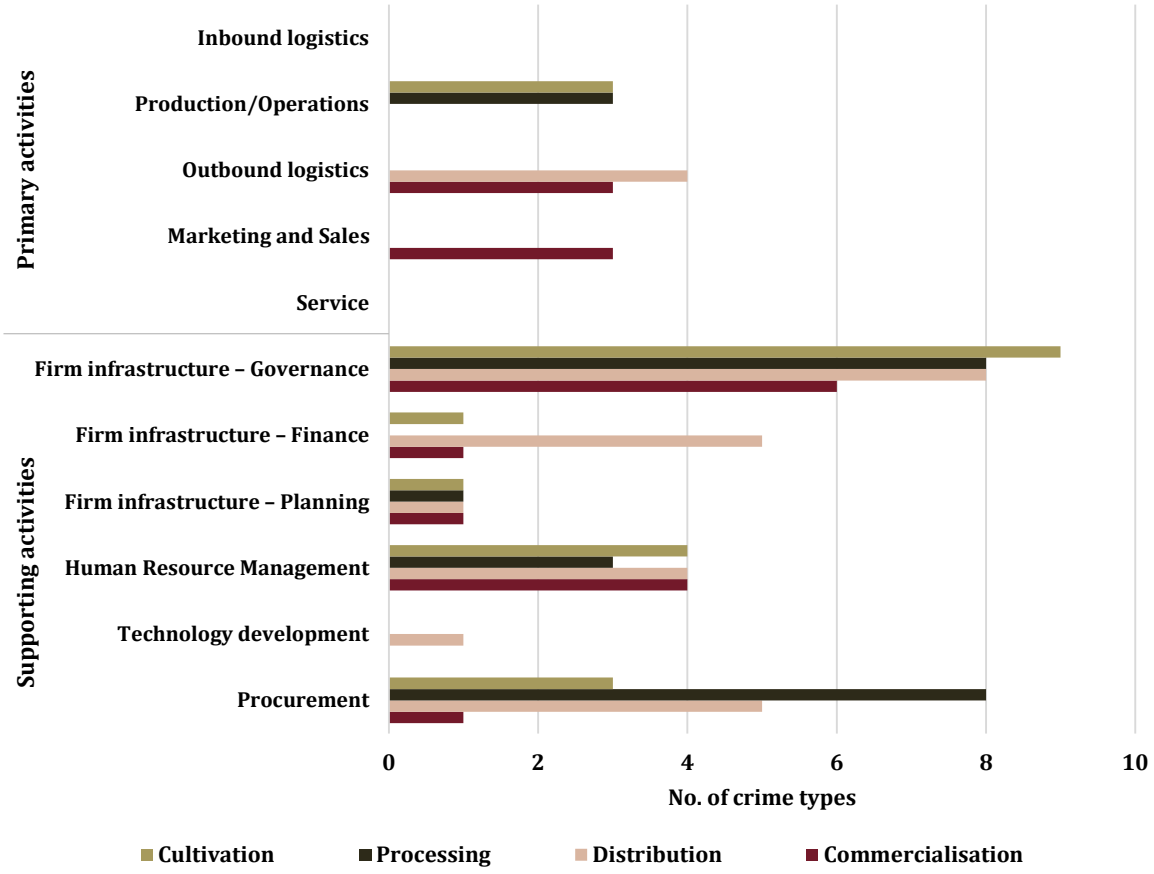


Figure 4.6
Crime types across functions of the value chain framework and stages of the cocaine trade

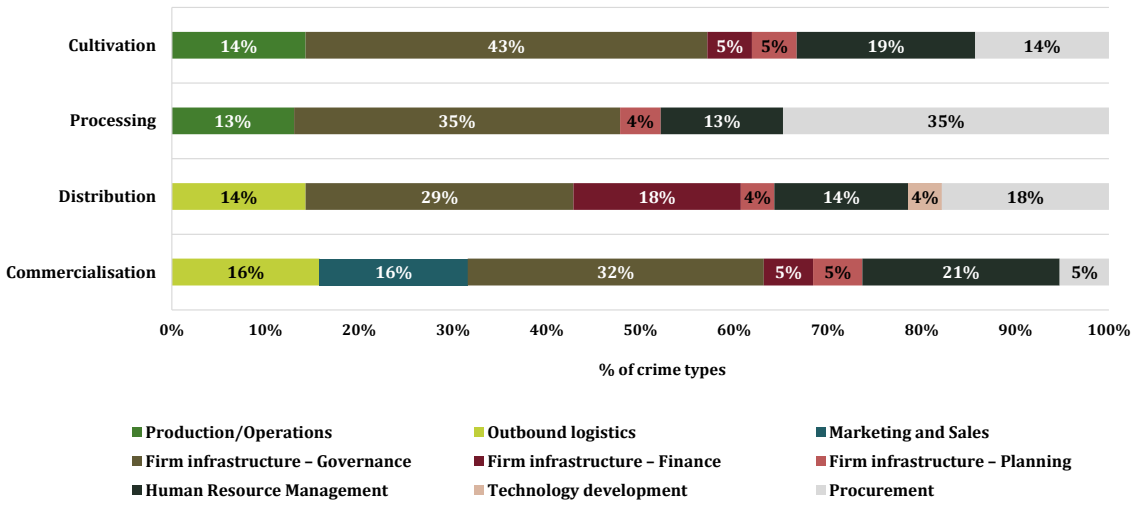


Figure 4.7
Distribution of crime types across cocaine trade stages by function of the value chain framework

The predominance of criminal activities linked to supporting functions raises an important question: Would these crimes persist if cocaine was not prohibited? Legal regulation of cocaine offers a potential solution to the violence and criminal activity plaguing the drug trade (Thoumi, 2003). By shifting control from illicit organisations to legitimate oversight, the need for criminal governance, coercion, and exploitation could be drastically reduced, if not eliminated. This transition could potentially mitigate much of the violence, corruption, and environmental damage currently associated with cocaine's illegal status (Borden, 2013). Legalisation could diminish turf wars and violence between criminal organisations vying for control of the cocaine trade (Thoumi, 2003). Borden (2013) suggests that prohibition fuels these conflicts and that legalisation could significantly reduce the criminal underground and associated illicit employment opportunities. This shift in control could also address the environmental damage linked to coca cultivation, as legal frameworks could promote sustainable farming practices and reduce the need for remote, hidden farms (Greenfield & Paoli, 2022). Furthermore, the regulation would allow for quality control, reducing health risks associated with contaminated or adulterated cocaine, and enable governments to implement harm reduction strategies and treatment programs more effectively (MacCoun & Reuter, 2001). However, as Bean (2014) argues, it is crucial to acknowledge that the transition to a legal market may not eliminate all criminal activity associated with cocaine.

Analysis of crime diversity and complexity

The results highlight both the diversity and complexity of the cocaine trade. A greater number of crime types suggests that a wider array of criminal actions is employed to support specific functions or stages, demonstrating the trade's capacity to tailor its criminal activities to the distinct requirements of each stage. For example, homicide serves distinct roles depending on the stage where it occurs. In the cultivation stage, homicide may be employed to intimidate or control local populations, reinforcing governance through fear and submission. In the commercialisation stage, however, homicide may be deployed to eliminate competitors or enforce market agreements, thereby strengthening governance at a higher, more strategic level. While homicide contributes to governance across both stages, this demonstrates how governance is enacted differently at various stages, shaped by the specific demands and dynamics of each context.

The diversity of crime types presented in Tables 4.3 and 4.4 can arise both naturally and as a consequence of legal crime classifications. Natural diversity stems from the intrinsic complexity of the cocaine trade itself. For instance, in cultivating and processing regions of Colombia, coercive governance mechanisms such as bribery and extortion are prevalent, while in the commercialisation stage, crimes such as fraud, inducement to use, and trafficking for sexual exploitation become more prominent. These variations highlight how criminal activities differ

across stages, shaped by the unique demands and dynamics of each. Conversely, legal crime classifications can artificially inflate the apparent diversity of crime types. Different legal systems may categorise similar criminal behaviours under distinct headings. For example, a single act of coercion, such as intimidation, may be classified as extortion, assault, or intimidation, depending on the jurisdiction. These classifications reflect the terminology and legal frameworks used by authorities, leading to an apparent increase in crime types, even when the underlying criminal activity remains fundamentally the same.

This dual aspect of diversity—natural and classification-driven—adds an additional layer of complexity to understanding the cocaine trade. While natural diversity reflects the varying criminal strategies employed to respond to different conditions, the influence of legal classifications highlights how the frameworks and systems used to record and analyse criminal activities shape our understanding of the criminal landscape. Therefore, the number of crime types identified in this study signals not only the variety of criminal activities that underpin the cocaine trade but also the context-dependent nature of these crimes, shaped by both operational needs and the classifications imposed by legal systems.

Together, these patterns reveal the cocaine trade's complex nature, driven by its reliance on a broad array of criminal activities finely tuned to the trade's strategic and logistical needs. This complexity suggests that efforts to disrupt or dismantle the cocaine trade must address the various criminal activities that sustain it across its various stages and functions.

Violent crime types

Of the 48 crime types identified as supporting the cocaine trade, 11 are classified as violent (Figure 4.8). Violent crimes, as defined in this study, entail acts that involve the "intentional use of violence by one person against another" (Rosenfeld, 2009). I classified the following offences as violent crimes based on this definition: body dismemberment, civilian casualties, enforced disappearance, extortion, forced displacement, homicide, human trafficking and forced labour, sex trafficking, threats, torture, and use of antipersonnel landmines.

These violent crime types were exclusively associated with supporting functions within the value chain framework. Of these, 73% (n = 8) were linked to governance activities. Additionally, some violent crimes were associated with human resource management as well as marketing and sales functions, illustrating the diverse roles that violence plays within the operational landscape of the cocaine trade.

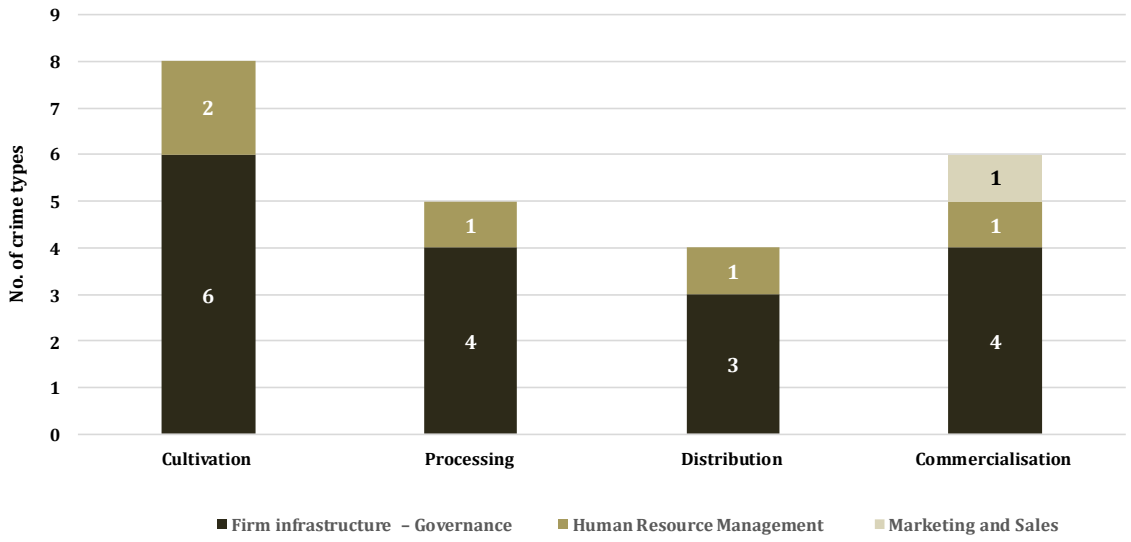


Figure 4.8
Distribution of violent crime types across cocaine trade stages by function of the value chain framework

Narrative analysis of operational crimes

Primary activities

Production/Operations

Crimes supporting the production and operations functions of the cocaine trade occur in both the cultivation and processing stages. They encompass transforming raw materials into finished products, usurpation of waters to irrigate crops and processing cocaine, and disposing of waste generated throughout these processes. During the cultivation stage, crimes involve illegal deforestation, land clearance, and harmful agrochemicals, resulting in environmental degradation and contamination of soil and water sources. Concerning waste disposal, Narváez Remuy (2019) documented instances where growers and leaf pickers left waste and trash behind after seeding and picking operations, exacerbating environmental degradation in affected areas. In the processing stage, criminals engage in the production of cocaine and its derivatives, such as coca base, coca paste, and bazuco. Hazardous chemicals like gasoline, cement, and sulfuric acid are commonly employed in this process, as highlighted by both documents and interviewees.

Outbound logistics

Illegal activities within outbound logistics are prevalent during the distribution and commercialisation phases. These activities encompass the trafficking of goods, use and/or usurpation of movable and immovable assets, and the illicit operation of airstrips. Cocaine and its derivatives are commonly trafficked during these stages, and individuals involved may face charges for possession of such substances.

The trafficking of cocaine often involves the utilisation of both movable and immovable property. For instance, as detailed in the preceding chapter, large quantities of the drug are stored in designated warehouses known as "nurseries" before being shipped. Additionally, apartments and warehouses serve as venues for wholesale and retail sales during commercialisation. Moreover, the smuggling of the drug out of the country may occur via speed boats or unauthorised flights, often necessitating the illegal use of airstrips. Further examples of facilities and movable property utilised in these illicit activities are documented by the Colombian Navy (Armada de Colombia, 2020).

Marketing and sales

The marketing and sales activities within the cocaine trade are intricately linked with the promotion of drug use and sex trafficking during the commercialisation stage. Gangs often target vulnerable groups, such as homeless individuals and minors, to entice them into cocaine use, thereby expanding their potential customer base. Interviewee 15 provided insight into this phenomenon, stating:

> "They use kids to sell the drug and pay them with bazuco, thereby creating addicts and creating a market. And not just a market of addicts but these become so desperate for the next hit that they're willing to do anything so they are used for sicariato – hitmen –, as mules to shift the drugs, too. So, it creates not just a consumption market but also a workforce"

Moreover, gangs conduct 'initiation campaigns' in schools in Bogota, as described by one interviewee, where doses are administered to start individuals on the path to addiction. In some cases, these individuals may even become part of the sales force for these gangs, further fuelling the sale of cocaine.

Additionally, coercion plays a significant role in the involvement of women in the cocaine trade. Interviewee 3 recounted instances where women coerced into providing sexual services in Bogota's tolerance areas were also compelled to sell drugs, including cocaine. These women were trained to identify legitimate customers from undercover law enforcement agents. Furthermore, many of these women end up financing their substance consumption, including cocaine, by providing sexual services.

Support activities

Firm infrastructure

Governance

Numerous crimes within this category aim to ensure the uninterrupted operation of the cocaine trade across its various stages, warding off interference from communities, the private sector, law enforcement, and local or national authorities. These crimes can be broadly categorised into violence, corruption, and political interference. From standpoint the Rational Choice Perspective (Cornish & Clarke, 1986), these crimes are considered calculated decisions made by individuals within the trade who seek to maximise benefits and minimise risks. Such actions, including violence, corruption, and political interference, are considered rational responses to the perceived costs and benefits of engaging in illicit activities. For example, violence may be employed to eliminate threats or competitors, while corruption can be used to secure favourable conditions and avoid detection. Political interference maintains an environment conducive to the trade, thus ensuring its continued operation. These decision-making strategies reflect the rational calculations made by actors in the cocaine trade, who weigh the immediate rewards of these criminal activities against the potential risks of detection or punishment.

Violence permeates all stages of the cocaine industry in Colombia, although it appears to be less prevalent in the processing stage. Interviewee 14 suggested that violence is avoided at processing sites to prevent drawing attention and exposing these isolated locations. However, accounts from other interviewees suggested that when violence is observed in the processing stage, it is because these areas are integrated with growing sites. Armed groups, traffickers, and local gangs employ violence, including homicides, threats, and torture, to establish control over communities and coerce their involvement in the trade. This often extends to eliminating social leaders who resist or oppose drug trafficking activities in rural areas. Additionally, homicides may occur due to disputes between traffickers and gang members, often executed by hired hitmen. Interviewees 3 and 9 noted the discovery of dismembered bodies in Bogota, attributing the murders to the 'Tren de Aragua,' a drug trafficking group. They explained that the group committed these acts to assert control over territories and compete for drug markets. Other examples include homeless basuco addicts who are not loyal to their original dealers and dealers who do not comply with orders from wholesalers who are assassinated to make an example. The forced disappearance of a woman forced to offer sex services and sell cocaine after she manifested her intent to leave further exemplifies the use of violence against individuals involved in the cocaine trade.

Moreover, violent confrontations between armed groups, drug trafficking factions, and gangs escalated during the post-conflict era as factions vie for control over drug markets across the country. These confrontations not only claim the lives of group members but also innocent bystanders. In urban areas, gangs enforce 'invisible boundaries,' with individuals perceived as intruders risking fatal consequences. Furthermore, antipersonnel landmines are employed to deter manual eradication efforts, and extortion is pervasive throughout all stages of the cocaine trade.

However, violence is not universally prevalent in all contexts. Instances exist where violence is not the primary governance tactic. For example, Interviewee 6 recounted how, in 'Playa Rica,' villagers have used coca revenue to invest in community development, thereby empowering residents to resist both drug traffickers and government interference. During the interview, Interviewee 12 explained that extortion is used more frequently than other violent tactics, and it is a key component of how certain groups exert control over the community. Whilst there are notably violent drug markets like Bogota's now-closed Bronx (see Mantilla, 2021), and the nearby San Bernardo, interviewees also mentioned other contexts where drug dealing takes place more covertly and void of violence. Interviewees surmised, for example, that more violence is observed in places where bazuco is sold but that these sites are more violent in Bogota than in Medellin. According to Interviewee 3, there is a 'criminal ethics' in Medellin whereby the use of bazuco has been restricted to secluded areas, and criminal gangs have banned its sales to minors. A couple of interviewees explained how some drug dealing sites, such as those near nightlife areas and universities, operate more discreetly than open-air markets and, as a result, experience lower levels of violence to avoid drawing unwanted attention. These examples illustrate how the characteristics of local drug markets differ across various geographical and social contexts.

Corruption and political interference are also employed to support the cocaine trade. Public corruption spans all stages, from bribing officials to safeguard crops to facilitating contraband at border controls to launder drug trafficking proceeds. Examples of public corruption were reported across all stages of the drug trade. Some coca growers bribe public officials to prevent their crops from being uprooted. At border controls, corrupt officers facilitate the smuggling of chemical precursors. Drug trafficking groups, such as the 'Clan del Golfo' (Gulf Clan), bribe ports authorities to avoid checks on large cocaine shipments. Additionally, corrupt law enforcement officers allow drugs to pass through controls, fail to arrest known members of trafficking groups, or alter intelligence information. In urban areas, gangs bribe law enforcement to avoid interference with their drug markets. Private corruption involves falsifying reports to aid chemical precursor diversion and allowing illicit shipments to pass through ports. Furthermore,

decisions regarding cocaine distribution are reportedly made from within prisons, highlighting the influence of incarcerated individuals on drug distribution networks. Moreover, certain societies have become dependent on the parallel economy of the cocaine trade, necessitating the election of political powers to protect this economy. This 'democratic compromise' involves criminal groups influencing electoral outcomes through financing, corruption, fraud, and intimidation, with proceeds from drug trafficking often funding electoral campaigns.

Finance and planning

Within the firm infrastructure category, crimes associated with planning and managing finances are prevalent due to the illicit nature of the cocaine trade. Any collaborative plan between individuals to engage in operations related to this trade constitutes a criminal conspiracy.

I identified various crimes associated with the finance function, including the financing of coca plantations. Armed groups often extend long-term credits to growers to facilitate the purchase of agricultural inputs, coca seeds, and other necessary materials. Some interviewees also mentioned establishing businesses, such as D.M.G. Grupo Holding S.A (better known as DMG), a contentious Ponzi scheme initially operating in Putumayo, a prominent coca-growing region. The Colombian government intervened, leading to the closure of the business, and its founder was extradited for involvement in drug trafficking (Global Witness, 2017).

Money laundering represents another significant element within this category. Interviewees delineated three primary methods traffickers employ: trade-based laundering, small cash transactions (smurfing), and high-end laundering through the financial system. Trade-based money laundering (TBML) involves disguising illicit funds by manipulating trade transactions, such as through misrepresentation of price, quantity, or quality, often using legitimate international trade systems to conceal the illicit origins via practices like over- or under-invoicing, over- or under-shipment, or misdescription of goods and services (Tiwari et al., 2024). Smurfing is a money-laundering technique where large sums are broken into smaller transactions by various intermediaries (individuals or companies) to avoid detection by financial authorities and bypass reporting thresholds (Starnini et al., 2021). Although its definition is contested, high-end money laundering broadly involves using sophisticated financial systems and regulated entities to conceal the origins of illicit funds (Matanky-Becker, 2024).

Moreover, fronting, contraband, and illegal mining were reported as common avenues for laundering illicit proceeds. Illegal mining, as documented by InSight Crime and Igarape Institute (2021), serves as a mechanism to launder funds from various criminal activities, including drug trafficking. Interviewees also discussed the use of fronting to obfuscate proceeds by placing assets and businesses under the names of individuals not directly involved in the cocaine trade. Common fronts include barber shops, nightclubs, livestock enterprises, sex shops, restaurants, and shopping centres. Despite the prevalence of fronting, Interviewee 11 expressed scepticism about its continued necessity, citing government ineffectiveness in prosecuting money laundering effectively. They also noted that contraband is used to launder proceeds and provided an illustrative example (translated from Spanish):

> The drug trafficker places the drugs in Mexico and receives payment in US dollars. The dollars are then transferred from Mexico to the USA before reaching China. In China, the funds are used to purchase goods, such as flip-flops, cigarettes, and cell phones. These items are then transported to Panama, back to the USA, through Caribbean islands, and finally to Cartagena, entering the free zone in Colombia. The merchandise is sold in Colombia, yielding profits of up to 700%, distributed among various operators.

Beyond the financial crimes already mentioned, the illicit enrichment of private individuals directly supports the cocaine trade. Investors, known as the 'invisibles,' provide essential funding for cocaine operations, especially during distribution. According to Interviewee 5, these investors have the financial means to supporting the trade and reinvesting to sustain it.

Human Resource Management

The cocaine trade relies on a network of individuals undertaking various activities, often involving the recruitment and training of individuals through illicit means. At every stage, individuals are coerced or compelled to participate in criminal activities associated with the cocaine trade. Instances of human trafficking for forced labour and the exploitation of minors for criminal purposes were pervasive across all stages. Individuals, including minors, are coerced into cultivating coca or joining militias to enforce governance at the cultivation stage. Those who resist such coercion often face forced displacement from their territories. Some families in precarious circumstances also exploit their minor family members for involvement in the cocaine trade. However, it is essential to acknowledge that not all individuals participate involuntarily, as several interviewees noted instances where growers and minors engage voluntarily in the cocaine trade. Charles (2021b), provides comprehensive insights into the exploitation of minors across all stages of the cocaine trade, detailing their roles as coca growers, leaf pickers, drug

mules, traffickers, intelligence gatherers, lookouts, processing lab workers[17], hitmen, armourers, and drug dealers. Minors and women are frequently used for drug transportation within the country due to the perception that they are less likely to be searched by authorities. In addition to minors, migrants are exploited for cultivation, processing, and drug trafficking within the country. The legal ambiguity of many migrants complicates prosecution by the state, as noted by Interviewee 3. Another interviewee corroborated the coercion of migrants into the cocaine trade while also highlighting that many migrants are forced into illegal mining activities. Other interviewees also reported human trafficking, particularly involving the use of body packers (mules), i.e., an individual who ingests or inserts cocaine pellets to transport the drug across borders or through security checks (Fremery et al., 2023), to smuggle cocaine abroad and, associations between the trafficking of women and drug dealing, as discussed in the marketing and sales section.

Technology development

While various technological advancements facilitate illicit activities, only one of the 48 identified crime types is associated with the technology development function: the use, construction, sale, and/or possession of semi-submersibles or submersibles. This crime is documented in one of the analysed sources (Armada de Colombia, 2020).

One potential crime that could have been included is the development of technologies to avoid detection by drug traffickers. Although none of the interviewees or analysed documents mentioned such technologies, it is not unlikely that organised crime groups employ them, as evidenced by reports on other criminal organisations. Carey and Marak (2018) state that cartels like the Sinaloa Cartel have access to high-tech tools, such as counter-surveillance scanners and sophisticated tunnels, which help them maintain secrecy and evade law enforcement detection. Moreover, cartels have adopted drones for both intelligence gathering and weaponisation, further complicating efforts to combat their activities. For instance, the Jalisco Cartel New Generation ('Cartel Jalisco Nueva Generación' in Spanish) has used drones to gather real-time intelligence, which aids in the coordination of attacks, often in tandem with light aircraft (Krame et al., 2023). However, the Colombian Penal Code (Congress of Colombia, 2000a) lacks specific laws addressing counter-surveillance technologies. The only tangentially relevant article is Article 269A, which refers to *abusive access to information systems* but does not explicitly include counter-surveillance technologies such as burner phones and unmanned aerial vehicles.

[17] Particularly to perform easy or simple processes like processing bazuco, as reported by a couple of the interviewees.

Procurement

Procurement is an integral aspect of the cocaine trade, spanning every stage and often involving various criminal activities. At the cultivation stage, individuals or armed groups engage in land-grabbing to establish coca crops, sometimes encroaching upon protected areas like national parks. While some landowners may legally possess land within these territories, others unlawfully seize land solely for coca cultivation. Although coca cultivation is not the primary driver of deforestation in Colombia (Dávalos et al., 2016), deforestation occurs in small plots to conceal illegal crops or construct distribution channels within forested areas. Notably, roads across forested areas discovered in La Macarena are believed to have been built by FARC before the 2016 peace agreement, as suggested by one interviewee.

Another significant category of crimes pertains to the procurement of substances essential for coca cultivation, cocaine processing, adulterating cocaine in later stages of the trade, as well as for distributing it. Agricultural chemicals are often illegally transported from Ecuador to the Nariño region, and gasoline is smuggled from Venezuela, where it is cheaper, to supply processing areas like Catatumbo near the border. Gasoline is also transported to Bajo Cauca on the Pacific coastline. Various methods are employed to acquire chemical precursors, including clandestine production, contraband, and diversion from the legal industry. Clandestine production sites, typically located near cocaine processing sites, serve as alternatives during shortages or logistical challenges (CIENA, 2018). These sites may also use oil stolen from pipelines. Substance contraband may be conducted openly through informal crossings or, technically, by modifying vehicles to evade detection at border controls. Additionally, diversion from the legal industry and establishing front companies were reported as methods of acquiring chemical precursors. Regarding fuels, traffickers exploit illegal fuel destinations and contraband to obtain combustibles necessary for transporting and processing cocaine.

Furthermore, substances such as cardiac medicines, anxiolytics, and veterinary products are diverted from or counterfeited within the legal industry to adulterate cocaine. According to one interviewee, traffickers cut cocaine during processing, distribution, or commercialisation, depending on the intended market and the recipient's capabilities. Occasionally, buyers may opt to process cocaine paste themselves, leading them to procure the paste directly.

Criminal portfolios, fuelled and confluent crimes

Some crimes mentioned in the interviews and reviewed documents were not included in the list of operational crimes for various reasons. I categorised these excluded crimes into three groups: criminal portfolios, fuelled crimes, and confluent crimes.

The consensus among interviewees was that wildlife trafficking, illegal mining, and arms trafficking are not integral to the cocaine trade but act as alternative income sources for organised crime groups, forming part of their broader criminal portfolio. While the InSight Crime and Igarape Institute (2021) noted that illegal mining was used to launder drug trafficking proceeds, these activities were generally seen as supplementary revenue streams. However, two interviewees highlighted the exchange of cocaine for illicit arms, suggesting a symbiotic relationship between drug and arms trafficking. At the commercialisation stage, shark loaning and illegal gambling were also identified as components of gang portfolios. Extortion, meanwhile, serves a dual role in the cocaine trade ecosystem: facilitating governance and generating additional income. Participants described how extortion operates as a "tribute" for security, used for intimidation and to exert control over communities.

Terrorism financing, although not directly involved in the cocaine trade, is another way in which profits from the cocaine trade are channelled into broader criminal operations. Gómez-Quintero et al. (2023) classified it as a fuelled crime. Profits from cocaine sales are channelled into recruiting armed groups, procuring weapons and ammunition, and sustaining operations in rural areas, even in the aftermath of the 2016 peace agreement.

Confluent crimes are those observed in areas where cocaine trade activities occur but do not hold a specific role in the trade itself. Many interviewees highlighted how areas where coca is cultivated often experience theft, fights resulting in injuries, and prostitution. While the involvement of prostitution in sex trafficking remained uncertain among interviewees, some documents and interviewees reported other crimes like sex tourism and theft as being confluent with drug market areas. This convergence of illicit activities within specific locations aligns with Crime Attractor Theory (Brantingham & Brantingham, 1995), which posits that certain environments possess characteristics, such as increased opportunity, reduced social control, and the presence of motivated offenders, that attract and facilitate criminal behaviour.

Discussion

Through a comprehensive review of the literature and interviews, 48 crime types were identified that support the cocaine trade in Colombia. The analysis has shown that 77% of those impact the trade's supporting functions, with a notable concentration on governance (27%) and procurement (23%). Crime types contributing to governance activities are prevalent across all stages, whereas crime types related to procurement functions are primarily concentrated in the processing stage. Most finance-related crime types are found in the distribution stage, while those related to human resource management appear in all stages. Violent crime types are primarily linked to governance, with some also associated with human resource management. The absence of crime types in inbound logistics and service suggests either lower susceptibility or a need for further investigation. Although only the use of semi-submersibles is explicitly identified as a crime within technology development, the potential development of various other technologies, including counter-surveillance tools, suggests a gap in the legal framework that may overlook significant aspects of organised crime activities. Notably, while social media and cyberspace play a substantial role in the illicit drug trade (Dolliver et al., 2018; Foley et al., 2019; Rawat et al., 2022), their use does not fall within the category of technology development, as they involve the exploitation rather than the creation of technologies. Moreover, interviewees did not identify any specific criminal activities involving cyberspace, aligning with the knowledge gap highlighted in the previous chapter regarding how the cocaine trade operates in this domain.

These results align broadly with previous research on crimes supporting the cocaine trade. Movable and immovable property use for drug trafficking, primarily in the distribution and commercialisation stages, has been noted by Aschner and Montero (2020). The construction and use of submersibles or semisubmersibles, also linked to the distribution stage, have been comprehensively documented by Rojas-Sanchez et al. (2020) and Guerrero Castro (2016, 2020). Marketing and sales activities at the commercialisation stage, including the inducement of adults and minors to consume cocaine and the coercion of trafficked women to distribute drugs, echo Aziani et al.'s (2021) observation that illicit enterprises cannot market their products as legal ones do. The involvement of minors, women, and other vulnerable individuals in drug-related crimes, as observed in this study, reflects similar findings from research on 'county lines' exploitation (Stone, 2018). The association of money laundering with the cocaine trade, particularly during the distribution stage, aligns with findings from previous studies (Levi, 2014; Soudijn & Kleemans, 2009). However, while Bayona-Rodríguez (2019) suggested a potential link between coca cultivation and money laundering at the municipal level, the present study did not find evidence to support this connection.

The research supports the findings of previous studies on the cocaine trade's links to violence, corruption, and political interference (e.g., Cuesta et al., 2017; Mejia & Restrepo, 2013). Various forms of violence identified within the cocaine trade in Colombia echo the classifications proposed by Goldstein (1985) and Reiss and Roth (1993), including organisational violence, transaction-related violence, and systemic violence affecting non-involved individuals like social leaders. This connection between the cocaine trade and violence against social leaders supports Lobo and Vélez's (2022) argument that armed groups use violence to expand coca cultivation. The findings align with research on the drugs-corruption-violence nexus (e.g., Morris, 2013) and offer evidence of a context in which corruption and violence are deeply intertwined, coexisting to sustain criminal operations. Instances of political interference, such as the involvement of drug money in former President Ernesto Samper's campaign (Comisión de la Verdad, 2020, February 20), illustrate Duncan's (2022) concept 'beyond "plata o plomo" — silver or lead —'. This convergence of violent, corrupt, and political interference tactics underscores Smith and McElwee's (2014) view that understanding illegal entrepreneurship requires moving beyond traditional legal frameworks. The study further confirms the phenomenon of criminal governance, where criminal organisations impose rules on both members and civilians (Lessing, 2021; Mantilla & Feldmann, 2021).

Unlike studies that focus on specific crime types, this research aimed to offer a comprehensive list of crime types linked to the cocaine trade across the various stages of its value chain. Not only this, but it also provided detailed descriptions of the mechanisms that connect these crimes to the cocaine trade. This contribution can serve to record the incidence of operational crimes more systematically. With this list, the study lays the groundwork for future research on the extent and impact of these criminal activities. Hence, it brings us closer to developing a crime harm index for organised crime. Such an index would mirror the Crime Harm Index (Sherman, Neyroud, et al., 2016), which measures harm by multiplying the harm level of each incident with recorded crime counts recorded by law enforcement. Current reporting practices make this difficult, as crimes linked to organised crime are often underreported or not identified (Singleton et al., 2018; Tusikov, 2012). Recent research, such as that by de Bont et al. (2018), has made progress in measuring drug-related homicides in Europe, highlighting the potential for further development in this area. Moreover, by systematically identifying crimes supporting the different stages of the cocaine trade, this study facilitates comparisons across stages, enabling a deeper understanding of the varying types of criminal activities at play. This approach allows policymakers and law enforcement to focus on specific criminal activities at each stage of the cocaine trade, enabling the development of more precise strategies to disrupt these operations.

This study offers a more precise categorisation tailored to the cocaine trade within Colombian borders, thereby overcoming the limitations of more generalised lists like that produced by the UNODC-DOC (2015). This focus on specificity ensures that the connections between the identified crimes and the cocaine trade are made explicit, allowing for more accurate analysis and interventions. In doing so, the study contributes to a more nuanced understanding of organised crime, offering insights that can inform both academic research and practical policy efforts aimed at curbing the harms associated with the cocaine trade. While this study provides a valuable framework for understanding the operational crimes of the cocaine trade, it is important to acknowledge that mapping each crime type to a single function may not fully capture their complexity. For instance, threats could be used for governance or human resource management. Future research could explore these nuances further, examining the multi-functionality of crime types within illicit networks.

By introducing a systematic method for identifying operational crimes, the research contributes to a broader understanding of the scope of other organised criminal activities in different contexts. Gómez-Quintero et al. (2023) emphasised the importance of identifying connected crimes to comprehensively understand organised crime, categorising them into direct, enablers, and fuelled crimes. However, as discussed in the introduction, these categories have limitations when analysing the connections between crimes and the cocaine trade or similar organised criminal activities. This study proposes a new categorisation by organising direct and enabler crimes according to specific activities within a value-chain framework. Although the value chain framework has been used to study the cocaine trade (Mejía & Rico, 2016; Vellinga, 2007), its application to crimes supporting the trade remains underexplored. This research adapts the value chain framework to examine the mechanisms connecting operational crimes with the cocaine trade, providing new insights into how these crimes support and sustain illicit activities. From a rational choice perspective, examining crimes through a value-chain lens offers a detailed mapping of the interconnected activities. It sheds light on offenders' motivations, revealing the intricate dynamics that drive organised crime.

The method proposed in this study could help investigate crimes that support other forms of organised crime. The value-chain framework is particularly effective for explaining crimes involving a supply chain, such as wildlife trafficking. Alternatively, other value frameworks like the value-shop and value-network models (Stabell & Fjeldstad, 1998) might better describe organised criminal activities that do not revolve around commodities. For example, Gottschalk (2009) suggested that the value-shop model could better explain money laundering activities, while the value-network model might capture the complexities of organised prostitution.

Researching organised crime presents inherent challenges including safety risks, limited access to participants and data, the secretive nature of criminal activities, lack of transparent records, and underreporting (Hosford et al., 2021). Organised crime indicators often reflect law enforcement's efforts, such as increased cocaine seizures resulting from intensified policing. Identifying operational crimes is difficult because law enforcement rarely records or distinguishes whether reported crimes are linked to organised criminal activities, and intelligence data is difficult to access (Gómez-Quintero et al., 2023). To address these challenges, the study included interviews with experts who had extensive knowledge of all stages of the cocaine trade. Although I considered court records as a data source, only the Supreme Court's records are publicly accessible in Colombia, and these lack detailed descriptions of cocaine trade activities.

Contextualising the study's findings within the Colombian legal framework is also essential, as legal interpretations of crimes vary across jurisdictions. For instance, I classified the crime of *training for illicit activities* under the distribution and commercialisation stages of the cocaine trade. This decision reflects the stages where the presence of hitmen—who are typically trained in such tactics—was reported. Article 341 of the Colombian Penal Code (Congress of Colombia, 2000b) defines *training for illicit activities* as organising, instructing, training, or equipping persons in military tactics for purposes such as terrorism, death squads, private justice groups, or gangs of hitmen. As the article explicitly references hitmen, this crime was categorised under the stages where expert reports indicated their involvement, rather than being applied more broadly (e.g., to coca cultivation). This underscores the importance of careful legal interpretation to ensure that the classifications accurately reflect the Colombian context while maintaining relevance to the operational realities of the cocaine trade.

The study is also constrained by the impact of legal crime classifications on the categorisation and interpretation of the crime types involved in the cocaine trade. While the study sought to classify crime types based on available data, variations in legal systems and the terminology used by authorities can influence how certain criminal behaviours are categorised. For example, a single act of coercion, such as intimidation, might be classified differently depending on the jurisdiction—whether as extortion, assault, or intimidation. This distinction arises from the different legal frameworks used to interpret and categorise crimes, which can lead to an apparent increase in the diversity of crime types, even when the underlying criminal activity remains fundamentally the same. This artificial inflation of crime types poses a challenge to accurately comparing and understanding the full scope of the criminal activities involved in the cocaine trade and highlights the need for careful legal interpretation in crime categorisation.

A limitation of this study is its inability to distinguish cybercrime elements within broader categories of drug trafficking, as the available data (documents and interviews) did not consistently differentiate between online and offline crime modes. This limitation stems, in part, from the Colombian Penal Code's (Congress of Colombia, 2000a) lack of distinction between cyber and physical drug trafficking activities. While limited evidence of cybercrime was identified, such as the use of social networks for communication (Pulgarín Morales, 2020) and speculation about drug trafficking in the Metaverse (but that aligns with Gómez-Quintero et al.'s (2024) findings), no specific crimes were detailed. This limitation is particularly relevant given the increasing role of cyberspace in drug trafficking globally (e.g., Dolliver et al., 2018; Foley et al., 2019; Fuller et al., 2023; Rawat et al., 2022). While research on internet-mediated drug trafficking in other contexts (e.g., Jardine, 2021; Joyce, 2023; Morgenthaler & Leclerc, 2023) offers valuable insights, further research is needed to understand the specific manifestations of cybercrime within Colombian drug trafficking networks, considering the country's unique technological landscape and internet usage patterns (OECD, 2017).

Future research should delve deeper into how local contexts influence the types of crimes that support the cocaine trade, recognising that organised crime is highly adaptive and shaped by its operational environment (Galeotti, 2014; Kleemans, 2014). Investigating these crimes in diverse local settings could reveal how specific environmental factors dictate the choice of criminal activities. For instance, while some drug markets and coca cultivation areas are characterised by violent governance by armed groups, others foster community-driven, non-violent rule-making. Given Colombia's vast regional diversity (Caulkins & Kleiman, 2018; Crocker et al., 2019), Greenfield and Paoli (2022) emphasised the challenges of assessing the harms associated with coca cultivation and processing, which illustrates the need for contextual analysis. Future research should also examine how offenders adapt their criminal tactics over time, shifting from violence to corruption as operational needs and law enforcement strategies evolve. For instance, violent methods may be employed initially to control individuals, but offenders might later resort to bribery if it proves more effective. Additionally, scholars might consider employing the Situational Crime Prevention framework (Clarke, 1980; Cornish & Clarke, 2003) to better understand the evolving dynamics of crimes associated with the cocaine trade. For instance, traffickers' increasing reliance on bribery at border crossings to evade detection exemplifies how offenders adapt their strategies in response to changes in the environment. By examining such adaptive mechanisms, researchers can gain deeper insights into the factors that shape crime selection within the broader context of organised crime.

Conclusion

This study systematically identified 48 crime types directly supporting the cocaine trade in Colombia, revealing a complex criminal landscape interwoven with the country's socio-political fabric. The analysis, grounded in the Rational Choice Perspective and the Value Chain Framework, highlights the predominance of crime types linked to supporting functions, particularly governance and procurement, underscoring the trade's reliance on violence, corruption, and exploitation. These findings resonate with existing literature while offering a more granular understanding of the mechanisms through which these crimes facilitate the cocaine trade.

The research illustrates the relationship between criminal activities and the cocaine value chain, showing how criminal behaviours align with the specific needs of each stage. This poses significant challenges for disruption efforts, requiring targeted interventions that address the distinct criminal profiles across cultivation, processing, distribution, and commercialisation. Notably, the study identifies a potential gap in addressing technology-enabled crime within the Colombian legal framework, highlighting an area that warrants further investigation and policy attention.

By providing a systematic methodology for identifying operational crimes, this research offers a valuable tool for future investigations into organised crime, both within Colombia and beyond. This framework can be adapted to various contexts and criminal activities, fostering a deeper understanding of the complex relationships between crime and illicit value chains. Further research should examine the specific ways in which different types of crime relate to the functions of the cocaine trade, explore the role of technology in facilitating cocaine trade-related crimes, and investigate how local contexts influence the selection and adaptation of criminal activities.

Chapter 5. Crime harms across the cocaine trade in Colombia

This chapter presents a harm assessment tool for evaluating the crimes underpinning the cocaine trade in Colombia. The tool is based on Greenfield and Paoli's (2013, 2022) harm taxonomy, which classifies these crimes according to harm types and domains. This classification provides the foundation for the tool's development.

Introduction

The cocaine trade involves a complex, multistage process that causes distinct harms, including loss of life, environmental degradation, and health risks for those involved. According to Greenfield and Paoli's (2013, 2022) taxonomy, these harms affect four domains: individuals, governments, the private sector, and the environment. They also vary in type, falling into five categories: functional integrity, material interests, privacy and autonomy, and reputation. This framework provides a structured approach for assessing the cocaine trade's wide-ranging impacts.

Despite extensive counter-drug policies, including the U.S. government's investment of over $10 billion in Colombia since 2000 (Prem et al., 2023), the supply of cocaine has not diminished. Instead, coca crop cultivation in Colombia rose from 48,000 hectares in 2012 to an estimated 253,000 hectares in 2023, accompanied by a surge in cocaine production to approximately 2,664 tonnes (UNODC & SIMCI, 2024). Studies highlight the limited effectiveness of current strategies, revealing that eradication efforts often displace coca cultivation rather than reduce it, while aerial spraying campaigns contribute to deforestation and expose communities to harmful health risks, such as respiratory conditions and miscarriages (Camacho & Mejía, 2017; Rincón-Ruiz & Kallis, 2013; Salisbury & Fagan, 2013). Furthermore, enforcement actions like kingpin removal and interdictions frequently destabilise drug markets, sparking violence in trafficking corridors and retail markets (Calderón et al., 2015; Castillo et al., 2020; Dell, 2015). These findings suggest that rather than mitigating harm, supply control strategies often intensify socio-environmental and public health harms, underscoring the need for re-evaluating current approaches.

Unlike consumer countries that primarily focus on countering trafficking and retail, Colombia must address all stages of the cocaine trade, including cultivation and processing. The latest Evaluation of Drug Policy Report for Colombia (2019) acknowledges the country's various efforts, including supply reduction measures, micro-trafficking interventions, and programs targeting poverty and drug abuse. However, the persistent growth of cocaine production highlights the inadequacy of these efforts in addressing the trade's complex and systemic nature.

Given the limitations of supply-reduction policies, a shift towards harm reduction offers an alternative way to address the challenges of the cocaine trade. Crimes vary significantly in the harm they cause (Sherman, Neyroud, et al., 2016). By focusing on harm, policies can better target the most damaging crimes (Paoli & Greenfield, 2018), such as those in the cocaine trade, where understanding harm at each stage can guide more effective resource allocation. This harm-focused perspective also encourages a more thoughtful evaluation of law enforcement strategies, particularly in terms of their societal consequences. For example, where disruptions in drug markets may lead to increased violence, harm-reduction strategies can focus on deterring violent offenders rather than indiscriminate suppression (Caulkins & Kleiman, 2018). To achieve this, it is essential to identify and classify the harms associated with each stage and assess the level and severity.

In this context, ranking the stages of the cocaine trade according to the level and severity of harm would be highly beneficial, allowing for the prioritisation of those stages most in need of intervention. Additionally, a detailed assessment of the various harms at each stage would inform the development of targeted, evidence-based strategies to mitigate the most damaging consequences of the trade.

This chapter examines the harms caused by the cocaine trade across its various stages—cultivation, production, trafficking, and distribution—to inform harm-reduction policies. The identification and classification of these harms would inform two key policy questions:

- Prioritising interventions: Which stages of the cocaine trade cause the highest and most severe harm, and how might this inform decisions about policy focus and resource allocation?
- Designing effective interventions: What are the specific harms caused at each stage, and how can counter-drug policies be tailored to mitigate these harms effectively?

The existing literature, however, reveals gaps in our understanding of the harms caused by the supply side of the cocaine trade. While research has extensively documented the harms of drug consumption (e.g., Bean, 2014; Bennett & Edwards, 2015; Bennett et al., 2008; Bonomo et al., 2019; Nutt et al., 2007; Nutt et al., 2010; van Amsterdam et al., 2015; Varano & Kuhns, 2017), less attention has been paid to the harms generated by cultivation, production, and trafficking activities (Pardo, 2020). Furthermore, disentangling these harms from broader socio-economic and structural issues presents a formidable challenge, as highlighted by Greenfield and Paoli (2022). For instance, violence and displacement in coca-growing regions are often rooted in systemic inequalities and governance failures (Thomson, 2011), making it difficult to isolate the harms directly attributable to the cocaine trade.

An additional gap is the scarcity of quantitative data on the harms associated with the supply side of the cocaine trade. While agencies like the United Nations Office on Drugs and Crime (UNODC) provide some information, it is often insufficient to capture the full range of crimes and harms (Maghsoudi et al., 2020; Pardo, 2020; Singleton et al., 2018). Additionally, the absence of crime incidence data limits the ability to conduct systematic harm analysis (Crossin et al., 2022). Access to detailed crime data across the cocaine trade's stages would enable the construction of a crime harm index, building on the concept initially proposed by Sherman, Neyroud, et al. (2016) and adapted by Gómez-Quintero et al. (2023) through the OCHAm framework, specifically designed for organised crime.

To address these challenges, this study adopts a novel approach. Building on the operational crimes identified in the preceding chapter, I apply Greenfield and Paoli's (2013, 2022) taxonomy to classify these crimes by the domains and types of harm they cause. This framework shifts the focus from criminal acts themselves to their broader consequences. For instance, deforestation harms biodiversity, increases landslide risks, depletes timber resources, and undermines local economies. Similarly, public corruption weakens institutions, erodes trust, misuses public funds, and damages international reputations. By separating the criminal act from its consequences, the taxonomy provides a structured method for examining how different crimes cause harm. This is essential for designing policies that directly mitigate the most significant harms rather than solely emphasising crime suppression (Paoli & Greenfield, 2013).

The harm classification forms the basis for developing a Multi-criteria Decision Analysis (MCDA) tool, a structured framework for systematically ranking the cocaine trade's stages based on their harm levels. The decision made through this process is to identify which stages of the cocaine trade should be prioritised for intervention, informing the development of more effective harm-

reduction policies. MCDA is a flexible, systematic approach designed to support decision-making in complex scenarios, even when data is limited or incomplete (Rogeberg et al., 2018). It involves assessing a potential set of actions called 'alternatives', which may take the form of identifying the most preferred option, sorting them into categories or ranking the options from the best to the worst (Roy, 2016). It evaluates alternatives by breaking down decisions into assessments across multiple, often conflicting criteria (Zyoud & Fuchs-Hanusch, 2017). This involves defining objectives, identifying relevant criteria, evaluating performance, and, in some methods, applying weights to reflect the relative importance of each criterion (Hansen & Devlin, 2019). By generating weights, MCDA enables a nuanced mapping of harm levels across the different stages of the cocaine trade. This detailed assessment enables identifying which stages require prioritisation and designing targeted, evidence-based interventions to mitigate harm effectively.

This study seeks to answer the following research question: **How can crime-related harms be assessed at each stage of the cocaine trade in Colombia?** The primary objective is to develop and pilot a harm assessment tool to evaluate the distribution of crime-related harms across the stages of the cocaine trade in Colombia. To achieve this, the operational crimes identified in the preceding chapter were classified using an adaptation of Greenfield and Paoli's (2013, 2022) harm taxonomy. Subsequently, an MCDA tool was developed and piloted to rank the stages of the cocaine trade by harm levels, providing a foundation for tailored and effective interventions. Interviews were conducted with a sample of pilot participants to examine the tool's potential to inform counter-drug policies.

The chapter begins with a background discussion of MCDA and its application in drug harm assessment and policy appraisal. The method section outlines the process for classifying operational crimes and designing the MCDA tool, including participant selection, data collection, and analysis strategies. The results and analysis section presents the findings of the harm assessment and the MCDA ranking exercise. This is followed by a discussion of the tool's implications, limitations, and potential for future research. The chapter concludes with recommendations for policy design and a reflection on the study's contribution to understanding and mitigating the harms of the cocaine trade.

This study shifts the focus to the supply side of the cocaine trade, departing from previous MCDA applications that have primarily addressed drug harms in consumer nations. It aims to lay the groundwork for evidence-based approaches to mitigating the harms of the cocaine trade in Colombia.

Multi-criteria Decision Analysis

Originating in the 1970s by Keeney and Raiffa (1993), MCDA has emerged as a systematic approach embraced across multiple disciplines for informed decision-making. The main objective of MCDA is to enable decision-makers to evaluate and compare various alternatives based on multiple criteria, facilitating a structured, transparent decision-making process (Peacock et al., 2009). Typically, MCDA is employed to assess different alternatives against a set of predefined criteria and determine which alternative best aligns with the decision-makers goals and value trade-offs; this is achieved by scoring and weighting the alternatives according to their performance on each criterion (Marsh et al., 2017). Scores reflect the performance of alternatives within each criterion, while weights denote priorities between criteria, promoting transparency by mandating the explicit identification and weighting of criteria (Dubljević, 2018; Sousa et al., 2021).

MCDA methods are useful to decision-makers due to their systematic structure, incorporation of multiple objectives and criteria, handling of uncertainty and subjectivity, consideration of stakeholder perspectives, and broad applicability across various domains. The flexibility and utility of MCDA methods are evidenced by their application across various fields, including engineering, computer science, health, and business administration (Basílio et al., 2022). In drug policy research, they have been used for drug harm assessment (e.g., Nutt et al., 2010), and drug policy appraisal (e.g., Rogeberg et al., 2018; Rolles et al., 2021; Wilkins et al., 2022).

MCDA in the assessment of drug-related harms

MCDA is a useful framework for comparing drugs in terms of harm. It provides a transparent and systematic way to evaluate harms across different drug types (Nutt et al., 2007; Nutt et al., 2010). These studies rely on expert judgments, and when definitions are provided, they typically assess the harm experienced and caused by an average user in the present time rather than retrospectively or as part of a longitudinal analysis.

Table 5.1 provides an overview of identified relevant MCDA studies. The table reveals the value of MCDA in comparative assessments across substances and locations. Notably, all studies have used criteria initially proposed by Nutt et al. (2010), with minor modifications, to assess drugs across various harm dimensions.

Table 5.1
Overview of MCDA studies that assess of drug-related harms
*Studies share most of these criteria initially devised by Nutt et al. (2010), with minor modifications

Study	Objective	Criteria	Substance(s)	Setting
Bourgain et al. (2012)	Assess damages and benefits	Grouped into physical, psychological, and social harms to users (e.g., mortality, dependence, loss of relationships) and others (e.g. injury, crime, and economic cost)*	9 substances, including heroin, cocaine, cannabis, alcohol and tobacco	France
Bonnet et al. (2020)	Rank drug types by harms		≥ 15 substances, including heroin, cocaine, cannabis, alcohol and tobacco	Germany
Bonomo et al. (2019)				Australia
Castaño et al. (2022)				Colombia
Crossin et al. (2023)				New Zealand
Nutt et al. (2010)				United Kingdom
van Amsterdam et al. (2015)				Europe
Nutt et al. (2014)	Estimate harms of Nicotine-containing products		12 products, including cigarettes, cigars, and patches	Worldwide
Ferreira et al. (2022)	Rank drug types by harms		Nitrous oxide and Poppers	United Kingdom

Table 5.2 shows how cocaine and its derivatives, crack cocaine and bazuco, have been ranked in the studies above. Cocaine and crack cocaine have consistently occupied top positions across most locations, underscoring their significant impact. Basuco, similar to crack cocaine and only distributed in Colombia, was rated the most harmful substance in the assessment by Castaño et al. (2022).

Table 5.2
Harm ranking of cocaine and derivatives in MCDA studies

Study	Setting	Harm ranking position of cocaine or derivatives	
Bourgain et al. (2012)	France	Cocaine	3/9
Bonnet et al. (2020)	Germany	Cocaine	5/30
		Crack cocaine	1/30
Bonomo et al. (2019)	Australia	Cocaine	11/22
Castaño et al. (2022)	Colombia	Bazuco	1/15
		Cocaine	3/15
Crossin et al. (2023)	New Zealand	Cocaine	13/23
Nutt et al. (2010)	United Kingdom	Cocaine	5/20
		Crack cocaine	3/20
van Amsterdam et al. (2015)	Europe	Cocaine	4/20
		Crack cocaine	3/20

Existing studies have a narrow focus. Most of these studies are conducted in drug-consumer countries, with Castaño et al. (2022) being an exception for considering the perspective of drug-producing nations such as Colombia. Secondly, these studies do not differentiate the harms across stages, which is critical for understanding the specific impacts at each stage. For example, the crimes that sustain the cocaine trade at the cultivation stage may generate harms that differ

significantly from those linked to crimes occurring during distribution or commercialisation, both in terms of the affected entities. Differentiating these impacts allows for a more precise understanding of where interventions are needed and can inform tailored policies designed to mitigate harm at each stage. Lastly, these studies compare different drug types rather than exploring how harms are distributed across the various stages of the trade. Addressing these gaps is needed for a comprehensive understanding of the harms associated with the cocaine trade in Colombia, which effectively informs counter-drug policy design.

Castaño et al. (2022) provide valuable insights into the dimensions of harm that are particularly pertinent in the Colombian context, where all stages of the cocaine trade—cultivation, processing, trafficking, and commercialisation—take place. Their analysis underscores the significance of crime, economic costs, international damage, and community harm, with cocaine, marijuana, and heroin identified as the primary drivers of harm across these dimensions—cocaine being the most produced drug in the country. Furthermore, Castaño et al. (2022) highlight the severe impacts intricately linked to the cocaine supply chain, including forced displacement, violence by armed groups, the exploitation of individuals as drug couriers (with women being especially vulnerable), and widespread money laundering and corruption. However, they also point out that obtaining insights beyond the physical and psychological dimensions—such as those involving money laundering and corruption—remains challenging, thereby necessitating a comprehensive approach to grasp the complexities of drug-related harms fully.

This study develops a pilot MCDA to rank the stages of the cocaine trade (cultivation, production, trafficking, and commercialisation) based on the crime harm they generate. Greenfield and Paoli's (2013, 2022) harm taxonomy inspired the assessment criteria. This allows for creating a weighted ranking system, identifying the stages that cause the most harm regarding functional integrity, material interests, privacy, autonomy, reputation, and the affected domains (individuals, governments, the private sector, and the environment).

The study also explores the potential and challenges of the tool**.** It seeks to evaluate how well the tool can be applied in the Colombian context, identify its strengths, and pinpoint the obstacles that may arise when using it for policy design. It is believed that this MCDA tool could aid the decision of determining which stage(s) of the cocaine trade should be prioritised for intervention, ultimately informing the development of more effective, targeted harm-reduction policies.

Method

This study employed a mixed-methods approach to explore the application of MCDA for assessing harms associated with the cocaine trade across its various stages and to identify the challenges and potential of this tool in shaping counter-drug policy. The study was conducted in two parts: First, I analysed the 48 operational crime types identified in the preceding chapter and classified them based on the specific harms they cause. Second, this classification served as the basis for designing an online survey to elicit subject matter expert assessments of harm levels and criteria weights. The survey was designed to gather quantitative inputs—harm scores and criteria weights—from experts, which were then used to conduct the MCDA. Subsequently, follow-up interviews provided insights into the practical challenges and potential applications of the MCDA tool for developing and informing counter-drug policies.

Classification and taxonomy of crime harms

A single crime type could impact multiple domains and generate multiple types of harm. For example:

- Body dismemberment (crime type) affects the functional integrity (harm type) of individuals (harm domain).
- Bribery (crime type) affects the functional integrity (harm type) and reputation (harm type) of the government (harm domain). Additionally, it could damage the reputation (harm type) of the individual (harm domain) involved in the crime[18].

This study classifies the operational crimes of the cocaine trade, identified in the previous chapter, using the harm assessment taxonomy developed by Greenfield and Paoli (2013, 2022). However, as discussed in Chapter 2, this study adopts the term *"domains"* instead of *"bearers"* to describe the entities impacted by these crimes. The term *"domain"* is used to reflect a neutral perspective, as it avoids the implications of sentience and especially the capacity for suffering that is often associated with the term *"bearer."* This distinction is particularly relevant for the environment, where the notion of "bearing" harm can be contentious (White, 2008). Instead, "domains" refer to the spheres of impact—individuals, government, private sector, and the

[18] While marked as a potential harm, studies suggest that the impact on an individual's reputation can be influenced by the social and cultural context in which corruption occurs. For instance, Ruiz Väsquez (2013) concluded that tolerance to corruption, including how a bribe is negotiated, can depend on how legitimised the practice is. He found that even the manner of negotiating a bribe and deciding who takes the initiative can shape citizens' perceptions of police corruption.

environment—where harms manifest. This recognises the environment as a critically important area affected by criminal activity without presupposing its experience of harm in the same way as sentient beings.

Based on feedback received during the survey design process (see the *MCDA survey tool* section below), two additional modifications were made to the original taxonomy:

1. **"Material interests" was renamed "material assets"** in the survey instrument to enhance clarity. Participants found "material interests" vague and abstract during the survey trial. Therefore, the revised term was used in the data collection phase to improve understanding, while the term "material interests" has been retained in the current analysis.

2. **The "environment" domain was refined to focus exclusively on the natural environment.** This modification was intended to minimise conceptual overlap with other domains, such as "material interests," which include man-made structures. However, some ambiguity remains in cases where the natural environment holds economic value, such as private conservation areas generating tourism revenue. In such instances, the classification requires careful consideration of whether harm should be attributed to the environmental domain or to the financial interests of the affected entity.

Greenfield and Paoli's (2013) original definition of the environment bearer encompassed both the "social environment" (concerning relationships between individuals and institutions) and the "physical environment." However, during survey trials, this broad definition proved complex in practice. Specifically, including the social environment risked overlap, as harm to communities or institutions was better attributed to individuals, the government, or the private sector. Consequently, the classification was refined to assign social harm to the directly affected domain, ensuring consistency.

Similarly, harm to man-made structures—such as maize fields or buildings—was reassigned to the material interests harm type within the respective domains of individuals, government, or the private sector, depending on ownership. While agricultural fields are part of the physical environment, their classification as material interests recognises these structures' ownership and economic value, distinguishing them from natural ecosystems like forests, rivers, or mountains. The refined "environment" domain now focuses solely on harms to natural ecosystems and resources, such as deforestation, soil degradation, or contamination of water sources caused by cocaine cultivation and processing.

These modifications aim to provide a clearer and more consistent categorisation of harms across the stages of the cocaine trade, addressing potential ambiguities. However, challenges remain in distinguishing environmental harm from economic loss, particularly in cases where natural resources have financial value, such as privately owned conservation areas or farmland.

Tables 5.3 and 5.4 below outline the harm domains (individuals, government, private sector, and environment) and types (functional integrity, material interests, privacy and autonomy, and reputation) used in this revised framework. The harm types should be understood as 'harms to' these respective categories (e.g., harms to functional integrity, harms to material interests, etc.). In this study, 'government' refers to state institutions at both local and national levels, while non-governmental entities, including those in the third sector, fall under the 'private sector' domain. The original terms 'government' and 'private sector' were retained to maintain consistency with Greenfield and Paoli's taxonomy. However, in retrospect, 'government' could be more precisely termed 'public sector' to better capture its scope, while 'private sector' might more accurately be described as 'civil and private sector' to reflect the inclusion of both private enterprises and third-sector organisations.

Table 5.3
Definitions of harm domains

Domain	Definition
Individuals	Any harm inflicted upon human beings or communities, including physical, psychological, or societal impacts.
Government	Harm directed towards national or local authorities.
Private sector	Harm inflicted upon non-governmental organisations or businesses.
Environment	Harm inflicted upon ecological systems, biodiversity, or natural resources.

Table 5.4
Definitions of harm types

Type	Definition
Functional integrity	Adverse impacts that impair the normal operation or functionality of an entity, system, or environment.
Material interests	Damage, loss, or devaluation of physical or financial resources belonging to individuals, governments, or private entities.
Privacy and autonomy	Violations of personal privacy, autonomy, or control over an individual's or entity's information, actions, or decisions.
Reputation	Negative perceptions, damage to credibility, or loss of public trust of individuals, governments, or private entities.

I categorised the 48 operational crime types identified in the previous chapter according to the defined harm domains and types. This categorisation drew on the insights and data from the preceding two studies: (1) a crime script analysis of the cocaine trade and (2) the identification of operational crimes across the stages of the cocaine trade. For each crime type, I systematically questioned which domains were impacted and how they were affected, i.e., which type of harm was caused.

While individuals, government and private sector are domains where the four types of harms can be caused, the environment can only suffer harms to its functional integrity. Greenfield and Paoli's taxonomy does not define reputation, privacy, or material interests for the environment, as these concepts primarily apply to human and institutional actors. However, cases where environmental damage intersects with economic interests, such as private conservation areas, may require additional contextual consideration.

To ensure the accuracy of the classification, an expert with over 10 years of experience in drug policy in Colombia reviewed it. This expert has actively contributed to Colombia's drug policy design processes and participated in international drug policy forums. She found the classification appropriate for the context of drug-related harms in the region and did not suggest any adjustments. However, she recommended engaging diverse stakeholders to discuss further and refine the classification, ensuring that broader perspectives are considered. While the timeframe and resources for this study did not allow for such engagement, this limitation is acknowledged in the discussion section of the chapter. It forms part of the broader discussion and future research directions proposed in the thesis.

Although this classification does not quantify the frequency or prevalence of these crimes—due to the unavailability of necessary data—it provides a structured framework for systematically mapping harms across the cocaine trade. This model can be further refined and applied in future research to explore the broader implications of these harms within policy and intervention strategies.

Data collection

Selection of participants

The online survey participants were purposefully sampled to ensure a diverse representation of expertise and experience in the cocaine trade. The selection process primarily relied on identifying individuals from organisations and authors identified during document analysis and interviews conducted in the preceding chapters. The snowball sampling technique was also employed, inviting participants to extend survey invitations to other subject experts. Selection criteria prioritised individuals with roles and affiliations across various sectors and perspectives relevant to the cocaine trade. This included senior analysts or above from public or law enforcement institutions, senior researchers or consultants in anti-drug policy, and independent investigative journalists specialising in drug trafficking topics in Colombia. The aim was to encompass expertise covering all stages of the cocaine trade, including production, processing, distribution, and commercialisation.

Out of the 68 experts invited to participate in the survey via email, 44 responses were received. While the survey participants represent a diverse range of backgrounds relevant to the cocaine trade (Figures 5.1 and 5.2), there is an overrepresentation of law enforcement (70.4%; n = 29) officers and an uneven gender distribution. Participants also came from sectors such as private industry, international organisations, civil society, academic institutions, and the civil service. The gender distribution was skewed, with 13.6% female (n=6) and 86.4% male (n=38) respondents.

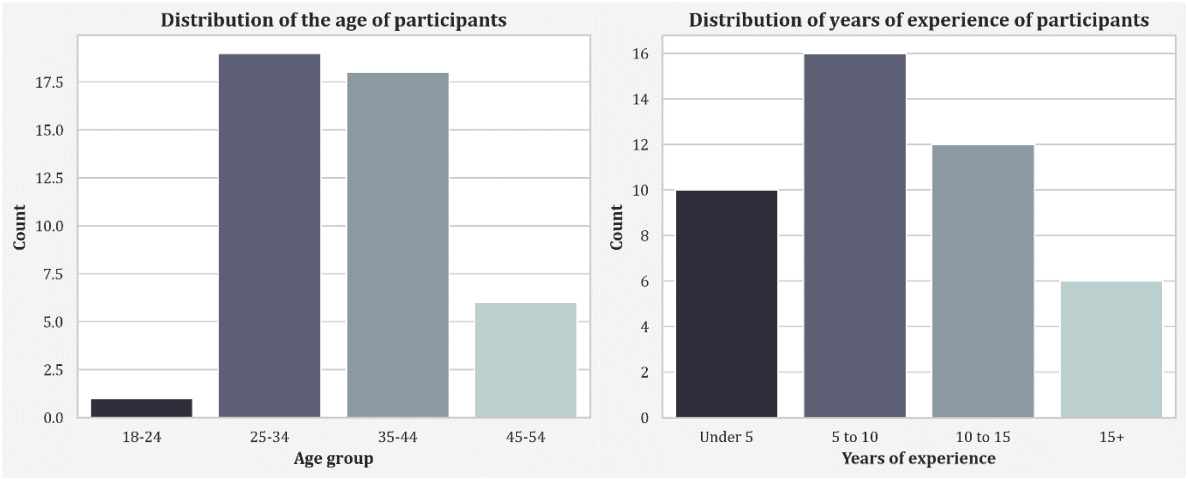


Figure 5.1
Age and experience of survey participants

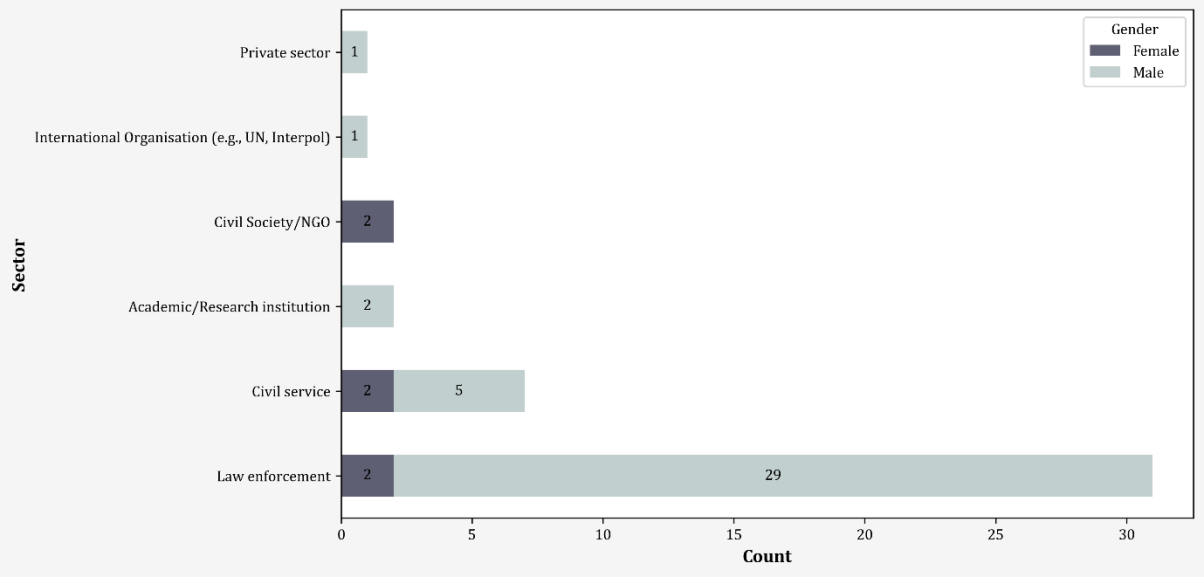


Figure 5.2
Occupational sector of survey participants by gender

Four participants from the survey were selected for follow-up interviews: a police officer, a senior academic, a senior civil servant involved in drug policy design, and a senior researcher from an NGO. These interviews were conducted to obtain in-depth insights into the MCDA tool's practical challenges, usability, and potential policy implications.

Ethical considerations, consent and data management

The UCL Security and Crime Science Department Ethics Committee approved this study (see Annex 12), and measures were taken to ensure compliance with ethical guidelines and regulations. The study was registered for data protection[19] and participants received detailed information about the research project and the objectives of the survey and interviews before voluntarily taking part (see participant information sheets in Annexes 13 and 14). The survey maintained pseudo-anonymity by assigning numerical identifiers to participant responses instead of linking them to personal information. Interviews were recorded with participants' consent (see consent form in Annex 15), securely stored on my laptop, transcribed, and subsequently deleted to maintain confidentiality. Any identifying information was excluded from the transcripts.

[19] Reference No Z6364106/2024/03/159 social research in line with UCL's Data Protection Policy.

MCDA

Objective

The objective of the MCDA is to systematically rank the stages of the cocaine trade based on the extent of harm they generate. This ranking is determined using a set of criteria that assess various types of impacts across different domains. The assessment is of the *current* level of harm associated with each stage of the cocaine trade. By identifying the most harmful stages, the MCDA aims to support policymakers in prioritising interventions and allocating resources more effectively.

Alternatives

In MCDA, alternatives refer to the different options being evaluated. In this study, the stages of the cocaine trade (cultivation, processing, distribution, and commercialisation) serve as the alternatives. However, the objective is not to select one stage over the others but rather to rank them according to their level of harm.

This study examines the four stages of the cocaine trade:

- **Cultivation –** The initial phase, where coca crops are sown, grown, and harvested.
- **Processing –** The transformation of coca leaves into cocaine and its derivatives, such as coca paste, coca base, and bazuco.
- **Distribution –** The transport and dissemination of processed cocaine within the country, either to local markets or to exit points such as ports, airports, and border crossings.
- **Commercialisation –** The wholesale and retail transactions of cocaine and bazuco, involving dealers and end-users.

Criteria

To rank the stages in terms of crime harms, the study utilised a combination of harm type and harm domain as criteria inspired by the harm assessment taxonomy proposed by Greenfield and Paoli (2013, 2022). The criteria employed in this study and their respective definitions are listed in Table 5.5.

Given the challenges—and, in some cases, the impossibility (Caulkins et al., 2011)—of precisely measuring certain harms, an ordinal scale was used to score and weight the criteria. This approach aligns with Greenfield and Paoli's (2013) decision to assess harm severity and incidence using ordinal measures.

Table 5.5
Criteria for assessing crime harms in the cocaine trade

Criterion	Definition
1. Harms to the functional integrity of individuals	Any adverse impact that impairs the functionality of a person at an individual or community level, including physical or psychological impacts.
2. Harms to the functional integrity of the government	Any adverse impact that impairs the normal operation or functionality of national or local authorities, including law enforcement.
3. Harms to the functional integrity of the private sector	Any adverse impact inflicted upon non-governmental organisations or businesses, impacting their capacity to operate and thrive.
4. Harms to the functional integrity of the environment	Any adverse impact inflicted upon ecological systems, biodiversity, or natural resources, affecting their capacity to operate and thrive.
5. Harms to the material interests of individuals	Any damage, loss, or devaluation of physical or financial resources belonging to individuals.
6. Harms to the material interests of the government	Any damage, loss, or devaluation of physical or financial resources belonging to the government, including those of national and local authorities and law enforcement.
7. Harms to the material interests of the private sector	Any damage, loss, or devaluation of physical or financial resources belonging to non-governmental organisations or businesses.
8. Harms to the privacy and autonomy of individuals	Violations of privacy, autonomy, or control over an individual's or community´s information, actions, or decisions.
9. Harms to the privacy and autonomy of the government	Violations of privacy, autonomy, or control over the government's information, actions, or decisions, including those of national and local authorities and law enforcement.
10. Harms to the privacy and autonomy of the private sector	Violations of privacy, autonomy, or control over non-governmental organisations or businesses' information, actions, or decisions.
11. Harms to the reputation of individuals	Negative perceptions, damage to credibility, or loss of public trust of an individual or community.
12. Harms to the reputation of the government	Negative perceptions, damage to credibility, or loss of public trust in the government, including that of national and local authorities and law enforcement.
13. Harms to the reputation of the private sector	Negative perceptions, damage to credibility, or loss of public trust in non-governmental organisations or businesses.

Survey design

The survey was administered online via the Qualtrics platform and offered in English and Spanish to accommodate participant preferences. However, all respondents completed the survey in Spanish. Annex 16 presents the English version of the survey. The survey comprised six sections: introduction and consent, demographic information, study context, scoring of harms across different stages, assessment of the importance of these harms, and conclusion.

1. **Introduction and consent:** Participants were introduced to the study and provided an information sheet detailing the objectives. Consent was obtained before proceeding.
2. **Demographics:** Participants provided information on age, gender, years of experience, and occupation sector.
3. **Context of the study:** Participants were briefed on the general framework of the study, including the harm types and domains considered.

4. **Scoring harms across stages:** Participants scored the level of each of the 13 harm criteria outlined above for each stage of the cocaine trade in Colombia—cultivation, processing, distribution, and commercialisation. Examples of operational crimes at each stage, along with the associated harm domains and types, were provided to assist participants. For instance, homicides, which occur across all stages, were included as an example when participants were asked to rate the level of harm to the functional integrity of individuals at each stage.
5. **Weighting harms:** Participants rated the relative importance of each harm criterion in the specific context of the Colombian cocaine trade, considering both the severity and the urgency of reducing the harms. *Severity* reflects the overall gravity of the consequences, while *urgency* refers to the immediate need for policy intervention and actions to reduce these harms.
6. **Conclusion:** Participants were thanked for their involvement and encouraged to suggest any additional harms related to crimes in the Colombian cocaine trade that may not have been covered in the assessment. They were invited to specify these harms if applicable.

Trialling the survey

The survey instrument underwent a trial with four experienced researchers specialising in survey design and crime and illicit drugs research in Latin America. This trial aimed to assess the clarity, comprehensibility, and relevance of the survey questions and the overall functionality of the survey. Based on feedback from the trial, minor adjustments were made to improve the survey's clarity and ease of interpretation.

Scoring and weighting

The survey took a sequential approach to scoring and weighting, where experts first rated the stages in terms of harms (i.e., the criteria) before assigning weights indicative of the importance of these harms. The scoring of alternatives against the criteria and criteria weighting can be done sequentially, simultaneously or iteratively (Hansen & Devlin, 2019). This approach was chosen to facilitate reflection on the negative impacts of the cocaine trade before prioritising criteria.

The scoring and weighting procedure employed direct scoring and direct weighting methods, utilising a Likert scale to assign scores and weights to identified harms. Direct methods, as described by Hansen and Devlin (2019). require decision-makers to express their views on the relative performance of each alternative and the importance of each criterion. Keisler and Linkov (2021) note that Likert-type scales provide a structured approach to scoring variables with a clear directional relationship (e.g., higher or lower levels of harm), even if this relationship is not strictly linear or log-linear.

Scoring questions

Participants were provided with definitions and examples of operational crimes connected to each stage of the cocaine trade. They were then instructed to score harm level on a scale from 0 to 4, representing *no harm* to *very high harm*, with an option for uncertainty to improve the accuracy of assessment (Figure 5.3).

Weighting questions

For each criterion, participants were asked to weigh the importance on a scale from 0 to 4, indicating *not important* to *highly important*. Participants were asked to consider the severity and urgency of addressing these harms in their assessments (Figure 5.4).

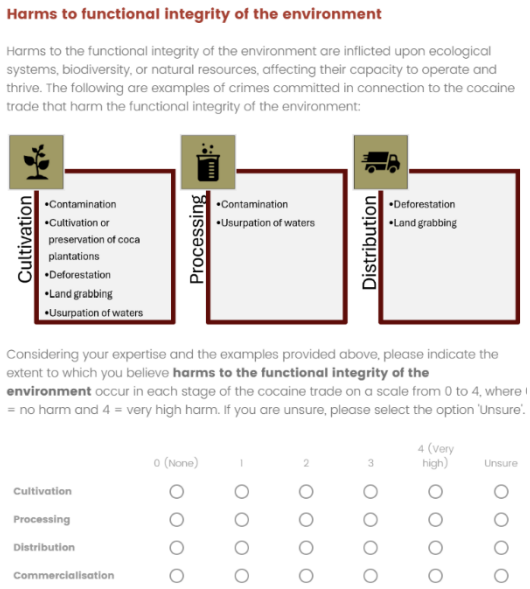


Figure 5.3
Example of Harm scoring question—
Functional integrity of the environment

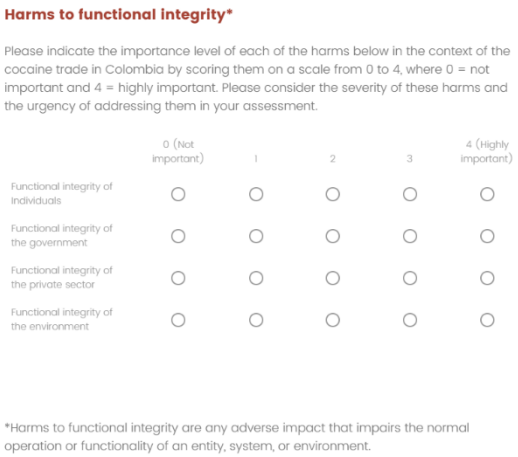


Figure 5.4
Example of weighting questions —
Functional integrity type

Analysis procedure

A weighted sum, an extensively used method (Marler & Arora, 2010) that provides a straightforward and flexible approach for evaluating multiple criteria (Williams & Cai, 2024), was employed for the MCDA analysis. The method involved computing median scores and normalised median weights, multiplying them, and summing the results for each stage.

This approach follows previous studies that applied MCDA to assess drug-related harms using survey data (e.g., Bonnet et al., 2020) rather than relying on expert consensus to determine scores and weights. Calculating median scores separately from median weights, rather than computing the median of the products of individual responses, allows for a structured sensitivity analysis.

Sensitivity analysis is a crucial step in MCDA, as it tests how changes in the weights and scores influence the results, thereby assessing the robustness of the decision-making process (Demir et al., 2024). The separation of scores and weights ensures that variations in each component can be independently examined, enhancing the interpretability and reliability of the results.

The analysis procedure involved the following steps:

1. **Identification of median scores:** For each criterion k and stage j, the median score $\tilde{s}_{kj}$ was determined. Given the ordinal nature of the Likert scale, the median was chosen to reflect central tendency as it is generally more appropriate than the mode for assessing central tendency for this data type (Weisburd & Britt, 2014). If a participant selected "unsure" for a specific criterion, their response was excluded from the analysis for that criterion. As a result, the number of responses for each criterion varied, with some criteria having fewer than 44 responses. The median score represents the central score assigned by participants to each criterion for each stage.

2. **Calculation of normalised median weights:** For each criterion k, the median weights ($\widetilde{w}_k$) were determined, representing the central value of the importance assigned to each criterion by all participants. These median values were then normalised so that the sum of the weights across all criteria equals 1. The normalised median weight ${\widetilde{w}_k}^{norm}$ for each criterion k was computed as:

$$ {\widetilde{w}_k}^{norm} = \frac{\widetilde{w}_k}{\sum_{k=1}^{K} \widetilde{w}_k} $$

   where $K = 13$, representing the number of criteria.

3. **Weighted sum:** The median score for each criterion k and stage j was multiplied by the normalised median weight of criterion k to obtain the weighted score for each criterion and stage. The weighted sum for each stage j was calculated by summing the weighted scores across all criteria. This provides an aggregate score that reflects the relative performance of each stage across the criteria, as evaluated by the experts.

$$ T_j = \sum_{k=1}^{K} \tilde{s}_{kj} \times {\widetilde{w}_k}^{norm} $$

Given that this study was a pilot, the primary focus was on evaluating the suitability of the MCDA tool rather than conducting a detailed analysis of the results. To assess the tool's effectiveness, the survey data was scrutinised for its ability to elicit meaningful criterion scores and weights.

Interviews

Follow-up interviews were conducted to provide a deeper contextual understanding and to explore the practical challenges, usability, and potential policy implications of the MCDA tool. These interviews were structured around five main areas: participants' understanding and experience with the MCDA tool, identification of appropriate audiences for harm rating, implementation and practicality, and the overall potential of the tool. The interviews aimed to explore:

- **Comprehension:** Ensuring participants fully understood the criteria and questions.
- **Relevance:** Assessing whether the criteria effectively captured significant harms.
- **Scoring and weighting:** Evaluating the adequacy of the scoring and weighting system.
- **User experience:** Gaining insights into the usability of the tool.
- **Audience identification:** Identifying the most appropriate groups for rating harms.
- **Feasibility:** Investigating the practical challenges associated with implementing the MCDA tool.
- **Potential:** Exploring how the tool's results could be integrated into existing policy frameworks and understanding its benefits and potential impacts.

Analysis and results

This section presents the study's findings, starting with the classification of operational crimes by harm domains and types, followed by the initial MCDA of the cocaine trade's stages. The MCDA results provide an overview of how participants rated each stage across harm type/domain combinations. However, the analysis reveals minimal variation, with most scores and weights clustering towards the highest values on the rating scale.

This homogeneity in expert assessments, with most participants assigning maximum scores and weights, suggests that all criteria were highly relevant for evaluating the harms associated with the cocaine trade. While the tool's design limits its ability to capture finer distinctions, the consistently high ratings indicate a strong consensus among experts.

Furthermore, the analysis includes qualitative insights from a short-answer survey question, inviting participants to suggest additional harms for consideration and follow-up interviews. These qualitative elements help explain the observed patterns in the data, highlight potential gaps in the current evaluation, and offer perspectives on the practical challenges, usability, and broader policy implications of the MCDA tool.

Mapping operational crime harms across the cocaine trade

Figure 5.5 illustrates the distribution of crime types across the stages of the Colombian cocaine trade, categorised by harm domains. Crimes affecting individuals are prevalent throughout, highlighting the widespread harm inflicted on people and communities. While the cultivation and processing stages feature numerous crimes targeting individuals, those in the distribution stage primarily impact government entities.

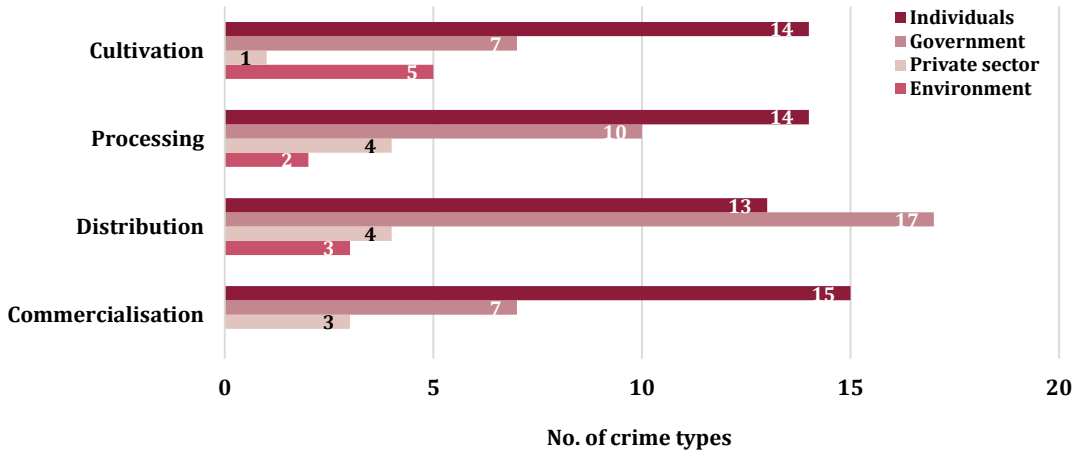


Figure 5.5
Number of crime types impacting each harm domain across the stages of the cocaine trade in Colombia (based on the 48 operational crimes identified in Chapter 4)

Figure 5.6 further elaborates on this analysis by presenting the number of crime types associated with each stage, categorised by harm types and domains. It highlights the consistent presence of harms related to *functional integrity* across all stages and domains, suggesting widespread disruption to normal operations within the cocaine trade network. *Privacy and autonomy* harms are also numerous across most stages. Crime types affecting government *material interests* are notably prominent in the distribution stage, alongside those related to *functional integrity*, indicating particular vulnerabilities of government resources during this phase. The cultivation stage stands out for the number of crime types causing *environmental harm*, reflecting the ecological impacts of illicit drug production.

	Cultivation	Processing	Distribution	Commercialisation
Functional integrity of individuals	10	9	7	11
Functional integrity of the government	6	7	14	7
Functional integrity of the private sector	1	2	3	2
Functional integrity of the environment	5	2	3	
Material interests of individuals	3	1	2	2
Material interests of the government		3	6	1
Material interests of the private sector	1	3	3	3
Privacy and autonomy of individuals	4	4	4	6
Privacy and autonomy of the government	2	2	3	1
Privacy and autonomy of the private sector	1	2	2	1
Reputation of individuals	2	3	3	3
Reputation of the government	3	3	4	2
Reputation of the private sector		1	1	

Figure 5.6
Number of crime types per harm domain and type across stages of the cocaine trade in Colombia (based on the 48 operational crimes identified in Chapter 4)

Figure 5.7 presents the list of the 48 operational crimes, further categorised by harm domains and types. Annex 17 explains the rationale for assigning these categories to each crime type.

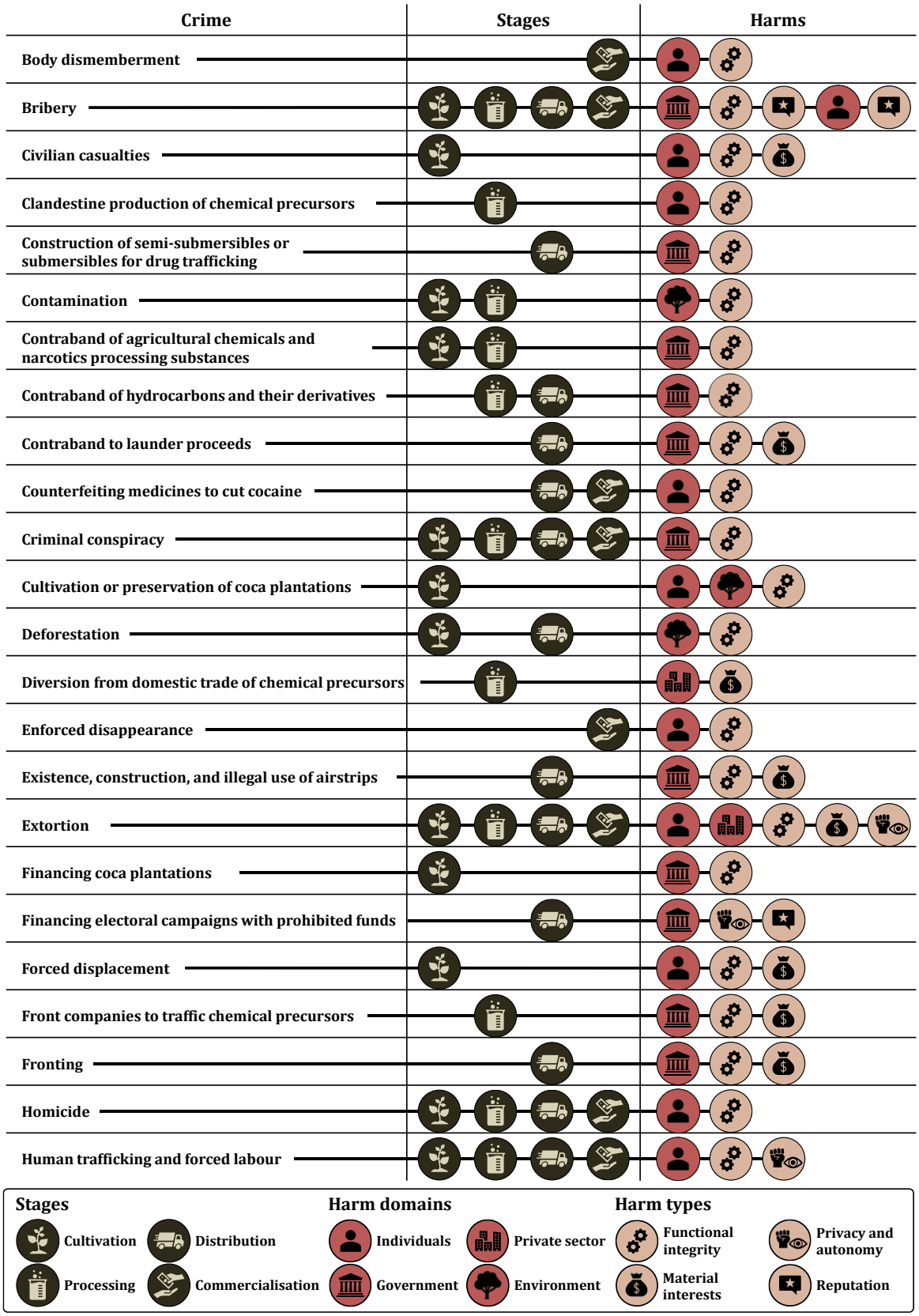


Figure 5.7
List of the 48 operational crime types, the stages in the cocaine trade in Colombia where they are perpetrated, and the associated harm domains and types

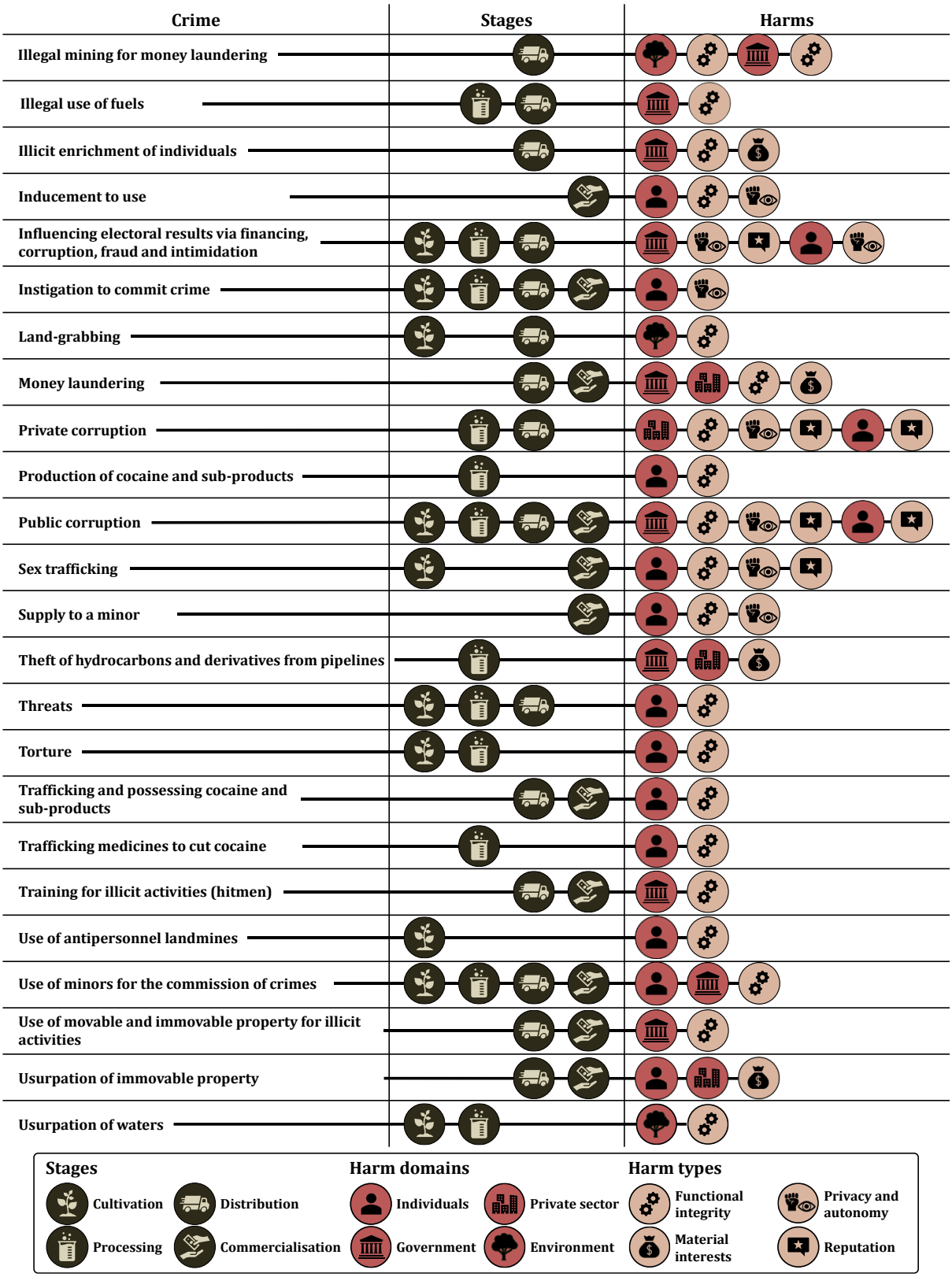


Figure 5.7 (continued)
List of the 48 operational crime types, the stages in the cocaine trade in Colombia where they are perpetrated, and the associated harm domains and types

Initial MCDA results: aggregate assessment of crime harm across cocaine trade stages

The weighted sum method provided scores of crime harms across the cocaine trade stages (see Table 5.6). All criteria had the same median weight (4, the maximum on the Likert scale), indicating that experts collectively viewed all criteria equally important. The normalised weight for each criterion was 0.077, which did not affect the total score due to the equal weighting. For simplicity, the total score for each stage was calculated by summing the median scores across all criteria. However, the equal weighting may not fully reflect the varying importance of different harm types, a point discussed in more detail in the discussion section.

Table 5.6
Median scores for each criterion-stage combination and sum of the median scores for each stage
FII: functional integrity of individuals; **FIG:** functional integrity of the government; **FIPS:** functional integrity of the private sector; **FIE:** functional integrity of the environment; **MII:** material interests of individuals; **MIG:** material interests of the government; **MIPS:** material interests of the private sector; **PAI:** privacy and autonomy of individuals; **PAG:** privacy and autonomy of the government; **PAPS:** privacy and autonomy of the private sector; **ROI:** reputation of individuals; **ROG:** reputation of the government; **ROPS:** reputation of the private sector.

	FII	FIG	FIPS	FIE	MII	MIG	MIPS	PAI	PAG	PAPS	ROI	ROG	ROPS	Score
Cultivation	4	4	3	4	4	4	3.5	4	4	4	4	4	4	50.5
Processing	4	4	4	4	4	4	4	4	4	4	4	4	4	52
Distribution	4	4	4	4	4	4	4	4	4	4	4	4	4	52
Commercialisation	4	4	4	4	4	4	4	4	4	4	4	4	4	52

The commercialisation, distribution, and processing stages received identical total scores (52), while the cultivation stage scored slightly lower (50.5). Across all stages, 11 out of 13 criteria had a median score of 4 (the highest possible value). For the cultivation stage, two criteria related to the private sector—FIPS (harms to the functional integrity of the private sector) and MIPS (harms to the material interests of the private sector)—received lower median scores of 3 and 3.5, respectively. This uniformity in median scores and weights suggests a strong consensus among experts. Still, it raises concerns about the tool's ability to differentiate between criteria and between harm levels across stages effectively. While these results should be interpreted cautiously, as the high median scores and weights limit the differentiation of harm levels, they are still presented for completeness.

Distribution of scores and weights

The distribution of scores and weights is skewed towards the higher end of the Likert scale, with most participants assigning high scores and maximum weights across criteria. Figures 5.8 shows that scores are predominantly clustered at the upper end, with a median score 4.0 for most criteria across all stages. As previously noted, the FIPS (harms to the functional integrity of the private sector) and MIPS (harms to the material interests of the private sector) criteria received slightly lower median scores of 3 and 3.5, respectively, for the cultivation stage.

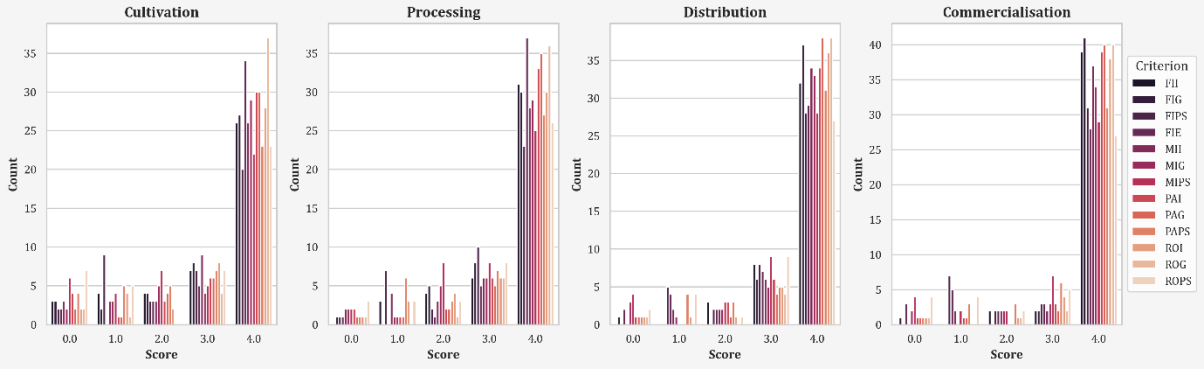


Figure 5.8
Distribution of criterion scores by stage
FII: functional integrity of individuals; **FIG:** functional integrity of the government; **FIPS:** functional integrity of the private sector; **FIE:** functional integrity of the environment; **MII:** material interests of individuals; **MIG:** material interests of the government; **MIPS:** material interests of the private sector; **PAI:** privacy and autonomy of individuals; **PAG:** privacy and autonomy of the government; **PAPS:** privacy and autonomy of the private sector; **ROI:** reputation of individuals; **ROG:** reputation of the government; **ROPS:** reputation of the private sector

Figure 5.9 illustrates the distribution of weights by criterion, which is also skewed. Although this uniform weighting indicates that the tool did not capture nuanced differences in how experts prioritised the criteria, it demonstrates that all were considered highly relevant for appraising the crime harms associated with the cocaine trade.

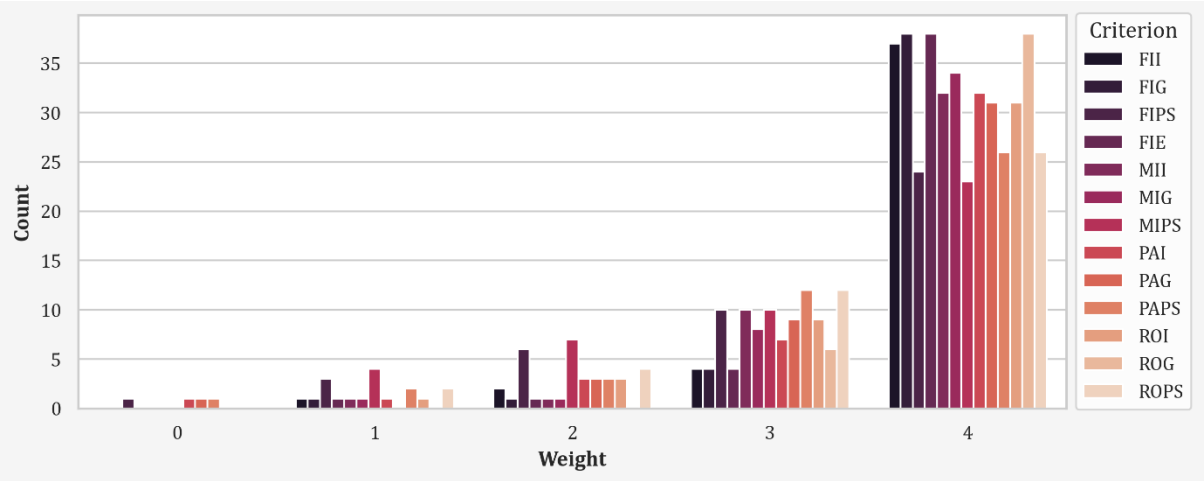


Figure 5.9
Distribution of weights by criterion
FII: functional integrity of individuals; **FIG:** functional integrity of the government; **FIPS:** functional integrity of the private sector; **FIE:** functional integrity of the environment; **MII:** material interests of individuals; **MIG:** material interests of the government; **MIPS:** material interests of the private sector; **PAI:** privacy and autonomy of individuals; **PAG:** privacy and autonomy of the government; **PAPS:** privacy and autonomy of the private sector; **ROI:** reputation of individuals; **ROG:** reputation of the government; **ROPS:** reputation of the private sector

Since sensitivity analysis examines how variations in scores and weights influence results (Demir et al., 2024), the lack of variability in this study precludes a meaningful assessment of the tool's responsiveness to changes in expert evaluations.

Implications of 'unsure' responses

Including an "unsure" option was necessary to accommodate the varied expertise of participants, recognising that not all experts could be expected to have comprehensive knowledge across all criteria. Of the 44 survey responses, 6 included "unsure" selections for scoring one or more stages for specific criteria.

Most of these "unsure" responses were related to harms affecting the private sector, particularly the reputation of the private sector (ROPS), which recorded five "unsure" responses across different stages. This suggests that experts may have had less familiarity with how the cocaine trade impacts the private sector compared to other sectors. Other criteria, such as harms to the functional integrity of the private sector (FIPS) at the cultivation stage, the functional integrity of the environment (FIE) at the commercialisation stage, and the material interests of the government (MIG) at the commercialisation stage, also saw one or two "unsure" responses, reflecting varying levels of confidence in evaluating harms in these areas.

The relatively low number of "unsure" responses suggests that most experts felt sufficiently knowledgeable to provide scores for most criteria (Table 5.7). However, the few instances of uncertainty underscore the need for a diverse panel of experts and possibly a more detailed briefing on criteria where expertise may be lacking.

Table 5.7
Summary of "unsure" responses by criterion and stage
FIPS: functional integrity of the private sector; **FIE:** functional integrity of the environment; **MIG:** material interests of the government; **ROG:** reputation of the government; **ROPS:** reputation of the private sector.

Criteria (Stages)	Number of "Unsure" Responses
FIPS (Cultivation) FIE (Commercialisation) ROG (Distribution) ROPS (Processing; distribution; commercialisation)	1
MIG (Commercialisation) ROPS (Cultivation)	2

Qualitative insights: participant suggestions, challenges, and potential of the MCDA tool

The short-answer survey question responses and the interviews provide insights about the MCDA tool's effectiveness, challenges, and potential to inform drug policy. All quotations included in this chapter were collected initially in Spanish and translated into English for this chapter. While every effort has been made to maintain the accuracy and intent of the original statements, some nuances may be lost in translation.

Instrument design

The four interviewees found the conceptual framework of the study—the idea that harm assessment of the cocaine trade must consider the stages, operational crimes, and harms—as well as the MCDA concept (i.e., the idea of ranking harms and weighing their importance) clear. However, some criteria and questions were perceived as complex. All agreed that including definitions of harm types and domains in all questions aided their understanding and facilitated accurate responses. Concepts such as "functional integrity" and "privacy and autonomy" of government were highlighted as potentially challenging, indicating a need for clearer definitions and more straightforward explanations. Additionally, there were suggestions to improve the focus on direct versus indirect crime harms, with one interviewee noting the difficulty of concentrating solely on crime harms without considering the broader impacts of drug trafficking.

Several interviewees recommended incorporating a variety of formats into the MCDA study, such as focus groups and workshops, alongside surveys. This approach could cater to different audiences and enhance the tool's effectiveness. For instance, Interviewee 4 suggested that interviews might be more effective for gathering perspectives from public sector experts, academics, and NGOs. In contrast, surveys could be more suitable for operational-level civil servants (e.g., analysts). According to Interviewee 4, focus groups would be advantageous for eliciting views from police officers, mothers, and youth: "With them, there is more unity in facing their realities. They are more assertive in generating responses and sharing their worldview. Individually, there is a risk of subjectivity; focus groups provide social control over reality, preventing context loss." Interviewee 3 recommended holding a focus group to explore the issue in greater depth, contextualise it, and achieve consensus, as discussion helps better understand the topic. Interviewee 1 proposed using preliminary survey results to consider hosting an MCDA workshop where decision-makers could agree on harm levels and priorities.

Including operational crimes helped contextualise the criteria, although some participants felt these examples could bias responses. For example, longer lists of associated crimes might make participants perceive the harm level as higher. Interviewee 1 remarked, "Having quantitative evidence would have helped inform the opinion." Quantifying crime incidence would improve the accuracy of the associated crime list and, consequently, the reliability of respondents' assessments.

The statistical analysis revealed that participants often struggled to differentiate between levels of harm and importance. Despite the numerical assessment facilitating the appraisal, as noted by interviewees 3 and 4, all interviewees agreed that they rated most criteria highly, suggesting the current scoring system may need adjustments to capture nuanced distinctions fully. Interviewee 1 observed,

> It's difficult not to rate everything highly; the tendency is to rate everything highly. As an expert, one should be able to recognise the differences, but it isn't easy. It might be due to a lack of knowledge; if we do not know the extent of the harm, we assume it's high. I felt I didn't have the tools to assess the importance and impact of the harm.

Clearer definitions of the scale and methods for comparative scoring, such as pairing or ordering criteria, could enhance differentiation and accuracy. Interviewee 2 suggested that making the rating scales more explicit and discussing them might help, proposing criteria comparison in pairs or requiring participants to order them.

Interviewees described the MCDA tool as conceptually challenging. Interviewee 4 commented on the tool's complexity: "The conceptual framework is interesting, but it is complex due to the many variables to consider." While the visual format was praised for clarity, the variables' complexity and the scoring's subjective nature posed difficulties. Simplifying the tool and providing additional guidance could reduce cognitive load and improve usability.

Interviewees also noted that the survey prompted them to reconsider the illicit drug problem from a different perspective—focusing on harms rather than the usual supply control and interdiction. This shift led to new insights and a deeper understanding of the issue. The tool's ability to stimulate such reflections and encourage alternative viewpoints was recognised as a valuable feature. Interviewee 2 remarked: "Everything was very clear; the concepts and categories were illuminating. I learned a lot. The instrument is very powerful, pedagogically speaking.".

<u>Additional harms suggested by participants</u>

Feedback from interviewees affirmed the relevance of the criteria, highlighting the MCDA tool's effectiveness in capturing a broad spectrum of harms, including those often overlooked, such as impacts on the private sector, as noted by Interviewee 1. While interviewees generally felt that the survey comprehensively addressed all relevant harms, some survey respondents provided additional suggestions.

Responses to the short-answer question, 'Are there any other harms relevant to crimes perpetrated in the cocaine trade in Colombia that you believe have not been considered in this assessment? If yes, please specify them' provide valuable insights into the comprehensiveness and focus of the MCDA tool. Although most participants either confirmed that the survey encompassed all relevant harms or did not respond to this question, a notable subset (n = 14; 32%) identified additional harms. These suggestions can be categorised into three main themes: drug use harms, indirect impacts, and harms specific to particular groups.

1. **Drug use harms**: Some participants highlighted harms related to drug use, such as the emotional damage within families, exploitation of vulnerable individuals, and negative impacts on youth and education. Although the MCDA tool was designed to appraise harms on the supply side of the cocaine trade, these responses suggest a potential need for future studies to consider the integration of both supply and demand-side impacts. Moreover, this feedback indicates the necessity of clarifying the tool's focus to avoid participant misunderstandings.

2. **Indirect impacts**: Respondents also identified several indirect impacts, including poverty, land ownership concentration, and broader social and cultural damages. This aligns with the interview feedback, highlighting challenges distinguishing direct from indirect harms. Incorporating these broader impacts into future iterations of the MCDA tool, either through specific criteria or additional studies, could enhance the comprehensiveness of the assessment.

3. **Harms focalised on specific groups**: Some responses emphasised the need to consider how harms affect specific groups, such as youth, Indigenous communities, and other vulnerable populations. While the survey did account for harm to individuals, some participants felt that the differential impact on various groups was not sufficiently addressed. Future iterations of the tool could include criteria that explicitly consider the differential effects on diverse populations, thereby improving the tool's relevance and comprehensiveness. However, this could make the tool even more complex, hindering its feasibility. In this regard, Interviewee 2 noted it "might be worthwhile for a later stage of the study or another more focused study. I don't think it's aligned with the purpose and scope of the survey. Especially to keep the survey achievable.".

4. **Clarification of criteria**: One participant suggested harms that were already covered by the existing criteria (e.g., harms to the legitimacy of the government, which could be classified under harms to the reputation of the government, and harms to the security of individuals, which could be classified under harms to the functional integrity of individuals or other types within the domain of individuals, depending on the impact), indicating a potential misunderstanding. This highlights the need for more precise definitions and explanations to ensure participants fully understand the criteria, leading to more accurate and valid assessments.

Challenges and benefits

The cocaine trade generates both benefits and harms, which can be perceived differently depending on perspective. As Interviewee 4 noted: "Harm can be perceived as either harm or benefit depending on perspective. What harms one may benefit another. Why not focus on impacts in general? In certain territories, the logic of impacts is reversed, and illicit economies can generate some well-being." This observation underscores the need to consider both the positive and negative impacts of the cocaine trade in various contexts, as the benefits may not always be immediately apparent.

Interviewee 4 emphasised the importance of a context-specific approach for practical application, suggesting that the survey would be more relevant locally than nationally. This would allow for a more accurate assessment of harms and their varying levels across different regions, fostering a more nuanced understanding of the drug trade's impact.

There was a consensus on the value of involving a broad range of stakeholders, including non-experts and individuals directly affected by drug trade-related harms. Suggestions included the general attorney's office, judges, community members, activists, and individuals from vulnerable populations to provide diverse perspectives. Interviewee 4 emphasised the importance of including women, mothers involved in illicit drug distribution areas, and young leaders:

> I think it is essential to involve women, mothers involved in some way. For example, leaders of the PNIS – the national program for illicit crop substitution in Colombia –, mothers in places with illicit drug distribution and marketing phenomena, and young leaders. There is a difference between the mother woman and the young protagonist. The mother tries to generate protective environments, and the children in their dimension are young people living around these references – the drug lord and successful trafficker references.

Interviewees highlighted several practical challenges, including the need for multiple survey versions to accommodate different user groups and the resource demands of scaling up the tool. Securing buy-in from various stakeholders and addressing logistical issues are essential for its successful implementation. For example, Interviewee 3 pointed out that for the National Police to adopt the tool, it must align with drug policy and the development plan, ensuring formal endorsement from the current government to encourage its use in decision-making.

Despite these challenges, interviewees also noted the potential of the MCDA for informing policy decisions, particularly if integrated into existing frameworks and adapted to local contexts. Interviewee 2 saw the tool as valuable for "all stages of the public policy cycle, from changing mental models to serving as a decision tool." Interviewee 4 noted:

> This instrument could be particularly useful in public policy planning and design stages. Especially if it is localised to specific contexts, it could help construct a baseline for monitoring and evaluation of harm minimisation, something currently lacking in the country.

The tool's potential to stimulate new questions and encourage further research was also recognised. Interviewee 2 identified several potential benefits of applying the MCDA tool, including fostering "actions more aware of the consequences of the problem, hopefully leading to more effective solutions (…) and fostering more inclusive and prudent policies." However, Interviewee 1 emphasised that political timing and alignment with current priorities could influence its effectiveness. They noted the tool's international potential, as it could serve as a valuable instrument for international NGOs advocating for reforms, similar to the approach taken with International guidelines on human rights and drug policy (World Health Organization, 2019) to promote local change.

Overall, the qualitative insights underscore the MCDA tool's potential as a valuable resource for understanding and addressing the harms associated with the cocaine trade. The tool's effectiveness and impact on policy-making processes can be significantly enhanced by addressing the identified challenges, incorporating suggestions for improvement, and focusing on a nuanced understanding of both harms and benefits and context-specific analyses.

Discussion

This study aimed to examine the crime-related harms across the stages of the cocaine trade in Colombia. The mapping of operational crime harms across the cocaine trade illustrates how different crime types impact various harm domains, highlighting the need for a nuanced understanding of its multidimensional impacts. An MCDA was employed to rank the stages of the trade using harm types and domains adapted from Greenfield and Paoli (2013, 2022) as criteria. The high weights assigned to these criteria by participants confirm their relevance and applicability for assessing the impacts of the cocaine trade. While the MCDA tool provided a structured framework for evaluation, the results showed limited distinction between harm levels across stages and criteria. Participant feedback offered valuable context for interpreting these findings, identifying limitations, and acknowledging the tool's potential to inform drug policy development.

Interviewees emphasised several key benefits of the MCDA approach. They appreciated the tool's ability to stimulate new perspectives on the illicit drug problem, shifting the focus from supply control and interdiction to a more comprehensive consideration of harms. This shift in perspective encouraged deeper reflection on the complex issues associated with the cocaine trade, including those often overlooked, such as impacts on the private sector. Participants acknowledged the MCDA tool's value in systematically evaluating harms across the trade, identifying the most severe aspects, and informing nuanced policy discussions.

There are certain limitations to consider. First, as an initial attempt at systematically classifying harms in the cocaine trade, the criteria have limitations, particularly in ensuring consistent categorisation. Further refinement is needed. For instance, excluding social environmental harms from the environment domain, while intended to improve conceptual clarity, may create ambiguity in cases where environmental degradation leads to societal consequences such as displacement or loss of livelihood. Similarly, the reclassification of man-made structures, such as agricultural fields, from the environment to material interests highlights the challenge of distinguishing between ecological harm and economic damage. In instances where environmental harm has direct financial implications—such as deforestation affecting private conservation areas or pollution damaging agricultural land—the taxonomy may require additional nuance to ensure harms are accurately classified. These complexities suggest that while the taxonomy provides a structured foundation for harm assessment, future research should focus on refining its categories to enhance its precision, applicability, and ability to capture the full spectrum of harms associated with the cocaine trade.

Second, although an expert in drug policy in Colombia reviewed the classification of operational crime types by harm types and domains, further refinement and validation with input from a broader range of stakeholders—particularly local communities directly affected by the cocaine trade—would be valuable. Engaging diverse perspectives could offer additional insights and ensure that the classification more accurately reflects the full scope of harms caused by these operational crimes. Meaningful participation requires integrating stakeholder input into decision-making and MCDA is an effective tool for incorporating diverse perspectives throughout the planning process (Marttunen et al., 2015). Involving stakeholders such as community-based organisations, policymakers, and local institutions could enhance the classification's accuracy by reflecting the lived experiences of those most impacted (Ngubane et al., 2024). Furthermore, stakeholder engagement in measure selection can uncover relevant aspects overlooked by researchers, ensuring a more comprehensive and contextually appropriate assessment (Ruangpan et al., 2021). This broader engagement can bridge the gap between research and implementation, fostering dialogue, consensus-building, and social learning (Keseru et al., 2021). In doing so, the MCDA tool would provide a more thorough and socially supported evaluation of harms associated with the cocaine trade.

Third, the participants assigned mostly high scores and maximum weights across most criteria. This resulted in minimal variation and limited the tool's ability to discern between harm levels and between criteria. It is unrealistic to assume that all harm types are equally important. In the real-world context of the cocaine trade, certain types of harms may carry more significance than others when it comes to policy prioritisation. For instance, harms to the functional integrity of individuals—such as the physical and psychological impacts of the cocaine trade on communities—may have more direct and long-lasting consequences compared to reputational harms, which, though damaging, may not always have the same immediate or widespread effects. Public sector departments often work within limited budgets, making it essential to establish priorities based on their relative contribution to desired outcomes and efficiently allocating scarce resources (Mabin et al., 2001). In this study, stages of the cocaine trade that disproportionately harm individuals may warrant more immediate attention than those primarily involving reputational harms.

Several factors may have contributed to the limited sensitivity of the MCDA tool. These include the complexity of the conceptual framework, potential ambiguity in criteria definitions, and the inherent difficulty in quantifying and comparing harms across diverse domains. Furthermore, the sample's over-representation of law enforcement officers may have introduced a bias towards perceiving higher levels of harm across all stages. This perception of high harm may be influenced

by the widely acknowledged severe harms associated with cocaine use itself, as highlighted by previous MCDA studies consistently ranking cocaine and its derivatives among the most harmful drugs (Bonnet et al., 2020; Bourgain et al., 2012; Castaño et al., 2022; Nutt et al., 2010; van Amsterdam et al., 2015). Specifically, the study by Castaño et al. (2022), conducted in Colombia, resonates with the current study's context and underscores the perceived severity of harms related to cocaine use. Feedback from interviewees underscored difficulties understanding some harm types and effectively weighing criteria. The MCDA tool requires refinement to enhance precision and relevance for policy-making. This should include clearer criteria definitions, exploration of diverse data collection formats (such as surveys, focus groups, and interviews tailored to specific audiences), and improved comparative scoring and weighting methods. 'Unsure' responses in the survey, primarily related to harms affecting the private sector – whilst still being rated as a relevant harm – further emphasise these limitations and the need for a more balanced and informed participant pool.

This research employed direct scoring and weighting methods using Likert scales to balance user-friendliness with methodological precision, as emphasised by Ryan et al. (2001). Simple weight elicitation was chosen for its ability to clearly express individual perspectives and encourage communication among decision-makers, a benefit noted by Dolan (2010). However, the observed low discriminatory power in the scores and weights may be attributed to these methods. The limited sensitivity observed in this study may be partially attributed to the use of a five-point Likert scale (0–4). Research suggests that increasing the number of response options can enhance both reliability and validity, with seven-point scales often identified as optimal for balancing precision and usability (Kusmaryono et al., 2022; Taherdoost, 2019). According to these studies, a five-point scale, while user-friendly, may not provide sufficient granularity to capture nuanced expert judgments, potentially leading to response clustering at the extreme values. Alternative approaches such as the Analytical Hierarchy Process (AHP), Multi-attribute Utility Analysis (MAUT), and swing weighting should be considered to address this limitation (Goetghebeur et al., 2012). Swing weighting has been applied in MCDA for drug harm assessments during workshops (Rogeberg et al., 2018; Rolles et al., 2021). Despite the potential advantages of these more sophisticated methods, their incorporation mustn't undermine the tool's usability. Overcomplicating the process might hinder its effectiveness among policymakers. Goetghebeur et al. (2012) suggest that while MCDA may initially seem nonintuitive and potentially encroach upon decision-making authority, maintaining simplicity and focusing on measuring the value of interventions can foster meaningful dialogue and encourage decision-makers to critically reflect on their values and priorities.

Participant and interviewee feedback also noted the necessity of adapting MCDA applications to local contexts and involving diverse stakeholders, particularly those directly impacted by the drug trade. This aligns with the challenges highlighted by Greenfield and Paoli (2022), who found that assessing harms associated with coca cultivation and processing was particularly difficult due to Colombia's contextual diversity. They noted that Colombia's megadiversity complicated efforts to evaluate and rank harms, with findings on deforestation, pollution, and economic impacts varying across different locations, often resulting in ambiguous or contradictory conclusions.

Greenfield and Paoli (2022) observed that coca cultivation and processing in Colombia involve both losses and gains for individuals, with indeterminate net consequences. This complexity is reflected in the interviews, which suggests that while the negative effects of coca cultivation are significant, a broader perspective is needed. Illicit economies in certain regions can paradoxically enhance well-being, challenging conventional impact logic. This is supported by findings from Parada-Hernández and Marín-Jaramillo (2021), who found that despite recognising the risks associated with coca growing, women appreciated that it gave them the capacity to afford goods and services. Furthermore, as documented in Chapter 3 (A crime script of the cocaine trade in Colombia), income from coca cultivation can support subsistence and education, further underscoring the dual nature of its impact.

Despite these challenges, the MCDA tool holds promise for informing counter-drug policy, as highlighted by interviewees. By providing a structured framework for systematically evaluating harms, the tool can facilitate more informed decision-making and encourage a deeper understanding of the various impacts of the cocaine trade. The potential of the MCDA tool lies not only in its ability to identify and prioritise harms but also in its capacity to stimulate critical reflection, foster collaboration among diverse stakeholders, and promote context-specific solutions.

Future research should focus on refining the MCDA tool to enhance its sensitivity and effectiveness. Specifically, this includes improving rating scales, developing methods to capture expert opinions better, and exploring diverse data collection formats such as workshops and focus groups tailored to various participant groups, including experts and vulnerable populations. While this study concentrated on crime harms with the assumption that such a focus would be most relevant to those involved in crime prevention, future research could expand the scope to include both direct and indirect impacts of the cocaine trade. This includes examining the broader effects, feedback mechanisms, and differential impacts on various population groups.

Future studies should also aim to develop precise harm indicators and improve data collection methods to better estimate crime incidence and the broader harms associated with the cocaine trade. As demonstrated in previous research (e.g., Goetghebeur et al., 2012), incorporating quantitative evidence could enhance the accuracy of harm assessments by providing more robust data for participant evaluations.

Conclusion

This pilot study employed an MCDA approach to rank stages of the cocaine trade in Colombia in terms of harm levels. Despite limitations in capturing nuanced distinctions between harm levels, the study yielded valuable insights. The consistent assignment of high weights to criteria by experts affirmed the relevance of the selected criteria, inspired by Greenfield and Paoli's harm taxonomy (2013, 2022). Qualitative data suggested that the MCDA tool stimulated critical reflection on the diverse crime harms of the cocaine trade, prompting a shift in perspective from supply control towards a more holistic understanding.

While challenges remain in refining the tool's sensitivity and discriminatory power, its potential to inform counter-drug policy was acknowledged. Future research should refine the criteria, enhance the tool's precision, incorporate quantitative data, and expand its scope to encompass both direct and indirect harms so that it can inform counter-drug policies that mitigate harms.

Chapter 6. Discussion

Introduction

The cocaine trade in Colombia represents a persistent and multifaceted challenge, generating harm across social, institutional, and ecological domains. These harms stem not only from drug-related activities, such as cocaine production and trafficking, but also from operational crimes that sustain the trade, including money laundering, violence, and human trafficking. Traditional counter-drug policies, which focus primarily on reducing supply and demand, have frequently intensified these harms, inadvertently exacerbating the vulnerabilities they aim to address.

This thesis responds to the pressing need for a more comprehensive and effective approach by proposing a harm-focused framework for analysing and addressing the impacts of the cocaine trade. By prioritising harm reduction over supply suppression, this framework offers a valuable perspective for evaluating the different stages of the trade and designing interventions focusing on the well-being of affected communities and institutions.

The study is underpinned by three core ideas: first, that harm reduction is a more suitable goal for drug policy than supply and demand reduction; second, that harm can be systematically assessed across the stages of the cocaine trade; and third, that such an assessment must account for all criminal activities that sustain the illicit drug trade, not just those directly related to drug use or trafficking. The overarching question guiding this research is: *What are the strengths and weaknesses of a framework that integrates the organised crime process, operational crimes, and crime-related harms for assessing the harms of the cocaine trade in Colombia?*

The intended impact of this research is to enrich the understanding of the cocaine trade's harms so that, eventually, such an understanding can guide law enforcement priorities toward mitigating the most severe impacts. Instead of focusing solely on curbing coca cultivation or production, the study advocates for a policy debate centred on identifying the most affected stakeholders—such as coca-growing communities, women coerced into drug trafficking, and ecosystems devastated by deforestation—and addressing these harms systematically. The conceptual framework developed in this research aims to assess harm across all stages of the trade, including the criminal activities that sustain these, with the potential to evolve into a practical tool for informing harm-reduction policies and prioritising law-enforcement actions.

This chapter synthesises the key findings of the three empirical studies conducted for this thesis, examines their implications for theory, policy, and practice, and addresses the limitations of the research. To answer the overarching research question, three interconnected studies were undertaken: (1) a crime script analysis of the cocaine trade, (2) expert interviews to identify associated crimes and analyse their mechanisms using a value chain framework, and (3) a pilot study employing Multi-Criteria Decision Analysis (MCDA) through an expert survey to evaluate the harms associated with the cocaine trade across its stages. These studies collectively address the three sub-research questions:

1. **What is the crime commission process of the cocaine trade in Colombia?**

   This study consolidates fragmented knowledge into a cohesive model by mapping the cocaine trade's stages—cultivation, processing, distribution, and commercialisation—and identifies mechanisms that sustain the trade and gaps in understanding, particularly in the underexplored commercialisation stage and the trade's use of cyberspace.

2. **Which crime types support the various stages of the cocaine trade in Colombia, and how?**

   Employing a value chain framework, this study classifies the crimes sustaining the cocaine trade, illustrating their complexity and diversity and providing a baseline to identify crime harms.

3. **How can crime-related harms be assessed at each stage of the cocaine trade in Colombia?**

   The final study evaluates an MCDA survey as a harm assessment tool, assessing its effectiveness in classifying and prioritising harms, its potential to inform counter-drug policies, and its methodological challenges and limitations.

Each study builds upon the others, creating an integrated approach: The crime script from Study 1 informed the operational crime classifications in Study 2, which provided the foundation for the harm assessment framework in Study 3.

The findings challenge traditional supply-focused policies by revealing that many harms stem from operational crimes rather than cocaine production or trafficking itself. Issues like violence, corruption, and environmental degradation often arise as unintended consequences of sustaining the trade. The harm-focused framework proposed in this thesis provides a tool for assessing these broader impacts.

While this research advocates for harm reduction as the primary policy objective, it does not dismiss the role of supply control measures. It recognises that some harm—particularly from drug-related crimes —could potentially be addressed through supply reduction interventions. For instance, Mazerolle et al. (2020) found that targeted law enforcement approaches, particularly those involving partnerships and geographically focused interventions, are effective in reducing drug crime. However, the harmful effects of supply-reduction policies and interventions—discussed in the literature review of this thesis—must also be considered. Bacon and Spicer (2022) observe that while supply control activities can contribute to disrupting drug markets, the resilience of these markets means that even the most effective interventions tend to have only marginal and short-lived impacts. They further express concerns that intensified enforcement can sometimes amplify the very issues it seeks to address, such as drug market violence. Greenfield and Paoli (2017) and Ritter and Stevens (2017) emphasise the lack of rigorous empirical evaluation of supply-side interventions in drug law enforcement. Greenfield and Paoli suggest that such interventions may be effective in some instances, but they call for further research to assess both their positive impacts and unintended harms. Ritter and Stevens note that despite substantial government investment, little research exists on the ability of these interventions to reduce harm. Therefore, while supply control measures may play a role in addressing certain drug-related crimes, their limited and often short-lived effectiveness underscores the need for a more balanced approach—one that prioritises harm reduction. A harm-reduction policy, in this context, would focus on transforming the drug trade toward less violent and harmful forms of operation. As Kammersgaard (2019) suggests, such an approach would, for example, steer the markets towards less harmful and violent structures to minimise the broader impacts of drug-related harms. This could also entail fostering safer environments for vulnerable communities and prioritising the reduction of harm caused by illegal armed groups that control coca-growing and processing areas, through the reclamation of territory via development initiatives.

This chapter is structured as follows: It begins by synthesising key findings and insights, reflecting on the harm-focused framework's theoretical advancements and practical applications. It then acknowledges the study’s limitations and identifies opportunities for future research.

Findings and contributions

Research question 1: What is the crime commission process of the cocaine trade in Colombia?

The cocaine trade in Colombia can be conceptualised as a multi-stage process, from cultivation to final sale, connected by voluntary transactions between sellers and buyers (von Lampe, 2016b). This study synthesised these stages into a structured crime script model, drawing upon Cornish's (1994) crime script framework to systematically depict the trade's criminal activities. The script describes the cocaine trade in Colombia as a structured, multi-stage process encompassing cultivation, processing, distribution, and commercialisation. Each stage comprises distinct activities, actors, and enabling conditions, underpinned by the pervasive influence of armed groups and corruption. Cultivation involves the sowing, harvesting, and initial processing of coca leaves, often within territories controlled by non-state armed actors who provide protection and impose taxation. Processing entails the chemical transformation of coca leaves into cocaine, requiring specialised knowledge and access to precursor chemicals, frequently smuggled or diverted from legitimate supply chains. Distribution is marked by the clandestine movement of cocaine through domestic and international routes, facilitated by corruption, bribery, and complex logistical networks. Finally, commercialisation involves wholesale and retail transactions, increasingly mediated by encrypted communications and digital platforms, though this stage remains the least understood.

The study found a lack of knowledge about the commercialisation stage of the cocaine trade in Colombia. While crime scripts on digital drug markets exist (e.g., Jardine, 2021; Joyce, 2023; Morgenthaler & Leclerc, 2023), the use of social media, encrypted messaging applications, and online platforms in the cocaine trade in Colombia remains largely unexamined. This gap in understanding points to a significant void in Colombia's counter-drug strategy, which does not address the cyber dimension of drug trafficking. For example, the document outlining Colombia's National Drug Policy 2023-2033 (Ministerio de Justicia y del Derecho, 2023) makes no reference to the role of digital platforms in drug trade activities. Moreover, the limited access to digital technologies in Colombia, particularly in rural areas where coca cultivation is concentrated, suggests that the cocaine trade may not operate on the same scale as in countries with more robust digital infrastructures (Giommoni et al., 2024). Consequently, the dynamics of cyberspace drug markets in Colombia remain an underexplored area, requiring further research to understand how these technological limitations shape drug trafficking in the country and the commercialisation of cocaine.

The crime script analysis study contributes to a comprehensive understanding of the cocaine trade by integrating knowledge from diverse sources, including grey literature, academic research, and investigative journalism. Despite the extensive information available on the trade, it remains fragmented. As stated by the UN General Assembly (2016), addressing the world drug problem demands a comprehensive and integrated response. By synthesising this data, the study constructs an integrated model for understanding the trade's crime commission process as a whole and facilitating the identification of pinch points for interventions (Hancock & Laycock, 2010), contributing to scholarly discourse and policy development.

The study further advances crime script analysis by introducing a more structured and systematic approach. Traditional crime scripting often relies on intuitive methods with limited formalisation (Dehghanniri & Borrion, 2019). By drawing on Chainey and Alonso Berbotto's (2022) method, this study refines data collection techniques, integrating systematic review methods, prioritising academic and grey literature, and incorporating expert interviews for validation. The application of Borrion's (2013) quality assurance criteria enhances the script's precision and completeness, though challenges remain in assessing attributes like ambiguity, indicating the need for further refinement. By addressing these methodological gaps, the study strengthens the rigour and replicability of crime scripting (Borrion & Dehghanniri, 2023).

The integrated crime script model offers a valuable tool for informing counter-drug policies by providing a panoramic view of the entire cocaine trade process. Given the involvement of over 40 state entities in the implementation of Colombia's National Drug Policy 2023-2033 (Ministerio de Justicia y del Derecho, 2023), effective coordination is necessary. This challenge is further compounded by financial constraints and institutional limitations, as Loaiza (2023) warns that the projected investment may fall short, and the state's capacity to coordinate such a vast array of actors could be overstretched. Disjointed interventions may inadvertently undermine one another, ultimately hindering broader policy goals. For instance, forced eradication efforts often lead to violent confrontations and deepen the distrust between the state and peasant coca-leaf growers, not only exacerbating tensions but also hindering long-term solutions such as the voluntary illegal crop substitution programme promised in the 2016 peace agreement (Ortiz-Ayala, 2021). By integrating diverse policy responses within a cohesive crime script model, policymakers can identify potential conflicts between interventions and develop more coordinated, strategic approaches to enhance policy effectiveness and mitigate unintended consequences.

Research question 2: Which crime types support the various stages of the cocaine trade in Colombia, and how?

Operational crimes are criminal activities that directly support each stage of the cocaine trade, from the cultivation of coca to the commercialisation of cocaine products. This study identified 48 distinct operational crimes, illustrating the diverse mechanisms that enable the trade to function. These crimes include drug-specific offences, such as planting coca, processing cocaine, trafficking, and possession, as well as ancillary crimes, such as threats, homicides, corruption, and money laundering.

The research adopted the Rational Choice Perspective (Cornish & Clarke, 1986) and the Value Chain Framework (Porter, 1985) to analyse these operational crimes systematically. This framework allowed for the categorisation of the identified crimes into primary and supporting functions of the cocaine trade. Primary activities, such as production, processing, and logistics, are distinguished from supporting activities, including procurement, governance, and financial management. Of the 48 identified crime types, 37 are linked to supporting functions, emphasising their essential role in maintaining the trade. Cornish and Clarke (2002) argue that organised crime is purposive and characterised by organisation, planning, and decision-making—elements that mirror the structure of legitimate businesses. In line with this perspective, this study employs the Rational Choice Perspective and the Value Chain Framework to enhance our understanding of the mechanisms driving the cocaine trade. The study shows the strategic, business-like nature of criminal enterprises and how operational crimes align with the broader goals and functions of the cocaine trade.

Mapping these crimes across the stages of the cocaine trade revealed patterns in their distribution and illustrated how specific crimes emerge to meet operational needs at different points in the value chain. For instance, threats, extortion, and violent crimes are pervasive across all stages, where coercion is used to maintain control over the supply chain. Contraband crimes occur at different stages but serve different purposes: some are involved in procurement (e.g., securing substances for coca cultivation and cocaine processing), while others facilitate money laundering. Crimes involving movable and immovable property and money laundering are concentrated in the distribution and commercialisation stages, facilitating logistics and the integration of illicit profits into the formal economy.

The diversity and complexity of operational crimes provide valuable indicators for understanding the vulnerabilities and strengths of the cocaine trade. The number of crime types is tied to their classification in Colombia's penal code (Congress of Colombia, 2000a). In this regard, the study revealed potential gaps in the legal framework. For instance, while the use of semi-submersibles is explicitly criminalised, the regulation of other technologies, such as counter-surveillance tools, remains ambiguous. The absence of explicit legal provisions addressing technologies like burner phones and unmanned aerial vehicles suggests that certain enablers of organised crime may operate in a legal grey area. At the same time, the variety of crime types also reflects the complexity of the trade. Thoumi (2017) argues that policies focused on a single issue—such as reducing supply—risk overlooking other critical factors, such as corruption, that sustain the trade. This study supports that claim. For instance, while efforts to curb coca cultivation may temporarily reduce supply, they are unlikely to succeed in the long term without addressing the corruption and money laundering that underpin the trade's profitability.

The study moves beyond frameworks of drug-related violence, such as those proposed by Goldstein (1985) and Reiss and Roth (1993). While these frameworks offer important insights into the types of violence associated with drug trafficking, this study also examines other non-violent crimes. It builds on Naylor's (2003) distinction between primary and secondary crimes, providing a more detailed understanding of the complexities within the cocaine trade by classifying crimes using the Value Chain Framework. This broader perspective highlights how a wide array of operational crimes, both violent and non-violent, collectively sustains the cocaine trade in Colombia.

Research question 3: How can crime-related harms be assessed at each stage of the cocaine trade in Colombia

The first step to assessing crime harms was to identify the harms. The harm taxonomy developed by Greenfield and Paoli (2013, 2022) was slightly modified to categorise the harms, distinguishing between harm types and harm domains (e.g., individuals and the government). Operational crimes were classified accordingly. This exercise illustrated how, beyond their role in sustaining the cocaine trade, operational crimes are also sources of harm. Many of the harms inflicted on communities, institutions, and ecosystems stem from these operational crimes rather than from the drug trade itself. For instance, corruption of state actors and local officials, along with the violence that arises from territorial disputes between drug trafficking groups, result in significant social harm, undermining the safety and security of entire populations (Comisión de la Verdad, 2022). Thus, the damage caused by the cocaine trade is not solely a product of the illicit substance but also of the illegal infrastructure that supports it.

Building on this classification, MCDA was employed in this study to rank the stages of the cocaine trade based on the harm they generate. The stages—cultivation, processing, distribution, and commercialisation—were treated as alternatives, while the various types of harm were used as criteria. This approach provided a structured means to evaluate the diverse and complex harms inflicted by the cocaine trade across its stages. While MCDA has been previously applied to compare harms across different drugs (e.g., Ferreira et al., 2022; Nutt et al., 2010; van Amsterdam et al., 2015) or to evaluate various policy scenarios (such as prohibition, regulation, or free market) (e.g., Rogeberg et al., 2018; Rolles et al., 2021), no existing study has attempted to use MCDA to rank stages of the cocaine trade in terms of harm.

The MCDA framework was piloted through expert surveys and subsequently validated via interviews. The consistently high weights assigned to the different criteria reaffirmed the relevance of Greenfield and Paoli's taxonomy to assess the harms of organised crimes. The interviewed experts, drawn from various relevant fields, highlighted the importance of assessing harm comprehensively and expressed appreciation for the MCDA as a tool to structure such assessments. The survey process prompted experts to think about harms they had not previously considered, such as the impacts on the private sector. It reinforced the limited understanding of the scope of harms associated with the cocaine trade. Expert feedback underscored the potential of the harm assessment tool. Interviewees suggested that the tool could increase international awareness of the need for harm-focused policy shifts. All interviewed experts recognised that this type of assessment could contribute to policy discussions prioritising harm reduction.

Despite its strengths, applying MCDA to this context presented several challenges. Experts struggled to frame and articulate harm assessments, as they had not previously analysed the cocaine trade from this perspective. Some definitions and criteria proved difficult to interpret, and the lack of reliable data on specific harms further complicated the assessment process. In the pilot survey, experts frequently assigned the highest ratings across all harm categories and stages, limiting the ability to differentiate between levels of harm. They also weighted all criteria equally, inadvertently equating harms of differing severity—for example, reputational damage and threats to physical integrity. In hindsight, these issues may stem from the criteria used in the MCDA analysis. Although Greenfield and Paoli's (2013, 2022) taxonomy was adapted, it may still be too abstract to generate precise evaluations. Previous studies have similarly criticised the taxonomy as difficult to operationalise due to its complexity, despite its comprehensiveness (Mitchell, 2019; Sherman, Neyroud, et al., 2016).

Another challenge in applying MCDA to this context is the conceptual framework used to assess harm. While analysing the cocaine trade in terms of its stages—cultivation, processing, distribution, and commercialisation—provided a structured way to assess harm, this approach may have also contributed to expert difficulties in evaluation. Gómez-Quintero et al. (2023) argue that assessing the harms of organised crime requires examining how criminal activity unfolds across multiple stages, as this allows for a deeper understanding of causal relationships and interconnections. Their OCHA method emphasises crime scripts to systematically map the stages of organised crime, offering a structured assessment of criminal processes. Similarly, this thesis has maintained that a stage-based approach provides valuable insights for resource allocation, particularly for drug-producing countries that must address all stages of the illicit trade and make informed decisions on where to concentrate enforcement efforts.

However, while conceptually useful, thinking in terms of stages may not align with how the cocaine trade manifests geographically. In Colombia, several stages of the trade often occur within the same area. For instance, since 2015, UNODC & SIMCI (2020) have identified 'productive enclaves', which are places that concentrate where the production of coca leaf, its transformation into coca base or cocaine hydrochloride, and its subsequent trafficking to consumption centres in Colombia and abroad. In 2023, there were 15 productive enclaves identified in Colombia, concentrating 39% of the coca-growing area in just 14% of the territory where coca crops were present in 2023 (UNODC & SIMCI, 2024). Data on the cocaine trade is typically reported by geographical area rather than by stage, with UNODC statistics categorising coca cultivation, seizures of coca leaf, coca base, and cocaine according to specific regions (UNODC, 2024c). While a stage-based approach remains valuable for understanding the operation of organised criminal activity, as demonstrated in the crime script and the operational crimes studies, this thesis has revealed its limitations for decision-making in policy and law enforcement. For authorities tasked with disrupting the cocaine trade, interventions are more naturally designed around geographic hotspots rather than discrete stages, suggesting that future harm assessments should incorporate spatial dimensions alongside stage-based analyses.

In this sense, MCDA could instead be applied to sort geographical areas based on harm profiles, providing an alternative way to structure harm assessments. The process of sorting, as opposed to ranking or selecting alternatives, is particularly relevant in this context because it enables decision-makers to assign areas to predefined harm categories based on established criteria, rather than requiring a direct comparison of all regions (Roy, 2016; Zopounidis & Doumpos, 2002). Unlike ranking, which orders alternatives from best to worst, or choice, which selects an optimal alternative, sorting classifies alternatives based on how well they fit the characteristics

of a category rather than how they compare to others (Zopounidis & Doumpos, 2002). This then, aligns with the need to assess geographical areas based on their harm levels without necessarily placing the areas a strict ordinal sequence. In this case, geographical areas involved in the cocaine trade could be assigned to harm categories that reflect the severity and nature of crime-related harms they experience. This approach would align with existing applications of MCDA in environmental policy, public health, and economic risk assessment, where sorting methods help structure complex decisions by grouping entities based on relevant criteria (Alvarez et al., 2021). By considering both spatial and procedural dimensions, a sorting-based MCDA framework could provide policymakers and law enforcement agencies with a structured means to prioritise interventions in regions most affected by the cocaine trade.

Political will is another significant challenge in adopting a harm assessment tool. Gaining support from policymakers and decision-makers is a critical hurdle, as a shift toward a harm-focused approach challenges entrenched supply-centric policies and may face resistance from stakeholders who prioritise traditional measures, such as eradication and interdiction. Shen (2025) argues that political will is essential for enacting and implementing innovative policies, highlighting three key components: authority (the power to enforce policy), capacity (the resources to implement it effectively), and legitimacy (the perceived rightfulness of actions by stakeholders). In this context, resistance to harm-focused assessments may stem from a lack of authority among reform advocates, limited institutional capacity, or the absence of legitimacy in shifting away from punitive drug control strategies. Overcoming these barriers requires technical advancements in harm assessment and strategic engagement with policymakers to build the necessary political will for change.

The use of MCDA in this research reveals important challenges, particularly the difficulty of quantifying harm to enable decision-making. Interviewed experts reported difficulties in estimating the extent of crime and assigning differential weights to harm criteria; the survey data confirmed this. Unlike supply-demand metrics, which can rely on proxy data, the MCDA framework depends on more subjective harm assessments. Paoli and Greenfield (2013) identified five key challenges in assessing the harms of criminal activities: (1) morality, cultural and socio-economic variability, and subjectivity; (2) problems with infinitude, standardisation, and causality; (3) gross vs net harms; (4) quantification; and (5) incommensurability. Quantification and incommensurability are of particular relevance to this study. They argue that many harms, for instance, social and psychological, are difficult to objectively measure, leading to inconsistencies in harm assessments. Additionally, different types of harm (e.g., financial loss vs psychological trauma) are often incomparable, complicating efforts to weigh or prioritise them in

policy decisions. Alternative approaches, such as estimating the costs of crime (e.g., Heeks et al., 2018) and the Crime Harm Index (Sherman, Neyroud, et al., 2016), use financial measures or sentencing guidelines as proxies for harm. However, as discussed in the literature review, these methods are most adequate for recorded crime.

Integrating expert elicitation techniques with the Crime Harm Index presents a promising avenue for future research. Building on insights from Chapter 5 of this thesis, which highlighted the challenges experts face in providing numerical assessments without robust data, expert elicitation could serve as a valuable proxy for estimating crime incidence. Consultations with MCDA experts from the LAMSADE laboratory at Université Paris Dauphine suggested the potential for combining MCDA with the Crime Harm Index, addressing data limitations while leveraging expert knowledge to enhance harm quantification.

Limitations

This study offers valuable insights into the dynamics of the cocaine trade, particularly within the context of Colombia. However, two overarching limitations must be acknowledged, constraining the findings and suggesting areas for future research; other limitations specific to each study have been discussed in their respective chapters.

Quantitative data constraints

A key limitation of this study lies in its reliance on non-quantitative data sources, including academic literature, grey literature, investigative journalism, and expert accounts. While these sources provided rich, context-specific insights, the absence of robust quantitative and court evidence restricts the analysis. Furthermore, while expert interviews (15 to refine and validate the crime script, 15 to identify operational crimes, and 48 surveys to test the MCDA tool) played a central role in this study, the risk of bias in expert accounts must be considered. Expert elicitation is highly valuable in situations where data are lacking or incomplete (Hanea et al., 2022). However, experts are prone to errors due to cognitive biases, social influences, and challenges in conveying probabilistic information (Hemming et al., 2018).

Exclusion of key perspectives

A significant limitation of this study is the exclusion of key stakeholders directly affected by or involved in the cocaine trade, including coca growers, traffickers, and impacted communities. The harms experienced by these groups vary, shaped by gender, culture, and socio-economic conditions. Adding further complexity, this thesis has noted that some stakeholders also perceive benefits from the cocaine trade, particularly in the form of financial stability in certain contexts (Parada-Hernández & Marín-Jaramillo, 2021). Paoli and Greenfield (2013) similarly highlight the distinction between gross and net harms, noting that some criminal activities may yield countervailing benefits that complicate harm assessments. Thoumi (2017) underscores that drug-related harms are deeply intertwined with broader social vulnerabilities, necessitating policies that account for the complexity of drug markets. He argues that a truly comprehensive and balanced approach to drug policy must engage a diverse range of stakeholders, including non-state actors such as affected communities, NGOs, and financial institutions. Including these perspectives in future research could foster a more nuanced and balanced understanding of the actual harms associated with the cocaine trade.

Insights

This section outlines insights gained through the development of this thesis. It examines the concept and dimensions of harm, ethical considerations, and the broader implications of a harm-focused approach to counter-drug policy.

Direct, indirect, and dynamic harms

The harms associated with the cocaine trade are diverse and extend beyond the immediate criminal activities involved in its production and trafficking. For example, the Colombian Truth Commission Report (Comisión de la Verdad, 2022) documents how the trade has exacerbated violence, perpetuated armed conflict, and undermined community structures, particularly among indigenous and Afro-Colombian populations. It also highlights the economic distortions caused by coca cultivation, which foster dependency on illicit activities and hinder sustainable development, as well as the destabilisation of land ownership patterns. This thesis focuses on direct harms, such as violence, exploitation, and environmental destruction, while broader, indirect harms remain underexplored. The emphasis on crime-related harms, excluding these indirect impacts, posed a challenge for participants in the MCDA study. As highlighted in the survey responses, distinguishing between direct and indirect harms proved particularly difficult. Respondents identified several indirect consequences, including poverty, land ownership

concentration, and broader social and cultural damages. Future research could expand the scope to incorporate both direct and indirect impacts of the cocaine trade. However, I believe that including indirect impacts in harm assessments would add an extra layer of complexity to an already complex and unresolved challenge.

An additional dimension of harm that has not been fully explored in this thesis, but warrants further investigation, is the temporal and dynamic aspects of the cocaine trade. Harm caused by the trade can evolve over time, with both immediate and long-lasting consequences. For example, deforestation induced by the cultivation of coca crops can result in both temporary and permanent damage, ranging from short-term disruption to the irreversible loss of forest cover and the alteration of ecosystem dynamics (GIZ, 2017). Ayres (2020) further explores the effects of coca cultivation on deforestation. Likewise, sexual violence, which leads to unwanted pregnancies as described by Cuesta et al. (2017), exemplifies harm that extends beyond the immediate moment of abuse, carrying lifelong consequences for the victim. Similarly, body packers may face imprisonment, forcibly separating them from their families (Cuesta et al., 2017) for a period of time, or experience mishaps, such as the rupture of drug packages, which can have lasting physical and psychological impacts (Traub et al., 2003). In contrast, the threat of violence, as determined by Paoli et al. (2013), may result in harm that is more marginal and of shorter duration compared to the examples mentioned above.

The temporal nature of harm is intertwined with the dynamics of the cocaine trade, which can exacerbate or attenuate these harms over time. As the trade strengthens, its associated harms can worsen, leading to reinforcing cycles of violence and control. In their ethnographic study of the Caquetá department in Colombia, Peñaranda Currie et al. (2021) explained how the coca economy financed the construction of critical infrastructure for the trade's expansion. Communities in the area were violently coerced into participating in these construction efforts. The authors describe a "symbiotic" relationship, where the Revolutionary Armed Forces of Colombia (FARC) ensured the security and infrastructure necessary for the cocaine trade, while simultaneously imposing local order on surrounding communities. As the infrastructure bolstered the growth of the coca economy, the FARC's control over the region intensified, amplifying the harm experienced by local communities. Similarly, in his ethnographic study of the northern Cauca department, Dest (2021) illustrated how the growing dominance of drug traffickers over land progressively silenced Afro-Colombian communities in the area.

The dynamics of harm within the cocaine trade extend beyond its temporal dimensions, also reflecting systemic and interrelated processes. These dynamics are central to understanding how harms perpetuate and escalate over time. While the temporal aspect highlights how harm evolves, it is equally important to consider how these harms are sustained through feedback loops and system behaviours. As suggested by Ríos (2013), competition between drug trafficking groups and law enforcement interventions creates a reinforcing cycle of violence. Traffickers' battles to control markets provoke violence, leading to law enforcement responses, which, in turn, disrupt markets and incentivize further conflict. This cyclical nature of harm mirrors the principles of System Dynamics (SD), a method designed to capture the interrelationships and feedback systems within complex social systems (Forrester, 1961; Sterman, 2000).

Applying SD to the cocaine trade provides a comprehensive framework to understand how both direct and indirect harms emerge and interact over time. By modelling the feedback loops between actions (such as drug trafficking or law enforcement interventions) and their outcomes (such as violence or the expansion of the cocaine economy), SD can reveal the underlying processes that drive harm. This approach aligns with Paoli et al. (2013), who emphasised that past actions shape current harm and future dynamics. They argue, for example, that the dominance of Dutch organised crime groups in the ecstasy market can be traced back to historical actions within the cocaine trade, illustrating how present activities influence future criminal capacities.

Despite its potential, SD has been underutilised in crime research. While it has been extensively applied to environmental management, business strategy, and healthcare (Zanker et al., 2021), its use in crime remains limited. Some studies have touched on youth, domestic, and community violence (see the systematic literature review of Naumann et al., 2019) and violent property crime (Adam, 2021). Other applications of SD have looked at the problem of the cocaine trade with a focus on questioning the effectiveness of supply control interventions (see Homer, 1993; Jaen & Dyner, 2014; Olaya & Angel, 2014). Expanding the use of SD to model the temporal and systemic dimensions of crime and harm within the cocaine trade could yield important insights for both research and policy.

Contextual and population variations in harm distribution

The uneven distribution of harms across contexts and populations was a recurrent theme across the three studies developed in this thesis. Through various examples and anecdotes brought forward by interviewees and analysed documents, it became clear that the harms identified in this research do not manifest uniformly across all contexts or equally across populations. Instead, they are shaped by local dynamics, socio-economic factors, and the specific vulnerabilities of certain groups, highlighting the complexity of the issue and the need for nuanced, context-specific interventions. Generalisation of harm across socio-demographic or geographic subgroups is problematic as not all populations experience the same harm for the same crime (Innes & Innes, 2018; Ratcliffe, 2015). Hamilton-Smith and Mackenzie (2010) argue that while efforts have been made to categorise and rank harms, these classifications are inherently context-dependent, as similar criminal activities can produce different consequences in different settings. They argue that the idea that one type of harm is universally more significant than others is problematic, reinforcing the need for flexible, context-specific approaches to understanding and addressing harm.

The importance of contextual variations was evident when examining drug markets in different urban and rural settings. For example, drug markets operating in marginalised urban areas, such as those involving homeless individuals or vulnerable populations, were reported in documents and by interviewees to be characterised by heightened violence. One such example is the now-extinct Bronx in Bogotá, a notorious neighbourhood for drug-related activity, where violence was far more pervasive than in other drug markets. In contrast, drug markets operating near universities in cities like Medellín or Bogotá, or those centred around schools in urban peripheries, were said to be less violent, even though they still contributed to significant harm, particularly to minors. Variations in rural communities were also reported by interviewees and in documents. As discussed in the crime script analysis (Chapter 3), the presence of illicit economies was often associated with violence and exploitation, typically linked to armed groups and illicit drug trafficking. However, rural drug economies can vary significantly, as demonstrated by the Territory of Conviviality and Peace of Lerma in Colombia, where a shift from traditional coca production to agroecological practices for food sovereignty challenges violent capitalist logics and promotes peace (Valencia & and Courtheyn, 2023).

The distribution of harms also varies across populations, with certain groups bearing disproportionate burdens. Women, particularly those from marginalised or economically disadvantaged backgrounds, are another group that experiences disproportionate harm from the cocaine trade. Many women, often serving as sole providers for their families, are more vulnerable to exploitation by criminal groups (Cuesta et al., 2017; Mazzoldi Díaz et al., 2018). Indigenous communities are often exploited due to their deep knowledge of Colombia's rural areas and their historical connection to the land and forced into the drug trade or become collateral damage of its violence, leading to the erosion of cultural values and traditional ways of life (van Uhm & Grigore, 2021). However, it is important to acknowledge that some Indigenous individuals, particularly the young, also voluntarily participate in the cocaine trade, driven by economic incentives and a desire for personal gain (van Uhm & Grigore, 2021). This nuanced reality highlights the issue's complexity and challenges simplistic generalisations about victimhood, as the concept of victim status is relative and can be influenced by relationships and actions within a network, as discussed by (Marshall, 2024).

These regional and population-specific variations in harm distribution raise important questions for developing counter-drug policies. While helpful in understanding broad trends, a national approach may fail to address local populations' specific needs and challenges. The evidence presented in this research suggests that a more effective counter-drug strategy would need to recognise the diverse and context-dependent nature of the harms caused by the cocaine trade. Local investigations and tailored policy responses are essential to mitigate these harms effectively, as what works in one region or for one population may not apply to another (Thoumi, 2017).

Ethical considerations and risks in using harm assessments for policy

While well intended, the harm assessment tool developed in this research could lead to several unintended ethical consequences. One of the concerns is the potential for further stigmatisation of specific communities, particularly those involved in the illicit cocaine trade, such as coca growers and drug dealers. These actors may be categorised as harmful or morally culpable without considering the broader socio-economic context. Labelling these individuals solely as perpetrators of harm fails to recognise the structural inequalities that drive their involvement in the trade and risks oversimplifying a highly complex issue. Research has shown that coca growers, for instance, are frequently stigmatised and criminalised by the state, with their work reduced to simplistic metrics that ignore the historical and economic factors leading to illicit crop cultivation (Rojas Herrera & Dessein, 2023). Grajales-Marín et al. (2025) show that

socioeconomic marginalisation evidenced through poverty and limited access to basic services are correlated with areas where coca is grown. This state-driven stigmatisation has fuelled marginalisation, violence, and repression against cocaleros, reinforcing their precarious position in society (Gutiérrez-Sanín, 2022; Pereira & Ramírez, 2020).

Another concern is that if the harm assessment tool lacks sufficient depth or fails to capture the broad range of harms, it could inadvertently overlook the suffering of minority communities. As discussed before, women, Indigenous, and Afro-Colombian groups often bear disproportionate harm from the cocaine trade—whether through displacement, violence, or exploitation. Paoli and Greenfield (2013) discuss the inherent challenge of defining harm comprehensively, noting that no harm assessment can be entirely exhaustive, as ancillary effects and broader socio-political contexts complicate rigid categorisation. If a harm assessment remains too narrow in scope, it risks marginalising these communities further by failing to acknowledge the full extent of their vulnerabilities, ultimately reinforcing their invisibility in policy decisions.

Broader discussions on harm acknowledge the moral and socio-economic subjectivity of defining what constitutes harm and who qualifies as a victim. Paoli and Greenfield (2013) caution against rigid harm classifications, arguing that assessments should account for the legitimacy of different perspectives, including those of individuals criminalised by the state. Without careful consideration, harm assessments risk entrenching existing biases rather than fostering more just and effective policy responses.

Another ethical concern is the potential manipulation of the harm assessment tool for political purposes. Through case examples, Van Duyne (2004) discusses how law enforcement, politicians, and the media often converge to amplify fear-based narratives around organised crime, using exaggerated threats to justify expanded state powers and restrictive policies. Similarly, Grundlingh (2017) illustrates how crime reporting in media strategies frequently heightens sensationalism, shaping public perceptions and reinforcing dominant narratives. This interplay between political interests and public discourse creates a risk that harm assessments could be co-opted to advance punitive rather than evidence-based policy goals. For instance, by selectively defining what constitutes harm, political actors could tailor the tool to legitimise pre-existing agendas, such as framing drug use as an immoral act to justify harsher enforcement measures.

Future research

This section outlines potential avenues for future research that build upon the findings and insights presented in this thesis.

Comparison across contexts and transnational dimensions

This study focused specifically on the cocaine trade in Colombia, which presents a unique set of political, economic, and social dynamics. However, the findings are limited in scope and do not address the cocaine trade in other countries, such as Bolivia or Peru, where the context and dynamics may differ.

Bolivia, for instance, exhibits considerably lower levels of violence associated with the drug trade. As Grisaffi (2021) argues, this divergence stems from three key factors: widespread participation in the illicit trade, its entrepreneurial nature, and the mediating role of unions in areas lacking formal state presence. These elements foster a less coercive and more community-centred trade dynamic. Mortensen and Gutierrez (2019) further discuss the role of strong local institutions in mitigating violence, noting that in Bolivia, non-state, self-help organisations enable marginalised communities to assert their interests and reduce criminal activity. While participation in the illicit trade is similarly widespread in Colombia, the cocaine trade is characterised by intimidation and coercion rather than entrepreneurial initiative. The findings of this thesis illustrate how armed groups and drug traffickers, rather than unions, dominate governance structures within the cocaine economy, exacerbating violence and community harms. Another distinct factor in the Colombian context is the intensified competition among armed groups for territorial and trade control following the demobilisation of the FARC-EP guerrilla group, which contributed to the violence observed across all stages of the cocaine supply chain in Colombia, from cultivation to distribution (UNODC & SIMCI, 2021). Extending a harm-focused analysis to other cocaine-producing countries offers a critical opportunity to broaden and refine the understanding of the cocaine trade's impacts.

Beyond country-specific analyses, the cocaine trade's transnational nature necessitates a framework that can capture and measure harms not only in producer countries but also in transit and consumer regions. The crime script can be integrated with other frameworks that cover stages beyond Colombian borders, such as Staring et al.'s (2019, 2023) crime script on cocaine smuggling in the Netherlands, and the identification of operational crimes could be extended beyond Colombian borders. Such an approach would facilitate the development of coordinated global strategies for harm reduction.

Development of harm indicators

The design and implementation of harm indicators would help to advance research on assessing the harms of the cocaine trade, and address the lack of quantitative data which limited the results of this thesis. To move beyond this limitation, harm-based indicators could enable a richer harm assessment.

Existing reports from agencies like the UNODC often focus on supply-side indicators, such as eradication efforts, aerial spraying, interdiction, and market variables like prices and coca cultivation estimates (Maghsoudi et al., 2020; Pardo, 2020; Singleton et al., 2018). However, these measures primarily assess the scale of the trade in terms of production or consumption and fail to address the broader social, environmental, and institutional consequences of the cocaine trade. Researchers and agencies alike have called for a revamp of the current indicators, advocating for frameworks that more comprehensively account for the externalities and collateral harms arising from the trade (Bewley-Taylor, 2016; Muggah et al., 2015). The development of harm indicators would therefore need to move beyond traditional supply and demand measures, incorporating aspects such as violence, corruption, environmental degradation, and the exploitation of vulnerable populations.

The need for harm-based indicators is further underscored by initiatives like UNODC's (2016) International Classification of Crime for Statistical Purposes (ICCS) , which offers a transnational tool to produce comparable crime data across regions. This standard could aid in developing harm indicators that encompass a wider range of activities within the drug trade, not just those associated with production and trafficking but also with the broader network of crimes that sustain these operations. Similarly, the European Monitoring Centre for Drugs and Drug Addiction (EMCDDA) has recognised the potential for incorporating "drug-related crimes, harms, and other consequences" into its monitoring programs (Singleton et al., 2018). More recently, Singleton et al. (2023) have noted that with some improvements, the EMCDDA's programme of work to develop supply-related monitoring and analysis could provide a richer, more comprehensive picture of drug markets at both national and international levels.

Examining the effects of non-prohibition policy frameworks

This thesis has been developed within the prohibitionist framework governing drug policy. The harm-focused approach it proposes provides an analytical foundation to understand the source of harm caused by the cocaine trade, which could inform analysis of the impact of alternative approaches to prohibition.

Scholars and policy institutions, including the Global Commission on Drug Policy (Global Commission on Drug Policy, 2020; Greenfield & Paoli, 2022), have argued that prohibition exacerbates the harms caused by the illicit drugs trade. Some have suggested that alternative regulatory frameworks could mitigate these harms by displacing illicit actors and reducing the need for coercive enforcement measures (Borden, 2013; Thoumi, 2003). For example, Restrepo (2022) notes that legalising coca cultivation and cocaine production could reduce territorial disputes, enhance security in urban areas, and redirect law enforcement resources towards more impactful forms of crime.

Despite these arguments, empirical research on the effects of legalisation or regulation on the supply-side harms of the cocaine trade remains limited. Existing legalisation and decriminalisation approaches to illicit drugs are concerned with the commercialisation stage; the effects of these approaches are discussed in terms of their effects on drug use, not on the effects on the supply side (see for example Eastwood et al., 2016). The crime script, identification and classification of operational crimes and their harms could be used as a baseline for analysing how alternative policy frameworks could impact the cocaine trade.

Chapter 7. Conclusion

The research presented in this thesis aimed to develop and evaluate a harm-focused framework for assessing the impacts of the cocaine trade in Colombia. Traditional counter-drug strategies have primarily centred on reducing supply and demand, often exacerbating the very harms they seek to mitigate. In response, this thesis proposed a more comprehensive approach, shifting the focus towards harm minimisation by integrating the organised crime process, operational crimes, and crime-related harms into a single analytical framework.

To achieve this objective, three interrelated studies were conducted. First, a crime script analysis mapped the stages of the cocaine trade—cultivation, processing, distribution, and commercialisation—providing a structured understanding of how the trade operates. Second, expert interviews and a value chain framework were employed to classify the operational crimes sustaining the trade, illustrating their complexity and their role in generating harm. Finally, a pilot study using Multi-Criteria Decision Analysis (MCDA) assessed crime-related harms across these stages, evaluating the distribution of harm and the framework's potential as a tool for policymaking.

The overarching research question guiding the research was: What are the strengths and weaknesses of a framework that integrates the organised crime process, operational crimes, and crime-related harms for assessing the harms of the cocaine trade in Colombia?

The findings of this research demonstrate that an integrated framework combining the organised crime process, operational crimes, and crime-related harms significantly enhances our understanding of the cocaine trade in Colombia. By synthesising these elements, the framework captures the complexities of the trade, offering a structured and comprehensive analysis. The crime script analysis illustrates the trade as a multi-stage process, highlighting underexplored mechanisms such as the role of digital platforms in commercialisation. The classification of operational crimes using a value chain framework further enriches this understanding by revealing these crimes' diverse functions in sustaining the trade. It also revealed legal gaps, as certain technologies enabling organised crime, such as burner phones and UAVs, remain ambiguously regulated. Finally, the harm assessment, structured through MCDA, provides a systematic approach to evaluating the distribution and impact of harms across the trade's stages. Together, these components construct a holistic model that offers valuable insights into how the cocaine trade operates and the harms it generates.

Beyond enhancing understanding, the crime script and operational crimes study also make methodological contributions and offer practical implications. The crime script advances crime script analysis by introducing a systematic and replicable approach, refining data collection methods, and integrating a broader range of sources. Its structured representation of the trade provides policymakers and law enforcement with a valuable tool to identify vulnerabilities and intervention points, enabling more targeted strategies. Additionally, the operational crimes study presents a novel framework for mapping and categorising the diverse criminal activities that sustain the cocaine trade. Applying a value chain perspective facilitates the systematic identification of supporting crimes, laying the groundwork for future research on crime harm indices and informing policy interventions aimed at disrupting these illicit networks. These contributions strengthen the methodological rigour of organised crime research while offering actionable insights for counter-drug policies.

However, while the framework successfully integrates different dimensions of organised crime, its application for policy and law enforcement decision-making has some limitations. The MCDA-based harm assessment faced challenges in practical implementation, including difficulties in quantifying harm, a lack of clear differentiation between harm levels, and the need for more precise evaluation criteria. Additionally, the stage-based approach to harm assessment does not fully align with the geographical realities of the cocaine trade, where multiple stages often co-occur within the same areas. Policymakers and law enforcement agencies typically operate based on spatial intelligence rather than discrete crime stages. This suggests that a geographically informed adaptation of the framework may be more suitable for guiding interventions.

Ultimately, this research highlights the strengths and weaknesses of an integrated harm-focused framework. Its primary contribution lies in advancing knowledge by structuring the cocaine trade into interconnected activities and systematically assessing its associated harms. However, conceptual and methodological challenges limit its effectiveness as a decision-making tool. For now, the challenge of assessing the harms of the cocaine trade in a way that effectively informs policy design and law enforcement interventions requires further development.

This research also offers insights into the complexities of harm within the cocaine trade. The distinction between direct and indirect harms emerged as a key challenge, with participants struggling to differentiate between immediate consequences (e.g., violence and environmental damage) and broader socio-economic repercussions (e.g., poverty and land dispossession). Additionally, the dynamic nature of harm should be acknowledged. Another insight is the uneven distribution of harm across different populations and regions. For example, urban drug markets

linked to vulnerable populations often experience heightened violence, while rural communities engaged in coca cultivation face systemic exploitation and displacement. Moreover, marginalised groups—such as women and Indigenous communities—bear a disproportionate burden of harm.

The findings of this thesis open several avenues for future research. First, applying the harm-focused framework beyond Colombia—particularly through comparative analyses with Bolivia and Peru—could enhance understanding of how governance, socio-political conditions, and law enforcement shape the cocaine trade's harms. Second, developing quantitative harm indicators, aligned with international standards, would improve systematic measurement and policy relevance. Finally, examining the effects of non-prohibitionist policies on supply-side harms could extend empirical insights into the impact of regulatory approaches on illicit drug markets.

Over six decades since Nixon's declaration of the War on Drugs, the illicit cocaine trade continues to thrive, fuelled by policies that have prioritised supply reduction over harm mitigation. This thesis has argued that a harm-based approach would help drug policy and law enforcement to prioritise the most harmful crimes, inform resource allocation, mitigate unintended consequences, and guide strategic interventions to reduce overall societal harm. By developing a framework that integrates the organised crime process, operational crimes, and their associated harms, this research provides a step forward towards assessing the negative impacts of the cocaine trade in Colombia.

By mapping the interconnections between crimes and their harms, this research offers an evidence-based foundation for policymakers seeking to shift from ineffective, punitive approaches towards interventions that mitigate the most damaging consequences of the trade. In doing so, it challenges the prevailing narrative of the War on Drugs and underscores the urgent need for policies that are not merely reactive but strategically focused on harm reduction. As Juan Manuel Santos declared in his Nobel Lecture (2016), Colombia has paid the highest cost in deaths and sacrifices. It is time for the global community to acknowledge this reality and rethink its approach to drug policy. This research represents a step in that direction, offering both a framework for analysis and a call for a more humane and effective response to one of the most persistent challenges of our time.

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Annexes

Annex 1. Selected documents

Academic literature

1. Narváez Remuy, L. (2019). "Cullqui Supay" economía fantasma : aproximación etnográfica a los cambios generados por la influencia del cultivo de coca en el territorio, el trabajo y las prácticas de consumo en el resguardo Kichwa La Apaya, Municipio de Leguízamo, Putumayo ["Cullqui Supay" ghost economy: An ethnographic approach to the changes generated by the influence of coca cultivation in the territory, work, and consumption practices in the Kichwa La Apaya indigenous reserve, Municipality of Leguízamo, Putumayo] Universidad Externado de Colombia]. Bogotá. https://bdigital.uexternado.edu.co/handle/001/2296. Accessed on 30/01/2022

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Grey Literature

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Investigative reporting

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Annex 2. Quality assessment of documents

Study	Authenticity	Credibility	Representativeness	Meaning
Charles (2021a)	Document is complete although it is difficult to assess given that it has been adapted for the website. Insight Crime is a recognised, trustworthy organisation. There is no evidence of influence from stakeholders or personal interests. Document was retrieved from official website.	Method is not explicit. Some examples of the primary data collected are explicit.	Focuses on children recruited for armed forces	Text seems descriptive based on fieldwork findings, with some literal examples of their data. Some definitions or context explanations are provided.
Charles (2021b)	Document is complete although it is difficult to assess given that it has been adapted for the website. Insight Crime is a recognised, trustworthy organisation. There is no evidence of influence from stakeholders or personal interests. Document was retrieved from official website.	Method is not explicit. Some examples of the primary data collected are explicit.	Focuses on children recruited for armed forces	Text seems descriptive based on fieldwork findings, with some literal examples of their data. Some definitions or context explanations are provided.
Hernández-Mora (2017b)	Document is complete and is authors by a recognised journalist and a recognised newspaper. Document was retrieved from official website. While both the interviewer and newspaper are known for their strong political postures, there is no apparent bias.	Interview method is clear and is presented as a transcription of the interview. When details are omitted, this is manifested in the document.	Focuses on trafficker	Answers from interviewee are transcribed. There is no apparent interpretation of the interviewer
Silva Ávalos (2017)	Document is complete although it is difficult to assess given that it has been adapted for the website. Insight Crime is a recognised, trustworthy organisation. There is no evidence of influence from stakeholders or personal interests. Document was retrieved from official website.	Method is not explicit. Some examples of the primary data collected are explicit.	Focuses on the situation of coca growers. However, a range of different stakeholders were interviewed	Text seems descriptive based on fieldwork findings, with some literal examples of their data. Some definitions or context explanations are provided.
InSight Crime (2019)	Document is complete although it is difficult to assess given that it has been adapted for the website. Insight Crime is a recognised, trustworthy organisation. There is no evidence of influence from stakeholders or personal interests. Document was retrieved from official website.	Method is not explicit. Some examples of the primary data collected are explicit.	Focuses on armed groups coming from different areas around the country.	Text seems descriptive based on fieldwork findings, with some literal examples of their data. Some definitions or context explanations are provided.
InSight Crime and Igarape Institute (2021)	Document is complete. Insight Crime and Igarape Institute are recognised, trustworthy organisations. There is no evidence of influence from stakeholders or personal interests. Document was retrieved from official Insight Crime website.	General details of method provided. Some examples of the primary data collected are explicit.	Focuses on individuals that process coca into cocaine and illegal actors that are part of the supply chain but that are connected in some form with environmental crime	Text seems descriptive based on fieldwork findings, with few literal examples of their data. Definitions and context explanations are provided.

Annex 2. Quality assessment of documents (continued)

Study	Authenticity	Credibility	Representativeness	Meaning
Hernández-Mora (2017a)	The document, authored by a recognised journalist and published by a reputable newspaper, was retrieved from the official website. Despite the known political stances of both the interviewer and the newspaper, no apparent bias is evident in the content.	Interview method is clear and is presented as a transcription of the interview. When details are omitted, this is manifested in the document.	Focuses on grower involved in processing base/paste.	Answers from interviewee are transcribed. There is no apparent interpretation of the interviewer
Abu-Saada and Brown (2020)	Media is complete and was watched directly on Netflix	Visual evidence is provided about perpetrators and their activities	Focuses on perpetrators throughout the cocaine trade chain. Interviews them directly.	Visual and audio evidence of the responses of interviewees. Further context and meanings are explained.
UNODC & SIMCI (2021)	Document is complete and was retrieved from the official website of UNODC. UNODC is the official institution charged with monitoring illicit crops.	Method for estimating crops and processed quantities are explained in detail. References to sources of data are included throughout the document.	Focuses on stakeholders in the growth and processing phases.	Text is descriptive. Context and concepts are explained in detail.
Alcaldía Distrital de Santa Marta, UNODC (2018)	Document is complete and was downloaded from the Drug Observatory of Colombia. The study was carried out by the Mayorship of Santa Marta and UNODC.	The instruments used for data collection are explained and included as an annex. Direct examples of primary source data are shown.	Document focused on citizenship and potential users. It also asks authorities about their knowledge of drug dealing sites. No drug dealers are interviewed.	The report offers literal examples of primary data to support their findings. Definitions and explanations of context were included.
Armada de Colombia (2020)	Document is complete and is from an official institution.	Data is collected in the navy´s official data system so it should be credible. In the document the data is presented in terms of graphs and tables and explained accordingly.	Data focuses on the activities of traffickers that are detected by the navy. Information considered relevant by the author has been reported, while other, potentially relevant information has been discarded.	Data presented and described is literal, not interpreted. However, more definitions could be provided on the meaning of certain terms (e.g. the different types of vehicles used by traffickers to transport cocaine)
Cajiao et al. (2018)	Document is currently a working paper, however it has been sponsored by the FIP a recognised think tank. Document is complete and was downloaded from the FIP website.	General details of method provided. Some examples of the primary data collected are explicit.	Focuses on individuals that process coca into cocaine and illegal actors that are part of the supply chain. Experts, not actual perpetrators, were interviewed.	Text is descriptive and literal exerts of the interviews are provided. More definitions and context could have been included.
Prada Collazos (2018)	The document is complete and the author is a recognised think tank. The document was downloaded from the official website. There are no evident biases.	The document is complete and the author is a recognised think tank. The document was downloaded from the official website. There are no evident biases.	Focus is on armed groups	Meaning of concepts and context are provided. However, literal references to data are not included.
Bernal et al. (2020)	The document is complete and the author is a recognised think tank. The document was downloaded from the official website. There are no evident biases.	The document is complete, sourced from the official website, and authored by a recognised think tank, with no evident biases.	Focus is on coca growers and excludes indigenous communities.	Meaning of concepts and context are provided. However, literal references to data are not included.

Annex 2. Quality assessment of documents (continued)

Study	Authenticity	Credibility	Representativeness	Meaning
FIP & adelphi (2021)	The document is complete. Authors of the document are recognised organisations. The document was downloaded from the official FIP website. There is a view of biological conservation that frameworks the document.	Details about the origin of the data are provided.	The document focuses on the activities affecting the Amazon's ecosystem, one of them being coca crops. A diverse range of actors was consulted including growers from indigenous community members, NGOs and public servants.	The report offers literal examples of primary data to support their findings. Definitions and explanations of context were included.
Mazzoldi Díaz et al. (2018)	The document is complete and the author is a recognised think tank. The document was downloaded from the official website. There are no evident biases.	The document mentions field work and interviews but the instruments and details about the method are not specified.	Focus is on habitants in areas where drug trafficking is pervasive and where they are subject to control of armed groups.	The report offers literal examples of primary data to support their findings. Definitions and explanations of context were included.
CIENA (2017)	Document is complete, readable and was downloaded from the official website of the National Police of Colombia.	It is an informative piece. No method has been explained.	Focuses on the chemicals used to produce cocaine.	Definitions and context are provided.
CIENA (2018)	Document is complete, readable and was downloaded from the official website of the National Police of Colombia.	It is an informative piece. No method has been explained.	Focuses on the infrastructure used to produce cocaine.	Definitions and context are provided.
CIENA (2020)	Document is complete, readable and was downloaded from the official website of the National Police of Colombia.	It is an informative piece. No method has been explained.	Focuses on infrastructure, chemicals and modalities perceived by law-enforcement.	Definitions and context are provided.
CIENA (2021)	Document is complete, readable and was downloaded from the official website of the National Police of Colombia.	It is an informative piece. No method has been explained.	Focuses on infrastructure, chemicals and modalities perceived by law-enforcement.	Definitions and context are provided.
Parada-Hernández and Marín-Jaramillo (2019)	Document is peer-reviewed and published in an academic journal, which guarantees authenticity. Also document was downloaded from the journal's website, guaranteeing integrity of the document.	There is a section that explains the method and how the data was collected.	Focuses on cocalero women in the south pacific. Data collected from male and female peasants and that perform different roles in the coca economy.	Some literal examples of fieldwork are included. Explanation and context is provided in the document.
Sanín (2019)	Document is peer-reviewed and published in an academic journal, which guarantees authenticity. Also document was downloaded from the journal's website, guaranteeing integrity of the document.	There is a section that explains the method and how the data was collected.	Focuses on cocalero women in the south pacific. Data collected from male and female peasants and that perform different roles in the coca economy.	Some literal examples of fieldwork are included. Explanation and context is provided in the document.
Narváez Remuy (2019)	Document downloaded from the official website of University El Externado. Document is complete. Identity of the author is verified by the University. The author is from the community where the study is performed.	The text is explicit about the method to elicit data and the narrative is descriptive, with literal pieces of data.	Focuses on coca growers and their own experiences while growing coca	Context and definitions are provided throughout the text to ensure there is a good understanding of the narrative. Literal examples are provided.

Annex 2. Quality assessment of documents (continued)

Study	Authenticity	Credibility	Representativeness	Meaning
Parada-Hernández and Marín-Jaramillo (2021)	Document is peer-reviewed and published in an academic journal, which guarantees authenticity. Also document was downloaded from the Science Direct portal, guaranteeing integrity of the document.	There is a section that explains the method and how the data was collected. There are no literal pieces of data presented, however they did annex details on the method and coding book.	Focuses on cocalero women in the south pacific. Data collected from male and female peasants and that perform different roles in the coca economy.	Literal examples are not offered. However, the topic is describing the activities, which does not leave much to interpretation. Explanation and context is provided in the document.
Pulgarín Morales (2020)	Document downloaded from the official website of University El Externado. Document is complete. Identity of the author is verified by the University.	The text is explicit about the method to elicit data and the narrative is descriptive, with literal pieces of data.	Focuses on users and dealers of drugs, in general, not specific to cocaine. Some mentions to cocaine are made.	Context and definitions are provided throughout the text to ensure there is a good understanding of the narrative. Literal examples are provided.
Van Dexter and Visseren-Hamakers (2020)	Document is peer-reviewed and published in an academic journal, which guarantees authenticity. Also, document was downloaded from the Taylor & Francis Online portal, guaranteeing integrity of the document.	There is a section that explains the method and how the data was collected. Literal pieces of data are included.	Focuses on actors involved in illicit activity that is somehow connected to forests and their destruction. Several stakeholders were interviewed and observed.	Context and definitions are provided throughout the text to ensure there is a good understanding of the narrative. Literal examples are provided.
Zulver and Idler (2020)	Document is peer-reviewed and published in an academic journal, which guarantees authenticity. Also, document was downloaded from the Taylor & Francis Online portal, guaranteeing integrity of the document.	There is a section that explains the method and how the data was collected. Literal pieces of data are included.	Focuses on actors operating at the borders between Colombia and Venezuela and the women that suffer harms	Context and definitions are provided throughout the text to ensure there is a good understanding of the narrative. Literal examples are provided.
van Uhm and Grigore (2021)	Document is peer-reviewed and published in an academic journal, which guarantees authenticity. Also, document was downloaded from the Springer portal, guaranteeing integrity of the document.	The text is explicit about the method to elicit data and the narrative is descriptive, with literal pieces of data.	Focus is on Emberá–Wounaan community	Context and definitions are provided throughout the text to ensure there is a good understanding of the narrative. Literal examples are provided.
Dest (2021)	Document is peer-reviewed and published in an academic journal, which guarantees authenticity. Also, document was downloaded from the Science Direct portal, guaranteeing integrity of the document.	The text is explicit about the method to elicit data and the narrative is descriptive, with literal pieces of data.	Focus is on coca growers from their own experiences	Context and definitions are provided throughout the text to ensure there is a good understanding of the narrative. Literal examples are provided.
Blattman et al. (2024)	Document is peer-reviewed, published in an academic journal and downloaded directly from the source, which guarantees authenticity.	Method is detailed and explained in the document. Sections of the text that refer to interviewees experience are signposted throughout	Focuses on drug dealers and wholesalers. A range of stakeholders, including perpetrators, were consulted.	Context and definitions are provided throughout the text to ensure there is a good understanding of the narrative. Literal examples are provided.

Annex 3. Studies, locations, and stages

Study	Location	Cultivation	Processing	Distribution	Commercialisation
Charles (2021a)	Cauca, Vaupés	✓	✓		
Charles (2021b)	Antioquia, Cauca, Norte de Santander		✓	✓	✓
Hernández-Mora (2017b)	Bolívar			✓	
Silva Ávalos (2017)	Nariño, Putumayo	✓	✓		
InSight Crime (2019)	Cauca, Nariño, Norte de Santander, Amazonas, Caquetá, Guainía, Guaviare, Meta, Vaupés		✓	✓	
InSight Crime and Igarape Institute (2021)	Amazonas	✓		✓	
Hernández-Mora (2017a)	Cauca		✓		
Abu-Saada and Brown (2020)	Valle del Cauca	✓	✓	✓	
UNODC & SIMCI (2021)	National	✓	✓	✓	
Alcaldía Distrital de Santa Marta, UNODC (2018)	Magdalena				✓
Armada de Colombia (2020)	National			✓	
Cajiao et al. (2018)	National		✓	✓	
Prada Collazos (2018)	Cauca	✓	✓	✓	
Bernal et al. (2020)	Valle del Cauca, Caquetá, Norte de Santander	✓			
FIP & adelphi (2021)	Meta, Guaviare, Putumayo	✓			
Mazzoldi Díaz et al. (2018)	Nariño			✓	
CIENA (2017)	National		✓		
CIENA (2018)	National		✓		
CIENA (2020)	National		✓	✓	
CIENA (2021)	National			✓	
Parada-Hernández and Marín-Jaramillo (2019)	Putumayo	✓	✓		
Sanín (2019)	Putumayo	✓			
Narváez Remuy (2019)	Putumayo	✓	✓		
Parada-Hernández and Marín-Jaramillo (2021)	Putumayo, Nariño	✓	✓		
Pulgarín Morales (2020)	Cundinamarca				✓
Van Dexter and Visseren-Hamakers (2020)	Putumayo	✓			
Zulver and Idler (2020)	Norte de Santander, Arauca, Guajira	✓			
van Uhm and Grigore (2021)	Chocó			✓	
Dest (2021)	Cauca	✓	✓		
Blattman et al. (2024)	Antioquia				✓
		15	**16**	**13**	**4**

Annex 4. Ethics approval certificate for study 1: A crime script of the cocaine trade in Colombia

LONDON'S GLOBAL UNIVERSITY

UCL

Student name: Juliana Gomez Quintero
Supervisor name: Hervé Borrion / Spencer Chainey

Title of proposed project: A crime script of Cocaine Trade in Colombia

Upon review of the materials that you provided, the Department of Security and Crime Science Ethics Committee has decided that your proposed research is exempt from requiring approval by the UCL Research Ethics Committee. This is because the proposed research either:

- does not involve human participants and/or does not involve the collection and/or use of data derived from human individuals, or
- corresponds to one or more of the following UCL exemption criteria (https://ethics.grad.ucl.ac.uk/exemptions.php):

Ethics exemption	
1.	Research involving information freely available in the public domain. For example, published biographies, newspaper accounts of an individual's activities and published minutes of a meeting, whilst still personal data under the Data Protection Act would not require ethics review.
2.	Research involving anonymised records and data sets that exist in the public domain. For example, datasets available through the Office for National Statistics or the UK Data Archive where appropriate permissions have already been obtained and it is not possible to identify individuals from the information provided.
3.	Studies of public behaviour that are purely observational (non-invasive and non-interactive), unless the recorded observations identify individuals (names, photographs) which could place them at risk of harm, stigma or prosecution.
4.	Research involving the use of non-sensitive, completely anonymous educational tests, survey and interview procedures when the participants are not defined as "vulnerable" and participation will not induce undue psychological stress or anxiety.
5.	Research involving the use of educational tests, survey and interview procedures on human participants in the public arena (e.g. elected or appointed public officials, candidates for public office, artists).

Should your project substantially change from what you have proposed, you will need to go through the ethics process again.

Signed: _____ **Dated:** 9/2/2021

Dr Kartikeya Tripathi
Chair, Departmental Ethics Committee
Department of Security and Crime Science
University College London

University College London, Gower Street, London WC1E 6BT
Tel: +44 (0)20 7679 2000
email@ucl.ac.uk
www.ucl.ac.uk

Annex 5. Ethics approval certificate for study 2: Operational crimes driving the cocaine trade in Colombia (covers interviews of all studies)

LONDON'S GLOBAL UNIVERSITY

UCL

Student name: Juliana Gómez Quintero

Supervisor name: Hervé Borrion, Spencer Chainey

Title of proposed project: Connected crimes, harms, and temporal aspects of cocaine trade in Colombia

Upon review of the materials that you provided, the Department of Security and Crime Science Ethics Committee has decided that your proposed research is exempt from requiring approval by the UCL Research Ethics Committee. This is because the proposed research either:

- does not involve human participants and/or does not involve the collection and/or use of data derived from human individuals, or
- corresponds to one or more of the following UCL exemption criteria (https://ethics.grad.ucl.ac.uk/exemptions.php):

Ethics exemption	
1.	Research involving information freely available in the public domain. For example, published biographies, newspaper accounts of an individual's activities and published minutes of a meeting, whilst still personal data under the Data Protection Act would not require ethics review.
2.	Research involving anonymised records and data sets that exist in the public domain. For example, datasets available through the Office for National Statistics or the UK Data Archive where appropriate permissions have already been obtained and it is not possible to identify individuals from the information provided.
3.	Studies of public behaviour that are purely observational (non-invasive and non-interactive), unless the recorded observations identify individuals (names, photographs) which could place them at risk of harm, stigma or prosecution.
4.	Research involving the use of non-sensitive, completely anonymous educational tests, survey and interview procedures when the participants are not defined as "vulnerable" and participation will not induce undue psychological stress or anxiety.
5.	Research involving the use of educational tests, survey and interview procedures on human participants in the public arena (e.g. elected or appointed public officials, candidates for public office, artists).

Should your project substantially change from what you have proposed, you will need to go through the ethics process again.

Signed: **Dated:** 22/06/2022

Dr Kartikeya Tripathi
Chair, Departmental Ethics Committee
Department of Security and Crime Science
University College London

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Annex 6. Participant information sheet – Cocaine trade and connected crimes

(also provided in Spanish to those interviewed in Spanish)

LONDON'S GLOBAL UNIVERSITY

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Cocaine trade and connected crimes in Colombia

Information sheet

Department: Security and Crime Science
Name and contact of researcher: Juliana Gómez Quintero, [email redacted]
Research supervisor: Prof. Hervé Borrion

This interview is part of the study "Cocaine trade and connected crimes in Colombia" carried out by a PhD student from the Department of Security and Crime at University College London (UCL). The design of this study has been reviewed by the Ethics Committee of the Department of Security and Crime Sciences. The committee determined that the study is exempt from submission to the UCL Ethics Committee.

You are invited to participate in this research project. You should only participate if you want to; choosing not to participate will not prejudice you in any way. Before you decide, it is important that you understand why the research is being done and what your participation will entail. Please take the time to read the following information carefully and discuss it with others if you wish. Please ask us if there is anything that is not clear to you or if you would like more information. Thank you in advance for reading this document.

Aim of the study
The objective of this study is to identify the crimes that are committed in connection with each of the stages of cocaine trafficking in Colombia.

Selection of participants
To participate in this study, people with knowledge of cocaine trafficking and connected crimes in Colombia are sought.

The interview
The interview is estimated to take around 45 minutes. The interview will take place virtually or in person according to what is agreed between the interviewer and the interviewee. Before beginning the interview, the interviewee will be asked to fill out and return the consent form to the interviewer. During the interview you will be asked about three topics: your experience with cocaine trafficking and related crimes, the different stages of cocaine trafficking, and crimes connected to cocaine trafficking. While the structure is designed to cover topics from growing coca to selling cocaine for consumption, the interview will focus on topics in which you have experience. All data will be collected and stored in accordance with the UK Data Protection Act 2018 and the General Data Protection Regulation.

Recording
You can decide if you authorise the recording of the interview. If you authorise the recording, it will only be used as a reference by the interviewer. The recording will be deleted once it is transcribed.

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Voluntary participation
You are free to decide whether to participate in this study. If you decide to participate, you will be asked to complete a consent form. You can withdraw your participation at any time until the publication of this research, without the need for a reason. If you wish to withdraw from the study, please contact us at the researcher's email and we will delete your data.

Possible risks and disadvantages of your participation
There are no foreseeable disadvantages and risks of participating in this study.

Benefits of your participation
Although there are no immediate benefits for the people who participate in the project, it is hoped that this work will serve as a basis for research of drug trafficking.

Complaints and claims
If you wish to make a complaint about this investigation, please contact the researcher, Juliana Gómez Quintero ([email redacted]). If you feel that your complaint has not been handled to your satisfaction, you may contact the Chair of the Research Ethics Committee, Department of Security and Criminal Sciences (scs.ethics@ucl.ac.uk).

Confidentiality
All personal information will be kept confidential, and every effort will be made to ensure that you cannot be identified. Personal data (name, contact, position) collected in this study will be stored anonymously and securely. You may not be identified in any subsequent report or publication.

Use of study results
The results will be disseminated in standard academic media. The results may also be disseminated through magazines/newspapers/newspapers of general interest. You will not be identifiable in any report or publication.

Note on data protection and privacy
The data controller for this project will be University College London (UCL). The UCL Data Protection Office oversees UCL's activities involving the processing of personal data and can be contacted at data-protection@ucl.ac.uk. The UCL Data Protection Officer can also be contacted at data-protection@ucl.ac.uk. Your personal data will be processed for the purposes described in this notice. If you have concerns about how your personal data is being processed, please contact UCL in the first instance at data-protection@ucl.ac.uk. If you are still dissatisfied, you can contact the Information Commissioner's Office (ICO). Contact details and details of data subject rights are available on the ICO website at: https://ico.org.uk/for-organisations/data-protection-reform/overview-of-the-gdpr /individualsrights/

Organization and financing of this research
This research is carried out as part of a PhD research funded by the Faculty of Engineering at University College London, Colfuturo and Minciencias.

Thank you for reading this information sheet and for considering participating in this study.

Annex 7. Participant consent form – Cocaine trade and connected crimes

(also provided in Spanish to those interviewed in Spanish)

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Cocaine trade and connected crimes in Colombia

Informed consent

Select by checking the appropriate box for each of the following statements:

	Yes	No
I confirm that I have read and understood the information sheet for the study "Cocaine trade and connected crimes in Colombia". I have had an opportunity to consider the information and what is expected of me.		
I understand that my personal information will be used for the purposes that have been explained to me.		
I understand that said information will be treated in accordance with all applicable legislation on data protection.		
I understand that my information may be subject to review by responsible persons at the University (including patrons and funders) for monitoring and auditing purposes.		
I am aware of who to contact if I wish to file a complaint.		
I authorize the interview to be recorded.		

Name of participant _____ Date _____ Signature _____

Annex 8. Enforcement conditions across the stages of the cocaine trade in Colombia

Cultivation

Colombia's coca cultivation is strictly regulated under national and international legislation, with unauthorised cultivation criminalised under Law 30 of 1986 and Law 599 of 2000. Coca cultivation is illegal unless explicitly authorised for scientific, medical, or indigenous traditional use. Legal cultivation requires a permit from the National Narcotics Fund (Fondo Nacional de Estupefacientes - FNE) and compliance with the Ministry of Justice and Law regulations. The National Narcotics Council (CNE) oversees drug policy, while agencies such as the National Police, the Anti-Narcotics Directorate (DIRAN), and the Military Forces are responsible for enforcement. These agencies exercise powers, including forced eradication, asset seizure, and criminal prosecution. Alternative development programmes like the PNIS offer legal economic alternatives to coca farmers.

Processing

Cocaine processing is entirely prohibited, governed by laws such as Law 30 of 1986 and Law 599 of 2000, with enhanced penalties under Law 1908 of 2018. Enforcement is carried out by the National Police, DIRAN, the Attorney General's Office, and the Armed Forces, which conduct raids, dismantle laboratories, and seize assets. The Ministry of Justice and Law in Colombia is responsible for regulating chemical precursors used in cocaine production. It oversees their legal import, production, distribution, and use through the Sub-directorate of Control and Supervision of Chemical Substances and Narcotics, ensuring they are not diverted for illicit purposes. The Ministry issues permits for their legal handling and collaborates with national agencies like the National Police and National Directorate of Taxes and Customs (DIAN) to monitor and investigate illegal transactions. It also works with international organisations such as the United Nations Office on Drugs and Crime (UNODC) and the International Narcotics Control Board (INCB) to comply with global drug control treaties. Additionally, the Ministry contributes to the National Drug Policy and supports legislation, such as Decree 1844 of 2018, to strengthen enforcement against drug-related activities.

Distribution

The distribution of cocaine is criminalised under Colombia's Penal Code (Law 599 of 2000), with additional measures under Law 1453 of 2011 and Law 1908 of 2018 targeting organised criminal groups. The National Police, DIRAN, and Military Forces conduct interdiction operations, while the Attorney General's Office prosecutes trafficking networks. Additional regulatory agencies, such as the Superintendency of Transport and Colombian Migration Authority, monitor legal transport systems and border crossings. Law enforcement agencies exercise powers including arrest, surveillance, border control, and asset seizure. Authorities conduct investigations, arrests, and undercover operations, seizing illicit assets and collaborating with international agencies such as the DEA and INTERPOL. Extradition policies and intelligence operations further support the dismantling of drug trafficking networks.

Commercialisation

Under Law 30 of 1986 and Law 599 of 2000, the sale and commercialisation of cocaine are prohibited. Enforcement is led by the National Police's Anti-Narcotics Directorate and the Attorney General's Office, with support from the National Army, which disrupts organised crime structures. Authorities conduct investigations, arrests, and undercover operations, seizing illicit assets. The C-221/94 Constitutional Court ruling decriminalised personal drug consumption, recognising individual rights. Law 745 (2002) focuses on protecting minors from drug use, imposing obligations on educational and commercial institutions.

Annex 9. Review of methods in crime script studies that have used document analysis

	Study	Topic	Data sources	Search strategy	Inclusion criteria	Analytical strategy
1	Vidal and Décary-Hétu (2018)	Production of Methamphetamine	Google search for methamphetamine recipes	Keyword search using relevant keywords. Selection of keywords was not justified.	Include: a detailed description of the four main methamphetamine production steps; list of required chemicals with the precise quantity to be used for each chemical; list of required equipment.	Content qualitative analysis: a. Identify different steps in the manufacturing of methamphetamine and their evolution b. Identify adaption by methamphetamine produces in relation to the evolution of legislation.
2	Viollaz et al. (2018)	Wildlife trafficking (focus on rhino horn trade and live pet trade)	Academic literature (sourced from EBSCOhost and SCOPUS) and grey literature (sourced from Rutgers Library Gray Literature database and Google searches).	1. Individual searches using a combination of relevant keywords. Selection of keywords was not justified. 2. Individual search on financial crime linked to rhino horn and live pet trade using a set of relevant keywords. Keywords selected based on a paper on categories of financial crime.	Documents published after 2002 were considered. No other inclusion criteria were mentioned.	When the authors found overlaps in content, they "combined with individual notes made when things worked differently for each type of illegal trade." (p. 599)".
3	van der Valk et al. (2020)	Illegal gold mining – Peru * Document analysis was used to validate interview and focus group results.	Journalistic articles were used among other non-open-source documents (archival documents, statistics, data collected by companies and organizations and legislation)	Not specified.	Not specified.	ATLAS.ti software was used for thematic analysis, nothing else was specified.
4	Sosnowski et al. (2020)	Illegal harvesting of live corals – Indonesia & Fiji	Academic literature (sourced from ProQuest, Scopus, Web of Science, and Google Scholar) and non-academic resources (i.e. grey literature) such as government reports, journalistic articles and zoological reports. Source of the non-academic resources was not specified.	Inspired in search methods of systematic reviews: 1. Keyword search using relevant keywords. Keyword selection not justified. Backward snowballing based on the citations in the literature identified in the first search.	Publications with "information relevant to crime script development" (p. 387)	"Information describing any stages of the coral harvest was systematically extracted to build a coherent and complete script based on the selected crime-scripting framework, detailed below" (p. 388)

Annex 9. Review of methods in crime script studies that have used document analysis (continued)

Study		Topic	Data sources	Search strategy	Inclusion criteria	Analytical strategy
5	Peters (2020)	Piracy – Nigeria	Data from the IMB, the International Maritime Organization (IMO) and the U.S. National Geospatial-Intelligence Agency (NGIA). The paper also mentioned that academic sources, grey literature and intelligence briefs were used for triangulation, but sources were not specified.	Not specified.	Incidents occurring between 2009 and 2018, perpetrated in Nigeria's internal waterways, territorial seas and contiguous and exclusive economic zones; or attributed to Nigerian pirates in the wider GoG, including the high seas; or committed on the high seas in locations where Nigeria was the closest littoral state.	1. Data combined and duplicate incidents eliminated. 2. Initial coding performed and tested to ensure consistency. 3. Coding reviewed.
6	Alonso Berbotto and Chainey (2021); Chainey and Alonso Berbotto (2022)	Theft of Oil from Pipelines – Mexico	Recorded data on IPT incidents (sourced from Pemex) and open-source intelligence (OSINT) using Google. Open sources included: "journal articles, Mexican and international media coverage, published journalistic investigations, and reports about TROP and IPT in Mexico from consultancy practices and think tanks" (p. 7)	1. Keyword search using relevant keywords. Keyword selection not justified. 2. Refining selection of documents by "removing redundancy and considering appropriateness of content" (p. 7) 3. Further refinement based on quality (authenticity, credibility, representativeness and meaning).	Documents in English and Spanish, published between 2014 and 2019, relating to Mexico.	1. Create crime script template 2. Identify data and apply document analysis 3. Code data to categorise data into crime script template 4. Axial coding to examine associations between categories and subcategories of data 5. Examine and group decision-making within and between each stage of an organized crime.

Annex 10. List of operational crimes

Int: interviews; **CSA:** crime script analysis; **PC:** penal code
The name of the crime in the Colombian Penal Code (Congress of Colombia, 2000a) is written in Spanish in its original form. PC is only included where it led to adding a new crime type to the list.

No.	Crime type	Article No.	Name of crime type in Colombian Penal Code	Source
1	Body dismemberment	204	Irrespeto a cadáveres	Int
2	Bribery	405	Cohecho propio	Int; CSA
3	Civilian casualties	145	Actos de barbarie	Int
4	Clandestine production of chemical precursors	382	Tráfico de sustancias para el procesamiento de narcóticos	Int; CSA; UNODC-DOC
5	Construction of semi-submersibles or submersibles for drug trafficking	377B	Uso, construcción, comercialización y/o tenencia de semisumergibles o sumergibles para narcotráfico	UNODC-DOC
6	Contamination	333; 371	Daños en los recursos naturales y ecocidio; Contaminación de aguas	Int; CSA; UNODC-DOC
7	Contraband of agricultural chemicals and narcotics processing substances	319; 382	Contrabando; Tráfico de sustancias para el procesamiento de narcóticos	Int; CSA; UNODC-DOC
8	Contraband of hydrocarbons and their derivatives	319-1	Contrabando de hidrocarburos y sus derivados	Int; CSA; UNODC-DOC
9	Contraband to launder proceeds	319	Contrabando	Int; UNODC-DOC
10	Counterfeiting medicines to cut cocaine	382	Tráfico de sustancias para el procesamiento de narcóticos	Int; UNODC-DOC
11	Criminal conspiracy	340	Concierto para delinquir	PC; UNODC-DOC
12	Cultivation or preservation of coca plantations	375	Conservación o financiación de plantaciones	Int; CSA; UNODC-DOC
13	Deforestation	330	Deforestación	Int; CSA
14	Diversion from domestic trade of chemical precursors	382	Tráfico de sustancias para el procesamiento de narcóticos	Int; CSA; UNODC-DOC
15	Enforced disappearance	165	Desaparición forzada	Int; UNODC-DOC
16	Existence, construction, and illegal use of airstrips	385	Existencia, construcción y utilización ilegal de pistas de aterrizaje	Int; UNODC-DOC
17	Extortion	244	Extorsión	Int; CSA; UNODC-DOC
18	Financing coca plantations	375	Conservación o financiación de plantaciones	Int; UNODC-DOC
19	Financing electoral campaigns with prohibited funds	396A	Financiación de campañas electorales con fuentes prohibidas	Int
20	Forced displacement	180	Desplazamiento forzado	Int; UNODC-DOC
21	Front companies to traffic chemical precursors	382	Tráfico de sustancias para el procesamiento de narcóticos	Int; UNODC-DOC
22	Fronting	326	Testaferrato	Int; UNODC-DOC
23	Homicide	103	Homicidio	Int; CSA; UNODC-DOC
24	Human trafficking and forced labour	188A	Trata de personas	Int; CSA; UNODC-DOC
25	Illegal mining for money laundering	332; 338	Explotación ilícita de yacimiento minero y otros materiales	Int; CSA; UNODC-DOC
26	Illegal use of fuels	327D	Destinación ilegal de combustibles	Int; CSA; UNODC-DOC
27	Illicit enrichment of individuals	327	Enriquecimiento ilicito de particulares	Int; UNODC-DOC

Annex 10. List of operational crimes (continued)

Int: interviews; **CSA:** crime script analysis; **PC:** penal code
The name of the crime in the Colombian Penal Code (Congress of Colombia, 2000a) is written in Spanish in its original form. PC is only included where it led to adding a new crime type to the list.

No.	Crime type	Article No.	Name of crime type in Colombian Penal Code	Source
28	Inducement to use	378	Estímulo al uso ilícito	Int; UNODC-DOC
29	Influencing electoral results via financing, corruption, fraud and intimidation	387; 388; 390; 390A	Constreñimiento al sufragante; Fraude al sufragante; Corrupción del sufragante; Tráfico de votos	Int
30	Instigation to commit crime	348	Instigación a delinquir	PC
31	Land-grabbing	263; 336; 337	Invasión de tierras; Invasión de áereas de especial importancia ecológica; Apropiación ilegal de baldíos de la nación	Int; CSA
32	Money laundering	323	Lavado de activos	Int; CSA; UNODC-DOC
33	Private corruption	250A; 325; 325A	Corrupción privada; Omisión de control; Omisión de reportes sobre transacciones en efectivo, movilización o almacenamiento de dinero en efectivo	Int; CSA; UNODC-DOC
34	Production of cocaine and subproducts	376	Tráfico, fabricación o porte de estupefacientes	Int; UNODC-DOC
35	Public corruption	320; 322; 413; 414; 415	Favorecimiento y facilitación del contrabando; Favorecimiento por servidor público; Prevaricato por acción agravado; Prevaricato por omisión agravado	Int; CSA; UNODC-DOC
36	Sex trafficking	188A	Trata de personas	Int; CSA; UNODC-DOC
37	Supply to a minor	381	Suministro a menor	Int; UNODC-DOC
38	Theft of hydrocarbons and derivatives from pipelines	327A	Apoderamiento de hidrocarburos, sus derivados, biocombustibles o mezclas que los contengan	Int; CSA; UNODC-DOC
39	Threats	347; 188E	Amenaza; Amenazas contra defensores de Derechos Humanos y servidores públicos	Int; CSA
40	Torture	178	Tortura	Int; UNODC-DOC
41	Trafficking and possessing cocaine and subproducts	376	Tráfico, fabricación o porte de estupefacientes	Int; UNODC-DOC
42	Trafficking of medicines to cut cocaine	382	Tráfico de sustancias para el procesamiento de narcóticos	Int; UNODC-DOC
43	Training for illicit activities (hitmen)	341	Entrenamiento para actividades ilicitas	PC
44	Use of antipersonnel landmines	367A; 367B	Empleo, producción, comercialización y almacenamiento de minas antipersonal; Ayuda e inducción al empleo, producción y transferencia de minas antipersonal	Int; UNODC-DOC
45	Use of minors for the commission of crimes	188D	Uso de menores de edad la comisión de delitos	Int; CSA; UNODC-DOC
46	Use of movable and immovable property for illicit activities	377	Destinación ilícita de muebles o inmuebles	Int; UNODC-DOC
47	Usurpation of immovable property	261	Usurpación de inmuebles	PC; UNODC-DOC
48	Usurpation of waters	262	Usurpación de aguas	PC; UNODC-DOC

Annex 11. List of excluded crime types

Int: interviews; **CSA:** crime script analysis; **PC:** penal code
1: Peripheral association with the cocaine trade**; CP:** criminal portfolio; **CC:** confluent crimes; **FC:** fuelled crimes; **2:** Law enforcement facilitation or obstruction**; 3:** Not within scope**; U:** drug-user-related crimes; **OS:** other substances; **TN:** transnational crimes

The name of the crime in the Colombian Penal Code (Congress of Colombia, 2000a) is written in Spanish in its original form. PC is only included where it led to adding a new crime type to the list.

No.	Crime type	Article No.	Name of crime type in Colombian Penal Code	Source	Reason for exclusion
1	Aggravated culpable murder	110	Homicidio culposo agravado	UNODC-DOC	3: U
2	Arms trafficking	365	Fabricación, tráfico, porte o tenencia de armas de fuego, accesorios, partes o municiones	Int; UNODC-DOC	1: FC
3	Culpable facilitation of escape	450	Favorecimiento de la fuga-culposo	UNODC-DOC	2
4	Culpable murder	109	Homicidio culposo	UNODC-DOC	3: U
5	Environmental contamination due to exploitation of mining or hydrocarbon deposits	334A	Contaminación ambiental por explotación de yacimiento minero o hidrocarburo	UNODC-DOC	1: CP
6	Extortive kidnapping	169	Secuestro extorsivo	UNODC-DOC	1: CP
7	Fabrication and commercialisation of harmful substances to human health	374	Fabricación y comercialización de sustancias nocivas para la salud	UNODC-DOC	3: OS
8	Facilitation of escape	449	Favorecimiento de la fuga	UNODC-DOC	2
9	Failure to denounce a private individual	441	Omisión de denuncia de particular	UNODC-DOC	2
10	Favouring	446	Favorecimiento	UNODC-DOC	2
11	Handling stolen goods (hydrocarbons)	327C; 327E	Receptación	UNODC-DOC	1: CP
12	Illicit supply or prescription	379	Suministro o formulación ilegal	UNODC-DOC	3: OS
13	Illicit supply or prescription to sportsmen and sportswomen	380	Suministro o formulación ilegal a deportistas	UNODC-DOC	3: OS
14	Injuries	111	Lesiones	Int	1: CC
15	Loan sharking	305	Usura	CSA	1: CP
16	Possession of illicit substances (scopolamine or any other similar substance)	383	Porte de sustancias	UNODC-DOC	3: OS
17	Rebellion	467	Rebelión	UNODC-DOC	1: CC
18	Sex tourism	219	Turismo sexual	CSA; UNODC-DOC	1: CC
19	Terrorism financing	345	Financiación del terrorismo y de grupos de delincuencia organizada y administración de recursos relacionados con actividades terroristas y de la delincuencia organizada	Int; UNODC-DOC	1: FC

Annex 11. List of excluded crime types (continued)

Int: interviews; **CSA:** crime script analysis; **PC:** penal code
1: Peripheral association with the cocaine trade**; CP:** criminal portfolio; **CC:** confluent crimes; **FC:** fuelled crimes; **2:** Law enforcement facilitation or obstruction**; 3:** Not within scope**; U:** drug-user-related crimes; **OS:** other substances; **TN:** transnational crimes

The name of the crime in the Colombian Penal Code (Congress of Colombia, 2000a) is written in Spanish in its original form. PC is only included where it led to adding a new crime type to the list.

No.	Crime type	Article No.	Name of crime type in Colombian Penal Code	Source	Reason for exclusion
20	Theft	239; 240; 185A	Hurto: Hurto calificado; Intimidación o amenaza con arma de fuego; armas, elementos o dispositivos menos letales; armas de fuego hechizas; y arma blanca	Int	1: CC
21	Trafficking of arms and munition of armed forces	366	Fabricación, tráfico y porte de armas, municiones de uso restringido, de uso privativo de las fuerzas armadas o explosivos	UNODC-DOC	1: CP
22	Trafficking of children and teenagers	188C	Tráfico de niñas, niños y adolescentes	UNODC-DOC	1: CP
23	Transnational bribing	433	Soborno transnacional	UNODC-DOC	3: TN
24	Wildlife trafficking	328; 328A	Aprovechamiento ilícito de los recursos naturales renovables; tráfico de fauna	UNODC-DOC	1: CP

Annex 12. Ethics approval certificate for study 3: Crime harms across the cocaine trade in Colombia

LONDON'S GLOBAL UNIVERSITY

UCL

Student name: Juliana Gómez Quintero

Supervisor name: Hervé Borrion, Spencer Chainey

Project ID: 767

Title of proposed project: Assessing Harms Across Stages: A Multi-Criteria Decision Analysis of the Cocaine Trade for Informed Policy Interventions

Upon review of the materials that you provided, the Department of Security and Crime Science Ethics Committee has decided to grant your project ethics approval under the low-risk category.

The approval is granted for the duration of the project mentioned in your application. If the project continues beyond this period, you will need to seek an extension or a fresh approval.

Should your project substantially change from what you have proposed, you will need to go through the ethics approval process again.

Signed: **Dated:** 11/03/2024

Dr Kartikeya Tripathi
Chair, Departmental Ethics Committee
Department of Security and Crime Science
University College London

University College London, Gower Street, London WC1E 6BT
Tel: +44 (0)20 7679 2000
email@ucl.ac.uk
www.ucl.ac.uk

Annex 13. Participant information sheet – Assessing crime harms

(also provided in Spanish to those who answered the survey in Spanish)

Department of Security and Crime Science
Faculty of Engineering

UCL

Assessing crime harms across the cocaine trade in Colombia

Information sheet

Department: Security and Crime Science
Name and contact of researcher: Juliana Gómez Quintero, [email redacted]
Research supervisor: Prof. Hervé Borrion

This survey is part of the study " Assessing crime harms across the cocaine trade in Colombia" conducted by Ms Gómez-Quintero, lecturer and PhD candidate of the Department of Security and Crime at University College London (UCL). The design of this study has been reviewed and approved by the Ethics Committee of the Department of Security and Crime Sciences. The study is registered for data protection.

You are invited to participate in this study. You should only participate if you want to; choosing not to participate will not prejudice you. Before you decide, you must understand why the research is being done and what your participation will entail. Please take the time to read the following information carefully and discuss it with others if you wish. Please ask us if anything is unclear or if you want more information. Thank you in advance for reading this document.

Aim of the study
The objective of this study is to identify and assess the harms caused crimes perpetrated in the cocaine trade across its various stages (cultivation, processing, distribution, and commercialisation) in Colombia.

Selection of participants
To participate in this study, people with knowledge of cocaine trafficking, associated crimes, and harms in Colombia are sought.

The survey
You will be asked to tick a consent box to ensure you agree to participate in this study. Then, you will fill in the survey. The survey will gather data on demographics (age, gender, years of experience, and the sector in which you work), your perception of harms associated with different stages of the cocaine trade, and your judgment on the importance of these harms. Taking this survey should last around 20 minutes.

Voluntary participation
You are free to decide whether to participate in this study. If you decide to participate, you will be asked to tick the consent box below. You can withdraw from the study at any point before submitting the survey if you want to. If you do not want to participate, there will be no penalty.

Possible risks and disadvantages of your participation
There are no foreseeable disadvantages and risks of participating in this study.

Benefits of your participation
Although the project participants do not receive immediate benefits, it is hoped that this work will serve as a basis for research on drug policy in Colombia and harm assessment of organised crimes.

Department of Security and Crime Science
Faculty of Engineering

Complaints and claims
If you wish to complain about this investigation, please contact the researcher, Juliana Gómez-Quintero ([email redacted]). If you feel your complaint has not been handled satisfactorily, you may contact the Chair of the Research Ethics Committee, Department of Security and Criminal Sciences (scs.ethics@ucl.ac.uk).

Confidentiality
The survey is confidential and pseudonymised. Confidentiality means your answers will NOT be shared with anyone except the research team. Pseudonymised means that your answers will not be linked to your name, which we will not ask, but given a number (e.g., Participant N11). This means that your answers cannot be specifically linked to you. You will not be able to be identified in any subsequent report or publication.

Limits to Confidentiality
Confidentiality will be respected subject to legal constraints and professional guidelines.

Use of study results
The results will be disseminated in standard academic media and may also be disseminated through magazines/newspapers/newspapers of general interest. You will not be identifiable in any report or publication.

Note on data protection and privacy
The controller for this project will be University College London (UCL). The UCL Data Protection Officer provides oversight of UCL activities involving the processing of personal data, and can be contacted at data-protection@ucl.ac.uk.

This 'local' privacy notice sets out the information for this study. Further information on how UCL uses participant information can be found in our 'general' privacy notice: https://www.ucl.ac.uk/legal-services/privacy/ucl-general-research-participant-privacy-notice.

The information that is required to be provided to participants under data protection legislation (GDPR and DPA 2018) is provided across both the 'local' and 'general' privacy notices.

The categories of personal data used will be as follows:

- Age
- Gender
- Years of experience
- Occupation sector

The lawful basis for processing your personal data is the performance of a task in the public interest. Your personal data will be processed so long as it is required for the research project. The personal data will be pseudonymised and will endeavour to minimise the processing of personal data wherever possible. If you are concerned about how your personal data is being processed, or if you would like to contact us about your rights, please contact UCL in the first instance at data-protection@ucl.ac.uk.

Organisation and financing of this research
This research is carried out as part of a PhD research funded by the Faculty of Engineering at University College London, Colfuturo, and Minciencias.

Thank you for reading this information sheet and considering participating in this study.

Annex 14. Participant information sheet – Challenges and potential of MCDA

(provided in Spanish – All interviews were conducted in Spanish)

Challenges and potential of MCDA for assessing crime-related harms in the cocaine trade: Expert perspectives
Informed consent

Department: Security and Crime Science
Name and contact of researcher: Juliana Gómez Quintero, [email redacted]
Supervisor principal de la investigación: Prof. Hervé Borrion

This interview is part of the study "Assessment of Crime-Related Harms in the Cocaine Trade in Colombia" carried out by Ms. Gómez-Quintero, lecturer and PhD candidate from the Department of Security and Crime at University College London (UCL). The design of this study has been approved by the Ethics Committee of the Department of Security and Crime Sciences. The study is registered for data protection.

You are invited to participate in this research project. You should only participate if you want to; choosing not to participate will not prejudice you in any way. Before you decide, it is important that you understand why the research is being done and what your participation will entail. Please take the time to read the following information carefully and discuss it with others if you wish. Please ask us if there is anything that is not clear to you or if you would like more information. Thank you in advance for reading this document.

Aim of the study
This interview aims to identify and assess the challenges and potential of the tool designed to evaluate the harms caused by crimes committed within the framework of the cocaine trade at its various stages.

Selection of participants
To participate in this study, you must have completed the survey titled 'Assessment of Crime-Related Harms in the Cocaine Trade in Colombia.

The interview
The interview is expected to last approximately 40 minutes and will be conducted online. Before beginning the interview, the interviewee will be asked to fill out and return the consent form to the interviewer. During the interview, you will be asked about the design of the tool and your experience with it. You will also be asked about your perception of the implementation challenges and the tool's potential to inform the design of counter-narcotics policies and measures. All data will be collected and stored in accordance with the UK Data Protection Act 2018 and the General Data Protection Regulation.

Recording
You can decide if you authorise the recording of the interview. If you authorise the recording, it will only be used as a reference by the interviewer. The recording will be deleted once it is transcribed.

Voluntary participation
You are free to decide whether to participate in this study. If you decide to participate, you will be asked to complete a consent form. You can withdraw your participation at any time until the publication of this research, without the need for a reason. If you wish to withdraw from the study, please contact us at the researcher's email and we will delete your data.

Security and Crime Science
Faculty of Engineering

Possible risks and disadvantages of your participation
There are no foreseeable disadvantages and risks of participating in this study.

Benefits of your participation
Although participants do not receive immediate benefits, this work is expected to serve as a foundation for research on drug policy in Colombia and the assessment of harms caused by organised crime.

Complaints and claims
If you wish to make a complaint about this investigation, please contact the researcher, Juliana Gómez Quintero ([email redacted]). If you feel that your complaint has not been handled to your satisfaction, you may contact the Chair of the Research Ethics Committee, Department of Security and Criminal Sciences (scs.ethics@ucl.ac.uk).

Confidentiality
All personal information will be kept confidential, and every effort will be made to ensure that you cannot be identified. Personal data (name, contact, position) collected in this study will be stored anonymously and securely. You may not be identified in any subsequent report or publication.

Use of study results
The results will be disseminated in standard academic media. The results may also be disseminated through magazines/newspapers/newspapers of general interest. You will not be identifiable in any report or publication.

Note on data protection and privacy
The data controller for this project will be University College London (UCL). The UCL Data Protection Office oversees UCL's activities involving the processing of personal data and can be contacted at data-protection@ucl.ac.uk. The UCL Data Protection Officer can also be contacted at data-protection@ucl.ac.uk. Your personal data will be processed for the purposes described in this notice. If you have concerns about how your personal data is being processed, please contact UCL in the first instance at data-protection@ucl.ac.uk. If you are still dissatisfied, you can contact the Information Commissioner's Office (ICO). Contact details and details of data subject rights are available on the ICO website at: https://ico.org.uk/for-organisations/data-protection-reform/overview-of-the-gdpr /individualsrights/

Organisation and financing of this research
This research is carried out as part of a PhD research funded by the Faculty of Engineering at University College London, Colfuturo and Minciencias.

Thank you for reading this information sheet and considering participating in this study.

Annex 15. Participant consent form – Challenges and potential of MCDA

(provided in Spanish – all interviews were conducted in Spanish)

Challenges and potential of MCDA for assessing crime-related harms in the cocaine trade: Expert perspectives

Informed consent

Select by checking the appropriate box for each of the following statements:

	Yes	No
I confirm that I have read and understood the information sheet for the study "Cocaine trade and connected crimes in Colombia". I have had an opportunity to consider the information and what is expected of me.		
I understand that my personal information will be used for the purposes that have been explained to me.		
I understand that said information will be treated in accordance with all applicable legislation on data protection.		
I understand that my information may be subject to review by responsible persons at the University (including patrons and funders) for monitoring and auditing purposes.		
I am aware of who to contact if I wish to file a complaint.		
I authorize the interview to be recorded.		

Name of participant _____ Date _____ Signature _____

Annex 16. The survey

(also available in Spanish to those who took the survey in Spanish)

1. Introduction and consent

Assessing crime harms across the cocaine trade in Colombia

I am Juliana, a Lecturer and PhD candidate affiliated with UCL's Security and Crime Science Department. My research focuses on comprehensively understanding the multifaceted damages derived from crimes committed in cocaine trafficking in Colombia. From its cultivation to its final commercialisation, this illicit activity substantially harms health, the environment, and social structures. However, there is a gap in our understanding regarding the distribution of the harmful effects resulting from the crimes involved throughout the various stages of the cocaine trade.

Your responses are essential for comprehending this phenomenon and formulating evidence-based public policies aimed at mitigating the negative effects of cocaine trafficking.

This survey takes about 20 minutes to complete and asks questions on demographics (age, gender, years of experience, and the sector in which you work), your perception of the extent of harms occurring at the different stages of the cocaine trade, and your judgement on the importance of these harms.

If you agree to participate, you will be asked to tick a consent box (below).

Before you proceed, please read the **participant information sheet [click here]**.

By clicking the 'I consent' button below, you confirm:

- To have read and understood the information sheet for the study and that you have had an opportunity to consider the information and what is expected of you.
- You acknowledge that your participation in the study is voluntary, you are 18 years of age, and that you are aware that you may choose to terminate your participation in the study at any time and for any reason before submitting the survey.
- You understand that your personal information will be used for the purposes outlined above and treated in accordance with all applicable legislation on data protection.
- You understand that responsible persons (including patrons and funders) may review your information at the University for monitoring and auditing purposes.
- You are aware of who to contact if you wish to file a complaint.

Please note that this survey is best displayed on a laptop or desktop computer. Some features may not be compatible with a mobile device.

○ I consent, begin the study
○ I do not consent, I do not wish to participate

2. Demographics

Demographics

Please take a moment to provide some basic information about yourself. Your responses will help me better understand the participants.

How old are you?

- ○ 18-24 years old
- ○ 25-34 years old
- ○ 35-44 years old
- ○ 45-54 years old
- ○ 65+ years old

How do you describe yourself?

- ○ Male
- ○ Female
- ○ Non-binary / third gender
- ○ [ ] Prefer to self-describe
- ○ Prefer not to say

How many years of experience do you have related to the cocaine trade?
This includes experience in various roles such as law enforcement, policy-making, research, advocacy, or any other field that directly deals with issues related to the production, distribution, trafficking, or consumption of cocaine.

- ○ Under 5 years
- ○ 5-10 years
- ○ 10-15 years
- ○ 15+ years

Please select the option that best describes the sector in which you work.

- ○ Academic/Research institution
- ○ Civil service
- ○ Law enforcement
- ○ Civil Society/Non-governmental Organisation (NGO)
- ○ International Organisation (e.g., United Nations, Interpol)
- ○ Journalist/Media
- ○ Other

If you selected 'Other', please specify

[ ]

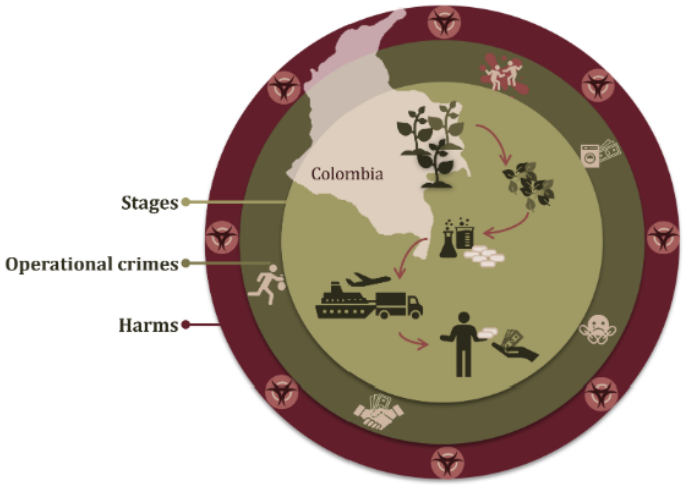
3. Context of the study

UCL

English (United Kingdom)

Conceptual framework

In the research, I investigate the harms arising from crimes committed in the cocaine trade. Built upon three layers, the conceptual framework aims to enrich understanding how these harms are distributed across the trade.



1. Stages: unravelling the journey
This layer focuses on dissecting the journey of the cocaine trade into distinct stages: cultivation, processing, distribution, and commercialisation. By analysing each stage, we pinpoint where harm manifests and understand its varying intensities.

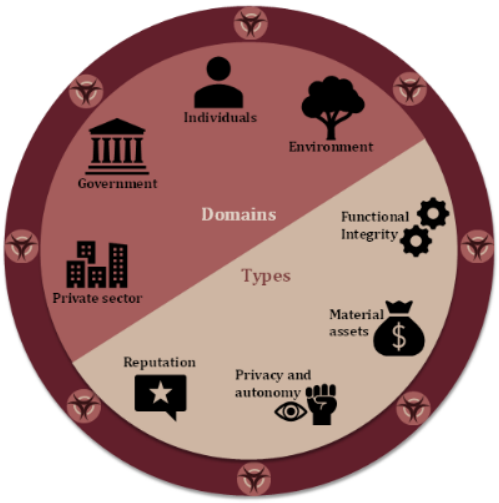
2. Operational crimes: unveiling the ripple effect
Beyond cocaine production, a web of operational crimes, including violence and money laundering, sustain the trade. This layer identifies and understands these crimes across different trade stages, recognising their role in magnifying overall harm.

3. Harms: tracing the impact
This layer categorises and contextualises adverse impacts, discerns between different impacts, and explores the diverse domains in which these harms can occur.

By comprehensively mapping out these harms, we gain a nuanced understanding of their consequences on individuals, communities, and societies. The research involves three studies: mapping stages through document analysis, gathering expert insights on connected crimes, and the ongoing study focusing on harms.

Harms: types and domains

This study concerns the damages directly derived from crimes committed within the realm of cocaine trafficking. Harms are classified into domains and types. Domains refer to the contexts in which harm can occur, including individuals, government, the private sector, and the environment. Types encompass the different categories of adverse outcomes: functional integrity, material assets, privacy and autonomy, and reputation.



The survey is divided into two parts to capture these dimensions comprehensively. The first part will prompt you to evaluate the extent of each harm type within each domain across the various stages of the cocaine trade. In contrast, the second part will ask you to assess the importance of each harm type/domain combination concerning their severity and urgency. Definitions for these dimensions will be provided as you progress through the survey.

4. Scoring harms across stages

Part I: Scoring crime harms across stages of the cocaine trade in Colombia

In this section, you will be asked to evaluate the extent to which each harm type/domain combination is caused across the stages of the cocaine trade in Colombia, including cultivation, processing, distribution, and commercialisation. To assist you in this task, examples of crimes connected to these stages of the cocaine trade that cause each harm type/domain combination will be provided. Remember that this study concerns the damages directly derived from crimes committed within the framework of cocaine trafficking.

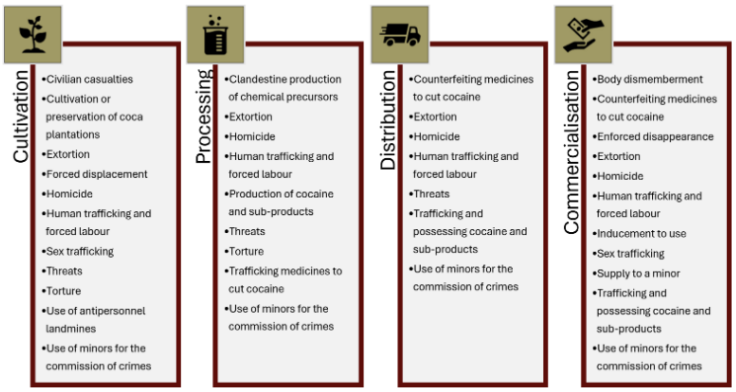
Your expertise in the field and the examples provided will play a crucial role in accurately assessing the occurrence of each harm across the stages. Please indicate the extent to which you believe each harm occurs in each stage of the cocaine trade by scoring on a scale from 0 to 4, where:

- 0 = No harm
- 4 = Very high harm.

If you are uncertain about the occurrence of a harm, please select the option 'Unsure'.

Harms to functional integrity of individuals

Harms to the functional integrity of individuals are any adverse impact that impairs the functionality of a person at an individual or community level, including physical or psychological impacts. The following are examples of crimes committed in connection to the cocaine trade that harm the functional integrity of individuals:

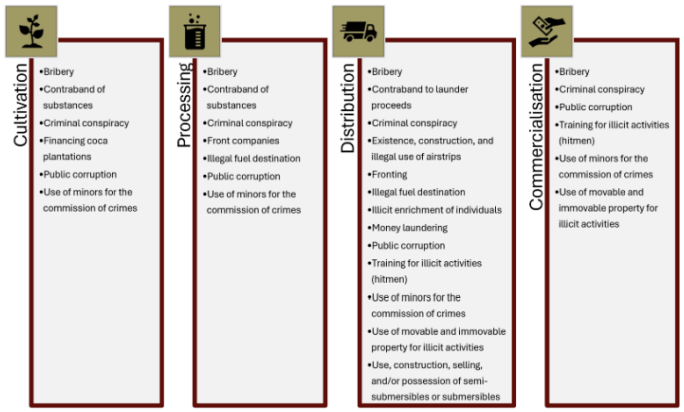


Considering your expertise and the examples provided above, please indicate the extent to which you believe **harms to the functional integrity of individuals** occur in each stage of the cocaine trade on a scale from 0 to 4, where 0 = no harm and 4 = very high harm. If you are unsure, please select the option 'Unsure'.

	0 (None)	1	2	3	4 (Very high)	Unsure
Cultivation	○	○	○	○	○	○
Processing	○	○	○	○	○	○
Distribution	○	○	○	○	○	○
Commercialisation	○	○	○	○	○	○

Harms to functional integrity of the government

Harms to the functional integrity of the government are any adverse impact that impairs the normal operation or functionality of national or local authorities, including law enforcement. The following are examples of crimes committed in connection to the cocaine trade that harm to the functional integrity of the government:

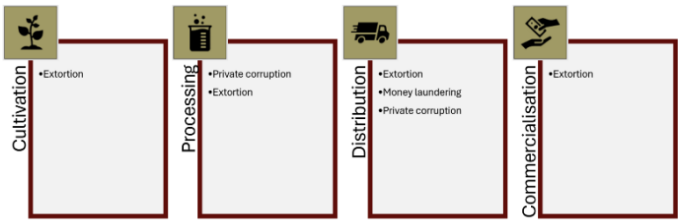


Considering your expertise and the examples provided above, please indicate the extent to which you believe **harms to the functional integrity of the government** occur in each stage of the cocaine trade on a scale from 0 to 4, where 0 = no harm and 4 = very high harm. If you are unsure, please select the option 'Unsure'.

	0 (None)	1	2	3	4 (Very high)	Unsure
Cultivation	○	○	○	○	○	○
Processing	○	○	○	○	○	○
Distribution	○	○	○	○	○	○
Commercialisation	○	○	○	○	○	○

Harms to functional integrity of the private sector

Harms to the functional integrity of the private sector are inflicted upon non-governmental organisations or businesses, impacting their capacity to operate and thrive. The following are examples of crimes committed in connection to the cocaine trade that harm the functional integrity of the private sector:

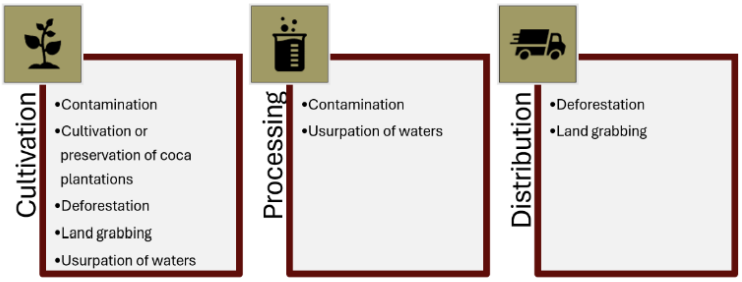


Considering your expertise and the examples provided above, please indicate the extent to which you believe **harms to the functional integrity of the private sector** occur in each stage of the cocaine trade on a scale from 0 to 4, where 0 = no harm and 4 = very high harm. If you are unsure, please select the option 'Unsure'.

	0 (None)	1	2	3	4 (Very high)	Unsure
Cultivation	○	○	○	○	○	○
Processing	○	○	○	○	○	○
Distribution	○	○	○	○	○	○
Commercialisation	○	○	○	○	○	○

Harms to functional integrity of the environment

Harms to the functional integrity of the environment are inflicted upon ecological systems, biodiversity, or natural resources, affecting their capacity to operate and thrive. The following are examples of crimes committed in connection to the cocaine trade that harm the functional integrity of the environment:

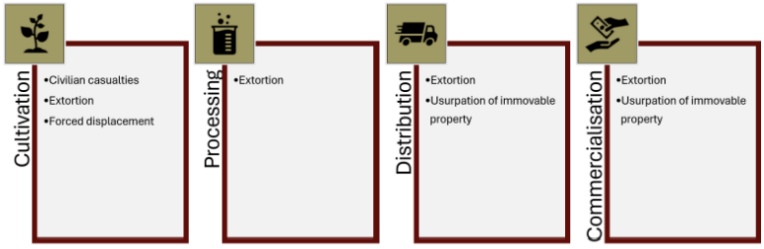


Considering your expertise and the examples provided above, please indicate the extent to which you believe **harms to the functional integrity of the environment** occur in each stage of the cocaine trade on a scale from 0 to 4, where 0 = no harm and 4 = very high harm. If you are unsure, please select the option 'Unsure'.

	0 (None)	1	2	3	4 (Very high)	Unsure
Cultivation	○	○	○	○	○	○
Processing	○	○	○	○	○	○
Distribution	○	○	○	○	○	○
Commercialisation	○	○	○	○	○	○

Harms to material assets of individuals

Harms to material assets of individuals are any damage, loss, or devaluation of physical or financial resources belonging to individuals. The following are examples of crimes committed in connection to the cocaine trade that harm material assets of individuals:

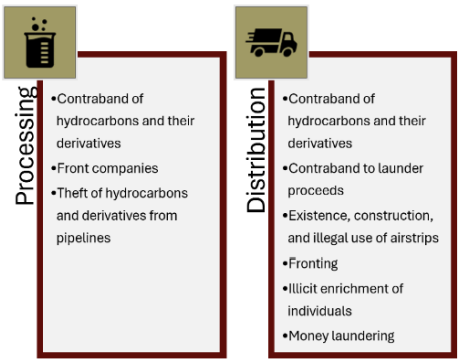


Considering your expertise and the examples provided above, please indicate the extent to which you believe **harms to material assets of individuals** occur in each stage of the cocaine trade on a scale from 0 to 4, where 0 = no harm and 4 = very high harm. If you are unsure, please select the option 'Unsure'.

	0 (None)	1	2	3	4 (Very high)	Unsure
Cultivation	○	○	○	○	○	○
Processing	○	○	○	○	○	○
Distribution	○	○	○	○	○	○
Commercialisation	○	○	○	○	○	○

Harms to material assets of the government

Harms to material assets of the government are any damage, loss, or devaluation of physical or financial resources belonging to the government, including those of national and local authorities and law enforcement. The following are examples of crimes committed in connection to the cocaine trade that harm the material assets of the government:

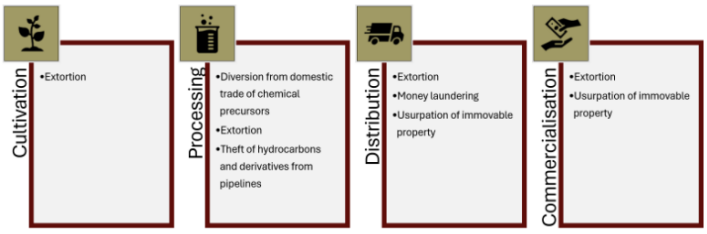


Considering your expertise and the examples provided above, please indicate the extent to which you believe **harms to material assets of the government** occur in each stage of the cocaine trade on a scale from 0 to 4, where 0 = no harm and 4 = very high harm. If you are unsure, please select the option 'Unsure'.

	0 (None)	1	2	3	4 (Very high)	Unsure
Cultivation	○	○	○	○	○	○
Processing	○	○	○	○	○	○
Distribution	○	○	○	○	○	○
Commercialisation	○	○	○	○	○	○

Harms to material assets of the private sector

Harms to material assets of the private sector are any damage, loss, or devaluation of physical or financial resources belonging to non-governmental organisations or businesses. The following are examples of crimes committed in connection to the cocaine trade that harm the material assets of the private sector:



Considering your expertise and the examples provided above, please indicate the extent to which you believe **harms to material assets of the private sector** occur in each stage of the cocaine trade on a scale from 0 to 4, where 0 = no harm and 4 = very high harm. If you are unsure, please select the option 'Unsure'.

	0 (None)	1	2	3	4 (Very high)	Unsure
Cultivation	○	○	○	○	○	○
Processing	○	○	○	○	○	○
Distribution	○	○	○	○	○	○
Commercialisation	○	○	○	○	○	○

Harms to privacy and autonomy of individuals

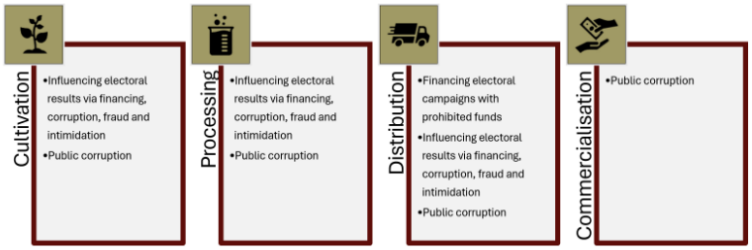
Harms to the privacy and autonomy of individuals are violations of privacy, autonomy, or control over an individual's or community´s information, actions, or decisions. The following are examples of crimes committed in connection to the cocaine trade that harm the privacy and autonomy of individuals:

Considering your expertise and the examples provided above, please indicate the extent to which you believe the **harms to the privacy and autonomy of individuals** occur in each stage of the cocaine trade on a scale from 0 to 4, where 0 = no harm and 4 = very high harm. If you are unsure, please select the option 'Unsure'.

	0 (None)	1	2	3	4 (Very high)	Unsure
Cultivation	○	○	○	○	○	○
Processing	○	○	○	○	○	○
Distribution	○	○	○	○	○	○
Commercialisation	○	○	○	○	○	○

Harms to privacy and autonomy of the government

Harms to the privacy and autonomy of the government are violations of privacy, autonomy, or control over the government's information, actions, or decisions, including those of national and local authorities and law enforcement. The following are examples of crimes committed in connection to the cocaine trade that harm the privacy and autonomy of the government:

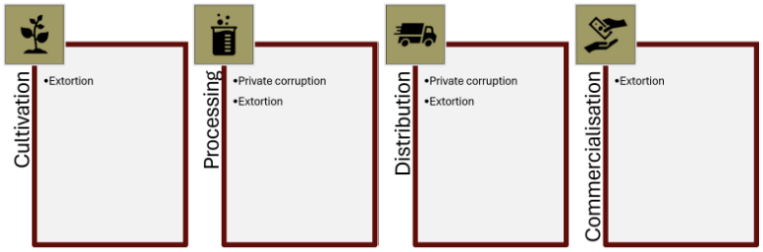


Considering your expertise and the examples provided above, please indicate the extent to which you believe the **harms to the privacy and autonomy of the government** occur in each stage of the cocaine trade on a scale from 0 to 4, where 0 = no harm and 4 = very high harm. If you are unsure, please select the option 'Unsure'.

	0 (None)	1	2	3	4 (Very high)	Unsure
Cultivation	○	○	○	○	○	○
Processing	○	○	○	○	○	○
Distribution	○	○	○	○	○	○
Commercialisation	○	○	○	○	○	○

Harms to the privacy and autonomy of the private sector

Harms to the privacy and autonomy of the private sector are violations of privacy, autonomy, or control over the information, actions, or decisions of non-governmental organisations or businesses. The following are examples of crimes committed in connection to the cocaine trade that harm the privacy and autonomy of the private sector:

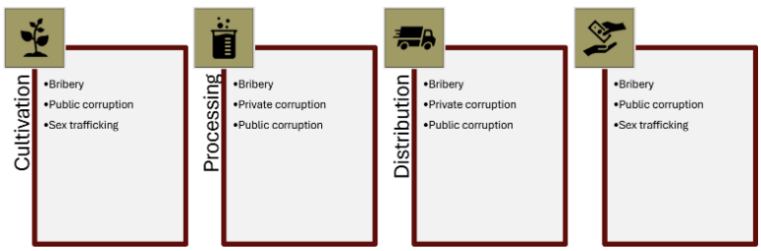


Considering your expertise and the examples provided above, please indicate the extent to which you believe the **harms to the privacy and autonomy of the private sector** occur in each stage of the cocaine trade on a scale from 0 to 4, where 0 = no harm and 4 = very high harm. If you are unsure, please select the option 'Unsure'.

	0 (None)	1	2	3	4 (Very high)	Unsure
Cultivation	○	○	○	○	○	○
Processing	○	○	○	○	○	○
Distribution	○	○	○	○	○	○
Commercialisation	○	○	○	○	○	○

Harms to the reputation of individuals

Harms to the reputation of individuals are negative perceptions, damage to credibility, or loss of public trust of an individual or community. The following are examples of crimes committed in connection to the cocaine trade that harm the reputation of individuals:

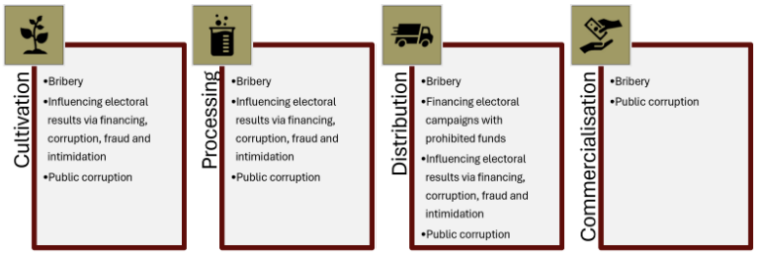


Considering your expertise and the examples provided above, please indicate the extent to which you believe the **harms to the reputation of individuals** occur in each stage of the cocaine trade on a scale from 0 to 4, where 0 = no harm and 4 = very high harm. If you are unsure, please select the option 'Unsure'.

	0 (None)	1	2	3	4 (Very high)	Unsure
Cultivation	○	○	○	○	○	○
Processing	○	○	○	○	○	○
Distribution	○	○	○	○	○	○
Commercialisation	○	○	○	○	○	○

Harms to the reputation of the government

Harms to the government's reputation are negative perceptions, damage to credibility, or loss of public trust in the government, including that of national and local authorities and law enforcement. The following are examples of crimes committed in connection to the cocaine trade that harm the reputation of the government:

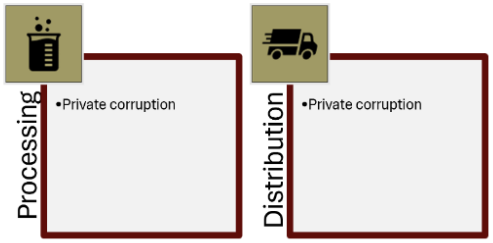


Considering your expertise and the examples provided above, please indicate the extent to which you believe the **harms to the reputation of the government** occur in each stage of the cocaine trade on a scale from 0 to 4, where 0 = no harm and 4 = very high harm. If you are unsure, please select the option 'Unsure'.

	0 (None)	1	2	3	4 (Very high)	Unsure
Cultivation	○	○	○	○	○	○
Processing	○	○	○	○	○	○
Distribution	○	○	○	○	○	○
Commercialisation	○	○	○	○	○	○

Harms to the reputation of the private sector

Harms to the reputation of the private sector are negative perceptions, damage to credibility, or loss of public trust in non-governmental organisations or businesses. The following are examples of crimes committed in connection to the cocaine trade that harm the reputation of the private sector:



Considering your expertise and the examples provided above, please indicate the extent to which you believe the **harms to the reputation of the private sector** occur in each stage of the cocaine trade on a scale from 0 to 4, where 0 = no harm and 4 = very high harm. If you are unsure, please select the option 'Unsure'.

	0 (None)	1	2	3	4 (Very high)	Unsure
Cultivation	○	○	○	○	○	○
Processing	○	○	○	○	○	○
Distribution	○	○	○	○	○	○
Commercialisation	○	○	○	○	○	○

5. Assessing the importance of harms

Part II: Assessing the importance of crime harms

In this second and final part of the survey, you will be asked to evaluate the importance of each of the harms you previously rated in the context of the cocaine trade in Colombia. Please consider the severity of these harms and the urgency of addressing them in your assessment.

Your expertise is invaluable in determining the significance of each harm. Please indicate the importance level of each of the harms below in the context of the cocaine trade in Colombia by scoring them on a scale from 0 to 4, where:

- 0 = Not important
- 4 = Highly important

Harms to functional integrity*

Please indicate the importance level of each of the harms below in the context of the cocaine trade in Colombia by scoring them on a scale from 0 to 4, where 0 = not important and 4 = highly important. Please consider the severity of these harms and the urgency of addressing them in your assessment.

	0 (Not important)	1	2	3	4 (Highly important)
Functional integrity of Individuals	○	○	○	○	○
Functional integrity of the government	○	○	○	○	○
Functional integrity of the private sector	○	○	○	○	○
Functional integrity of the environment	○	○	○	○	○

*Harms to functional integrity are any adverse impact that impairs the normal operation or functionality of an entity, system, or environment.

Harms to material assets*

Please indicate the importance level of each of the harms below in the context of the cocaine trade in Colombia by scoring them on a scale from 0 to 4, where 0 = not important and 4 = highly important. Please consider the severity of these harms and the urgency of addressing them in your assessment.

	0 (Not important)	1	2	3	4 (Highly important)
Material assets of individuals	○	○	○	○	○
Material assets of the government	○	○	○	○	○
Material assets of the private sector	○	○	○	○	○

*Harms to material assets are damage, loss, or devaluation of physical or financial resources belonging to individuals, governments, or private entities.

Harms to privacy and autonomy*

Please indicate the importance level of each of the harms below in the context of the cocaine trade in Colombia by scoring them on a scale from 0 to 4, where 0 = not important and 4 = highly important. Please consider the severity of these harms and the urgency of addressing them in your assessment.

	0 (Not important)	1	2	3	4 (Highly important)
Privacy and autonomy of Individuals	○	○	○	○	○
Privacy and autonomy of the government	○	○	○	○	○
Privacy and autonomy of the private sector	○	○	○	○	○

*Harms to privacy and autonomy are violations of privacy, autonomy, or control over an individual's or entity's information, actions, or decisions.

Harms to reputation*

Please indicate the importance level of each of the harms below in the context of the cocaine trade in Colombia by scoring them on a scale from 0 to 4, where 0 = not important and 4 = highly important. Please consider the severity of these harms and the urgency of addressing them in your assessment.

	0 (Not important)	1	2	3	4 (Highly important)
Reputation of individuals	○	○	○	○	○
Reputation of the government	○	○	○	○	○
Reputation of the private sector	○	○	○	○	○

*Harms to reputation are negative perceptions, damage to credibility, or loss of public trust in individuals, governments, or private entities.

6. Conclusion

To conclude this survey, we value your perspective. Are there any other harms relevant to crimes perpetrated in the cocaine trade in Colombia that you believe have not been considered in this assessment? If yes, please specify them.

Annex 17. Rationale for the classification of operational crimes by harm domains and types

Crime	Stages	Harm domains and types	Explanation
Body dismemberment	Commercialisation	Individuals (functional integrity)	This crime, attributed to score setting, impairs the functional integrity of individuals involved in or associated with the cocaine trade during the commercialisation stage by loss of life.
Bribery	Cultivation, processing, distribution, commercialisation	Government (functional integrity, reputation), Individuals (reputation)	Bribery undermines the functional integrity of government institutions by compromising their ability to enforce laws and regulations effectively, leading to systemic corruption and weakening public trust. Additionally, it damages the reputation of both government officials and individuals involved in the cocaine trade, fostering a perception of dishonesty and unethical behaviour.
Civilian casualties	Cultivation	Individuals (functional integrity, material interests)	Civilian casualties during the cultivation stage not only result in physical harm and loss of life but also undermine the material interests of individuals involved, as their homes and other assets may be damaged during confrontations.
Clandestine production of chemical precursors	Processing	Individuals (functional integrity)	The clandestine production of chemical precursors during processing harms the functional integrity of individuals by exposing them to health risks and endangering their physical well-being.
Contamination	Cultivation, processing	Environment (functional integrity)	Contamination of the environment during both cultivation and processing stages impairs the functional integrity of ecological systems and biodiversity, through the use and disposal of harmful chemicals, waste and trash in soil and water sources.
Contraband of hydrocarbons and their derivatives	Processing, distribution	Government (functional integrity)	The contraband of hydrocarbons and their derivatives during processing and distribution stages undermines the functional integrity of government institutions by facilitating illegal activities and weakening law enforcement efforts.
Contraband of substances	Cultivation, processing	Government (functional integrity)	The contraband of substances during cultivation and processing stages directly undermines the functional integrity of government institutions by enabling illegal trade and impeding regulatory efforts.
Contraband to launder proceeds	Distribution	Government (functional integrity, material interests)	Using contraband to launder proceeds during the distribution stage undermines the functional integrity of government institutions by facilitating money laundering activities, enabling trafficking operations to persist and concealing proceeds from merchandise that would otherwise represent tax revenue for the government.
Counterfeiting medicines to cut cocaine	Distribution, commercialisation	Individuals (functional integrity)	Counterfeiting medicines to cut cocaine during distribution and commercialisation stages harms the functional integrity of individuals by endangering their health and well-being through the consumption of counterfeit drugs, thus causing harm to individuals' functional integrity.
Criminal conspiracy	Cultivation, processing, distribution, commercialisation	Government (functional integrity)	Engaging in criminal conspiracy at various stages of the cocaine trade undermines the functional integrity of government institutions by fostering collusion and corruption, and facilitating the commission of crimes.

Annex 17. Rationale for the classification of operational crimes by harm domains and types (continued)

Crime	Stages	Harm domains and types	Explanation
Cultivation or preservation of coca plantations	Cultivation	Individuals (functional integrity), Environment (functional integrity)	Individuals involved in this process, including farmers and workers, face significant physical risks due to exposure to harmful agrochemicals like pesticides and herbicides, which can result in acute and chronic health issues. Additionally, the act of picking coca leaves can cause irritation to the hands of pickers. From an environmental perspective, the conversion of natural habitats into coca plantations, especially large-scale ones, contributes to the depletion of biodiversity and the fragmentation of habitats. This disruption undermines ecological balance and jeopardizes the survival of local flora and fauna.
Deforestation	Cultivation, distribution	Environment (functional integrity)	Deforestation during both cultivation and distribution stages harms the functional integrity of the environment by destroying natural habitats and disrupting ecological balance, thus causing long-term environmental degradation.
Diversion from domestic trade of chemical precursors	processing	Private sector (material interests)	The diversion from domestic trade of chemical precursors during the processing stage impacts the material interests of the private sector by causing financial losses and disrupting legitimate business operations.
Enforced disappearance	Commercialisation	Individuals (functional integrity)	Enforced disappearance during the commercialisation stage undermines the functional integrity of individuals by violating their rights and subjecting them to physical harm and psychological trauma.
Existence, construction, and illegal use of airstrips	Distribution	Government (functional integrity, material interests)	The presence, construction, and illicit utilisation of airstrips erode the functional integrity of governmental institutions by serving as conduits for cocaine trafficking. Furthermore, the unauthorised use of airstrips can lead to their physical deterioration, thereby jeopardising the government's material interests, particularly if these airstrips are public infrastructure.
Extortion	Cultivation, processing, distribution, commercialisation	Individuals (functional integrity, material interests, privacy and autonomy), Private sector (functional integrity, material interests, privacy and autonomy)	Extortion at various stages of the cocaine trade harms the functional integrity of both individuals and the private sector by coercing them into unlawful payments, thereby causing financial losses and undermining their autonomy and capacity to operate.
Financing coca plantations	Cultivation	Government (functional integrity)	Financing coca plantations during the cultivation stage undermines the functional integrity of government institutions by supporting illegal activities and perpetuating the cycle of drug production.
Financing electoral campaigns with prohibited funds	Distribution	Government (privacy and autonomy, reputation)	Financing electoral campaigns with prohibited funds undermines the privacy and autonomy of government institutions by influencing political processes and compromising democratic principles. This practice tarnishes the government's reputation, as it undermines the integrity of the electoral system and raises concerns about the fairness and transparency of democratic procedures.

Annex 17. Rationale for the classification of operational crimes by harm domains and types (continued)

Crime	Stages	Harm domains and types	Explanation
Forced displacement	Cultivation	Individuals (functional integrity, material interests)	Forced displacement harms the functional integrity and material interests of individuals by uprooting them from their homes and communities, causing psychological trauma and economic instability. This includes indigenous communities. The displacement or marginalisation of these communities due to coca cultivation can erode traditional knowledge systems, cultural heritage, and social cohesion, undermining the functional integrity of indigenous societies.
Front companies	Processing	Government (functional integrity, material interests)	Front companies can undermine both the functional integrity and material interests of government institutions by facilitating illicit activities and concealing criminal operations. By operating covertly or under false pretences, these entities may engage in illicit activities such as tax evasion, fraud, and other financial malpractices. This behaviour not only deprives the government of legitimate tax revenue but also leads to direct financial losses through activities like embezzlement and bribery.
Fronting	Distribution	Government (functional integrity, material interests)	Fronting undermines the functional integrity of government institutions by enabling money laundering and other illegal activities, harming both governmental reputation and material interests.
Homicide	Cultivation, processing, distribution, commercialisation	Individuals (functional integrity)	Homicide at various stages of the cocaine trade directly impacts the functional integrity of individuals by causing loss of life and instilling fear and insecurity within communities, thus impeding their ability to function normally.
Human trafficking and forced labour	Cultivation, processing, distribution, commercialisation	Individuals (functional integrity, privacy and autonomy)	Human trafficking and forced labour at various stages of the cocaine trade harm the functional integrity and privacy of individuals by subjecting them to exploitation and abuse, thereby undermining their autonomy and well-being.
Illegal fuel destination	Processing, distribution	Government (functional integrity)	Illegal fuel destination during processing and distribution stages undermines the functional integrity of government institutions by facilitating illicit activities and compromising regulatory efforts.
Illegal mining for money laundering	Distribution	Environment (functional integrity), Government (functional integrity)	Illegal mining for money laundering during the distribution stage harms the functional integrity of both the environment and government institutions by facilitating money laundering activities and causing environmental degradation.
Illicit enrichment of individuals	Distribution	Government (functional integrity, material interests)	By evading taxes, individuals engaged in illicit enrichment deprive the government of legitimate revenue, which impacts its material interests. Additionally, reinvesting illicitly gained funds into drug trafficking operations perpetuates criminal activities that undermine the functional integrity of governmental institutions.
Inducement to use	Commercialisation	Individuals (functional integrity, privacy and autonomy)	Inducement to use during the commercialisation stage undermines the functional integrity and privacy of individuals by coercing them into drug consumption, thereby endangering their health and autonomy.

Annex 17. Rationale for the classification of operational crimes by harm domains and types (continued)

Crime	Stages	Harm domains and types	Explanation
Influencing electoral results via financing, corruption, fraud and intimidation	Cultivation, processing, distribution	Government (privacy and autonomy, reputation), Individuals (privacy and autonomy)	Influencing electoral results at various stages of the cocaine trade undermines the privacy and autonomy of both individuals and government institutions by compromising democratic processes and fostering a perception of corruption and fraud.
Instigation to commit crime	Cultivation, processing, distribution, commercialisation	Individuals (privacy and autonomy)	Instigation to commit crime at various stages of the cocaine trade undermines the privacy and autonomy of individuals by manipulating them into criminal activities.
Land-grabbing	Cultivation, distribution	Environment (functional integrity)	Land-grabbing during both cultivation and distribution stages harms the functional integrity of the environment by encroaching upon natural habitats and disrupting ecological balance, thus causing long-term environmental degradation.
Money laundering	Distribution	Government (functional integrity, material interests), Private sector (functional integrity, material interests)	Money laundering during the distribution stage undermines the functional integrity of both government institutions and the private sector by facilitating the illegal transfer of funds and concealing the proceeds of criminal activities, thus causing harm to both governmental material interests and private sector financial resources.
Private corruption	Processing, distribution	Private sector (functional integrity, privacy and autonomy, reputation), Individuals (reputation)	Private corruption at various stages of the cocaine trade harms the functional integrity and privacy of both individuals and the private sector by fostering dishonest practices and compromising ethical standards, thereby causing financial losses and undermining autonomy.
Production of cocaine and sub-products	Processing	Individuals (functional integrity)	The production of cocaine and sub-products directly harms the functional integrity of individuals by exposing them to health risks and endangering their physical well-being, thus causing harm to individuals' functional integrity.
Public corruption	Cultivation, processing, distribution, commercialisation	Government (functional integrity, privacy and autonomy, reputation), Individuals (reputation)	Public corruption at various stages of the cocaine trade undermines the functional integrity and privacy of government institutions and the reputation of individuals by fostering collusion and abuse of power, thereby damaging public trust.
Sex trafficking	Cultivation, commercialisation	Individuals (functional integrity, privacy and autonomy, reputation)	Sex trafficking at various stages of the cocaine trade harms the functional integrity, privacy, and reputation of individuals by subjecting them to exploitation and abuse, thereby undermining their autonomy and well-being.
Supply to a minor	Commercialisation	Individuals (functional integrity, privacy and autonomy)	Supplying cocaine to a minor directly harms the functional integrity and privacy of individuals by endangering the health and well-being of young individuals and compromising their autonomy.
Theft of hydrocarbons and derivatives from pipelines	Processing	Government (material interests), Private sector (material interests)	The theft of hydrocarbons and derivatives from pipelines during the processing stage undermines the material interests of both government institutions and the private sector by causing financial losses and disrupting legitimate operations.

Annex 17. Rationale for the classification of operational crimes by harm domains and types (continued)

Crime	Stages	Harm domains and types	Explanation
Threats	Cultivation, processing, distribution	Individuals (functional integrity)	Harms the functional integrity of individuals by instilling fear and intimidation, thereby impeding their ability to function normally within their communities.
Torture	Cultivation, processing	Individuals (functional integrity)	Harms the functional integrity of individuals by causing physical and psychological trauma, thus impeding their ability to function normally within society.
Trafficking and possessing cocaine and sub-products	Distribution, commercialisation	Individuals (functional integrity)	Trafficking and possessing cocaine and sub-products at various stages of the cocaine trade directly harm the functional integrity of individuals by endangering their well-being, particularly to those packing cocaine inside their bodies.
Trafficking medicines to cut cocaine	Processing	Individuals (functional integrity)	Trafficking medicines to cut cocaine harms the functional integrity of individuals by endangering their health and well-being through the consumption of adulterated drugs, thus causing harm to individuals' functional integrity.
Training for illicit activities (hitmen)	Distribution, commercialisation	Government (functional integrity)	Training individuals for illicit activities such as being hitmen during the distribution and commercialisation stages directly harms the functional integrity of government institutions by facilitating criminal operations and compromising public safety, thus causing harm to governmental functional integrity.
Use of antipersonnel landmines	Cultivation	Individuals (functional integrity)	The use of antipersonnel landmines harms the functional integrity of individuals by endangering their physical safety and well-being, thus impeding their ability to function normally within their communities.
Use of minors for the commission of crimes	Cultivation, processing, distribution, commercialisation	Individuals (functional integrity), Government (functional integrity)	By coercing vulnerable youths into transporting drugs domestically—exploiting perceived gaps in law enforcement scrutiny—this practice violates their rights and weakens the effectiveness of law enforcement, hindering their ability to uphold justice.
Use of movable and immovable property for illicit activities	Distribution, commercialisation	Government (functional integrity)	The use of movable and immovable property for illicit activities during the distribution and commercialisation stages directly harms the functional integrity of government institutions by facilitating criminal operations.
Use, construction, selling, and/or possession of semi-submersibles or submersibles	Distribution	Government (functional integrity)	The use, construction, selling, and/or possession of semi-submersibles or submersibles harms the functional integrity of government institutions by enabling illegal maritime activities and compromising border security.
Usurpation of immovable property	Distribution, commercialisation	Individuals (material interests), Private sector (material interests)	Usurpation of immovable property harms the material interests of both individuals and the private sector by causing financial losses and disrupting legitimate property rights.
Usurpation of waters	Cultivation, processing	Environment (functional integrity)	Usurpation of waters impacts the functional integrity of the environment by disrupting natural ecosystems, depleting water resources, and causing ecological imbalance. This harm undermines the ability of the environment to function properly and sustain life, thus affecting the functional integrity of ecological systems and biodiversity.