SELECTIONS FROM
THE FORTHCOMING REPORT

ROADMAPS TO REGULATION: COCA, COCAINE & DERIVATIVES

CONVENER & EDITOR: AMANDA FEILDING

SECTION COORDINATORS:
PAUL GOOTENBERG
RICARDO VARGAS
HUGO CABIESES

THE **BECKLEY**
FOUNDATION

Selections from the Forthcoming Report

Roadmaps to Regulation: Coca, Cocaine & Derivatives

A Report commissioned by the Beckley Foundation's *Global Initiative for Drug Policy Reform*

Convener & Editor: Amanda Feilding

Section Coordinators:
Paul Gootenberg
Ricardo Vargas
Hugo Cabieses

The Beckley Foundation would like to thank the Open Society Foundations and other donors for their generous support, without which this project could not have happened.

The Beckley Foundation
Beckley Park
Oxford
OX3 9SY

Tel. +44 (0)1865 351209

www.beckleyfoundation.org

© The Beckley Foundation, 2016
All Rights Reserved

The Beckley Foundation is a Charity Registered in the UK, No. SC033546

Contents

FOREWORD
Amanda Feilding iii

REPORT DESCRIPTION & SUMMARY 1

Selections from the Report

Part I: Context & History

David Bewley-Taylor, Swansea University, UK
Coca and Cocaine: The Evolution of International Control 9

Part II: Stages in the Chain

Producer Countries

Thomas Grisaffi, University College London, UK
An Ethnographic Analysis of Bolivia's Cooperative Coca Control Strategy 21

Transit Countries

Juan Carlos Garzón Vergara, Woodrow Wilson Center, USA
Cocaine Trafficking in Central America: the Reason and the Pretext 31

Consumer Countries

Carla Rossi, Luca DiCensi, Francesco Fabi, National Research Council, Italy
Overview: Coca Derivatives and Consumer Countries 43

Gabriele Fischer, Laura Brandt, Medical University Vienna, Austria
Health Consequences of Cocaine Use 59

Part III: Roadmaps to Regulation

Carla Rossi, Luca DiCensi, Francesco Fabi, National Research Council, Italy
Analysis of Different Drug Policy Approaches and Consequences 73

Introduction to the Report

Amanda Feilding
Founder and Director, The Beckley Foundation

The edifice of prohibition is crumbling. Around the world, discontent with the current global drug control regime continues to increase. This is as much of a bottom-up phenomenon, as signalled by the accelerated change in public opinions about cannabis regulation, as it is a top-down one, as shown by the enlightened policy responses of progressively more states and legislatures. A new consensus is forming in opposition to the many unintended and devastating consequences of the policies of prohibition.

Indeed, over fifty years after the 1961 UN Single Convention on Narcotic Drugs was launched, the international regime of drug control has very little to its credit. Overall use of the major controlled drugs has risen, and supply is cheaper, purer and more available than ever before. The UN estimates that there are some 324 million drug users worldwide. Illicit drugs are now the third most valuable industry in the world, after food and oil, estimated to be worth over $350 billion a year, all in the control of an informal economy mired in criminality.

Fighting the war on drugs costs the world's taxpayers incalculable billions each year. Millions of people are in prison worldwide for drug-related offences, mostly personal users and small-time dealers. Corruption amongst law-enforcers and politicians has spread as never before, endangering democracy and civil society. Stability, security, and development are threatened by the fallout from the war on drugs, as are human rights. Access to essential medicines, such as controlled analgesics, is inequitable and increases the burden of avoidable pain. Tens of thousands of people die in the drug war each year.

These negative outcomes are intensely suffered by Latin America and the Caribbean, pivotal regions for the production and transit of drugs, particularly cocaine, towards consumption 'poles' in North America and Europe. The severity of these effects has been fuelled by the counter-narcotics policy of the United States. Since the 1970s, the US-funded *War on Drugs* has spent over a trillion dollars to export its 'drug-free world' utopia into the region. The anti-drugs crusade has been marked by partial and short-lived victories, the reconfiguration of drug-trafficking networks, the erosion of the social fabric and a trail of increased violence, political instability, environmental damage, human rights abuses and a general deterioration of the rule of law.

It does not come as a surprise, then, that in recent years national leaders in the region have joined the voices of a growing group of experts and members of the civil society asking for change[1]. In 2011, Bolivia denounced the UN Single Convention on Narcotic Drugs, later re-acceding with reservations allowing the country to protect the cultivation of coca. In January 2012, President Otto Pérez Molina of Guatemala became the first sitting president to decry the current policies and ask for a robust debate on alternatives, including decriminalisation and regulation. Months later, this position was echoed by his peers, Presidents Santos, of Colombia, and Calderón, of Mexico. In June of the same year, President José Mujica announced the Uruguayan government's plan to strictly regulate cannabis, becoming the first country to do so. In May 2013, the Organization of American States (OAS) published the *Drug Problem in the Americas*, a damning report on the drug situation in the continent that recommended alternatives to

[1] The Latin American Initiative on Drugs and Democracy (2009); the Vienna Declaration (2010); the Beckley Foundation's Public Letter (2011); the Global Commission on Drug Policy (2011).

incarceration, the reduction of sentences and a focus on rehabilitation.

This effervescence of policy innovations and declarations of intent continues to sweep the region, with countries such as Colombia, Ecuador, Jamaica, Mexico, Costa Rica, among others, supporting substantive reform.

The speed at which the global prohibition regime is unravelling reveals the fragility of this giant with feet of clay. For decades sustained by fear, prejudice and ideology, Prohibition is now caving in under the weight of a growing body of evidence exposing its many flaws. The Beckley Foundation has been a key actor in this process for nearly two decades. Our Policy Programme was the first to provide a scientific evidence-base on which to build drug policy that is health-orientated, harm-reducing, cost-effective and respectful of human rights. To this end, the Programme has organised a series of influential international policy seminars entitled *Drugs and Society: A Rational Perspective*, mainly held at the House of Lords in London. These gatherings of academics, scientists, politicians and thought-leaders have encouraged the exchange of knowledge and good practice, promoting evidence-informed approaches to policy making.

The Foundation has also produced over 40 books, reports and briefing papers examining different aspects of policy. Among these, the most prominent publications are: *Licensing and Regulation of the Cannabis Market in England and Wales*, which showed the potential gains of a strictly regulated market, *Roadmaps for Reforming the UN Drug Conventions*, and the influential *Cannabis Policy: Moving Beyond Stalemate*, which has served as a basis for policy innovation in the United States and Uruguay.

Furthermore, the Beckley Foundation has worked with public authorities to develop resources to facilitate decision-making. In 2012, the Foundation was invited to advise President Otto Pérez Molina and the Guatemalan government on drug policy reform. We produced two key reports, entitled *Paths for Reform* and *Illicit Drug Markets and Dimensions of Violence in Guatemala*, which included recommendations that are now being implemented.

Our research on the Guatemalan case adds to a vast literature documenting the destruction wreaked by the illicit market of cocaine in Latin America and beyond. But it also highlights the inadequacies of the current punitive paradigm of drug control to offer credible solutions. Addressing these questions is not a simple matter, but it is urgently necessary. This is why, in my discussions with President Pérez Molina in 2012, I suggested developing a report on the illicit market of coca and cocaine and potential ways to their strict regulation. His enthusiasm motivated us to undertake the report presented in the following pages.

The Report has been collaborated on by an excellent team of over twenty leading experts from different disciplines related to the topic – although few experts worldwide were willing to publicly conjecture about potential new regulatory strategies and their impacts. The publication provides a contextualised analysis of the cocaine trade, its consequences for different stakeholders along the supply chain, and opportunities for reform. In this sense, it is an ambitious undertaking that aims to provide a one-stop knowledge resource for policy-makers, academics, and the informed public. We have approached it with absolute academic rigour and without any set agenda, hoping to encourage more voices to break the taboo and join this timely debate.

Amanda Feilding, 2016

ROADMAPS TO REGULATION: COCA, COCAINE, AND DERIVATIVES

A report commissioned by the Beckley Foundation's *Global Initiative for Drug Policy Reform*

Produced by **Amanda Feilding** (Convener and Editor)
and **Paul Gootenberg**, **Ricardo Vargas**, and **Hugo Cabieses** (Section Coordinators)
with support from the Open Society Foundations.

The illicit cocaine trade is a major destabilising force in many parts of the world, particularly Latin America, the Caribbean, and West Africa. The cocaine trade and efforts to suppress it under the current prohibitionist regime are responsible for deaths, violence and corruption, economic damage, and environmental destruction, among many other harms to individuals and society**. It is difficult, if not impossible, to envisage an end to these problems without addressing the issues surrounding both the illicit cocaine market and the prohibitionist approach to controlling it.** However, since the discussion of alternatives to prohibition is taboo, remarkably little work exists that opens up a space for genuine, detailed debate on the issue.

The Beckley Foundation, founded by **Amanda Feilding** in 1998, is a UK-based think-tank and UN-accredited NGO focused on creating a scientific evidence-base on which to build balanced drug policies. Through the Foundation's *Global Initiative for Drug Policy Reform*, Amanda influences drug policy worldwide, with the aim of introducing reform so that policies are based on public health, harm reduction, cost-effectiveness, and the respect of human rights.

Amanda proposed the idea for a report on regulating coca, cocaine, and its derivatives at a meeting with the Guatemalan President and his cabinet, who welcomed it with enthusiasm. Following this endorsement, Amanda approached leading experts on the topic, inviting them to participate in the project. She succeeded in bringing together the most prominent thinkers in the field, and formed an interdisciplinary team of global specialists to contribute to this comprehensive report. **The aim of the report,** commissioned under the *Global Initiative for Drug Policy Reform*, is to open up and advance the discourse on alternatives to prohibition of coca/cocaine, in the same way the BF *Global Cannabis Commission's* 2008 report *Cannabis Policy: Moving Beyond Stalemate* did for cannabis.

RESEARCH QUESTION & AIMS

The overarching question is: What might be the most appropriate regulatory models for policy experimentation that would reduce the harms related to coca, cocaine, and its derivatives at each stage of the chain, from cultivation, through transit, to use?

The aim is to legitimise debate and policy experimentation with a view to reducing the devastating violence, corruption, and suffering in producer and transit countries. This includes:

- Reducing harms to both consumers and non-consumers;
- Minimising the drug-related income of illegal actors;
- Increasing drug-related income of the state and other legal actors, and reducing enforcement cost;
- Removing subsistence farmers and their families from the illicit economy and providing livelihoods within the mainstream economy.

RESEARCH METHODS

- A review of the literature on cocaine-related harms, examining evidence from diverse fields including health, economics, politics, law, security, and sociology;
- Field research with a focus on areas such as cultivation, production, traffic, end users, US/Latin American relations, arms dealing, security, development, human rights, and money-laundering;
- A review of evidence from alternative approaches to drug control that have been tried around the world (although little or no evidence exists for cocaine regulation itself);
- Development of ideas for new regulatory models, and evaluation of impacts such new models might have on health-related, economic, judicial, and socio-political outcomes.

SUMMARY OF THE REPORT

Part I: Context & History

Section Coordinator: Paul Gootenberg

Part I gives a historical overview describing the development of the use of coca leaf, cocaine, and crack cocaine. For each substance, the authors describe ethnography and use patterns, the harms and benefits associated with use, and the shifting societal and governmental attitudes towards the substance and those who use it. The section goes on to describe the history and effects of control mechanisms under the UN Drug Conventions, as well as their inflexibility and the consequent lack of experimentation with alternative policies. Finally, it explains the growing disenchantment with prohibition and the rising role of Latin America in the movement against this regime, along with philosophical, human rights, and economic impacts of the current policies and envisioned changes with the adoption of new policy options.

Part II. Stages in the Chain

Section Coordinator: Ricardo Vargas Meza

Part II gives an overview of the global illicit coca/cocaine market, highlighting socio-political issues (including the harms engendered, in large part, by prohibition) at every stage of the process: cultivation, processing, trafficking, supply, and consumption. Each chapter summarises and analyses the issues of a specific region, and describes options to reduce harms.

Cultivation and producer countries. These chapters contextualise the dilemmas faced by the three main countries where coca / cocaine are produced: Bolivia, Colombia, and Peru. The authors open the discussion on social inequality, conflict, and governance issues, and describe how prohibitionist measures deployed in the Andean countries have magnified pre-existing challenges and compounded them with additional difficulties. The chapters draw a vivid and comprehensive picture of the costs of prohibition in producing countries, and open discussion on the need and potential for change.

Trafficking and transit countries. The constellation of 'transit countries' evolves as a response to changes in the cocaine market, responding swiftly to factors such as governance issues, presence of insurgency groups, state of the economy, increased repression/interdiction in other regions, changes in demand, and cultural links. These chapters explore the current trafficking routes, including Central America, Mexico, Venezuela, West Africa, and the Caribbean, and explain how networks of corruption and criminality in transit countries impact governments, economies, social cohesion, and security.

User and consumer countries. These chapters introduce the multifaceted challenges for countries with high cocaine use, reiterating the problems introduced by prohibition and drawing a comprehensive picture of the harms of problematic use patterns. As efforts to curb the harms of crack / cocaine seem to have stagnated, the chapters also explore options for regulation that could be used to manage problem use and its potential harms.

Part III. Proposal of a Regulatory Model

Section Coordinator: Hugo Cabieses

Section III deals directly with the overarching research question, providing a summary of potential regulatory models to reduce harms at every level. The chapters identify some of the principal strengths, weaknesses, opportunities, and threats associated with different regulatory models, and they draw on the experiences of countries that have experimented with depenalisation or decriminalisation. The authors develop proposals for regulatory best practices and estimate the potential impacts of implementing them, while pointing out the challenges which may arise during the development of novel regulatory methods for coca, cocaine, and derivatives.

FOREWORD & INTRODUCTION		
Introduction to the Report	Amanda Feilding *Director, Beckley Foundation, UK.*	The convener of the report introduces the topic with a damning critique of the War on Drugs and an affirmation of the importance of continuing to build the scientific evidence base on which new policy options, based on decriminalisation and regulation, can be built.

PART I Chapter	Author(s)	Summary
Introduction to Part I: **"Clarifying Cocaine"**	Paul Gootenberg *Distinguished Professor, Stony Brook University, New York, USA.*	The introduction gives an overview of the sections to follow, touching on each contributor's main points and their contribution to the debate.
History and Overview of Use		
"The Botanical Science and Cultural Value of Coca Leaf in South America"	Carol Conzelman *Associate Director, Global Studies Program, University of Colorado Boulder, USA.* Dawson White *University of Illinois at Chicago, Field Museum of Natural History, Chicago, USA.*	This chapter summarises the botany, ethnobotany, and ethnography of coca and its traditional consumers, in particular Andean indigenous cultures. The authors describe the botanical diversity of coca and current cultivation patterns, and lay out the current scientific understanding of the chemistry and pharmacology of the coca leaf, with a focus on nutritive and medicinal properties. They then use data from Bolivia, Peru, and Colombia to characterise the ancient and modern cultures of coca cultivation/use, agrarian community politics, economic factors of licit vs. illicit markets, and the shifting public image of the leaf over the centuries.
"Cocaine's Malleable Past"	Paul Gootenberg *Distinguished Professor, Stony Brook University, New York, USA.*	This chapter shows, from a global perspective, how malleable cocaine's profile has been across the drug's history. It explores how changes have registered in distinctive legal regimes, as well as in shifts in prestige and legitimacy, forms and paths of illicit use, severity of social harms, and impacts of prohibition on consumption, production, and trafficking. The author argues that cocaine's variable past suggests flexible ways of thinking about and dealing with the drug.
"Crack: Global epidemiology, key characteristics and consequences of use, and current interventions"	Benedikt Fischer *Professor & Senior Scientist, Univ of Toronto, Centre for Addiction & Mental Health, Toronto, CAN; Centre for Applied Research in Mental Health & Addiction, Simon Fraser University, Vancouver, CAN.* Co-authors: Sharan Kuganesan, Chantal Burnett, Andrea Gallassi, Dan Werb	This chapter sketches out the global epidemiology of crack use, and provides an overview of the characteristics and outcomes that distinguish crack from other street drugs (e.g., socio-economic marginalisation of users, principal vs. poly-drug use, health harms). The authors discuss crack users' unique exposure to victimization, violence, and other key health risks, as well as the volatility of crack markets and the stigma and social marginalization that present barriers to services. They conclude by presenting challenges posed by the limited availability of targeted prevention and treatment efforts.

History of Control Mechanisms		
"Coca and Cocaine: The Evolution of International Control"	David Bewley-Taylor *Professor, International Relations & Public Policy; Director, Global Drug Policy Observatory, Swansea University, UK.*	Here, the author charts the inclusion and current status of coca and cocaine in the United Nations' global drug prohibition regime, and explains how the coca leaf came to be included in the strictest drug schedules, outlawing 'quasi-medical' and 'traditional' uses. He also describes the changing views on coca within Peru and Bolivia following Evo Morales's radical and historic break with this anti-drugs strategy, representing the first open challenge to the extant system.
Prohibition in Context		
"The Gradually Eroding International Drug Regime and the Rising Role of Latin America"	Juan Gabriel Tokatlian *Director, Department of Political Science & International Studies, Universidad di Tella, Buenos Aires, Argentina.*	In this chapter, the author argues that the international drug regime is progressively losing legitimacy, and that Latin American countries are leading a paradigm shift through their drug policy experimentation. The chapter presents evidence and arguments which reinforce the movement against drug prohibition and punitive policies. It goes on to analyse the evolution of the international drug regime, particularly via Latin American debates and proposals.
Human Rights	Rodrigo Uprimny *Professor, Faculty of Law, Univ Nacional de Colombia, Bogotá; Director, Center for the Study of Law, Justice & Society, Colombia.*	This chapter is not yet completed, but will assess the many diverse ways in which the current prohibitionist policies impact on the rights of people in producer, transit, and consumer nations.
"The Economics of Drug Market Regulation in Latin America: Would Regulation Significantly Impact the Supply Chain?"	Daniel M. Rico *Public Policy, University of Maryland, USA.*	This chapter examines potential positive outcomes of drug regulations on the economic sphere, using the specific cases of Guatemala and Colombia. The author describes the criminal structures and conditions of the drug business, and analyses the economic impacts at each stage of the supply chain. He concludes that regulation would have a marginal economic impact in most of the stages, with the most significant impacts in the midlevel stages of production.

PART II Chapter	Author(s)	Summary
Introduction to Part II: **"Stages in the Chain"**		The introduction gives an overview of the sections to follow, touching on each contributor's main points and their contribution to the debate.
Cultivation / Producer Countries		
"From Crisis to Opportunity: An Ethnographic Analysis of Bolivia's Cooperative Coca Control Strategy"	Thomas Grisaffi *Research Fellow, University College London; Andean Information Network, UK.*	This chapter describes Bolivian President Morales' radical break with the US-backed anti-drugs strategy (which focused on the forced eradication of coca leaf and criminalisation of coca growers) and his establishment of a new 'coca yes, cocaine no' policy aimed at reducing harms to coca grower communities. The author explains how the new policy has been operationalised, and that it represents a viable, less damaging alterative to the forced eradication of coca crops.

"Colombia: The Madness behind the 'Successful' Campaign against Illegal Drugs"	Ricardo Vargas Meza *Sociologist; Research Investigator, Transnational Institute; Director, Acción Andina Colombia.*	This chapter addresses the motivations behind the US-led campaign against coca production and the cocaine trade in Colombia. The discussion centres on the socio-economic factors that led to the development of these industries in Colombia, and the political and social factors that fuelled the campaign against them. The realities behind the purported motivations are exposed, and the costs of the exercise revealed.
"Peru's VRAEM: Where the Neoliberal Development Model and the Illegal Economy Converge"	Ricardo Soberón Garrido *Lawyer & drug policy analyst; Director, CIDDH (Drugs & Human Rights Research Centre), Peru.*	The chapter presents the impacts of anti-narcotics policies in the VRAEM region (the main coca-cocaine producing region in Peru), showing how the illegal economy and neoliberal governance co-exist. The author argues that despite the violence and corruption, both can function simultaneously in complete harmony. The chapter also presents key ideas for a regulatory model for coca/cocaine products, including a legal industry, adult use, and medicine.
Trafficking / Transit Countries		
"Cocaine: the Mexican Link"	Luis Astorga *Researcher, Instituto de Investigaciones Sociales, Universidad Nacional Autónoma de México.*	The author reviews the history of cocaine in Mexico, up to the 1970s, when it became important to Mexican traffickers' income and alliances with their Colombian counterparts. He showcases the criminal organisations considered to be the main suppliers, how they became powerful, their profit estimates, and internal splits and reconfigurations that have led to high levels of violence. He then describes shifts in the relationship between political and criminal power structures, and outlines a hypothetical scenario of cocaine legalisation and its repercussions.
"Cocaine Trafficking in Central America: the Reason and the Pretext"	Juan Carlos Garzón Vergara *Global Fellow, Woodrow Wilson Center, Washington, DC, USA; Research Associate, Ideas for Peace Foundation, Colombia.*	This chapter describes the role and dimensions of drug trafficking in Central America and how governments and elites have responded, showing how insecurity and instability in this drug trafficking corridor have served to justify the 'war on drugs' while also helping governments and local elites evade responsibility. The author concludes that the opportunities and challenges that regulation could open in Central America will be mediated by institutional capacities and local conditions.
"The Effects of Cocaine Prohibition in Latin America: 'Risk Surplus Value' and Venezuela's Transit Role in International Trafficking"	Verónica Zubillaga *Associate Professor, Universidad Simón Bolívar, Caracas, Venezuela.* Andrés Antillano *Chair, Department of Criminology, Universidad Central de Venezuela, Caracas, Venezuela.*	The chapter argues that the 'war on drugs' in the Americas has not resulted in supply reduction, but instead has led to a redistribution and displacement of the players, routes, and countries involved, as reflected in Venezuela's growing role in international drug trafficking. The authors use the concept of 'risk surplus value' to discuss how cocaine's illegal status encourages violence, and discuss Venezuela's own drug policies (which adhere faithfully to the prohibition mandate), institutional order, violence, and criminalisation of disadvantaged sectors of society.
"In the Eyes of the World: West Africa and the Cocaine Connection"	Isidore S. Obot *Professor, University of Uyo, Centre for Research & Information on Substance Abuse, Uyo, Nigeria.*	This chapter describes the features of West Africa that are (directly or indirectly) associated with drug trafficking and use, including widespread poverty, a rising population of youth, growing inequality, and rapid urbanisation, as well as political and administrative factors such

		as socio-political conflicts, lack of strong governance, weak border controls, and widespread (but disregarded) corruption. The author argues that these factors have aided the establishment and maintenance of criminal organisations for trafficking minerals, humans, and drugs.
"Caribbean Trafficking / Transit Countries"	Bruce M. Bagley *Professor, University of Miami, USA* Anthony P. Maingot *Professor Emeritus, Sociology, Florida International Univ., USA.* Marcus Day *Director, Caribbean Drug & Alcohol Research Institute, St Lucia.*	This chapter is not yet completed, but will examine the issues faced by the Caribbean as a major transhipment zone for cocaine. It will discuss the role of the US in Caribbean supply reduction, the unintended consequences on the Caribbean of the War on Drugs (including the introduction of crime and corruption), and current developments in CARICOM drug policy.
User / Consumer Countries		
Overview: "Coca derivatives and consumer countries"	Carla Rossi *Vice-President, National Council for the Social Sciences, Italy.* Co-Authors: Luca Di Censi, Francesco Fabi	The overview introduces the prevalence of cocaine use in the world, along with data on the different groups of people involved and examples of 'epidemic' behaviour.
"Health Consequences of Cocaine Use"	Gabriele Fischer *Professor, Psychiatry & Psychotherapy, Centre for Public Health, Medical University Vienna, Austria.* Laura Brandt *Clinical Psychologist, Centre for Public Health, Medical University Vienna, Austria.*	This chapter provides an overview of somatic and psychiatric consequences experienced by a small but significant minority of cocaine / crack-cocaine users, including cardiovascular problems (stroke, myocardial infarction); necrosis of skin, soft tissue, and cartilage; psychotic disorders (delirium, hallucinations); development of cocaine use disorders, where cessation of use leads to mood disturbances, low drive, and increased appetite; and consequences of high-risk behaviours associated with use, such as infectious diseases, violence, or car accidents.
"Social Contexts and the Consumption of Coca Derivatives: The Downfall of Prohibition"	Antoniu Llort Suárez *Anthropologist, Universitat Rovira i Virgili, Tarragona, Spain.* David Pere Martínez Oró *Social Psychologist, Drug Policies Unit, Autonomous University of Barcelona, Catalonia, Spain.*	This chapter argues that most cocaine consumption is 'controlled', and that most problematic use is a result of prohibition itself, as well as of the social conditions of deprivation in which use takes place. The authors describe strategies used by the prohibitionist paradigm to conceal information that contradicts its tenets in order to maintain legitimacy (as demonstrated by the 'Cocaine Project'). They then compare use of cocaine hydrochloride in Spain to the use of crack and cocaine paste in North America, and suggest that more pragmatic and reasonable strategies, such as harm and risk reduction, should be deployed in response.

"Analysis of Different Drug Policy Approaches and Consequences"	Carla Rossi *Vice-President, National Council for the Social Sciences, Italy.* Co-Authors: Luca Di Censi, Francesco Fabi	Here, the authors characterise different drug policies and their consequences, citing a recent report by the Global Commission on Drug Policy that calls for an end to the criminalisation of drug users. The authors show that the effectiveness of punitive drug laws is not supported by evidence, and in fact may have unintended and undesirable consequences, including vast profit margins that enrich organised crime and corruption. They conclude by describing how approaches recently developed for cannabis might be adopted to regulate cocaine.

PART III Chapter	Author(s)	Summary
Introduction to Part III: **"Possibilities for Regulation"**		The introduction gives an overview of the sections to follow, touching on each contributor's main points and their contribution to the debate.
Principles and Forms of Regulation		
"Illicit Crops and their International Demand"	Ibán de Rementería *Expert & Consultant on drugs, alternative development, and security for the UN, CEPAL, GTZ, and IICA in Colombia, Peru, Bolivia, Ecuador, and Chile.*	This chapter describes the global agricultural and socio-economic conditions that set the stage for the current international drugs market, and lists the shortcomings of 'alternative development' schemes and possible solutions. The author then describes proposals for the cropping and commercialisation of coca and derivatives, closing with a description of three possible legal markets: 1. The traditional market (chewing coca, infusing leaves, medicinal uses); 2. A legalised market for cocaine and crack built on principles of medical use and harm reduction; and 3. A market for coca-based preparations, such as energy drinks. Together, these would provide viable alternatives to the current illicit market at all levels of the supply chain.
"K´INTUSQA: Regulation of Coca and its Derivatives"	Hugo Cabieses *Economist; Board Member, CIDDH; Consultant, TransNational Institute and Open Society Institute; Chief, Cabinet of Advisors to the Regional Government of Cajamarca, Peru.*	K'intusqa – a word in the Quechua language – traditionally indicates the act of selecting 3 coca leaves for the k'intu ceremony, but also refers to the 'ceremony' of re-evaluating and regulating coca/cocaine at 3 points in its trade: cultivation, commercialisation, and consumption. In this context, the author advocates a comprehensive harm reduction strategy that calls for re-evaluation of international treaties and policies, and destigmatisation of consumers and producers. He suggests the following: On the producer end, implementing sustainable rural development strategies (DRIS-C); along the trafficking chain, targeting the true links; and on the consumer end, treating it as a health problem amenable to education, prevention strategies, and rehabilitation through substitution and social integration.
"International Drug Control and Principles of a Regulatory Model"	Ricardo Soberón Garrido *Lawyer; Director, CIDDH (Drugs & Human Rights Research Centre), Peru.*	In this chapter, the author alludes to the UN treaties under which the international drug control regime currently operates, and proposes six guiding principles to help shape new regulatory models. Models following these principles would adhere to international law as well as human rights obligations. They are: 1. Legality (adjusting international law in compliance with the

		current system), 2. Reciprocity (developing international trade terms); 3. Effectiveness (periodic review of policies); 4. Shared Responsibility (observing trade terms); 5. Harm Reduction; and 6. Autonomy (both as an international community and within individual countries).
Potential Outcomes and Challenges		
"Proposals for Drug Policy Reform and Implications for Human Security"	Annette Idler *Director of Studies, Changing Character of War Programme, University of Oxford, UK.*	The author discusses how a shift from the current international drug control regime to a more flexible regulatory model may enhance human security. She argues that a regulated market will contribute to legal economic opportunities for rural communities in coca growing countries, thus reducing their vulnerabilities vis-à-vis transnational organised criminals and other violent non-state groups. She further discusses how reforms of the judicial framework can help reduce violence and abuse in transit countries, and considers how a new regulatory model could benefit consumer countries in terms of reduced stigma and easier access to medical treatment.

BOXES	Author(s)
"The coca preparation known as ypadú or mambe"	Anthony Henman
"Crack cocaine in contemporary Brazil: A challenge yet to be fully understood and addressed"	Francisco I. Bastos, Neilane Betoni
"The coca leaf a natural heritage for humanity"	Roberto Calzadilla
[UN drug control system]	John Collins
[Cocaine neuropsychopharmacology]	David Nutt

Coca and Cocaine:
The Evolution of International Control

Dave R. Bewley-Taylor
Professor, International Relations and Public Policy
Director, Global Drug Policy Observatory
Swansea University, UK

Abstract

This chapter charts the inclusion and contemporary status of both coca and cocaine within the global drug prohibition regime, a regime based on a series of multilateral treaties dating back to 1912 and since 1945 operating under the auspices of the United Nations (UN). As is discussed, both substances were corralled into the system via a complex process of 'anti-cocainism' driven predominantly by the now well-entrenched quest for supply-side 'solutions' to concerns regarding cocaine use within so-called 'developed' or 'Western' states. Influenced by now discredited research in the late 1940s, and with support from political elites within producing countries, the coca leaf was included in the strictest schedule of the 1961 Single Convention on Narcotic Drugs. Very much the product of US endeavours, and despite a 25-year transitional implementation period, this process outlawed 'quasi-medical' and 'traditional' uses of coca. The chapter goes on to outline how changing views of coca within Peru and Bolivia ensured a partial corrective to this situation in the 1988 Convention against Illicit Traffic in Narcotic and Psychotropic Substances and led to questions being raised about the health implications, not only of coca but also cocaine use. As is shown, the conclusions of a resultant UN study were energetically challenged, with increasingly obvious internal tensions around the place of coca within the regime left unaddressed. The election of President Evo Morales in 2005 brought the coca issue to the centre of debate at the UN, with Bolivia's contested and ultimately successful moves to readjust its relationship with the Single Convention representing the first open challenge to the extant system.

Keywords: International drug control regime, coca leaf, United Nations, Single Convention on Narcotic Drugs, Bolivia, Peru, Sociedad de Propietarios de Yungas (SPY), World Health Organisation, United Nations Interregional Crime and Justice Research Institute (UNICRI), International Narcotics Control Board (INCB)

Although varied concerns for the multinational control of opium underpin the origins of what can usefully be described as the global drug prohibition regime, coca and cocaine have long been an integral part of that multinational project. As such, today most countries are bound by international law to limit exclusively to medical and scientific purposes the production, manufacture, export, import, distribution of, trade in, use and possession of both substances. Their route to inclusion within the current United Nations (UN) based treaty system was far from straightforward, however. Like many other psychoactive substances, the gradual path to control was influenced by a complex and shifting mix of economic interests, geopolitical power and an unswerving faith in supply-side solutions to demand-side problems. As we shall see, within this intricate environment, the United States played an important role in bringing both coca and its alkaloid derivative under the auspices of the current prohibition-oriented international control framework – a framework it has worked so hard to construct and sustain. Indeed, although it

was the result of multilateral endeavour, inclusion of the coca leaf within the bedrock of the current regime, the 1961 Single Convention on Narcotic Drugs – a document framed in terms of concerns with the "health and welfare of mankind" – owes much to what might be seen as US narco-cultural imperialism.[1] Yet, paradoxically and while it is undoubtedly a unique case, the story of how one state sought to correct coca's misplaced inclusion within the regime demonstrates that sovereign states do have the ability to adjust their relationships to it.

The past as prologue: cocaine, coca and the foundational treaties

The history of international drug control stretches back to 1909, with the period between the Shanghai Opium Commission and the outbreak of the Second World War punctuated by a series of reinforcing legal instruments. These were designed ostensibly to rein in what was seen by some nations to be increasingly troublesome markets for a range of psychoactive substances. However, as the nomenclature of many of the pre-UN treaties suggests, international concern for coca and cocaine was initially secondary to the 'opium problem', with moral, commercial and geopolitical considerations doing much to colour national perspectives and engagement with the issue. To be sure, before the 1940s concern for what today might be regarded as – or socially constructed to be – 'problematic' cocaine use, particularly among minority groups, fluctuated within many states. It seldom reached the levels associated with opiates, however.

Nonetheless, while coca and cocaine remained somewhat peripheral to early discussions, the agreements made at Shanghai certainly provided an important platform from which to corral them into the developing legal framework of transnational drug control. The sources of what might be called 'anti-cocainism' at this point were many and varied. Different states were driven by different imperatives, encompassing medical, racial and other socio-cultural dimensions – complex issues that are beyond the scope of this chapter. That said, in the case of coca, moves towards control were in part the result of a growing, and now well entrenched, quest for supply-side 'solutions' to concerns regarding cocaine use within so-called 'developed' or 'Western' states, and those that were at that time protectorates thereof. Yet, as with other drugs under scrutiny, including not only opium and its derivatives but also cannabis, they did not become the subject of strict prohibition-oriented control. Indeed, in the process of constructing international instruments before 1961, most states, for disparate reasons, displayed a general reluctance to penalise non-medical and non-scientific use of certain psychoactive substances. Between the first fully-fledged convention in 1912 and the late 1940s – what can be regarded as the regime's foundational period – despite sometimes-fierce debate, drug treaties were concerned predominantly with the regulation of the licit trade and the availability of a range of drugs, including cocaine, for medical purposes. Often at the behest of US delegations working hard to export emerging domestic prohibitionist ideology, the issue of non-medical and non-scientific use of certain substances became an increasingly central concern. That said, without widespread support from other states that in many cases kept an eye on commercial opportunities, it was addressed primarily through legal mechanisms designed to limit production and manufacture, and prevent the leakage of licit drugs into illicit channels.

With this in mind, the precise imperatives underpinning the inclusion of cocaine into the international framework in 1912 remain unclear. For some historians, its incorporation was the result of Great Britain's desire – having been gently nudged by the USA – to deflect attention away from India's continuing role as an opium producer and exporter, and improve its market position vis-à-vis a range of manufactured drugs. A more sympathetic revisionist perspective suggests that it was more to do with growing cocaine use in British Asian colonies (Mills 2014; Taylor 1969: 89-90; McAllister 2000: 33). Either

[1] For an interesting discussion of this concept, with a focus on coca and cocaine, see Reiss 2014.

way, within an environment where concern for opium remained paramount, commercial interests and related lobbying helped ensure that provisions for the control of cocaine remained relatively weak. Beyond the protectionist action of European states with large pharmaceutical industries, particularly although not exclusively Germany, the limited impact of the emerging regime upon coca and cocaine markets was also compounded by a lack of engagement from Latin American producer states like Peru and, to a lesser extent, Bolivia – a situation the USA viewed with displeasure, but did relatively little to remedy. Indeed, in terms of relations with Lima, a good case can be made that Washington's reticence was greatly influenced by the complex corporate interests of the Coca-Cola Company and its associate, Maywood Chemical Co. of New Jersey. For their part, eager to protect coca-based industries and perceiving proposed transnational control structures as Western impediments to national sovereignty, before the 1940s Andean states had little desire to be part of what Paul Gootenberg has called international "treaty crusades" (Gootenberg 1999: 54-55).

As William McAllister confirms, during negotiations for the International Opium Convention in 1925, continuing to defend "material interests, a progressive ideology, and cultural prerogatives," the "South American coca states" declared that "at most, they would agree not to *increase* production" (McAllister 2000: 58). Benefiting from coca exports within the region, Bolivia, for example, opposed controls on raw materials, especially in the face of increasing competition from Dutch East Indian planters and Japanese coca cultivators in Taiwan. La Paz's reluctance to engage with the League of Nations on the issue also owed much to the lobbying of its elite coca growers' association, the Sociedad de Propietarios de Yungas (SPY), who quickly recognised the threat to indigenous coca. For its part, Peru decided not to even attend the conference in Geneva partly because coca was seen to represent "a path to self-sufficiency, modernization, and national prowess. Coca's supporters defended its utility, at least among indigenous users, rejecting the disparagements of western medical science" (McAllister 2000: 67).

Such South American reluctance to engage was an enduring feature of international drug control under the auspices of the League of Nations, a situation owing much to the region's lack of attention to the work of the organisation in general. A similar dynamic was also at work with regard to the USA. In this instance, however, the awkward US relationship with the League greatly hampered attempts to internationalise the prohibition of a number of psychoactive substances, including coca and cocaine, for anything other than medical and scientific purposes. The result, as Gootenberg points out, was a multiplicity of "cocaine sites and legal regimes" and a relatively tolerant policy environment that "actually worked to preclude the rise of interwar cocaine trafficking, as it kept profit incentives down" (Gootenberg 2008: 217). As with so many issues, this arrangement was to change after 1945 and the redistribution of the global balance of power.

Transition of control to the United Nations: the expansion of scope and emphasis under the Single Convention on Narcotic Drugs

In the post-war era, the responsibility for international drug control held by the League was transferred to the newly formed United Nations. As part of this process, the first session of the UN's Economic and Social Council (ECOSOC) established the Commission on Narcotic Drugs (CND) as one of its functional commissions and reorganised existing support bodies. The resultant restructuring also required amendments to the existing conventions, all of which retained their principal features, including those relating to coca and cocaine.

While the multinational instruments, if not the attendant support structures and overarching organisational entity, remained more or less the same, the end of the Second World War brought with it enormous changes to the way in which many states engaged with the international control framework. In many instances, this was a

direct result of the newfound US position of dominance on the world stage, including within many facets of the UN's work, drug control among them. Having struggled since 1909 to persuade states to support its global prohibitionist project, after 1945 Washington possessed what was in essence a hegemonial hold over cocaine issues. Among other states, Peru, increasingly a source of not just cocaine but also complex irritation for the USA, finally fell into line with the rules and norms of the transnational system. This was the result of a combination of factors including diminishing markets for cocaine after the defeat of the Axis Powers and, within an increasingly chilly cold-war environment, the coming to power in 1948 of a right-wing administration that followed Washington's lead on many issues. Such a shift in outlook was particularly welcome in the USA. There, having experienced only limited recreational cocaine use since the 1910s, concerns about increasing domestic consumption for non-medical and non-scientific purposes were becoming more pronounced, with authorities fingering Peru as the principal source of the drug. Ironically, the actions of the Peruvian authorities to clamp down on the cocaine market, including the closure of legitimate factories, actually did much to stimulate the illicit market and enhance the value of the now clandestine trade. Indeed, it can be argued that the first significant Andean drug busts in the late 1940s and early 1950s motivated US authorities – and, through their influence, the UN – to focus more attention on the control of coca and cocaine, a process that fed into negotiations for the Single Convention.

That said, a continuation of the international focus on opium also played a role in drawing coca states into the UN control framework. A key area of activity within the new structures in the late 1940s and early 1950s was the development of a new instrument on that substance. Exploiting US dominance, American diplomats worked hard to construct what became the 1953 New York Opium Protocol. Reflecting the US preference for control at source, this greatly tightened controls on the production and export of opium. A key feature was the restriction of the number of producing countries to seven. While very much outside their direct orbit of interest, the Protocol served to shift the traditionally non-engaged, and in some cases even obstructionist, position of coca producing states. As McAllister (2000: 182) points out, fearful that the precedent set by the Protocol might be applied to them, the "coca powers" became "uncharacteristically enthusiastic participants in the next round of international negotiations." And it was these that would eventually lead to the construction of the bedrock of the current regime and a convention that was to have a profound effect upon the control of a range of drugs, but particularly organic substances.

The product of many years' drafting – initial deliberations began in 1948 – the 1961 Single Convention on Narcotic Drugs had three core objectives: to codify the existing treaties into one convention, to simplify the drug control machinery and, crucially for this discussion, to extend existing controls to include the cultivation of plants grown as raw materials for the production of "natural narcotic drugs". This third objective was widely regarded as an important move to fill the most serious gap within the treaties already in force.

As a consolidating treaty, the Single Convention unsurprisingly retained many of the features of its predecessors, including the import/export certification and licensing system. The existing schedule framework – with cocaine and its salts scheduled in the strictest group – was also retained, although expanded. Additionally, several of the foundational treaties' more general characteristics were carried across into the new instrument. Among these, the Convention maintained the regime's enduring focus on drug supply. Indeed, while it tightened controls on the non-medical and non-scientific use of drugs like cocaine – by, for the first time, including penal provisions within what was to be a widely accepted treaty – the Convention also represented a significant departure from earlier treaties in the way it approached coca. This was the case in terms of both its role in cocaine production and its widespread and culturally ingrained indigenous use in the Andes.

Such a shift was related to the deliberate move of the Single Convention away from its predecessor's intention to reduce non-medical and non-scientific drug use simply through drying up excess capacity – a process that included focusing attention on individual drug users. Indeed, as has been discussed in detail elsewhere (Bewley-Taylor and Jelsma 2012), the Convention marked a change of regime from one concerned predominantly with "restrictive commodity agreements" to a stricter and wider-ranging multilateral framework which, while continuing this function, became more prohibitive in focus. To be sure, although containing some flexibility of interpretation and 'wiggle room' in terms of drug use, far from just codifying provisions of previous treaties, it extended existing controls in a number of areas, including not only non-medical and non-scientific consumption of scheduled substances, but also drug production.

In so doing, the Convention continued to keep a 'tight rein' on the production of opium – as we have seen, a substance long the focus of international campaigns – and simultaneously extended international controls on the production of a number of other raw materials, including the coca leaf. Indeed, the treaty was the first multilateral convention to make prohibitory provisions concerning the cultivation of the coca bush. New controls under the Convention included the obligation to establish national agencies within those states wishing to continue coca production for medical and scientific purposes and the legitimate trade.

While this was the case, the expansion of controls to the cultivation of raw materials was also closely connected to the Single Convention's aim to abolish the traditional use of certain plants – a practice regarded as another "serious gap" in the scope of the pre-1961 control framework. Effective control of cultivation aiming to reduce production to amounts required for medical and scientific purposes was considered difficult to achieve as long as large-scale local consumption of those raw materials continued in the main producing countries. And herein lies one of the fundamental distortions the Single Convention brought into the international drug control system. Concerns in the so-called developed world, particularly within the United States, about non-medical use of derivates such as cocaine led to pressure on 'developing countries' to end traditional uses (medicinal, religious/ceremonial and social) of the plants of origin in order to eliminate the source of raw materials. As Neil Boister noted in 2001, this dynamic was also "heavily influenced by the larger process of de-colonisation, which resulted in the political dichotomy of developing producer and developed consumer states that still polarizes drug control today" (Boister 2001: 42). Consequently, in what is now regarded by many as a highly flawed historical error, the coca leaf was placed in Schedule I of the Single Convention – one of the Convention's strictest categories – under the same controls as the extracted alkaloid cocaine.

This decision owed much to the now widely discredited 1948-1950 Commission of Enquiry into the Coca Leaf. Having visited Peru and Bolivia for three months on a 'crash' fieldwork expedition in 1949, the Commission concluded that coca leaf chewing was harmful to both individuals and the nations in which they resided. The Commission of Enquiry, notes the Transnational Institute, has since been "sharply criticised for its arbitrariness, lack of precision and racist connotations. The team members' professional qualifications and parallel interests were also criticised, as were the methodology used and the incomplete selection and use of existing scientific literature on the coca leaf" (Transnational Institute 2006: 6). Historical evidence suggests that the Commission's recommendations also had much to do with not only US dominance within the CND during the early post-war years (Bewley-Taylor 2001: 84-89), but also the choreographed efforts of US law enforcement agencies to link coca to the emerging traffic in illicit cocaine from the Andes to the rest of the world.

That said, it mustn't be forgotten that, as part of a quest for perceived modernity, political elites within Andean countries were receptive to the elimination of what was seen to be backward 'Indian' behaviour. To be sure, influenced to a great extent by the changing attitudes towards

coca within medical and scientific circles – a process that had been under way since the 1920s – there was only limited local opposition within Peru and even less within Bolivia. Here, in an argument that was to be broadly repeated by the president of Bolivia in the late 2000s, SPY was isolated in arguing that Bolivian coca was not a narcotic, but rather a benign, beneficial and integral component of Indian culture. Nevertheless, the aversion to coca within both states was sustained and dominant enough to ensure that there was limited resistance to the tightening of controls in discussions on the new Single Convention.

Despite much debate, differences in outlook and interests – both morally and economically driven – during negotiations at the plenipotentiary conference in 1961 raised largely unresolved questions about "indigenous medicine", "quasi-medical uses", "traditional uses" and the precise definitions of the plants or derived substances that should be placed under control. At one point an attempt was made to reconcile differences of perspective by including the phrase "medical, scientific and *other legitimate purposes*" (emphasis added) in the draft convention to refer to the use of coca leaf for the preparation of a flavouring agent "which shall not contain any alkaloids." This was an exemption put in place for the Coca-Cola Company, still in the 1950s an influential player within negotiations around the control of coca. While this was the case, it was argued by several delegations that the category of "other legitimate purposes" could in fact be used to include certain traditional uses such as coca chewing. No agreement could be found, however. The term was also considered to be confusing and a deviation from the fundamental principle of limitation to medical and scientific purposes. The exception for Coca-Cola was consequently brought under a separate article (Bewley-Taylor and Jelsma 2012: 78).

It is interesting to note that "other legitimate purposes" of another raw material, opium, including the seeds from the opium poppy for culinary use, were protected by excluding opium poppy and poppy straw from the schedules and by specifying that restrictions on cultivation only applied to the "cultivation of the opium poppy for the production of opium". Countries permitting the cultivation of the opium poppy for purposes other than the production of opium had to ensure that no drugs were derived from those poppies. Meanwhile, a similar construction, such as limiting restrictions to its cultivation "for the production of cocaine" or "concentrate of coca leaf" similar to "concentrate of poppy straw" – defined in the schedule as "the material arising when poppy straw has entered into a process for the concentration of its alkaloids" – was not introduced for coca. Indeed, the fact that coca leaf rather than a precursor substance for cocaine, such as coca paste or what was referred to in earlier treaties as crude cocaine, is included in Schedule I is one of the glaring internal inconsistencies within the Convention's scheduling rubric. It is true that preparations containing less than 0.1% of cocaine do fall under the exemption scheme. Nevertheless, its utilisation is limited. It cannot be applied to coca tea, for example, since coca leaves contain an average of around 0.7% cocaine.

Thus, ultimately the Single Convention failed to make any distinctions, in terms of classification or imposed controls, between coca leaf and cocaine. For the first time in the history of international control efforts, the treaty included as an explicit objective the end of "quasi medical" and "traditional uses" of coca. As a result, the widespread practices of coca chewing and the consumption of coca-based drinks in the Andean region, behaviour comparable to drinking coffee in the 'West', were condemned to be abolished. The only concession on the issue was that included within article 49 of the treaty. Nonetheless, although this permitted countries to make reservations regarding traditional use, these were defined as nothing more than transitional periods from the date the Convention came into force. As such, among clauses relating to opium and cannabis, the treaty required the abolition of coca leaf chewing within 25 years of it coming into force. This deadline quietly passed by in 1989, a year after agreement on the most recent piece of international drug control legislation.

Ambiguity and divergence: fracturing views on coca within the UN system since 1988

Indeed, although the Single Convention was originally conceived to be the definitive treaty on drug control, the evolving nature of the illicit market and the international community's responses to it ensured that it didn't last long as the sole UN instrument on the issue. Less than a decade after coming into force, it was bolstered by the 1971 Convention on Psychotropic Substances – focusing on increasingly popular 'synthetic' drugs not covered by the Single Convention – and was itself tightened up via the US-instigated 1972 Amending Protocol. Responding to growing concerns around drug trafficking in the 1980s, including the activities of the Colombian cocaine 'cartels', 1988 then saw swift agreement on the Convention against Illicit Traffic in Narcotic Drugs and Psychotropic Substances. However, in applying the prohibitive principles of the Single Convention to other aspects of what has become known vaguely as 'the world drug problem', the construction of additional treaties in 1971 and 1988 also created some dissonance within the enlarged control framework. While touching on a range of issues, systemic discrepancies relating to coca, and to a lesser extent cocaine, not only revealed a divergence in views, but also triggered the beginning of attempts to recalibrate the way the regime dealt with the substance.

The chain of events started in 1988. Reflecting a change in domestic politics within both nations, including an *indigenista* cultural revival, the skilful efforts of the Peruvian and Bolivian delegations at the conference for the 1988 Convention ensured that the approach to coca chewing laid down in the Single Convention was softened to a limited degree. Bolivia made a formal reservation to the 1988 Convention, stressing that its "legal system recognizes the ancestral nature of the licit use of the coca leaf which, for much of Bolivia's population, dates back over centuries" (Bewley-Taylor 2012: 257). More significant, however, was the recognition of traditional consumption under article 14 of the 1988 treaty. Accordingly, "measures adopted" under the terms of the Convention "shall respect fundamental human rights and shall take due account of traditional licit uses, where there is historic evidence of such use". Although a limited corrective to the punitive position on coca held within the earlier convention, the article generates several ambiguities.

First, the 1988 Convention appears to make space for traditional use. Yet this is prefaced by a US-supported clause stressing that any measures should not be "less stringent" than those contained in earlier treaties – a position enhanced by the non-derogation clause of article 25. Second, a lack of precision concerning historically proven traditional use left a great deal of uncertainty regarding legitimate use. Does it, for example, refer to cultural use, medicinal practice, or both? This was a point touched upon by the International Narcotics Control Board (INCB or Board) – the monitoring body for the implementation of the UN drug control conventions – in its progressive supplement to its Annual Report in 1994. Then, highlighting "a need to clarify ambiguities" concerning the coca leaf, the Board pointed out the need for clarity over the status of the traditional drinking of coca tea. More generally there remains a significant disconnect between the consumption and the production of the coca leaf. A combination of clauses within the 1961 and 1988 Conventions has produced a legal grey area regarding coca chewing. Nevertheless, despite the unprecedented actions of Bolivia between 2006 and 2013, under the existing control framework there remains "no such thing as licit cultivation" for that purpose.

Increasingly aware of the problematic status of coca, including the fact that the transitionary period had expired in 1989 and that the use of coca remained widespread and permissible under some national legislation, the INCB started to focus attention on the issue in the 1990s. Within its discussion on the need for clarifications, the Board noted that it is "confident that the Commission on Narcotic Drugs, on the basis of scientific evaluation, will resolve such long-standing ambiguities, which have been undermining the conventions" and consequently

called on the World Health Organisation (WHO) to undertake a scientific review (INCB 1994).

Yet, despite calls for the resolution of such an ambiguous position, the outcomes of a WHO and United Nations Interregional Crime and Justice Research Institute (UNICRI) study on coca/cocaine in 1995 proved too controversial to be published. The Briefing Kit summarising the research results concluded that the "Use of coca leaves appears to have no negative health effects and has positive therapeutic, sacred and social functions for indigenous Andean populations." In reference to cocaine, the study reached the conclusion that problems relating to the drug should be kept in perspective and that health problems from the use of some legal substances were greater (WHO/UNICRI Cocaine Project 1995). Consequently, as David Lewis, one of the report's authors, recalls, while the report's findings were, in his opinion, not news, US officials were shocked: "there was great concern that we were not pointing out all the dangers involved in cocaine use, and that the WHO would be seen as permissive." Lewis goes on to recount that US officials said "that we had no business comparing cocaine to alcohol or tobacco. The discussion that I heard was that you couldn't say anything good about chewing the coca leaf because it's a source of crack cocaine. I thought, 'Are you people stupid?'" (Feiling 2009: 276).

Corroborating Lewis's recollections, another account of the events surrounding the findings of the global study recalled how the arrival of the Briefing Kit at the United Nations Drug Control Programme in Vienna "caused a sensation", with the destiny of the result of four years of labour ultimately being determined by the reaction of the United States at the General Health Assembly in Geneva. At the forty-eighth Assembly meeting in May 1995, the US representative, Mr Boyer, expressed his government's concern with the results of the study, "which seem to make a case for the positive uses of cocaine, claiming that the use of the coca leaf did not lead to noticeable damage to mental or physical health, that the positive health effects of coca leaf chewing might be transferable from traditional settings to other countries and cultures and that coca production provides financial benefits to peasants" (Transnational Institute 2003: 3).

Boyer, with backing from the US Ambassador to the UN, stated that his government was considering suspending funds for WHO research if "activities related to drugs failed to reinforce proven drug control approaches". In response, the representative of the Director General of the WHO defended the organisation's role in the study, claiming it was "an important and objective analysis done by the experts" which "represented the views of the experts", yet "did not represent the stated policy position of the WHO, and WHO's continuing policy, which was to uphold the scheduling under the convention." In an attempt to further distance the WHO from the research in the face of US hostility, the representative stated that it was not the intention to publish the study in its current form, since that might lead to "misunderstanding". Debate on the issue at the Assembly ended with agreement on a peer review by "genuine experts" (Ibid.).

As this analysis of the coca issue – one of a series by the Transnational Institute – points out, "peer review is a fundamental part of every scientific study, including those of the WHO." And accordingly, a schedule was established for the peer review of the cocaine study that was to be concluded by 30 September 1997. "In fact, from March 1995, names of potential researchers were listed and, in accordance with procedure, sent to the US National Institute on Drug Abuse (NIDA) in charge of selecting the candidates. Over the course of almost two years, an intensive fax exchange took place whereby the PSA [the WHO's Programme on Substance Abuse] proposed names and NIDA answered by refusing each and every one of them" (Ibid.). There has never been an official end to this process. Rather, within the UN drug control apparatus at least, the whole episode has been allowed to wither and disappear.

In parallel with this process, and since the issue was raised by the INCB in the mid-1990s, at a systemic level nothing has happened to resolve

the legal inconsistencies surrounding coca. Rather the Board became increasingly reluctant to highlight the situation in its mandated role as a watchdog of the conventions, deal with the nations concerned in a spirit of dialogue and cooperation or encourage the CND and WHO to move to resolve the matter. Instead, the INCB has become increasingly critical of policy positions on coca in a number of Andean states, stepping up its condemnation of both traditional use and the industrialisation of coca products. Nowhere has this been more evident than in its response to the efforts of the Plurinational State of Bolivia to 'un-schedule' coca within the Single Convention.

Bolivia's President Morales challenges the UN on the issue of coca

Bolivian policies and laws on coca leaf had been under review since the 2005 election of President Evo Morales, a coca farmers' leader and himself a coca chewer. Indicating its intentions, the Bolivian government announced at the 2006 session of the CND that it would request what it regarded as the repair of an historical mistake made by the international community in including the coca leaf in its schedules of controlled substances.

While many countries displayed a degree of sympathy towards Bolivia's position at CND sessions in the following years, especially within the context of discussions on human rights and the 2007 Declaration on the Rights of Indigenous Peoples, a few explicitly opposed it and fell in line behind the INCB. Perhaps unsurprisingly, notable among these was the United States, whose delegation at the CND session in 2008 expressed the belief that all states should comply fully with the obligations of the 1961 Convention and that as such "coca leaf is a narcotic drug: coca should be limited as is the case with other narcotic drugs". As had long been the case regarding Washington's view of coca cultivation, concern here stemmed primarily, or at least publically, from the fear that any growth in coca cultivation would result in an increase in cocaine production. Despite Morales's populist slogan "zero cocaine, but not zero coca", US unease regarding the increase in Bolivian coca production was sufficient to trigger a downward adjustment in US anti-drug assistance in 2008 and put the country on the list of those considered for de-certification. This opposition was echoed at the multilateral level at the following year's CND, although the fact that this was the High Level Segment to review progress towards the drug control goals set by the international community ensured a higher profile discussion of the issue.

Bolivia's moves also took on more significance with the introduction in 2009 of the new constitution – a document that openly recognises the rights of indigenous people to use coca leaf in its natural state for traditional purposes as part of their cultural heritage. Consequently, moving to clarify the legal status of traditional domestic use and enable the export of coca-based products, the Morales administration formally announced at the 2009 CND that it was beginning to take the necessary legal steps to request the UN to end the prohibition of traditional uses of coca in Bolivia via a formal amendment to article 49. Opposition to this move, which followed the rules of the Single Convention, was sufficient to block this route to treaty revision. Openly led by the US and supported by states from Europe and Latin America, objections were made on the basis that any change to the treaties, however minor, would undermine the entire international drug control system, a narrative that the INCB had been propagating energetically. Having had this path blocked in January 2011, La Paz was left with limited options and consequently chose to withdraw from the Single Convention with the intention to re-accede with a reservation on the issue – a reservation modelled on the one that it applied to the 1988 Convention. While there was also opposition to this move, including from the United States and some of the states that blocked the amendment, this time it was insufficient to fulfil the appropriate ECOSOC criteria and prevent this course of action. Consequently, following withdrawal from the Single Convention in January 2012, Bolivia successfully re-acceded in February 2013. This was the first time in the history of the regime that a procedure of this type had ever taken place.

Reflecting upon the arduous nature of the process, Morales stated: "It's not easy to change international legislation, particularly when 25 years ago they had decided to eliminate the coca leaf and with it, our culture" (MercoPress 2013). Reaction from the US was far from supportive. "We oppose Bolivia's reservation and continue to believe it will lead to a greater supply of cocaine," a senior US State Department official remarked. "While we recognize Bolivia's capacity and willingness to undertake some successful counter-narcotics activities, especially in terms of coca eradication," he continued, "we estimate that much of the coca legally grown in Bolivia is sold to drug traffickers, leading to the conclusion that the social control of coca (allowing some legal growing) is not achieving the desired results" (Ibid.).

Conclusions

As this State Department response to Bolivia's re-accession suggests, there appears to have been some movement in the US position. Recent statements reveal that the US government certainly remains critical in terms of treaty compliance. Nevertheless, Washington DC no longer appears to be framing the withdrawal and re-accession with a reservation predominantly as a threat to the integrity of the entire regime. Rather, criticism is directed largely at the efficiency of social controls to prevent the diversion of legally grown coca to the illicit market – a perennial and, to some extent, justified concern.[2]

Within this context, and on the understanding that regulative frameworks for coca are robust and effective, Bolivia's move may encourage other Andean states, particularly Peru, to follow suit. This would help to bring the reality of coca chewing practices in a number of countries into line with the prescriptions of the Single Convention – a process that, rather than threatening it, actually protects regime integrity. That said, while such actions would align individual states' relationships to the international legal framework, it is clear that a full-blown review of the scheduling of coca is well overdue. As Sandro Calvani, the former Colombian representative of the United Nations Office on Drugs and Crime, wrote in 2007, "these days there is sufficient empirical and scientific evidence to demonstrate that it is absurd to continue regarding the coca leaf as a dangerous drug or psychotropic, or the consumption of coca tea as evidence of 'drug addiction'" (Feiling 2009: 14). It is certainly time for the WHO to reassess the issue. Any relaxation of controls may help to re-shape the market for stimulants by making low cocaine-content products available beyond areas of traditional coca use. This process might be regarded as a type of cocaine-oriented harm reduction and one route towards reducing market violence. It is true that this may currently seem a quixotic proposition. However, with Evo Morales now in office until 2020 – having been re-elected in October 2014 with a popular mandate on coca – it seems unlikely that attempts to re-valorise coca, by Bolivia at least, will end with the existing arrangements concerning domestic consumption.

While this is the case, it is also clearly time to re-visit the 1995 UNICRI-WHO report and its assessment of cocaine. That its findings in their entirety have been buried does little to support the international community's claim that it is pursuing "the health and welfare" of humankind via the treaty system. This is especially so when the harms associated with cocaine market-related violence in Latin America, in many ways a product of the global drug prohibition regime under which national frameworks operate, arguably now exceed those of use of the drug itself.

[2] See: Presidential Determination – Major Drug Transit or Major Illicit Drug Producing Countries for Fiscal Year 2015. September 15, 2014. https://www.whitehouse.gov/the-press-office/2014/09/15/presidential-determination-major-drug-transit-or-major-illicit-drug-prod
Memorandum of Justification for Major Illicit Drug Transit or Illicit Drug Producing Countries for Fiscal Year 2015. http://www.whitehouse.gov/sites/default/files/docs/final_-_country_justifications_2015_majors_list1.pdf

References

Bewley-Taylor, David R. 2001. *The United States and International Drug Control, 1909-1997*. London: Continuum.

Bewley-Taylor, David R. 2012. *International Drug Control: Consensus Fractured*. Cambridge: Cambridge University Press.

Bewley-Taylor, David and Jelsma, Martin. 2012. Regime change: re-visiting the 1961 Single Convention on Narcotic Drugs. *The International Journal of Drug Policy* 23(1): 72-81.

Boister, Neil. 2001. *Penal Aspects of the UN Drug Control Conventions*. The Hague: Kluwer Law International.

Feiling, Tom. 2009. *The Candy Machine: How Cocaine Took Over the World*. London: Penguin Books.

Gootenberg, Paul. 1999. Reluctance or resistance? Constructing cocaine (prohibitions) in Peru, 1910-1950. In Gootenberg, Paul (ed.), *Cocaine: Global Histories.* London: Routledge.

Gootenberg, Paul. 2008. *Andean Cocaine: The Making of a Global Drug.* Chapel Hill: University of North Carolina Press.

INCB. 1994. *Effectiveness of the International Drug Control Treaties.* Supplement to the report of the International Narcotics Control Board for 1994. E/INCB/1994/Suppl.1

McAllister, William B. 2000. *Drug Diplomacy in the Twentieth Century: An International History.* London and New York: Routledge.

MercoPress. 2013. Major victory for President Morales: UN accepts "coca leaf chewing" in Bolivia. MercoPress South Atlantic News Agency website, 14.01.13. http://en.mercopress.com/2013/01/14/major-victory-for-president-morales-un-accepts-coca-leaf-chewing-in-bolivia

Mills, James H. 2014. Cocaine and the British Empire: the drug and the diplomats at the Hague Opium Conference, 1911-12. *Journal of Imperial and Commonwealth History*, 42(3): 400-419.

Reiss, Suzanna. 2014. *We Sell Drugs: The Alchemy of US Empire.* Oakland, CA: University of California Press.

Taylor, A.H. 1969. *American Diplomacy and the Narcotics Traffic, 1900-1939: A Study of Humanitarian Reform.* Durham, NC: Duke University Press.

Transnational Institute. 2003. *Coca, Cocaine and the International Conventions*. TNI Drug Policy Briefing Nr. 5 - April 2003. Available at: http://www.tni.org/sites/www.tni.org/files/download/brief5.pdf

Transnational Institute. 2006. *Coca Yes, Cocaine, No? Legal Options for the Coca Leaf*. TNI Drugs & Conflict Debate Paper No. 13, May 2006. Available at: http://www.tni.org/files/download/debate13.pdf

WHO/UNICRI Cocaine Project. 1995. UN Briefing Kit, 3 March 1995. Available at: http://www.tni.org/sites/www.tni.org/archives/docs/200703081409275046.pdf

From Crisis to Opportunity: An Ethnographic Analysis of Bolivia's Cooperative Coca Control Strategy

Thomas Grisaffi
Research Fellow, University College London
Andean Information Network

Abstract

On coming to power in 2006, Bolivia's President Morales made a radical break with the US-backed anti-drugs strategy, which focused on the forced eradication of coca leaf and the criminalisation of coca growers. The new policy, often referred to as 'coca yes cocaine no', draws on the coca growers' own distinction between coca leaf (which has been consumed by indigenous Andeans for millennia) and cocaine, the illicit drug. The strategy legalised the cultivation of a small amount of coca leaf in specific zones, encourages the coca unions to self-police to ensure growers do not exceed this limit, and envisions the industrialisation and export of coca-based products. The overriding aim of the policy is to reduce harms to coca grower communities. Drawing on long-term ethnographic fieldwork in the Chapare, one of Bolivia's two main coca growing regions, this chapter explains how this new policy has been operationalised. It is argued that the coca farmers have made significant sacrifices to implement the new policy and that it represents a viable, less damaging alternative to the forced eradication of coca crops.

Keywords: coca, cocaine paste, coca growers' unions, Evo Morales, Chapare, forced eradication, development, social control

Evo Morales and the *Movimiento al Socialismo* (MAS) party secured overwhelming victories in the 2005, 2009 and 2014 presidential and legislative elections in Bolivia. On coming to power, President Morales (the leader of the Chapare coca growers' unions) made a radical break with the US-backed anti-drugs strategy, which focused on the forced eradication of coca leaf and the criminalisation of coca growers. The new policy, often referred to as 'coca yes cocaine no', draws on the coca growers' own distinction between coca leaf (which has been consumed by indigenous Andeans for millennia) and cocaine, the illicit drug. The strategy legalised the cultivation of a small amount of coca leaf in specific zones, encourages the coca unions to self-police to ensure growers do not exceed this limit, and envisions the industrialisation and export of coca-based products. The overriding aim of the policy is to reduce harms to coca grower communities.

The new approach has shrunk coca cultivation and has had various positive impacts, including dramatically cutting human rights violations and allowing coca growers to diversify their sources of income. Nevertheless, cooperative coca control remains controversial. The US has been particularly critical, citing evidence that the illegal cocaine trade has expanded in recent years. In 2008 the White House put Bolivia on a blacklist of countries that do not cooperate in the fight against drug trafficking, a decision that has been renewed every year since. Being blacklisted or 'de-certified' brought with it a range of sanctions including the withholding of US development aid, credit and trade benefits.

Drawing on long-term ethnographic fieldwork (thirty months of research spread over several visits between 2005 and 2014)[1] in the Chapare,

[1] The research on which this chapter is based was supported by the Leverhulme Trust, the SSRC / Open Society Foundations'

one of Bolivia's two main coca growing regions, this chapter explains the lived reality of the coca farmers and how they have experienced a range of coca control policies. The chapter begins by outlining coca cultivation in Bolivia. It then provides an analysis of the harms generated by forced eradication and the failure of US-backed development projects to offer poor farmers realistic economic alternatives to coca. The second half of the chapter focuses on Morales's new coca policy and explains how it is put into operation by the Chapare coca growers' unions. It is argued that the farmers have made significant sacrifices to implement the new policy and that it represents a viable, less damaging alternative to the forced eradication of coca crops.

Coca in Bolivia

Coca (*Erythroxylum coca*), a hardy bush, has been cultivated on the eastern slopes of the Andes for at least 4,000 years. Around one in three Bolivians regularly consume coca or coca-based products (*La Razón* 2013a). Coca can be either chewed or prepared as a tea and is used in order to supress feelings of hunger, thirst and fatigue. Coca also serves important social, religious and cultural functions. For example, coca forms a vital component of rituals such as offerings to the *Pachamama* and *Supay* (Andean earth deities), and it is used to cure a broad range of ailments (Carter and Mamani 1986).

Ever since the arrival of the Spanish to the New World, debates have raged over the use, production and legality of coca and its derivatives. In 1961 the status of coca leaf as a dangerous drug was enshrined in international law with its listing, alongside cocaine and heroin, in the Single Convention on Narcotic Drugs (the most important piece of international drug control legislation). The convention, which Bolivia signed in 1976, establishes that governments should uproot all coca bushes in their territory (even those that grow wild) and that the traditional practice of coca leaf chewing must be abolished within 25 years of ratification. The 1961 convention therefore provided the justification and legal framework for subsequent US-backed coca eradication campaigns.

Drugs, Security, and Democracy Fellowship, and the Economic and Social Research Council.

According to UN data, Bolivia is the world's third largest producer of coca leaf after Peru and Colombia, with some 23,000 hectares under cultivation. In 2013 Bolivia's dried coca leaf market was valued at US$283 million, representing 9.4% of GDP in the agricultural sector (UNODC 2014). Bolivia has two principal coca-growing zones: the Yungas of La Paz, where two thirds of Bolivia's crop is produced, and the Chapare, which accounts for most of the rest. Given the cultural significance attached to coca in Bolivia, lawmakers were required to permit limited coca leaf production to supply the domestic traditional market. Thus, Bolivia's anti-drug Law 1008 (passed under intense pressure from the US in 1988) dictates that 12,000 hectares of coca can be legally cultivated in designated 'traditional growing zones', principally the Yungas of La Paz. All other coca, including that grown in the Chapare, was outlawed and slated for eradication. The Chapare coca growers have always viewed this distinction in Law 1008 to be arbitrary and deeply unfair. President Morales has committed to repeal Law 1008 and replace it with two different laws, one for coca and another for controlled substances. In July 2015 the new coca law was being developed in conjunction with the country's coca grower organisations.

The Chapare

This chapter focuses on coca control efforts in the Tropics of Cochabamba (henceforth referred to as the Chapare) as it is here where US-backed eradication campaigns were most forceful, but also because it was the Chapare coca unions that developed the alternative coca control strategy, to be discussed below.

The Chapare is a tropical agricultural zone located in the centre of the country. The population comprises Quechua-speaking peasants, and former miners and factory workers from the highlands, many of whom migrated to the region

in the early 1980s in search of opportunities in the coca-cocaine economy. The settler families established small family-run farms and relied on manual labour to cultivate rice, bananas, citrus fruit and coca. Others found work labouring in rudimentary operations to soak shredded coca leaf in solvents to extract the cocaine alkaloid and produce cocaine paste (the first step to refining pure cocaine). In the mid-1980s the coca-cocaine industry provided jobs for up to 20% of the nation's workforce and generated around US$600 million annually, equal to all other legal exports combined (Painter 1994: 49).

Influenced by the structure of the agrarian unions in the valleys of Cochabamba, the settlers organised themselves into self-governing units called *sindicatos* and set out into the jungle to claim land. The first thing they did was to clear an area for a football pitch and construct a barn for their monthly community meetings. Given the historic absence of the state, the *sindicatos* assumed the role of local governance; to this day they are responsible for assigning land, administering justice, taxing the coca trade and undertaking community projects such as building schools or roads (Grisaffi 2013). There are in excess of 1,000 *sindicatos*, which in turn are grouped into six federations representing some 45,000 coca grower families in total. The women are also organised in a parallel federation.

The small-scale farmers grow coca because it has several comparative advantages as a cash crop. Coca grows like a weed in places where other crops do not (on steep slopes, in acidic soil and at altitude), it reaches maturity after only one year, and it can be harvested once every three to four months, providing the family with a regular source of income. The work of planting and maintaining coca involves both sexes of all ages, and the main tools (including a machete, digging stick, and a back-pack mounted crop sprayer) are cheap and widely available in rural areas. Coca has a high value to weight ratio; this is important because many farmers live far from the nearest road and may have to carry produce long distances on their back. Finally and most importantly, while the price varies considerably, there is always a guaranteed market for coca. Merchants often buy dried coca leaf directly from the farm gate (sometimes paying for half of it in advance), saving the farmer effort, time and money.

The farmers do not get rich from cultivating coca. Rather, it complements subsistence farming and, in the absence of other income generating activities, is one of the few pursuits that provide them with access to cash. As one female union leader explains, "Coca is our subsistence – it allows our children to study and pays for our clothes, visits to the doctor, and our food." The majority of Chapare farmers live below the poverty line. Away from the main towns houses are built from rough-cut planks with beaten mud floors, and many do not have electricity, sanitation or running water.

Crop eradication and conditional development

A cornerstone of US counter-drug strategy in the Andean region has been the eradication of coca crops. The justification for destroying crops is that it prevents them from being processed into drugs and subsequently traded on the international market. Eradication is often carried out manually: teams of eradicators (normally military conscripts) accompanied by heavily armed members of the police enter small farmsteads to uproot the crops.[2] While coca eradication enjoys strong support among US policymakers, there is a growing body of research which indicates that it does not meet its targets and generates wide-ranging harmful impacts (Dion and Russler 2008, Mejía 2010, Mansfield 2011).

The US launched a coca eradication campaign in the Chapare in the mid-1980s. Initially eradication was carried out in collaboration with coca grower communities and the state even paid farmers compensation (at a rate of around US$2,000 per hectare eradicated). However, this all changed in 1997 when, in an attempt to curry favour with the US embassy, the Banzer administration (1997-

[2] Chemical eradication has also been used; typically herbicides are sprayed from small aircraft so that larger areas of coca can be destroyed. Colombia is currently the only Andean country to allow aerial fumigation.

2001) launched the Dignity Plan, a no-holds-barred accelerated coca eradication campaign with the aim to destroy the entire Chapare crop by 2002. The Dignity Plan dramatically reduced the amount of land under coca cultivation in the Chapare,[3] and was hailed by the US as a significant victory in the 'war on drugs'. However, this success came at a high social cost.

Eradication outpaced the provision of development assistance and plunged the coca grower families into severe economic crisis. Worse still, the decision to orientate the security forces towards 'internal enemies' provoked violent confrontations and opened the space for the violation of human rights. The US-trained and funded forces sent on eradication missions were denounced for a range of atrocities including murder, rape, theft, torching homesteads, beatings and torture.[4] Under the terms of the draconian anti-drug Law 1008, hundreds of farmers were arrested for drugs-related offences on little or no evidence, and held indefinitely without charge (Ledebur 2005). Unsurprisingly the government's policy of 'zero coca' in the Chapare came to be seen locally as 'zero *cocaleros*'.

While the bulk of US funding was dedicated to eradication and law enforcement, the US also provided coca farmers with assistance to encourage them to grow legal crops. However, with few exceptions, local people say that US Agency for International Development (USAID) backed projects did little to improve their lives. These projects were beset by problems in terms of the sequencing of aid (farmers had to uproot their coca before receiving assistance), the kind of assistance that was on offer, and the manner in which projects were executed. For example, farmers complained that given the lack of markets for the tropical products promoted by USAID (such as pineapples, palm heart and bananas), it often made more sense to let the crops rot in the fields than to go to the expense and effort of harvesting them. They also said that USAID agri-business projects did little to stimulate the local economy and only generated a handful of low-paid jobs. Finally, USAID's policy of non-collaboration with the coca unions sowed mistrust and provoked division within coca grower communities. Local farmers came to the conclusion that USAID intended to break the union through a strategy of divide and rule. In June 2008 the unions announced that they would no longer sign new aid agreements with USAID.

The *cato* accord

The state's repressive policies helped to strengthen the farmers' resolve to defend the right to grow coca, which they cast as an issue of national sovereignty (Grisaffi 2010). Throughout the 1990s and into the 2000s, the coca unions led mass protests, marches and road blockades that made the country ungovernable. In 2004, President Carlos Mesa (2003-2005) caved in to the Chapare farmers' demands and permitted each union member to grow a limited amount of coca known as a *cato* (1,600 square metre plot) in established cultivation zones, to ensure some basic income. With the launch of the '*cato* accord', protests, violence and human rights violations decreased immediately. The '*cato*' was only ever supposed to be a temporary measure to defuse the mounting social and political tensions. However, on assuming office President Morales made it a central pillar of his coca policy. Morales permitted 7,000 hectares of coca to be grown in the Chapare and a further 1,000 hectares in other 'transitional' zones.[5] The MAS government, in collaboration with the coca unions and supported by the European Union, has since developed a sophisticated coca monitoring, control and reduction system.

To be eligible for a *cato* of coca, the growers first have to gain an official land title and have their *cato* measured and registered by the state coca

[3] As a result of coca reduction efforts in the Chapare, coca was displaced to other parts of Bolivia (including the Yungas) but also to Colombia, an example of the so-called 'balloon effect'.

[4] Between 1997 and 2001 the security forces killed 33 coca growers and injured 570. This led to retaliatory attacks that left 27 military and police dead.

[5] This includes areas surrounding the Yungas traditional zones in the department of La Paz and the Yungas de Vandiola in Cochabamba.

monitoring institution, UDESTRO,[6] which then carries out recurring measurement every two years. As part of the monitoring effort the European Union has funded a biometric register of coca producers and distributed identity cards. Building on this infrastructure it is then up to the local level *sindicatos* to exercise internal controls (referred to as 'social control') to ensure that farmers respect the one *cato* limit.[7] The *sindicatos* are well placed to enact social control as they have a long history of self-governing (Grisaffi 2013).

Coca control is a shared responsibility, which involves the entire community. Each base level *sindicato* organises regular inspections of coca plantations; commissions are formed of local members and often include people from neighbouring communities. If the commission finds coca above the one *cato* limit, then the community will eradicate the entire crop and prohibit the farmer from replanting any coca for one year. Because of the time it takes for coca to mature, this effectively means two years without any coca income. If a farmer violates the rule more than once, then the *sindicato* imposes a life-time ban on growing coca. Farmers claim that the new system is more effective than the previous US-financed 'zero coca' policy. One man explained that under the old policy, when the military pulled up his coca he could replant without any immediate repercussion. "Before, when we planted the coca and they ripped it up, we would re-plant and they would rip it up again." However, he said that today it's "*jodido"* (really harsh): "… everyone knows how much coca you have and they will denounce anyone who plants more than a *cato*." The threats are real: to date more than 800 growers in the Chapare have lost their *cato* for breaking the agreement (*Opinión* 2014).

The farmers have good reasons to respect the agreement. They understand that if coca cultivation is restricted, then prices will increase. As one farmer put it, "We work less, but make more money." A strong sense of community pride also motivates people. One farmer said: "If you do not respect the *cato* then you make the whole *sindicato* look bad." *Sindicatos* that do not exercise adequate levels of control are singled out for criticism at union meetings and on the coca union's radio station. This can have serious material implications: for example, union leaders and municipal councillors confirmed that public works funding would be suspended for *sindicatos* that do not respect the *cato*. In a region where many lack access to basic services, including roads, electricity and sanitation, this constitutes a significant threat. One union leader said: "If you go to the Town Hall and your *sindicato* has not respected the *cato*, it's like having a criminal record. No one will attend to you." Finally, the coca growers identify strongly with the goals of the MAS administration; growers consider that respecting the *cato* will support the government's attempts to lobby the UN to decriminalise coca. As one male union leader notes, "We respect the *cato* to make the international community shut up."

Notwithstanding these advances, there are challenges associated with implementing the new policy. For example, some farmers have managed to illegally acquire more than one *cato* by sub-dividing existing plots or buying up additional land and then registering it under a false name. The coca unions are aware of these practices and over the past five years have made serious efforts to eliminate so-called 'ghost *catos*' (*catos fantasmas*). Of more concern is the impact that land titling has had on the union organisation itself. Land titling (combined with restricted legal coca cultivation) has led to a steep increase in land prices in the region. In turn this has contributed to rising levels of inequality between coca grower households. Some farmers complain that their richer neighbours use cash to influence community decisions, undermining the egalitarian ethos that characterises *sindicato* democracy (Grisaffi 2013). There is also an emerging generational divide between land owners and their children, many of whom have been priced

[6] Unidad de Desarrollo Económico y Social del Trópico (UDESTRO)

[7] The government is committed to the eradication of coca outside of the designated zones; over the past two years troops have eradicated over 11,000 hectares annually, far exceeding government targets.

out of the market and have no hope of acquiring their own land or a *cato* of coca. Finally, by taking control of land away from the community and handing it to the state, land titling has, in effect, undermined *sindicato* authority.[8] In the longer term these trends could have an impact on the community's ability to effectively self-police.

A minority of farmers quite simply refuse to comply with the regime. In these situations, workers from UDESTRO negotiate with community leaders, and if needs be they will organise for the coca to be forcibly eradicated by government troops. However, in contrast to the recent past, eradication is no longer accompanied by violence. One middle-aged female grower said: "These days we don't rebel when the coca cutters enter our plots; we just show them where the coca is and let them get on with their work." Others pointed out that the security forces no longer see them as 'enemies' but as '*compañeros*' (comrades). This positive collaboration can be traced to the fact that UDESTRO is staffed by representatives of the coca union, which in turn has enhanced the legitimacy of the institution but also the state itself. As one farmer said, "They understand that we depend on coca… We can talk to them, and if there is a problem then we can find a solution." In sum, most farmers agree that limiting coca cultivation is a small price to pay for peace and full citizenship.

A new development paradigm

Since 2006 the MAS government has promoted economic development in coca growing regions. However, unlike the previous strategy, access to assistance is no longer conditional on the prior eradication of coca. This is important, because farmers claim that the economic safety net provided by the *cato* (around US$200 per month which is equivalent to the minimum wage) means that they are now more willing to risk investing effort, time and capital in alternative livelihood strategies.

Farmers and government outreach workers say that government-backed fish-farming and crop substitution programmes are starting to yield positive results. Reduced dependence on coca is reflected in the fact that some farmers now describe the *cato* as a 'savings account' rather than their main source of income. As one farmer said, "You earn money to fill your stomach from something else, but coca is for saving." Indeed, in November 2013 a leader at a coca union meeting remarked: "Today we are not only *cocaleros*, we are also *bananeros* (banana growers) and *palmiteros* (palm heart growers)." These upbeat accounts are corroborated by UN data: in 2011 bananas covered the largest cultivated area in the Chapare followed by citrus fruit and palm heart (Ledebur and Youngers 2013: 4).

Government investment in infrastructure, institutional strengthening and social development has brought the Chapare into the social and economic mainstream. Chapare residents claim that today there are more jobs in non-agricultural work, government scholarships mean that their children can now study at university, and access to cheap government loans has allowed them to start up their own businesses (such as shops and taxis). Accordingly the local economy has started to grow. The improved economic situation is evidenced by the proliferation of second-hand motorbikes, home improvements, and a steep increase in land prices. To give an idea of the economic transformation that has taken place, one farmer said: "At the fiestas they don't drink *chicha* (homebrew) anymore, now they only drink (bottled) beer and rum." By addressing the underlying causes of coca cultivation, including the lack of state presence, poverty, and social exclusion, coca crop reductions may prove to be more sustainable than those achieved under forced eradication.

The benefits of government-backed development projects are uneven, however. Most of the government investment has focused on areas

[8] Historically the power of the *sindicato* was rooted in its control over access to land. The *sindicato* had a strict code of conduct and if people did not obey then they would face sanctions, backed up by the threat of expulsion from the community. Today, however, union leaders are unwilling to confiscate plots of land from members for fear that they will be taken to court. This has contributed to a rise of demobilisation and growing contempt for *sindicato* authority.

close to main roads. Meanwhile, those who live in isolated hilly regions still face many of the same challenges. In these areas crops do not grow well on the steep slopes, the sandy earth means that coca yields are far lower than in flat areas, and the lack of roads and bridges makes marketing produce all but impossible. Some farmers are therefore calling for greater government investment in infrastructure and support to aid the diversification of economic activities (including tourism and beekeeping), and there is a growing call for the right to plant two *catos* of coca so that they can meet their subsistence needs. The *cato* agreement is built on trust and requires farmers to make significant sacrifices so that all may benefit. If some farmers feel that they are paying a higher price than others, then it could undermine the long-term functioning of the entire system.

Coca legalisation

Morales, armed with a bag of coca leaves and backed by the UN's Permanent Forum on Indigenous Issues, has gone before the UN on numerous occasions to urge the world's leaders to remove coca leaf from the list of controlled substances. Morales argues that the ban on coca is not only a historic mistake, but also discriminatory towards Andean peoples. These efforts have not been met with success, however. The G8 countries, led by the US, have countered Bolivia's demand, arguing that de-listing coca would threaten the integrity of the international drug control system. Nevertheless Morales did score a minor victory in 2013, when Bolivia won the right to allow traditional coca consumption within its territory, thus reconciling Bolivia's international commitments with its 2009 Constitution, which declares that the state has a duty to preserve and protect coca chewing as an ancestral practice. However, while Morales venerates coca leaf, when it comes to cocaine his government remains firmly committed to prohibitionist policies.

The government has promoted the industrialisation of coca-based products including manufactured teas, skin creams and diet pills. But the continued illegality of coca leaf at the international level means that exporting coca-based products remains a long way off, and the domestic legal market cannot soak up current production. A recent EU study found that Bolivia requires 14,000 hectares to satisfy domestic demand (*Página Siete* 2013), far short of Bolivia's actual production, which stands at 23,000 hectares. Thus the government-built coca processing plant in the Chapare, which was inaugurated over five years ago, runs well below capacity and the union's plans to cultivate organic coca for the legal market are in disarray. Given the limited legal market and the higher prices paid by traffickers, much of the Chapare coca crop is destined for the maceration pit where it is transformed into cocaine paste.

Drug trafficking

Bolivia's coca policy is not designed to limit drug trafficking; however, there is evidence to suggest that the *cato* accord has made life harder for the drug workers in the Chapare. The coca growers are not opposed to cocaine production on moral grounds; they have very low levels of drug use in their communities and as far as they are concerned drug use is very much a 'gringo' problem. Moreover, to some extent they are dependent on the illicit trade as a market for their crop. Nevertheless, as a direct result of the *cato* accord they no longer tolerate drug production within their communities. As one drug worker commented, "Before, the *compas* (coca growers) would tell you when the UMOPAR (anti-drug police) were coming. Now they just turn you in."

The coca growers' hardened stance on drug production stems from the fact that they have become stakeholders with official land titles and a legal *cato* of coca; in other words, they now have something to lose. If a union commission finds a functioning – or even abandoned – drug production site on a union member's property, then they will impose sanctions. This might include the indefinite suspension of the right to grow coca or, in extreme cases, expulsion from the community. Meanwhile, if the police catch the drug workers they face considerable prison sentences. Given the slim profits from drug

production, most coca growers consider that it is simply not worth the risk.[9] The drug workers are feeling the pinch: as a result of pressure from the unions, they have been forced to set up production sites in ever more remote areas, and many have relocated their operations outside of the Chapare (Grisaffi 2014).

In spite of the coca growers' sincere efforts to limit coca cultivation and tackle drug production, Bolivia is facing a growing drug trade, along with the associated problems of violence and corruption (Farthing and Kohl 2014: 139-142). Part of the problem stems from the fact that Bolivia has become a major transit route for much cheaper Peruvian cocaine paste, which is trafficked to Argentina and Brazil (now the world's second largest market for cocaine). The Bolivian government is keen to show the international community that it is committed to tackling the emerging drug problem, and has taken an uncompromising approach to enforcement. In spite of drastic cuts to US funding[10] (which went from US$41 million in 2006 to zero by September 2013), the Bolivian security forces have nevertheless increased the seizures of illicit narcotics and the destruction of drug laboratories. For example, between 2006 and 2012 the police confiscated 187 tons of pure cocaine, a 234% increase when compared to the 56 tons that were confiscated under the DEA's watch from 1999 to 2005 (*La Razón* 2013b). Since 2008 Bolivia has worked with its neighbours on counter-narcotics initiatives and has signed bilateral agreements with Brazil, Peru, Argentina and Colombia.

Conclusion

Collaborative coca reduction seems to be paying off: the most recent UN coca survey reported that in 2013 coca cultivation in Bolivia stood at 23,000 hectares, the lowest level recorded since 2002, and a 26% drop when compared to 2010 figures (UNODC 2014). Success can be measured in terms of hectares of coca crop reduced, but perhaps a more appropriate metric is to assess coca grower welfare, and on this score Bolivia is excelling. Since the inauguration of the *cato* accord, the Chapare's economy has picked up, human rights violations have decreased, and living standards have improved. While the US has remained highly critical of cooperative coca control, multilateral organisations have been more positive. In a recent report the Organization of American States (2013) classified the Bolivian experiment as "best practice" that is worthy of replication, and the United Nations Office on Drugs and Crime has commended Bolivia's innovative policy, saying "the progress in Bolivia is undeniable" (Ledebur and Youngers 2013).

The idea that coca can be eradicated entirely and that this will prevent the drug trade is a dangerous myth. As long as there is demand for cocaine then people will continue to cultivate coca leaf as it represents a solution to their subsistence needs. If Washington-based policy makers remain firmly committed to supply-side enforcement then, at the very least, they should take note of the lessons learned in Bolivia. Engaged, healthy farmers cultivating less coca is preferable to the cycle of violence, instability and economic insecurity provoked by forced eradication. A still better solution would be for the US and other G8 countries to back Bolivia's call to legalise coca, which would open out new markets for coca-based products and generate economic opportunities for the Chapare farmers.

[9] Most drug workers are young men without land or much hope of decent jobs, and they earn pitiful wages for work that is tedious, intermittent and harmful to their health.

[10] US cuts came about in response to Bolivia's decision to expel the US ambassador and Drug Enforcement Administration (DEA) in 2008, on the grounds of sedition.

References

Carter, W. and Mamani, M. 1986. *Coca en Bolivia*. La Paz: Editorial Juventud.

Dion, M. and Russler, C. 2008. Eradication Efforts, the State, Displacement and Poverty: Explaining Coca Cultivation in Colombia during Plan Colombia. *Journal of Latin American Studies* 40(3): 399-421.

Farthing, L. and Kohl, B. 2014. *Evo's Bolivia: Continuity and Change*. Austin: University of Texas Press.

Grisaffi, T. 2010. 'We are Originarios… We just aren't from here': Coca Leaf and Identity Politics in the Chapare, Bolivia. *Bulletin of Latin American Research* 29(4): 425-439.

Grisaffi, T. 2013. 'All of us are Presidents': Radical Democracy and Citizenship in the Chapare Province, Bolivia. *Critique of Anthropology* 33(1): 47-65.

Grisaffi, T. 2014. Can you get rich from the Bolivian cocaine trade? Cocaine paste production in the Chapare. Andean Information Network website, 20.03.14. http://ain-bolivia.org/2014/03/can-you-get-rich-from-the-bolivian-cocaine-trade-cocaine-paste-production-in-the-chapare/

La Razón. 2013a. El consumo habitual de coca se da en tres de cada diez personas. *La Razón* website, 14.11.13. http://www.la-razon.com/index.php?_url=/seguridad_nacional/consumo-habitual-coca-da-personas_0_1943205725.html

La Razón. 2013b. Incautación de cocaine creció en 234% sin participación de la DEA. *La Razón* website, 20.01.13. http://www.la-razon.com/seguridad_nacional/Incautacion-cocaina-crecio-participacion-DEA_0_1763823702.html

Ledebur, K. 2005. Bolivia: Clear Consequences. In Youngers, C.A. and Rosin, E. (eds.), *Drugs and Democracy in Latin America: The Impact of U.S. Policy*, pp. 143-184. Boulder, CO and London: Lynne Rienner.

Ledebur, K. and Youngers, C. 2013. From Conflict to Collaboration: An Innovative Approach to Reducing Coca Cultivation in Bolivia. *Stability: International Journal of Security and Development* 2(1): 1-11.

Mansfield, D. 2011. Assessing Supply-Side Policy and Practice: Eradication and Alternative Development. Working Paper prepared for the first meeting of the Global Commission on Drug Policy, Geneva, 24-25 January 2011. Available at: http://www.globalcommissionondrugs.org/wp-content/themes/gcdp_v1/pdf/Global_Com_David_Mansfield.pdf

Mejía, D. 2010. Evaluating Plan Colombia. In Keefer, P. and Loayza, N. (eds.), *Innocent Bystanders: Developing Countries and the War on Drugs*. New York: The World Bank and Palgrave Macmillan.

Opinión. 2014. Unos 800 cocaleros perdieron cultivos por infringir los límite del "cato" de coca. *Opinión* website, 25.07.14. http://www.opinion.com.bo/opinion/articulos/2014/0725/noticias.php?id=134095

Organization of American States. 2013. *The Drug Problem in the Americas*. Available at: http://www.countthecosts.org/sites/default/the-full-OAS-introduction-and-analytical-report.pdf

Página Siete. 2013. ONU: Pregunten al Gobierno dónde va la coca de Chapare. *Página Siete* website, 06.12.13. http://www.paginasiete.bo/sociedad/2013/12/6/onu-pregunten-gobierno-donde-coca-chapare-7957.html

Painter, J. 1994. *Bolivia and Coca: A Study in Dependency*. Boulder, CO and London: Lynne Rienner.

UNODC. 2014. *Estado Plurinacional de Bolivia: Monitoreo de Cultivos de Coca 2013*. La Paz: Oficina de las Naciones Unidas Contra la Droga y el Delito.

Cocaine Trafficking in Central America: the Reason and the Pretext

Juan Carlos Garzón Vergara
Global Fellow, Woodrow Wilson Center, USA
Research Associate, Ideas for Peace Foundation, Colombia

Abstract

What would happen to the countries in Central America if the transnational cocaine market was regulated? This chapter aims to answer that question by analysing the role and dimensions of drug trafficking and the way in which governments and elites have responded to the challenge it poses. Based on an analysis of the interaction between the drug market, insecurity and violence – making use of the quantitative information available – the argument put forward is that the opportunities and challenges that cocaine regulation could open up for Central America will be mediated by institutional capacities and local conditions. Furthermore, the narrative that explains insecurity and instability in Central America in terms of the role the region plays as a drug trafficking corridor has not only served as an argument to justify the 'war on drugs' (the reason) but has also been useful to governments and local elites seeking to evade responsibility (the pretext).

Keywords: Drug trafficking, regulation, violence, drug market, organised crime, insecurity, corruption, war on drugs, Central America.

What would happen to the countries in Central America if the transnational cocaine market was regulated? What impact would this have on one of the most violent regions in the world? Although it is difficult to imagine that cocaine regulation would be feasible under current conditions, this hypothetical scenario invites reflection on the role and true dimensions of drug trafficking and the way in which governments have responded to the problem of illegal drugs.

This chapter seeks to address these questions. It takes into account that Central America is not a homogeneous region and that drug trafficking does not emerge and expand in a vacuum. In fact, there are a series of conditions and vulnerabilities that this problem takes advantage of and aggravates. This is why analysis of the relationship between the drug problem and violence must be understood in terms of the interaction between local conditions and transnational processes.

One of the key ideas in this chapter is that drug trafficking in Central America can be understood as both 'reason' and 'pretext'. On the one hand, to some extent the drug problem helps to understand the violence, weak institutions, high levels of corruption and the infiltration of illegal activities in the 'legal' economy. There is no doubt that international cocaine trafficking and the strategies used to tackle it have had a huge impact in the region.

On the other hand, the narrative that explains insecurity and instability in Central America in terms of the role the region plays as a drug trafficking corridor has not only served as an argument to justify the 'war on drugs' – a strategy compatible with the 'iron fist' – but has also been useful to governments and local elites seeking to evade responsibility. In this sense, the noise created by the threat of drug trafficking has meant that the causes of the serious structural problems affecting the region have repeatedly been ignored.

From this standpoint, it will be argued that the opportunities and challenges that cocaine regulation could open up for Central America will be mediated by institutional capacities and local conditions. Regulating the market for cocaine within a responsible legal framework could drastically reduce the harms associated with the illegal trade and create a favourable environment for adopting a more balanced, less repressive approach (Global Commission on Drug Policy 2014). But regulation requires a capable state, and that is precisely the key question in the case of Central America (Cruz 2011).

The fundamental debate that this chapter seeks to encourage is whether regulation can be an opportunity to strengthen institutions, or whether it is necessary to strengthen the institutions first in order to open the way for the positive effects of regulation. As the discussion will show, there are no easy answers to this question. What is clear is that this debate must weigh the evidence and bear in mind that drug policy – like any other public policy – should be evaluated and changed in the light of new challenges and alternatives.

The dimensions of the cocaine market in Central America: tendencies and costs

Over the last decade, Central America has come to the fore as the main route for trafficking cocaine and its by-products from the producer countries in the Andean region to the consumer countries, particularly the United States (UNODC 2012). In the second half of the 2000s, three dynamics caused a shock in the drug trafficking chain, with direct consequences for Central America:

1) The actions taken by the Colombian state against drug production and trafficking, together with the reconfiguration of Colombia's criminal organisations (as reflected in the increase in drug seizures, the reduction in production potential and the fragmentation of the criminal groups) (Rico 2013; Castillo, Mejia and Restrepo 2014).

2) The Mexican government's offensive against the so-called cartels (in a war declared by president Felipe Calderón in 2007) and the internal disputes within these organisations, with a death toll of more than 60,000 and a corresponding increase in the murder rate (Bailey 2014; Robles, Calderón and Magaloni 2013).

3) Increased maritime interdiction in the Caribbean, with the consequent loss of importance of this route (as reflected in the smaller number of drug seizures) (UNODC 2012).

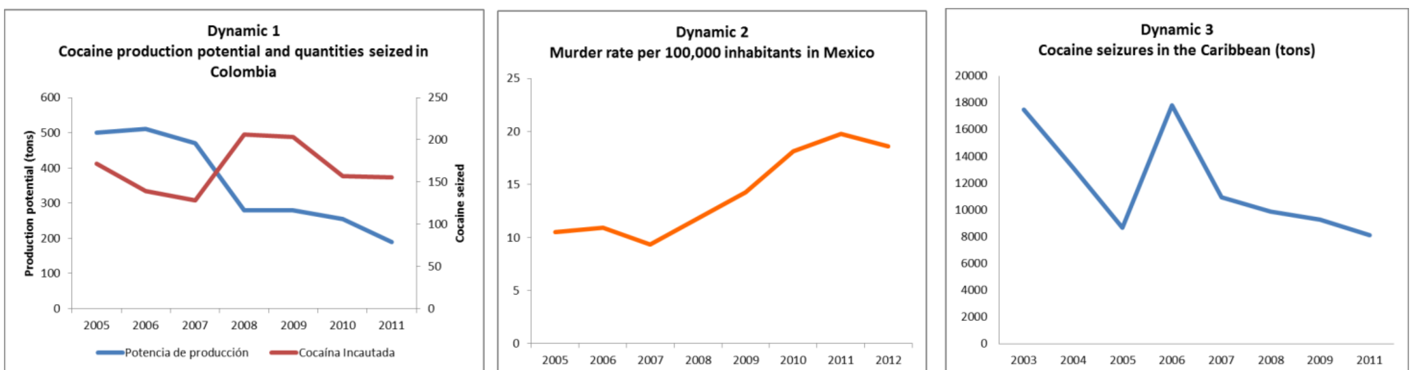


Figure 1. Dynamics that caused a shock in the drug trafficking chain
Sources: Dynamic 1 (cocaine production potential and quantities seized) – Ministry of Defence, Colombia; Dynamic 2 (murder rate per 100,000 inhabitants) – Executive Secretariat of the National Public Security System, Mexico; Dynamic 3 (cocaine seizures in the Caribbean) – World Drug Report 2014, United Nations Office on Drugs and Crime.

In the midst of this shock, the Central American countries, which used to see drugs pass straight through, started to notice that cocaine was being stored in their territory while the trafficking networks in Mexico and Colombia were reconfiguring themselves (Garzón 2013). What was going on in these two countries caused an increase in the transaction costs for the traffickers (with greater instability and a rise in the number of intermediaries), as well as their risk levels (due to the authorities' offensive against certain of their structures, together with the internal competition). The factions started to compete for a smaller slice of the cake in an environment that was more hostile for their operations (Reuters 2014).

The transnational criminal organisations' response to these changes was to look for territories that would guarantee them higher levels of impunity and protection (as a result of the authorities' incapacity, connivance or self-interest). [1] This situation led to increased interaction between the transnational organisations and local (more territorial) factions, setting up and strengthening family networks of traffickers in charge of transporting drugs to the United States.

In this context, countries such as Panama and Costa Rica started to come to the fore as business locations for organised crime. Honduras became the main aircraft landing site for unloading shipments of illegal drugs (with a growing number of seizures of shipments from Venezuela), while El Salvador – with its dollarised economy – became one of the key money laundering centres. Furthermore, Mexico's southern border with Guatemala consolidated itself as the main entry point for overland transport to North America.

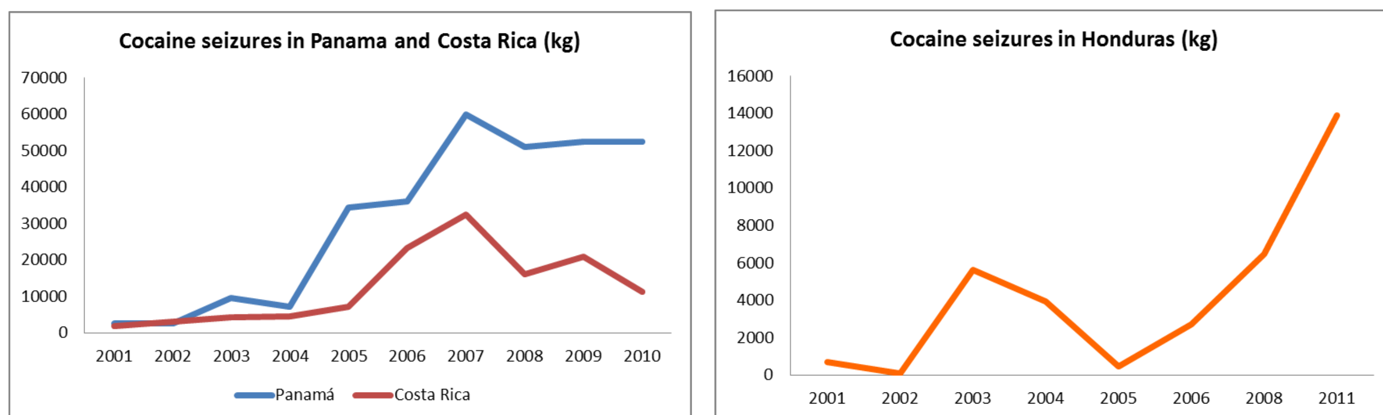


Figure 2. Cocaine seizures in Panama, Costa Rica and Honduras
Source: World Drug Report 2014, United Nations Office on Drugs and Crime

[1] This is the so-called 'cockroach effect' described by Bruce Bagley, recalling how cockroaches scatter away from a dirty kitchen when the light is turned on, in order to avoid being caught. See Bagley 2012.

Despite the authorities' efforts to contain this process, there is no evidence to indicate that any substantial impact has been made on the illegal cocaine economy. On the contrary, the market has been able to adapt to changing circumstances, posing new challenges to states. As happened with organised crime, the trafficking business has become fragmented and now operates like an ant colony, with small quantities being carried by hundreds of people.

As far as the size of the cocaine market in Central America is concerned, speculative estimates have been the norm. The US authorities calculate that about 250-300 tons of cocaine passed through Guatemala in 2010 alone. According to Costa Rica's Security Minister, Mario Zamora, an estimated 900 tons move through the region each year. Meanwhile, the Guatemalan government puts the figure at about 600 tons of cocaine moving from South to North (*Prensa Libre* 2013). To put these estimates in perspective, it is useful to recall that according to the White House the cocaine production potential in the Andean region was 750 tons in 2010 and much of this was destined for Europe (Office of National Drug Control Policy n.d.).

Some calculations suggest that the net profit earned by local organisations in Central America for trafficking a kilo of cocaine is about US$2,000. Taking a moderate estimate of 300 tons per year, this would be equivalent to a net annual profit of US$600 million. That is only a small fraction of the US$38 billion that the market is said to be worth for cocaine going from South to North America (UNODC 2008), but quite sufficient to buy off corrupt officials and influence local economies. Moreover, this is not counting the money that comes back to be laundered – which might be a very much larger amount – or the profits that may be generated from retail sales in the streets of Central America's main cities and tourist destinations.

It is also necessary to take into account that the European market has grown in importance and consider the role that Central American countries could potentially play in it. Although the Mexican criminal organisations do not have comparative advantages over the Colombian or Brazilian organisations in access to Europe, there are signs that they are attempting to scale up their involvement in this trafficking route (AMERIPOL 2013). Most cocaine leaves straight from South America and transits through West African countries on its way to Eastern Europe. A small – through probably growing – amount transits through Central America and is transported in small quantities to the other side of the Atlantic Ocean. It should be borne in mind that the corridor from La Guajira to the island of San Andrés and the Central American countries has once again become important in recent years.

The cocaine market and the responses meant to tackle it create significant impacts that are difficult to quantify. The costs of insecurity in Central America – for which drug trafficking has its share of responsibility – range from 3.6% of GDP in Costa Rica to 11% in Honduras (World Bank 2011). How much of that corresponds to the negative impacts of the cocaine market? It is very difficult to separate out the impacts of drug trafficking from other illegal activities in a region shot through with various interconnected types of violence and crime.

This statement takes on a particular meaning in the case of violence. The United Nations Office on Drugs and Crime (UNODC) has estimated that organised crime is responsible for 30% of the murders that take place in the Americas, while in Europe and Asia that figure does not even reach 1% (UNODC 2014). In Central America, the most violent region in the world with a homicide rate of 25 per 100,000 inhabitants, the percentage may be significantly higher. Nevertheless, it is important to be cautious about establishing a direct link between the drugs market and violence.

When asking questions about this relationship, a useful exercise is to compare cocaine seizures in Central American countries (taken as the proxy variable for the flow of drugs through the region) with homicide rates. Three types of countries can be identified in this way:

i) Those where there is no correlation (El Salvador, Guatemala and Nicaragua). The first two countries have a complex crime situation closely connected to the presence of gangs who wield and dispute control over territory.

ii) Those where drug seizures went hand in hand with peak levels of violence (Costa Rica and Panama, especially in 2006 and 2007). In these countries, the increase in the presence of drug traffickers triggered the violence, but homicide rates later fell relatively rapidly, partly due to the actions taken by the government and partly because of the stabilisation of the drugs market.

iii) Those where the rise in the homicide rate is correlated with the constant increase in drug seizures (Honduras) and spiralling violence is difficult to halt.

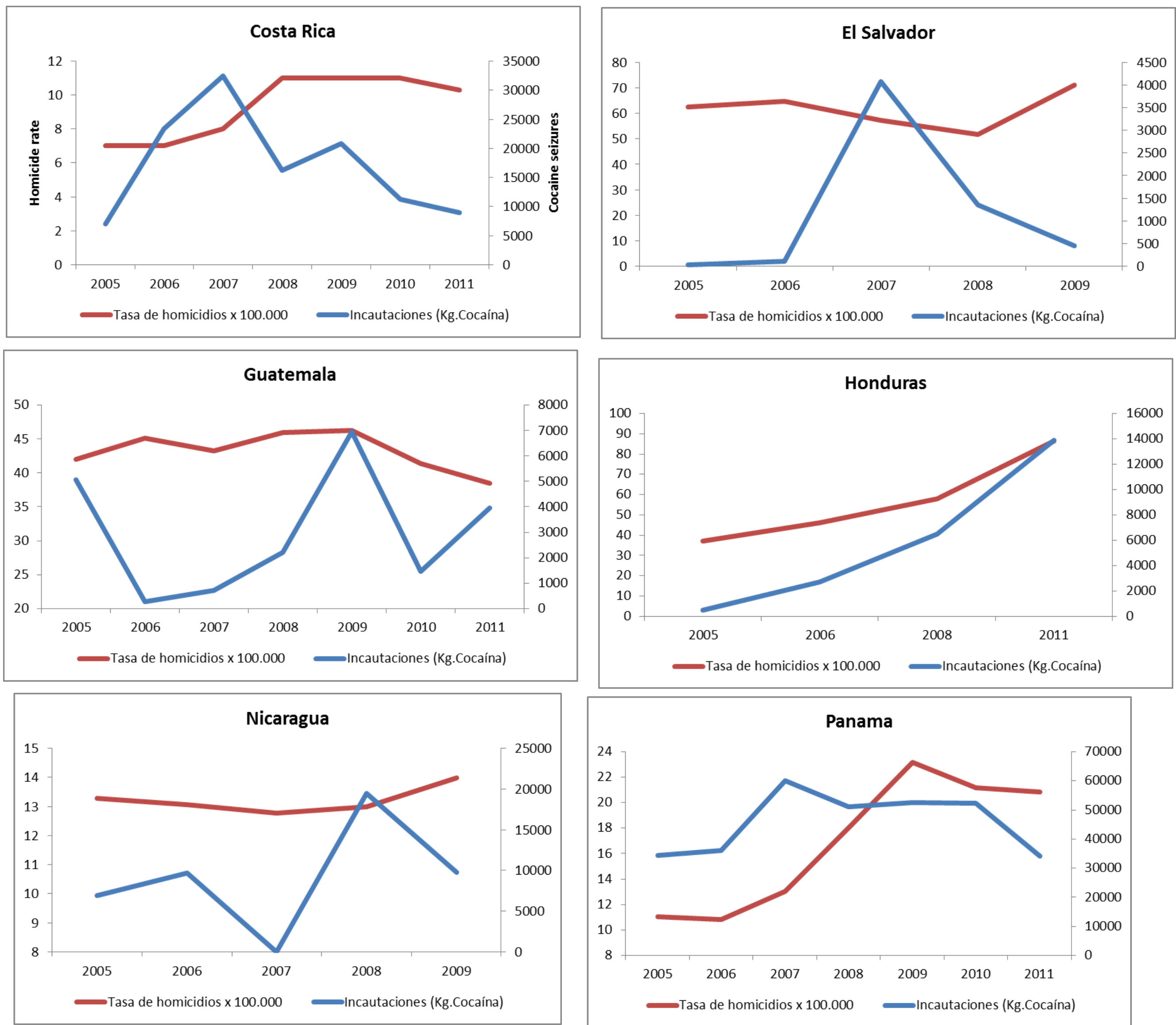


Figure 3. Homicide rate per 100,000 inhabitants and cocaine seizures in Central American countries
Sources: Homicide rates – United Nations Development Programme, Human Development Report for Latin America 2013-2014 ("Citizen Security with a Human Face"); Cocaine seizures – United Nations Office on Drugs and Crime.

Impacts and costs of the illegal drugs market in Central America and government responses aimed at tackling it

- Violent deaths, accounting for a significant though undetermined percentage of high homicide rates.
- Forced displacement and migration by people fleeing from violence. The recent humanitarian crisis caused by the large number of children migrating to the United States, and their subsequent deportation, is a case in point (Olson 2014).
- Corruption in the police forces and institutions responsible for combating drug trafficking (including high-level officials).
- Increase in the parallel market for arms and ammunition (in a context of high numbers of firearm-related deaths).
- Forced recruitment of children and young people by criminal organisations.
- Reconfiguration of the state around the interests of criminal economies (with varying degrees of permissiveness on the part of local elites and politicians).
- Rise in the prison population held for drug-related crimes (especially minor offences).
- Militarisation of security and reinforcement of the 'iron fist' policy (giving priority to punitive responses and the use of force).

In each of these cases, drug trafficking's interaction with local conditions unleashed different dynamics. It is difficult to uphold the argument that the main explanation for the high levels of violence in Central America is the increased influx of drugs or the repressive measures taken by the authorities in the producer countries. In fact, detailed analyses at the national and local level have shown that there are large swathes of territory where drugs pass through and criminal organisations operate but which have relatively low levels of violence (Mendoza 2014). In such circumstances, it is necessary to be extremely careful about attributing to exogenous variables (as drug trafficking might be considered) the ability to explain complex internal dynamics with strong local and structural roots.

Accepting this argument does not imply denying that the changes in how transnational drug trafficking operates have had an impact in Central America. As Liza ten Velde states: "Although it is necessary to be prudent and avoid attributing most of the violence to drug trafficking (…), it is clear that the region's growing role as a drug transit route has been accompanied (in some places) by a substantial increase in the homicide rate" (Ten Velde 2012). The point is that these consequences have been by mediated local conditions and capacities, which are diametrically different when Costa Rica, for example, is compared with Honduras, one of the countries with the highest levels of inequality and unemployment in the Americas (UNDP 2010). This is precisely where an explanation can be found for why in some places the incursion of drug trafficking has translated into spiralling violence, while in others the drug trade has taken advantage of impunity to operate silently.

As the UNODC mentions, when analysing the situation in Central America it needs to be remembered that where crime is well organised, drugs can flow through a transit region without incident, and this is facilitated by high levels of corruption (UNODC 2012). In the words of the International Crisis Group, in these places the criminals' "wealth and firepower turn them into de facto authorities, admired by some and feared by many" (ICR 2014).All this has taken place not in a vacuum but in a context of weak institutions, fluid relations between the criminal world and state agents, high levels of impunity, and the persistent legacy of the region's civil wars and counter-insurgency operations (with the consequent privatisation of the security services).

In some Central American countries, drug trafficking found that the conditions were favourable for it to spread, with political grey areas and instability, large swathes of territory where the state's presence was weak, and limited social and economic inclusion (Cruz 2011). The illegal drug economy took advantage of these vulnerabilities to establish itself and indeed made them worse, in the most violent region in the world (UNDP 2009). This can be seen with particular intensity in the Northern Triangle countries: Guatemala, Honduras and El Salvador (Ten Velde 2012).

Given this reality, and taking up the argument made by José Miguel Cruz (2014), it is possible to state that "violence in Central America [and the insecurity situation in general] has more to do with poor governance – that is, draconian security policies, corrupt law-enforcement institutions, and entrenched impunity …" than with drug trafficking itself.

It should be recalled that the renewed importance of Central America as a corridor for illegal drugs was preceded by a spike in homicidal violence, specifically in the Northern Triangle countries whose history has been marred by civil wars and weak institutions. Unfortunately, as Cruz points out, the fixation on *maras*, drug trafficking and migration has meant that the debate has avoided the underlying issue – the state's inability to enforce the law and offer protection to its citizens.

With this context in mind, it is important to mention that the region of Central America has become one of the main hotspots of the so-called 'war on drugs', with an increase in funding from the United States and more recently from Russia (in the case of Nicaragua). The priority has been to interrupt the drug traffic coming from the producer countries and heading to the consumer countries, applying a 'strategy' that emphasises repression. In a region marked by the policies of the 'iron fist', the fact that there is now a new argument to provide the armed forces with a role in addressing internal problems is no small matter (Zabludovsky 2014, Schwartz 2014).

While the funds allocated by the US for Plan Colombia were reduced by US$61 million to US$223 million, and those for the Mérida Initiative fell by US$142 million to US$205 million, the funding allocated for the Central America Regional Security Initiative (CARSI) in 2013 increased by US$26 million to reach a total of US$162 million (*The Economist* 2013). Despite recent efforts to channel international funding more towards prevention, institutional strengthening and transnational initiatives to combat crime, the tone and intensity of the responses at the local level continue to be biased toward punitive approaches, frequently ignoring the multiple causes of violence and crime (Korthuis 2014, Isacson et al. 2013). Along the way, the complex problem of the gangs (better known as *maras*) has begun to form part of the narrative on transnational organised crime.

The strategy has focused on hitting the most visible structures. The arrest of the Mexican and Colombian criminal organisations' operators as well as important local *capos* has shaken organised crime in the last few years. However, these operations have not been backed by an enhanced institutional presence. In the absence of any authority, a new generation of criminals has emerged to fill the vacuum, placing emphasis on predatory activities such as extortion and kidnapping (Garzón 2014, Dudley 2014). For these factions, cocaine trafficking is still a profitable and attractive business, fed by the demand in consumer countries and more recently the growth of the local market.

What would happen if the transnational cocaine market was regulated?

One key question is how regulating cocaine could change this situation, positively or negatively. In considering this question, it is important to start from one decisive fact: coca leaf is not grown in Central America, which means that the cocaine trade there is dependent on being supplied with the raw material. If the international (import-export) market for cocaine was regulated, the role of the transit countries would become less important, at least in the legal trade. What would be the impact of such a change?

In fact, this hypothetical scenario of the cocaine market losing importance could actually come about if the current trend of falling cocaine use in the United States continues. According to US data, the number of people reporting having used cocaine in the month prior to the survey fell by 40% between 2006 and 2012. A recent estimate for the Office of National Drug Control Policy in the White House indicated that the size of the cocaine market was reduced in value by 50% between 2000 and 2010 (Kilmer et al. 2014). In this context, it is worth asking, as Alejandro Hope (2014) does for the case of Mexico, what would the consequences be for Central American countries?

One route that is frequently ignored in the analysis of drug trafficking through Central America is Europe. This neglect is largely explained by the preponderance of the drugs market in the United States. However, this situation may be changing with the growing importance that cocaine trafficking to Europe is taking on. Thus, it cannot be ruled out that Mexico's criminal organisations will seek to finish processing cocaine base in Central America and open up a corridor to European countries. Although this does not seem the most natural route, drug trafficking is dynamic and flows through the places where conditions allow, taking advantage of weak institutions.

There is no reliable information about the profits generated by cocaine trafficking in Central America, and it is therefore difficult to estimate how much the loss of revenue from this market would affect the criminal organisations and levels of violence. One aspect that should be highlighted here is that the organised crime groups in Central America have not specialised in trafficking cocaine. Instead, they have traditionally devoted themselves to various different criminal activities – most of them predatory in nature. On the other hand, the question that arises concerns the emergence of a parallel market for cocaine, which could keep the Central American corridor active, albeit not with the same intensity.

It is necessary to ask, then, whether the Central American criminal organisations would be able to find a substitute for the illegal cocaine economy. In the case of the Mexican organisations, Hope maintains that cocaine represents at least 50% of their income from the export of illegal drugs. In that case, it is difficult to imagine that other activities could generate the same or a higher level of profit. As Hope (2014) argues, "for every peso of profit, the risks involved in theft, kidnapping or extortion are much greater than the risk of drug trafficking."

One alternative for the traffickers would be the growth in the local drugs market. Indeed, there are signs that drug use is increasing in Central American countries. Even so, however much local demand increases it will never manage to compensate for the reduction in exports to the United States. Cocaine use in the region's countries is unlikely to even reach ten tons – a negligible portion of the quantity exported to North America.

Cocaine regulation – and/or a contraction in the cocaine market in the US – would have an (undetermined) impact on the revenue received by the criminal groups. However, this impact could be transitory – and in some areas probably insignificant – unless it was accompanied by an increase in institutional capacities to counteract the potential reaction and adaptation on the part of the criminal organisations, as well as an offer of legal alternatives for the individuals and communities who have been involved in this illegal economy.

It can be anticipated that regulation would not have the same impact across the board. Instead, it would depend to a great extent on each country's capacities and resources. This has to do with how far the state has managed to make its presence felt, not only in rural areas and more isolated regions, but also in peripheral urban areas, where it is necessary to start to think about development strategies (Stevens, Bewley-Taylor and Dreyfus 2009; Felbab-Brown 2013).

A good example to illustrate the disparity between the Central American countries is what happened with the drive to modernise their police forces. While countries such as Costa Rica and Panama have made positive progress, in Honduras, Guatemala and El Salvador the reform initiatives have lost impetus as they proved incapable of changing anachronistic cultures rooted in a model that prioritises the use of force and breeds corruption.

Regulation would open up various opportunities, offering the possibility of redirecting resources toward prevention, redefining the security agenda to go beyond the monologue on drug trafficking, with higher levels of autonomy for the region, and weakening the capacity to corrupt and infiltrate institutions, as well as reducing the inflow of illegal funds and therefore asset laundering. But, as in the case of the various attempts to reform security in Central America, these changes will require the political will to root out corruption from the security forces and institutions and ensure transparent governance, providing them with the resources they need to operate.

As the Global Commission on Drug Policy argues in its most recent report, “Taking Control: pathways to drug policies that work”, regulation offers a promising way forward with the potential to reverse the most damaging consequences of prohibitionism (Global Commission on Drug Policy 2014). In the case of Central America, changing the response to the drug problem by introducing new alternatives that focus on harm reduction – and doing away with the unachievable goal of a drug-free world – could help to change the mindset that believes that the solution to the security problem is repression and force.

Of course, these opportunities should be considered not in abstract terms but in the light of the institutional, social, economic and political realities of the Central American countries. In this context, we come back to the fundamental question of whether regulation can be an opportunity to strengthen institutions, or whether it is necessary to strengthen the institutions first in order to open the way for the positive effects of regulation. It must be made clear that the weakness of the state cannot be used as an argument to block experimentation with other paths – ultimately, the same question about capacities must be asked with regard to prohibition.

Addressing the reasons – and motivations – that brought the region to this point, and doing away with the pretexts obstructing the adoption of more balanced alternatives focused on citizen security, is a step that needs to be taken in order to meet the challenge currently faced by the Central American countries. How can this be done? The region urgently needs less rhetoric and more action. It is time for a serious rethink of the ‘war on drugs’ strategy and an end to the vicious circle of repression and corruption.

References

AMERIPOL. 2013. *Análisis Situacional del Narcotráfico: una perspectiva policial.* Bogotá: Comunidad de Policías de América.

Bagley, Bruce. 2012. *Drug Trafficking and Organized Crime in the Americas: Major Trends in the Twenty-First Century*. Washington DC: Woodrow Wilson Center.

Bailey, John, 2014. *The Politics of Crime in Mexico: Democratic Governance in a Security Trap.* Boulder, CO and London: Lynne Rienner.

Castillo, Juan Camilo, Mejia, Daniel and Restrepo, Pascual. 2014. *Scarcity without Leviathan: The Violent Effects of Cocaine Supply Shortages in the Mexican Drug War.* Center for Global Development Working Paper 356. Washington DC: Center for Global Development.

Cruz, José Miguel. 2011. Criminal Violence and Democratization in Central America: The Survival of the Violent State. *Latin American Politics and Society* 53(4): 1-33.

Cruz, José Miguel. 2014. Child Migrants, Violence, and the Nicaraguan Exception. IPI Global Observatory website, 18.08.14. http://theglobalobservatory.org/2014/08/child-migrants-violence-nicaragua-exception/

Dudley, Steven. 2014. Criminal Evolution and Violence in Latin America and the Caribbean. InSight Crime website, 26.06.14. http://www.insightcrime.org/news-analysis/evolution-crime-violence-latin-america-caribbean

Felbab-Brown, Vanda. 2013. Lecciones clave para los esfuerzos del Estado para afrontar la violencia urbana y el crimen organizado en América Latina. In Niño Guarnizo, Catalina, (ed.), *Seguridad Regional en América Latina y El Caribe – Anuario 2013.* Bogotá: Friedrich Ebert Stiftung en Colombia – FESCOL.

Garzón, Juan Carlos. 2013. *The Criminal Diaspora: The Spread of Transnational Organized Crime and How to Contain its Expansion*. Washington DC: Woodrow Wilson Center.

Garzón, Juan Carlos. 2014. From Drug Cartels to Predatory Micro Networks: the "new" face of organized crime in Latin America. In Bagley, Bruce M., Rosen, Jonathan D. and Kassab, Hanna S. (eds.), *Reconceptualizing Security in the Americas in the Twenty-First Century.* Lanham: Lexington Books.

Global Commission on Drug Policy. 2014. *Taking Control: pathways to drug policies that work*. Available from: http://www.globalcommissionondrugs.org [Accessed 10 September 2014]

Hope, Alejandro. 2014. ¿El fin del corredor mexicano? *Revista Perspectiva* Dossier, "Narcotráfico: del garrote al debate", April/June 2014. Available at: http://www.revistaperspectiva.com/files/files/dossier/dossier_4.pdf

ICR. 2014. *Corredor de Violencia: la frontera entre Guatemala y Honduras.* Latin America Report N° 52, 4 June 2014. Brussels: International Crisis Group.

Isacson, Adam, Haugaard, Lisa, Poe, Abigail, Kinosian, Sarah and Withers, George. 2013. *Time to Listen: Trends in U.S. Security Assistance to Latin America and the Caribbean*. Washington DC: Latin American Working Group Education Fund, Center for International Policy, and Washington Office on Latin America.

Kilmer, Beau et al. 2014. *What America's Users Spend on Illegal Drugs: 2000-2010*. Santa Monica, CA: RAND Corporation.

Korthuis, Aaron. 2014. *The Central America Regional Security Initiative in Honduras*. Washington DC: Woodrow Wilson Center.

Mendoza, Carlos. 2014. ¿Cuál es la relación entre violencia homicida y narcoactividad en Guatemala? *Plaza Pública* website, 19.05.14. http://www.plazapublica.com.gt/content/cual-es-la-relacion-entre-violencia-homicida-y-narcoactividad-en-guatemala-parte-i

Office of National Drug Control Policy, The White House. n.d. Coca in The Andes. Available at: http://www.whitehouse.gov/ondcp/targeting-cocaine-at-the-source

Olson, Eric. 2014. *How to Address Child Migration from Central America*. Washington DC: Woodrow Wilson Center.

Prensa Libre. 2013. Crece acción de Narcos en Centroamérica. *Prensa Libre* website, 24.02.13. http://www.prensalibre.com/internacional/Crece-accion-narcos-Centroamerica_0_853114736.html

Reuters, Peter. 2014. The Mobility of Drug Trafficking. In LSE Expert Group on the Economics of Drug Policy, *Ending the Drug Wars*. London: London School of Economics.

Rico, Daniel. 2013. Las dimensiones internacionales del crimen organizado en Colombia: las BACRIM, sus rutas y refugios. In Garzón, Juan Carlos and Olson, Eric (eds.), *The Criminal Diaspora: The Spread of Transnational Organized Crime and How to Contain its Expansion*. Washington DC: Woodrow Wilson Center.

Robles, Gustavo, Calderón, Gabriela and Magaloni, Beatriz. 2013. *Las Consecuencias Económicas de la Violencia del Narcotráfico en México.* Stanford University paper prepared for the Inter-American Development Bank Seminar "The cost of crime and violence in Latin America and the Caribbean".

Schwartz, Mattathias. 2014. A Mission Gone Wrong: Why are we still fighting the drug war? *The New Yorker* website, 06.01.14. http://www.newyorker.com/magazine/2014/01/06/a-mission-gone-wrong?currentPage=all

Stevens, Alex, Bewley-Taylor, Dave and Dreyfus, Pablo. 2009. *Drug Markets and Urban Violence: Can tackling one reduce the other?* The Beckley Foundation Drug Policy Programme Report 15. Available at: http://www.beckleyfoundation.org/pdf/report_15.pdf

Ten Velde, Liza. 2012. *El nexo entre drogas y violencia en el Triángulo del Norte. El papel del narcotráfico en la violencia delictiva y las respuestas de política pública en Guatemala, El Salvador y Honduras.* TNI Drugs & Conflict Debate Paper No. 19, 30 November 2012. Amsterdam: Transnational Institute.

The Economist. 2013. US 2014 budget allocates more funding to Central America. *The Economist* website, 16.04.13. http://country.eiu.com/article.aspx?articleid=1180385902&Country=Belize&topic=Politics&subtopic=Forecast&subsubtopic=International+relations&u=1&pid=392001223&oid=392001223&uid=1

UNDP. 2009. *Informe de Desarrollo Humano para América Central 2009-2010. Abrir espacios a la seguridad ciudadana y al desarrollo humano*. Colombia: United Nations Development Programme.

UNODC. 2008. *Crime and Instability: Case Studies of Transnational Threats*. Vienna: United Nations Office on Drugs and Crime.

UNODC. 2012. *Transnational Organized Crime in Central America and the Caribbean: A Threat Assessment*. Vienna: United Nations Office on Drugs and Crime.

UNODC. 2014. *Global Study on Homicide 2013.* Vienna: United Nations Office on Drugs and Crime.

World Bank. 2011. *Crime and Violence in Central America: A Development Challenge.* Washington DC: World Bank.

Zabludovsky, Karla. 2014. Private Morales Doesn't Want to Die for Your Sins. *Newsweek* website, 27.02.2014. http://www.newsweek.com/private-morales-doesnt-want-die-your-sins-245604

Coca Derivatives and Consumer Countries

Luca Di Censi, Francesco Fabi, Carla Rossi
National Council for the Social Sciences, Italy

Abstract

Cocaine is a powerful stimulant drug extracted from the leaves of the coca plant. Crack is a form of cocaine that has been processed to produce crystals (also called 'freebase cocaine' or 'rocks') that can be smoked. Cocaine and crack are strong but short-acting stimulant drugs. They tend to make users feel more alert and energetic. The prevalence of cocaine consumption in the world is quite high. Drug addicts (heroin + cocaine) are estimated at about 27 million (0.6% of the adult population). After a long period of constant growth, in recent years the overall consumption and production of illegal drugs is stationary. Cocaine is the second most used illegal drug in the world. In European countries, the EMCDDA reports a high prevalence of cocaine use among the 15-34 age group, ranging from 0.2% in Greece and Romania to 5.4% in the UK. In the United States the prevalence of use in the last 12 months is 1.8% in the general population and 4.6% among young people (18-25). Using data about seizures in various countries, it is possible to analyse the different trafficking routes in recent years. These routes explain the spread of cocaine consumption in West Africa and Eastern Europe, together with related phenomena such as criminality and corruption. This chapter estimates the different 'populations' involved (consumers, dealers, traffickers, etc) and illustrates the statistical methodology.

Keywords: crack-cocaine, consumption, trafficking, routes, drug seizures

Cocaine is a powerful stimulant drug made from the leaves of the coca plant. Crack is a form of cocaine that has been processed to produce crystals (also called 'freebase cocaine' or 'rocks') that can be smoked.

Cocaine and crack are strong but short-acting stimulant drugs. They tend to make users feel more alert and energetic. Many users say they feel very confident and physically strong and believe they have great mental capacities. Common physical side effects include dry mouth, sweating, loss of appetite and increased heart and pulse rate. At higher dose levels, users may feel very anxious and panicky. The effects from snorting cocaine (taking it in through the nose) usually set in quickly but only last for up to 30 minutes, if the intake is not repeated. The effects of smoking crack set in even quicker but are not as long lasting.

Because of cocaine's high cost, it has long been considered a 'rich man's drug'. Crack, on the other hand, is sold at lower prices that even teens can afford – at first. The truth is that once a person is addicted, the expense skyrockets in direct proportion to the increasing amount needed to support the habit.

For both crack and cocaine, dependency is not inevitable. Whether people become dependent, and if so how quickly it happens, will vary depending on the individual user's mental state and circumstances. The fact that cocaine and crack are expensive means that people who become dependent may spend vast amounts of money. Those who are not wealthy may find themselves involved in crime or prostitution to finance the habit.

The negative effects of crack are stronger than those of cocaine, as recognised by Nutt et al. (2008, 2010) and van Amsterdam et al. (2010,

2013). In a recent paper (Mammone et al. 2014), a new 'risk of harm' indicator has been derived, combining previous ones. It measures the harm to the user population in order to compare unintended consequences of drug policy in different countries. The harm indicator value for cocaine is 2.07 and for crack 2.67, 29% higher (for the purposes of comparison, the value for heroin is 2.51, for alcohol 2.18 and for cannabis 1.18).

There are similarities between the spread of drug use, in particular the spread of use of addictive drugs, and that of infectious diseases, as described since 1969 with respect to heroin (de Alarcón 1969, Mackintosh and Stewart 1979, Hunt and Chambers 1976). The use of drugs is communicated as a kind of 'innovative' social practice or custom, and not to everyone but only to those who, for whatever reason, are not immune (susceptible individuals). Once the contagious nature of drug use is accepted, the epidemiological concepts of 'incidence' (the rate of new cases occurring within a certain period of time) and 'prevalence' (the number of cases at a particular time) are operationally valuable in studying the diffusion and dynamics of illegal drug use, in this case regarding coca derivatives.

Cocaine diffusion in consumer countries

Peter Reuter described the cocaine epidemic(s) in the US quite efficiently in 2001. In Europe and other countries, the spread took place some years later than in the US, due to the expansion of drug trafficking.

> *"Drug epidemics (…) are characterized by sharp peaks in population incidence rates followed, with a lag, by a plateauing at a new high in the number of dependent users. The pattern reflects the fact that a portion of new users become dependent within a few years, that incidence is partly driven by the extent of perceived problematic use and that exit from dependence is slow. Everingham and Rydell (1994) offer a now classic representation of that phenomenon, while Behrens and others (1999, 2000) have explored the dynamics in more detail. Drug markets vary over the course of a drug epidemic in the ratio of heavy users to light users, the mean age of users and, in a predictable fashion, the opportunity cost of sellers' time. Those in turn affect the level of property crime generated by drug use.*
>
> *In the early stages of the cocaine epidemic in the United States, drug users were not predominantly poor. The image of the drug was relatively benign, its dangers were little known and its attractions were great. Most users were inexperienced and did not at that time consume large quantities or suffer significant problems. Low-income users could earn substantial incomes selling to users who are not poor. Such conditions are likely to be common in the early stages of drug epidemics in which the drugs are not well known to the population.*
>
> *In the late 1980s, frequent users made up a much larger fraction of all cocaine users and accounted for a larger fraction of total cocaine consumption. Cocaine users were then poorer and had acquired both a criminal history and a record of treatment. More educated cocaine users were likely to have responded to messages about the adverse consequences of the drug and to experience better outcomes in treatment. Evidence from the National Household Survey on Drug Abuse shows that the negative correlation of current cocaine use (that is, use in the previous month) and education increased substantially after 1985 (Reuter et al. 1994)."* (Reuter 2001).

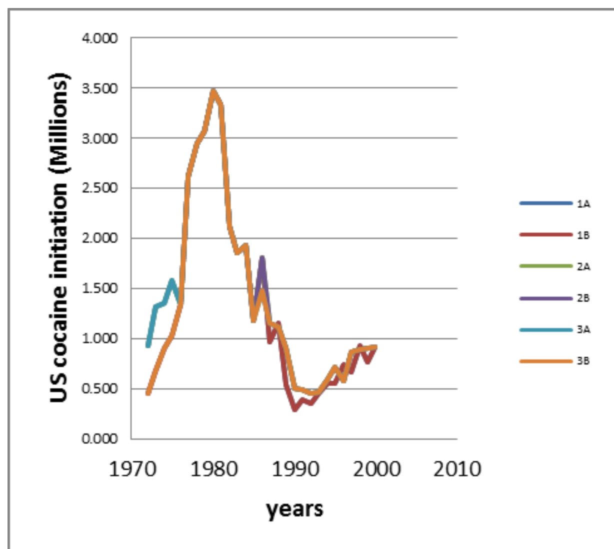


Figure 1a. Incidence curves estimated with different hypotheses

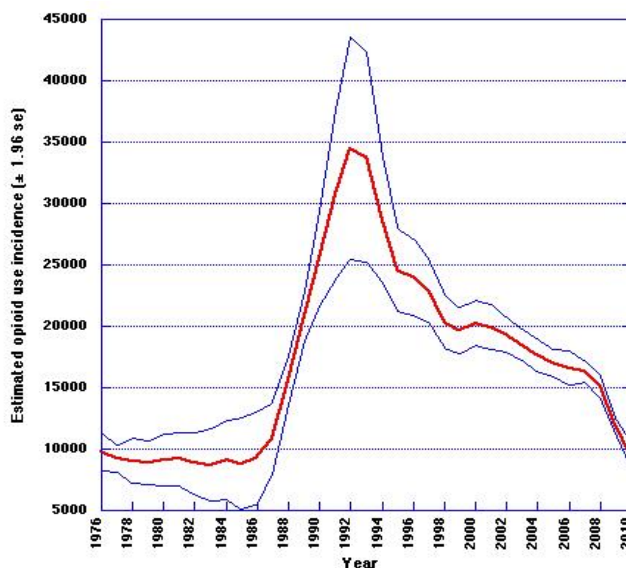


Figure 1b. Heroin incidence curve estimated in Italy by Back-calculation

Figure 1. Examples of incidence curves in drug epidemics

Figure 1 shows the typical behaviour of epidemic incidence curves. The first one is related to the cocaine epidemic in the US according to Caulkins at al. (2004) and the second one to the heroin epidemic in Italy (EMCDDA 2012). The heroin epidemic in Italy is still decreasing and approaching the endemic stage, whereas the US cocaine epidemic is increasing again towards a second, but lower, epidemic stage, similarly to heroin in Europe in general.

Prices

Drugs are sold in illegal markets. The prices are determined systematically: notwithstanding the high rate of observed variation, they have clear patterns. Moreover, those prices have important implications both for participants (users and dealers) and for others, including potential users (because prices affect the incentive to start using drugs) and society more generally (through crime and the generation of criminal income).

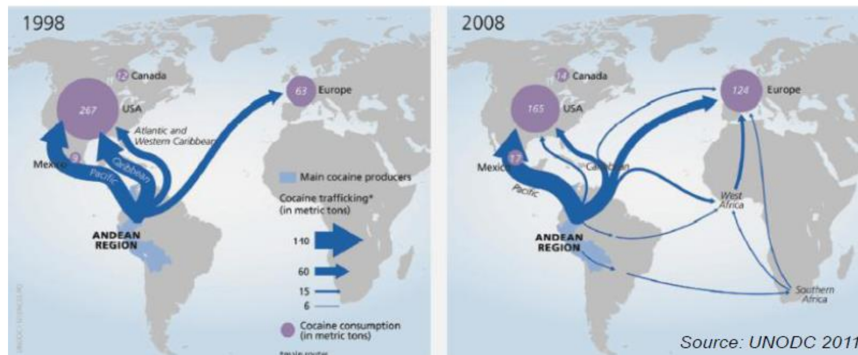
In 2010, a kilogram of cocaine base in Colombia typically sold for US$1,474 and a kilogram of cocaine typically sold for US$2,438. In Peru in 2008, a kilogram of cocaine base typically sold for US$850 and a kilogram of cocaine typically sold for US$1,250. In Mexico in 2010, a kilogram of cocaine typically sold for US$12,500. In the United States in 2010, the cost of a kilogram of cocaine typically ranged from US$11,500 to US$50,000, and the cost of a kilogram of crack ranged from US$14,000 to US$45,000 (UNODC 2012).

The lowest price of crack is found in Central and South American countries like Venezuela, the Dominican Republic and Panama, where it can be sold for as little as US$1,000 per kilogram (Ibid.).

Supply routes

To understand the diffusion of cocaine use in the world, it is basic to know the routes used by traffickers from supply to consumer countries. These are shown in Figure 2.

What changed in cocaine routes



1. Consumption reduced in the USA and doubled in Europe
2. More routes to Europe
3. More relevant role of Western and Southern Africa as transit countries
4. Displacement from the Caribbean route to the Mexican one

Figure 2 Cocaine routes in 1998 and 2008
Source: UNODC. Presentation by Sandeep Chawla and Angela Me, "Challenges in estimating the production of pure cocaine HCl," at the EU Conference "Improving responses to organised crime and drug trafficking along the cocaine route," Rome, 28-30 May 2013.

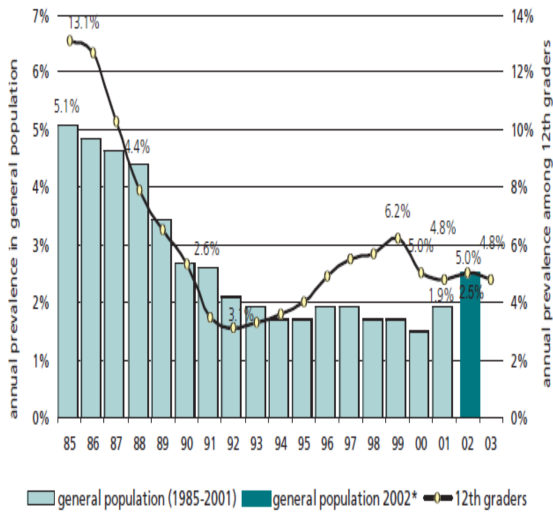
The first routes to Europe ran directly from Central and South America to the United Kingdom and the Iberian Peninsula. In Europe, the 'epidemics' developed as in the US, just some years later, starting in the UK and Spain due to the direct influence of the supply routes. New routes now pass through Africa, arriving from South America to West Africa and then towards the Mediterranean to Spain, Italy and other countries, such as the Balkans. A specific route goes directly to South Africa.

Diffusion of cocaine and crack in North America (US and Canada)

Most Americans first learned about crack cocaine through media stories, which usually disclosed tragic details of public figures' addictions. Coverage of the dangers associated with the use of all forms of cocaine intensified in 1979 with the emergence of the practice of smoking cocaine, colloquially referred to as 'freebasing'. *Rolling Stone* magazine focused on smokable forms of cocaine, calling it the "top-of-the-line model of the Cadillac of drugs," yet cautioned that 'freebasing' seemed to be much more dangerous than snorting. In 1985, *The New York Times* became the first major media outlet to use the term 'crack cocaine', and a follow-up article appeared on the front page less than two weeks later, detailing crack cocaine and its intensely addictive quality. By 1986, major news outlets had declared crack cocaine usage to be in "epidemic proportions" (Beaver 2010).

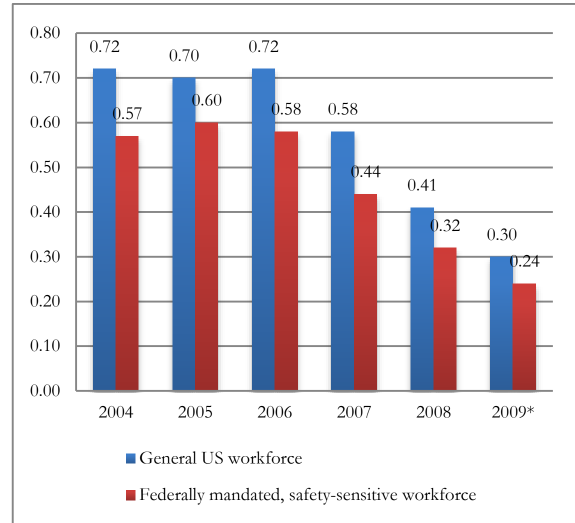
The prevalence of cocaine users in the US is shown in Figure 3. The epidemic character of the use of a specific drug, in this case cocaine, implies that after the initial epidemic stage an endemic one starts, after which another, 'lower' epidemic stage can follow, as is happening in Europe in recent years for heroin and in the US for cocaine. Similar behaviour can be observed in Canada, as shown in Figure 4.

Cocaine use in the USA: 1985-2003 annual prevalence rates among the general population, age 12 years and above, and among high-school students (12th graders).



* Given changes in the methodology used, general household survey data for 2002 are not comparable with results of previous surveys conducted in previous years.
Sources: SAMHSA, results from the 2002 National Survey on Drug Use and Health and previous National Household Surveys on Drug Abuse; NIDA, Monitoring the Future, 2002

Positive tests for cocaine use among the US workforce, 2004-2009*



*Positive tests for cocaine use among the general US workforce (5.7 million tests in 2008) and among the federally mandated, safety-sensitive workforce (1.6 million tests in 2008). Data for 2009 refer to the first two quarters only.

Source: Quest Diagnostics, *Drug Testing Index*

Figure 3. Cocaine use prevalence among various populations in the US.
Source: UNODC *World Drug Report* 2004 and 2010.

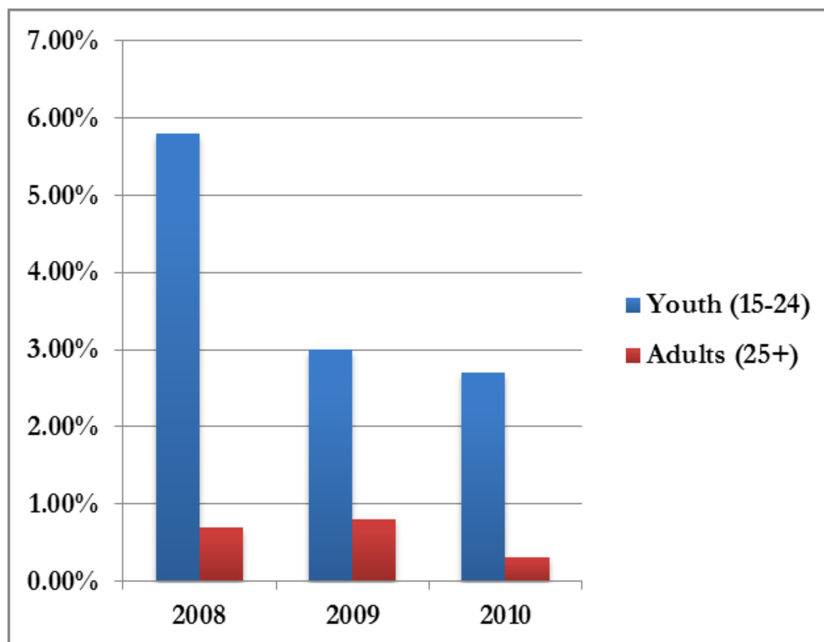


Figure 4. Prevalence of past-year cocaine use in Canada (2008, 2009, 2010)
Source: Canadian Alcohol and Other Drug Use Monitoring Survey (CADUMS) 2008, 2009, 2010

Cocaine in the UK
The prevalence of cocaine use in the UK steadily increased in the 1990s and 2000s and, though recent indications suggest that the trend has stabilised, use in the UK remains the highest in Europe, along with Spain. In 1996, 0.6% of 16 to 59 year olds had tried the drug in the last year. This proportion increased to 3% in 2008-09 and then decreased to 2.5%, or around 800,000 people, in 2009-10. As on the continent, cocaine is the UK's second most used illicit substance after cannabis and, as with cannabis, there is a considerable diversity among its users. There are occasional recreational users as well as dependent and marginalised users.

The average profile of the members of the first group includes stable living conditions and regular employment. Cocaine is used in its powder form, alone or in combination with other substances (except heroin), on a weekly basis.

The second group has a more socially disadvantaged profile, usually using either crack cocaine or the combination of cocaine and heroin. Crack users commonly live in large cities, often belong to ethnic minorities, and many of them are unemployed and have precarious living conditions. In 2006, around 8,000 crack cocaine users (2.2% of all drug users) were reported to have entered drug treatment in 20 European countries, most of them being reported by the United Kingdom.

The Iberian Peninsula as the main importing region for the rest of Europe
Spanish cocaine seizures primarily take place in international waters (two thirds of the total in 2007). About one tenth is found in shipping containers. A much smaller share (2%) is seized close to the country's beaches, while airports account for just 6%. Portuguese seizures basically mirror the patterns seen in Spain, showing increases until 2006 and declines thereafter. The changes have been even more pronounced in Portugal, reflecting the strong links with trafficking via West Africa (Guinea-Bissau and Cape Verde).

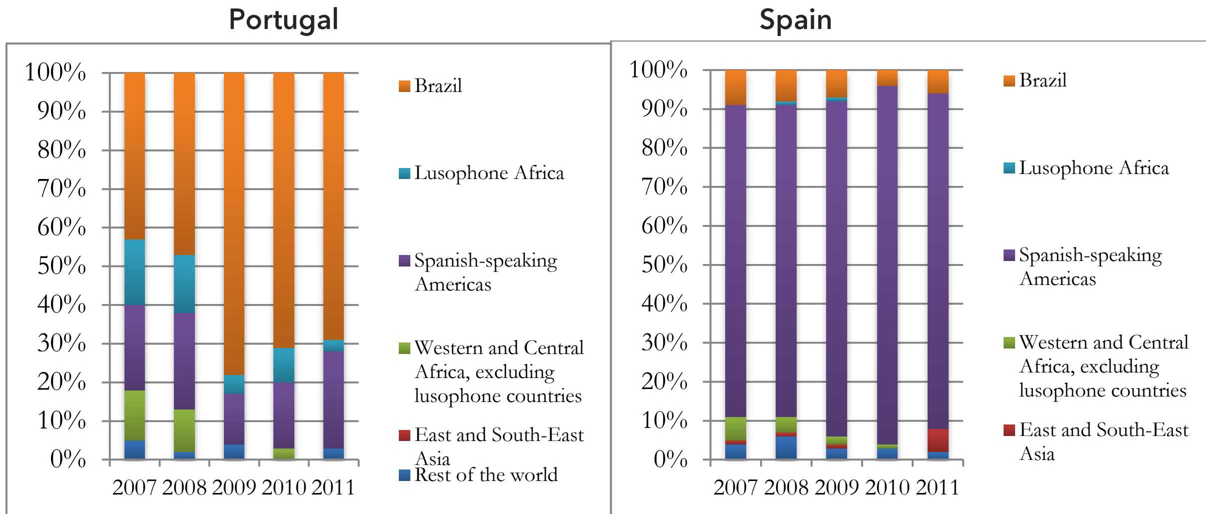
Trafficking of cocaine to Europe is, to a significant extent, run by Colombian organised crime groups that forge alliances with various criminal groups operating in Europe, notably groups in Spain, Italy and the Netherlands. In most European countries, the majority of those arrested for drug trafficking are local citizens, but the Colombian groups act as importers and, to a lesser extent, as wholesalers. Their involvement in retail markets is limited to Spain. Between 21% and 26% of all foreigners arrested for cocaine trafficking in Spain over the 2004-2007 period were Colombian nationals. The proportion rose to 29%, or nearly 1,000 individuals, in 2008.

In addition, groups from the Caribbean region play a role, including Dominicans in Spain, Jamaicans in the United Kingdom and Antilleans in the Netherlands. Other South Americans are also prominent, especially on the Iberian Peninsula. In a number of countries in continental Europe, including France, Switzerland, Austria, Italy, Germany and Portugal, West Africans are active as retailers (as well as small-scale importers).

North Africans are prominent in several countries with a Mediterranean coastline or a large North African diaspora, including Spain, Italy, France and the Netherlands.

A few groups from the Balkan region have also emerged as players in the international cocaine trade in recent years. In contrast, there is little concrete evidence so far to suggest that the Mexican drug cartels are playing a major role in Europe. As for the countries of provenance of individual seizures in the Iberian Peninsula, there are quite large differences between Spain and Portugal, as clearly shown in Figure 5. In particular the link between Portugal and Brazil is evident.

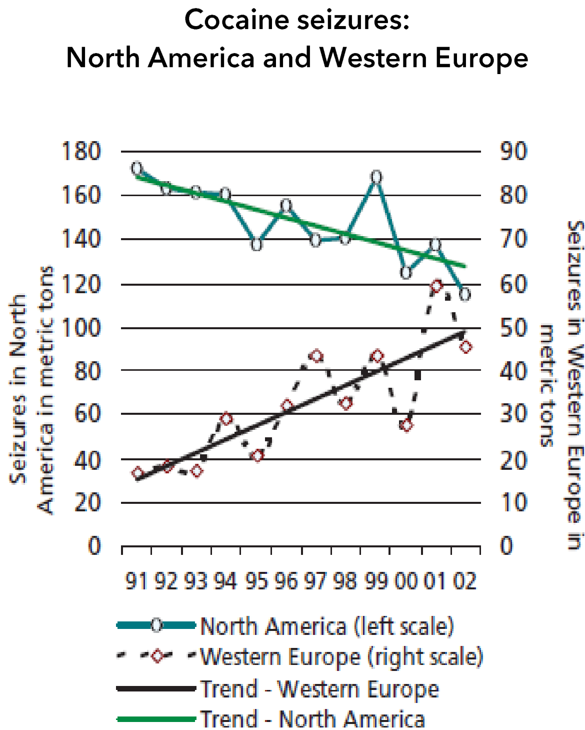
Trends in cocaine use in Western Europe and other parts of the world
Cocaine use has spread in Western Europe and is still spreading to other European countries, in particular Eastern Europe, as shown in Figure 6, Figure 7 and Figure 8. As a final synthesis, Figure 9 shows the cocaine use epidemics in the US and Europe. Differences in start dates and prevalence levels are clearly visible.



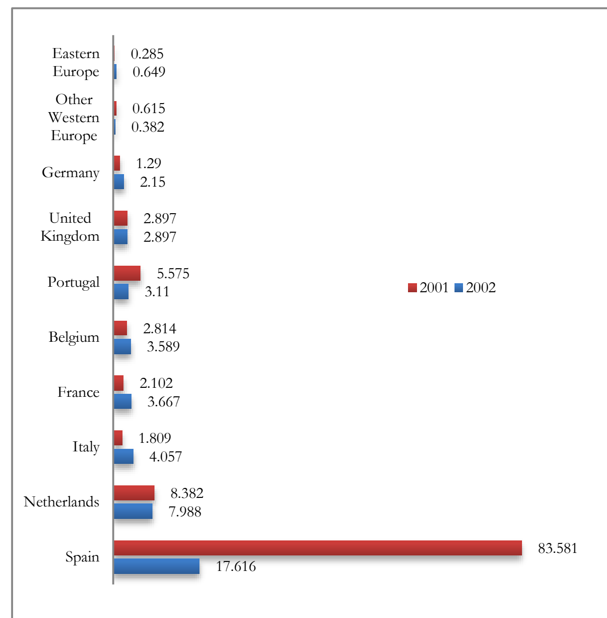
Source: UNODC, individual drug seizure database.

Note: Reporting countries are asked to provide information about the country where the drugs were obtained (or, in the case of unaccompanied shipments, the departure country). For the purposes of this figure, this is considered as the provenance of the drug. However, countries are also asked to provide information on the country of origin, i.e., where the drugs were produced/manufactured. In cases where the country where the drugs were obtained is not specified, or coincides with the country that made the seizure, the country of origin is taken as the provenance. In order to reflect patterns in transnational trafficking, any cases where the provenance coincides with the country making the seizure, or where no information on provenance is known, are excluded.

Figure 5. Countries of provenance of cocaine seized in Portugal and Spain (2007-2011)



Cocaine seizures in Europe in 2001 and 2002



Source: UNODC, Annual Reports Questionnaire Data

Source: UNODC, Annual Reports Questionnaire Data/ DELTA

Figure 6. Trends in cocaine seizures in the US and Europe

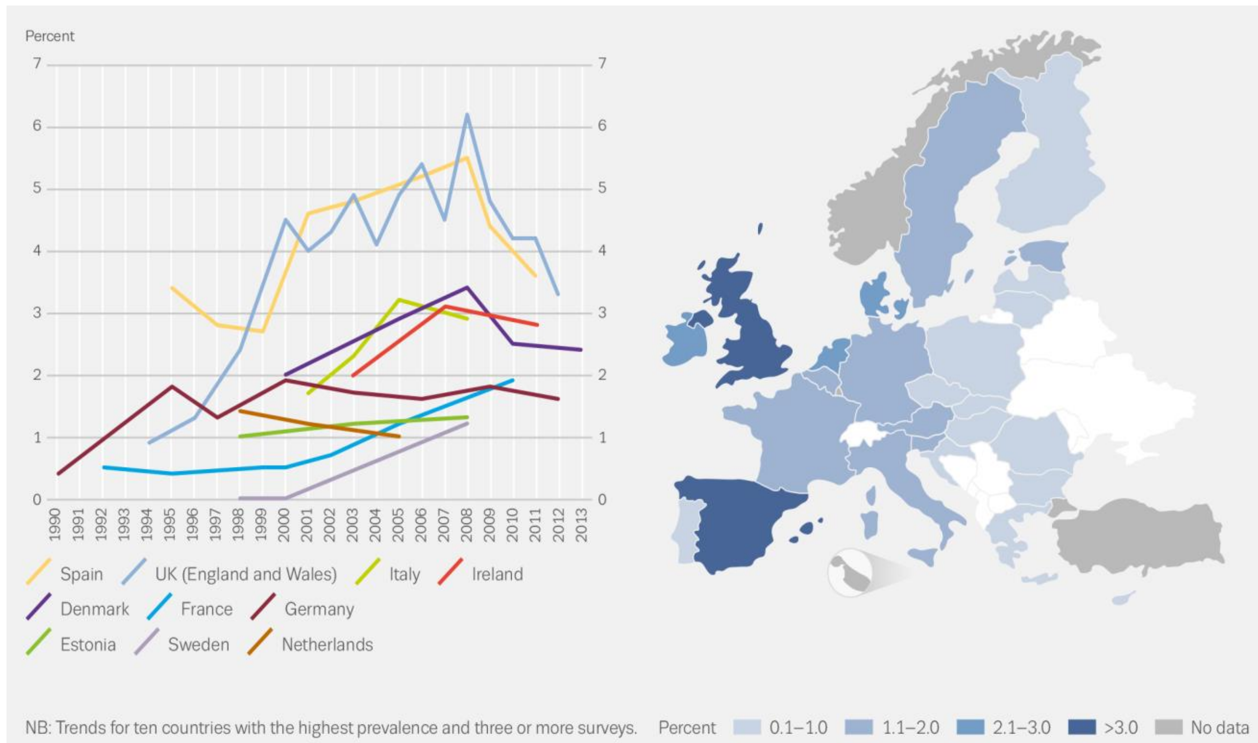
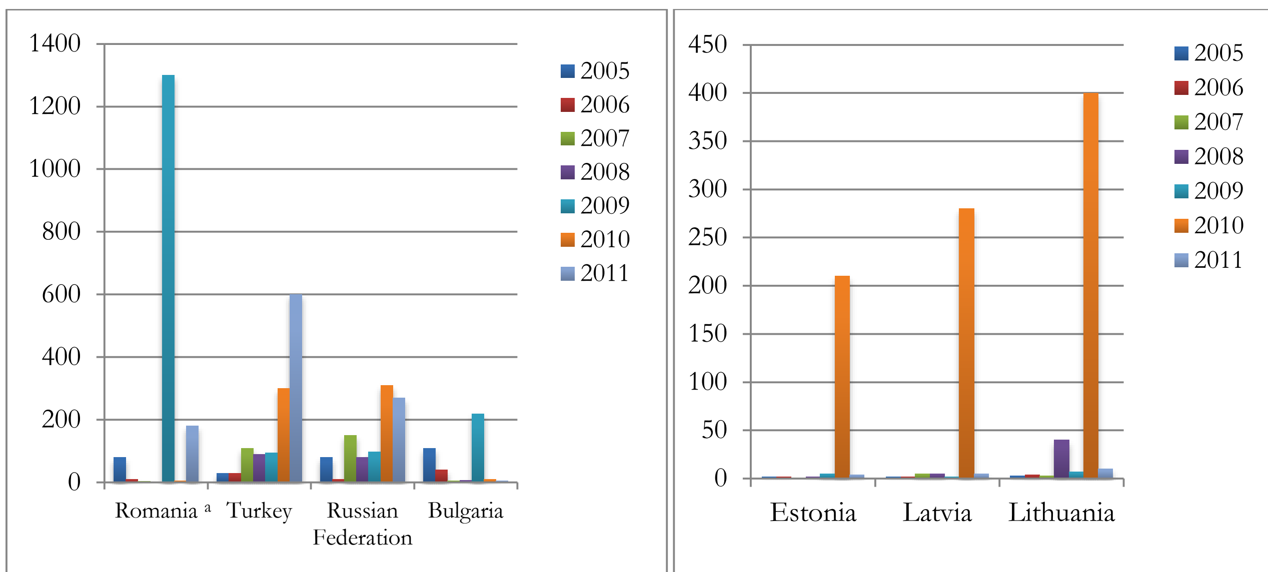


Figure 7. Last year prevalence of cocaine use among young adults (15-34): selected trends (left) and most recent data (right) in the EU
Source: EMCDDA 2014



[a] the high level of seizures in Romania in 2009 was mainly due to a single large seizure in the port of Constanta.

Figure 8. Cocaine spread in new European countries
Source: UNODC, data from Annual Reports Questionnaire and other official sources

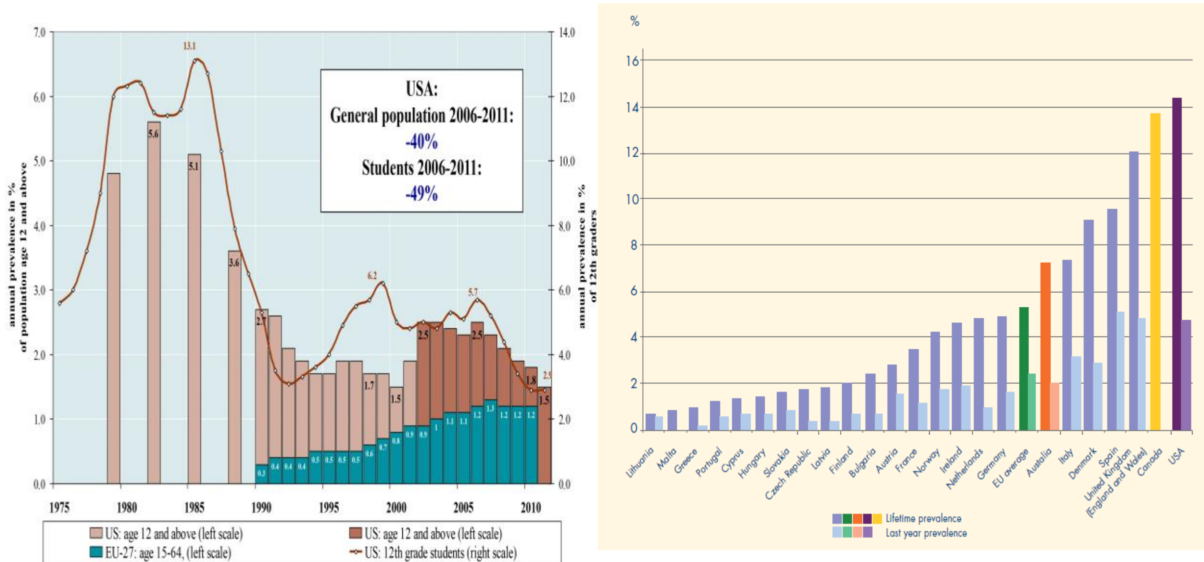
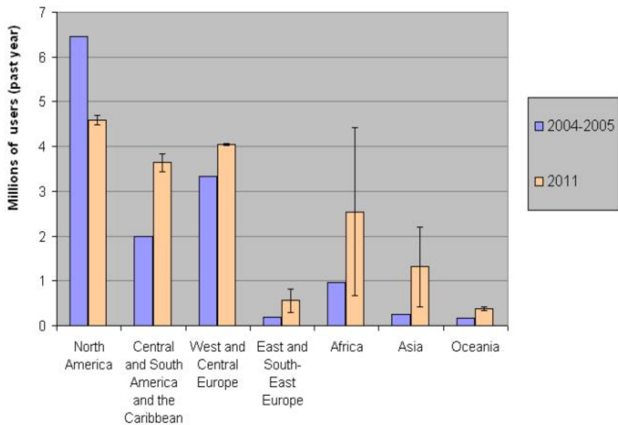


Figure 9. Cocaine use prevalence in the US, Canada and Europe
Sources: SAMHSA, National Household Survey on Drug Use and Health 2011; NIDA, Monitoring the Future, 2011; UNODC, Annual Reports Questionnaire data; EMCDDA, Statistical Bulletin (2011 and previous years)

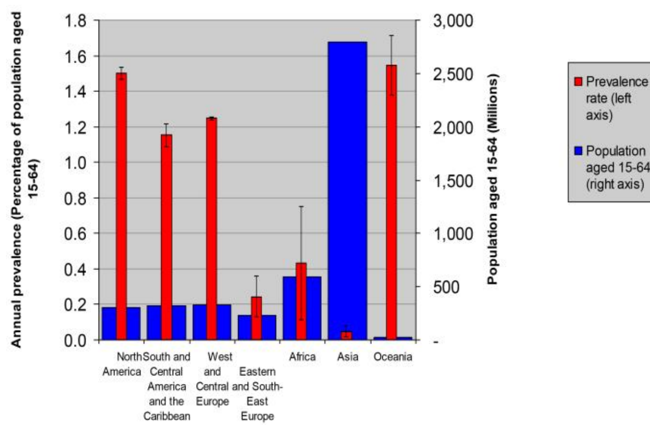
Epidemic behaviour can be seen also in other parts of the world (in particular South America), as summarised in Figure 10. The graph shows clearly the regions moving to the endemic stage (higher prevalence in 2004-2005 than 2011, as in North America) and those with higher prevalence in 2011 than 2004-2005 but in different stages: Western Europe has a lower difference (moving to stabilisation), Eastern Europe, South America and Oceania have a higher difference (epidemic stage) and the epidemic stage is even more pronounced in Africa and Asia.

Breakdown of number of cocaine users (past year), 2004-05 versus 2011



Source: UNODC, World Drug Report 2013 + prev years

Breakdown of global population aged 15-64 and corresponding annual prevalence of cocaine use



Source: UNODC, World Drug Report 2013 (data 2011)

Figure 10. Trends in cocaine use in various regions and populations

Central and South America

Although cocaine is consumed worldwide, its production starts in South America. In the past, the general assumption was that cocaine was produced largely for export outside the region, but this no longer seems to be the case. Cocaine use is widespread across Latin America and the Caribbean, in addition to North America.

Approximately half the cocaine users in the world are in the American hemisphere; of these, 70% are found in North America and 27% in South America. While cocaine use appears to be decreasing among high school students in the United States, in the few countries in South America that have trend data cocaine use among high school students is at best stable. In some South American countries, past year cocaine use has reached levels similar to those found in Europe. Of even greater concern are the rates of past month use, which are now higher in some South American and Caribbean countries than in the United States.

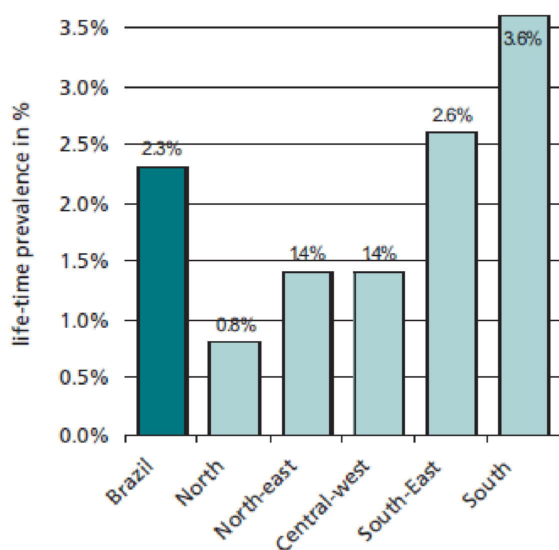
The experience of countries with long histories of drug use has shown that as drug epidemics grow and evolve over time, differences in rates of use between males and females tend to diminish. Hence, in countries with higher rates of drug use overall, the differences in rates of use between males and females tend to be small, while in countries with relatively low rates of use, the differences in drug use rates between males and females appear to be greater.

In the majority of countries in Latin America and the Caribbean, the prevalence of cocaine use is higher among males than among females. This holds true for both the general population and the student population. There are some exceptions where cocaine prevalence among females appears to be higher than among males, but the differences are small and the prevalences close to equal (as will be discussed further in our later chapter).

The increasing cocaine use in Brazil (Figure 11) is acknowledged in the country's national programme launched in December 2011. The increase in seizures could also reflect the role of Brazil as a country of departure for cocaine trafficking across the Atlantic Ocean, as shown in Figure 5.

In Argentina, cocaine seizures rose almost eightfold between 2002 and 2009. Seizures in Chile peaked in 2007 and remained relatively high until 2010, and seizures more than doubled in Paraguay in 2010. However, survey data indicate that cocaine use in Argentina remained stable in 2010 in comparison with 2008, and cocaine use decreased in Chile over the same period. Nevertheless, the prevalence of cocaine use remains relatively high in both of those countries.

Brazil, life-time prevalence of cocaine use among the general population (age 12-65) in 2001



Brazil, cocaine consumption trend, 1987-2001

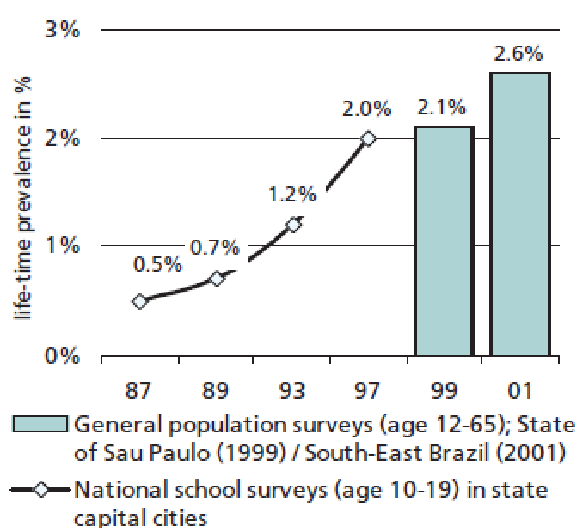


Figure 11. Increase in cocaine use in Brazil

Sources: CEBRID, I Levantamento Domiciliar Sobre o Uso de Drogas Psicotrópicas no Brasil 2001; CEBRID, I Levantamento Domiciliar Nacional Sobre o Uso de Drogas Psicotrópicas – estudo envolvendo as 24 maiores cidades do Estado de Sao Paulo 1999; CEBRID, IV Levantamento Sobre o Uso de Drogas entre Estudantes de 1º e 2º graus em 10 Capitais Brasileiras, 1997.

There are indications that treatment demand for crack use has considerably increased in Brazil; in select treatment services, crack and cocaine related treatment requests increased from <20% to 50% or more (Duailibi et al. 2008, Dunn et al. 1996). National data on drug-related hospitalisations show that cocaine/crack was associated with 5% of all hospitalisations for mental and behavioural disorders in 1999, the highest percentage of all illicit drugs (Noto et al. 2002). However, little general information on drug use characteristics, health profiles or service needs is available on crack users in Brazil.

A recent pilot study (Santos Cruz et al. 2013) analysed the issue, as crack use constitutes a major problem in cities across Brazil. While existing data suggest that crack use is generally concentrated among disenfranchised young people with extensive health problems and crime involvement, large data gaps exist. To address this issue, the study aimed to assess key characteristics of young crack users (aged 18-24) in two Brazilian cities, Rio de Janeiro (south-east), where the epidemic started earlier (Figure 11) and Salvador (north-east), where the epidemic started later. Assessments included an interviewer-administered questionnaire on key social, drug use, health and service use characteristics, as well as serological testing of HBV, HCV and HIV status, and were conducted anonymously between November 2010 and June 2011. The majority of participants were: male, with less than high school education, unstably housed (Rio only); gained income from legal or illegal work; arrested by police in past year (Salvador only); had numerous daily crack use episodes and shared paraphernalia (Salvador only); co-used alcohol, tobacco, cannabis and cocaine; had no injection history; rated physical and mental health as 'fair' or lower (Salvador only); had unprotected sex; were never HIV tested; were not HIV, HBV or HCV positive; and did not use existing social or health services, but desired access to crack user specific services.

The preliminary conclusion was: crack users in the two Brazilian sites featured extensive socio-economic marginalisation, crack and poly-drug use as well as sexual risk behaviours, and compromised health status. Social and health service utilisation is low, yet needs are high.

It is documented that the co-use of crack with cannabis is a common 'harm reduction' method among many crack users in South America; however, the combined intensive smoking patterns of these various substances may result in problematic (eg, pulmonary-bronchial) effects on users (Andrade et al. 2011, Haim et al. 1995, Restrepo et al. 2007).

Cocaine spread in Africa

The most striking new trend in cocaine trafficking in recent years has been the rising importance of Africa, notably of West and Central Africa, as a transit area for cocaine shipments to Europe. Seizures made in Africa rose from less than 1 mt over the 1998-2002 period to 15 mt in 2006. Most of the increase took place in 2006. The largest African cocaine seizures were reported by Nigeria, followed by Ghana, South Africa, Morocco and Cape Verde in 2006. In addition, Guinea Bissau emerged in recent years as an important cocaine trafficking hub. Out of the 33 African countries that provided seizure statistics in 2006 to UNODC, 25 African countries, or 76%, reported seizures of cocaine, up from 34% in 1990.

African cocaine seizures are now equivalent to 2.1% of the global total, up from 0.3% in 2005 and 0.1% in 2000. Since law enforcement in Africa is hampered by a lack of resources and other important factors, this marked increase may not fully reflect the actual trafficking flows through the region. UNODC's database of individual drug seizures showed that, out of the total number of cocaine seizures made in Europe in 2007 (where the 'origin' had been identified), 22% had been smuggled via Africa to Europe, up from 12% in 2006 and 5% in 2004. Criminal groups from West African countries continue to dominate the cocaine retail trade in a number of European countries. The most frequently mentioned country of origin of cocaine trafficked to Africa is Colombia, followed by Peru. The most important transit country for cocaine seizures made in Africa

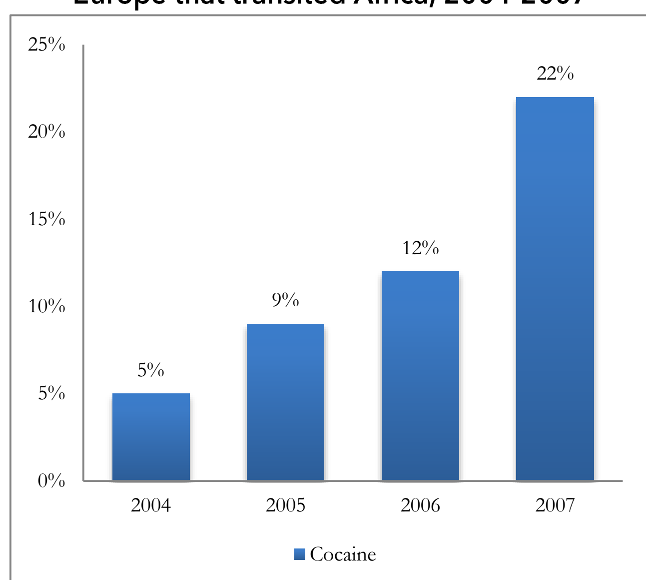
is Brazil, followed by Venezuela. The cocaine traffic route to Europe passing through West African countries is increasing in importance (Figure 11).

Being transit countries also increases the local cocaine consumption in various African countries. While 11 African countries reported rising levels of cocaine use in 2001-02, this number increased to 14 over the 2005-06 period; in parallel, the number of African countries reporting falling levels of cocaine use fell from seven to two. The increase was particularly noticeable in western and southern Africa, and along the Atlantic coast of North Africa. This is related to the increasing importance of Africa as a trans-shipment location for South American cocaine destined for Europe.

Overall, the use of cocaine in Africa remains limited in comparison with the markets in the Americas and Western and Central Europe. South Africa and Nigeria have both had a sizeable consumer market for cocaine for some time, and both of these countries also play a significant role as transit countries. By 2007, West Africa had acquired an important role as a trans-shipment hub for cocaine trafficked from South America to Europe. The routes from West Africa to Europe may have shifted away from flights to European airports and the northbound maritime routes along the African coast that prevailed in 2007 to land trafficking routes. The availability of cocaine in West Africa and along the land trafficking routes may also have fuelled an increase in cocaine use in West and North Africa; over the 2009-2011 period, Algeria, Burkina Faso, Côte d'Ivoire and Morocco each reported increases in cocaine use and the latest changes reported by Ghana and Togo (relative to 2008) also indicated rising cocaine use.

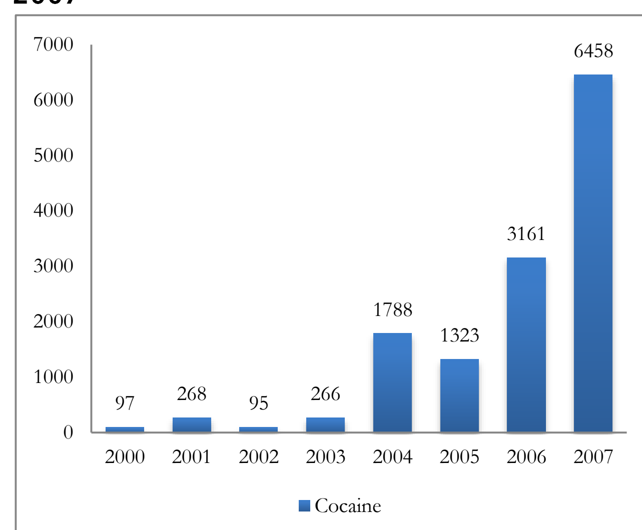
The prevalence rate in Kenya, while probably still lower than in Nigeria or South Africa, implies a sizeable consumer market of its own, and there are indications that East Africa may have acquired increased importance as a destination or as a transit region. The United Republic of Tanzania reported seizures of 65 kg in 2010, a level which, although small, significantly exceeds those recorded in previous years.

Proportion of individual cocaine seizures made in Europe that transited Africa, 2004-2007



Source: UNODC, Individual drug seizures database

Annual cocaine seizures in West Africa, 2000-2007



Source: UNODC *World Drug Report* 2007, and UNODC *Data for Africa* for 2006 and 2007 statistics

* preliminary data for 2006 based on available data as of November 2007

** from data collected by UNODC between January and November 2007

Figure 11. Changes in seizures due to new West Africa routes

From Africa to Asia

The provenance of cocaine in East Africa is not clear, but in addition to West Africa, the Gulf region, itself a region with a limited but possibly growing market, has also emerged as a possible source. The United Arab Emirates and Saudi Arabia have both registered increased seizures of cocaine in recent years. Uganda, Poland and Thailand identified the United Arab Emirates as a transit country for seized cocaine reaching their territory in 2011, and Yemen identified the Comoros as a destination. Qatar was also identified as a transit country by Japan, which has in turn increased its seizures of cocaine.

Among the markets with potential for growth of cocaine use, East and South-East Asia arguably present the greatest risk of expansion. Seizures in Hong Kong rose sharply to almost 600 kg in 2010 and more than 800 kg in 2011. According to authorities in Hong Kong, 92 recent seizures included single cases of 649 kg, 567 kg and 147 kg. In 2011, an increase of slightly more than 10% was recorded in the number of registered cocaine users, and there were 11 findings of small-scale processing plants to obtain crack cocaine (probably starting from cocaine salt). The Philippines has also seized relatively large quantities of cocaine in recent years, some of which was recovered from a shipment that was likely intended for Hong Kong. Thailand, a country with a large consumer market for stimulants (specifically amphetamine-type stimulants) but, so far, limited cocaine use, also identified the Philippines among the transit countries for cocaine reaching its territory, in addition to Pakistan, another country which recorded uncharacteristically high cocaine seizures in 2010. A recent survey on drug use in Pakistan confirms the emergence of limited cocaine use in Pakistan. Figure 12 shows the trends in cocaine interceptions all over the world, although the main eastward cocaine routes are not completely known yet (Figure 13).

Conclusions

The cocaine market is still expanding, following what seems to be a clear 'regional commercial strategy' by traffickers. The differentiation of coca derivatives, with the creation of crack as a less expensive substance, can also be seen as a way to maintain and increase market shares. Africa, Asia and Oceania are the next expansion areas, but the countries of Eastern Europe have not yet reached peak levels and an endemic phase is probable in the near future

It is quite clear that various drug policies applied in the five continents are quite ineffective and need to be analysed with a scientific and pragmatic approach, taking into account the economic results obtained by traffickers and criminal organisations more generally, with the serious unintended consequences – such as the impact on country competitiveness – that will be considered in our later chapter.

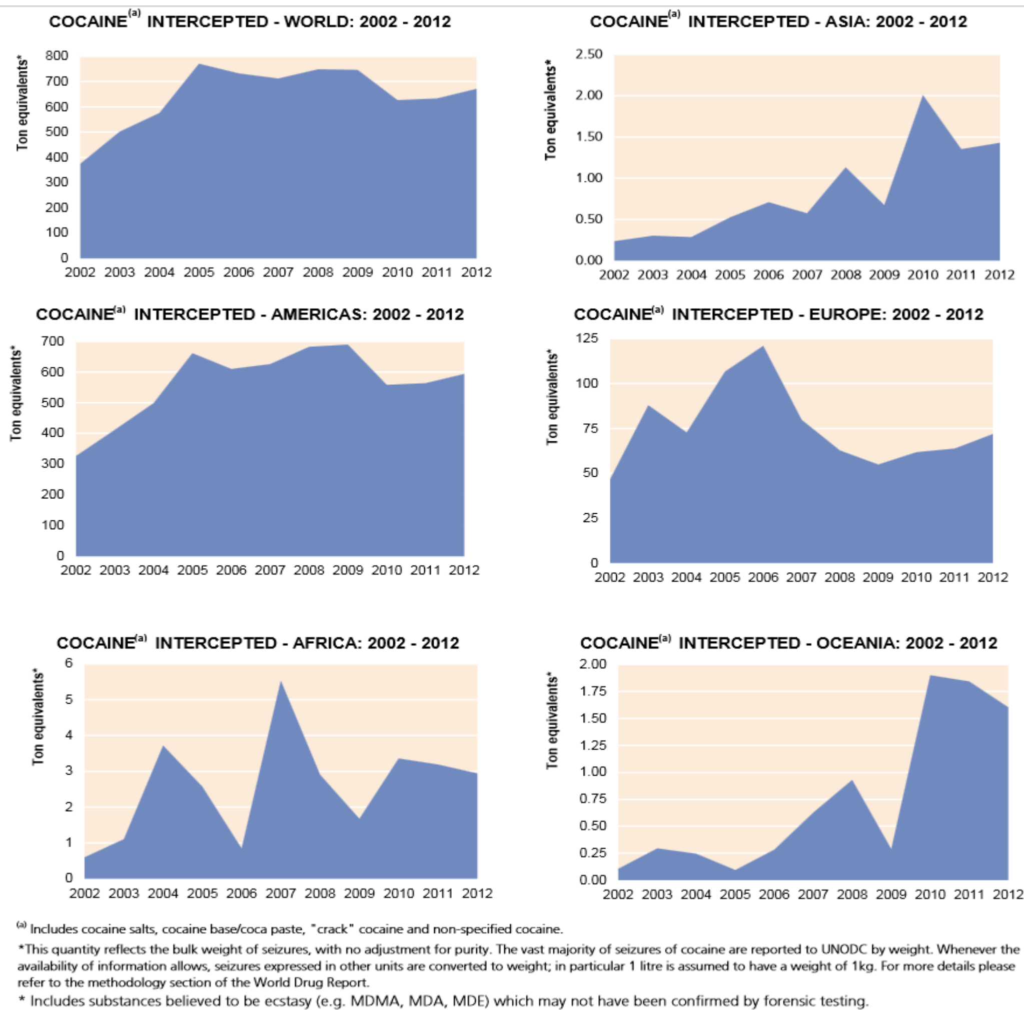


Figure 12. Cocaine interception in the world, showing the tendency for the market to expand eastwards.
Source: UNODC World Drug Report 2014 (http://www.unodc.org/wdr2014)

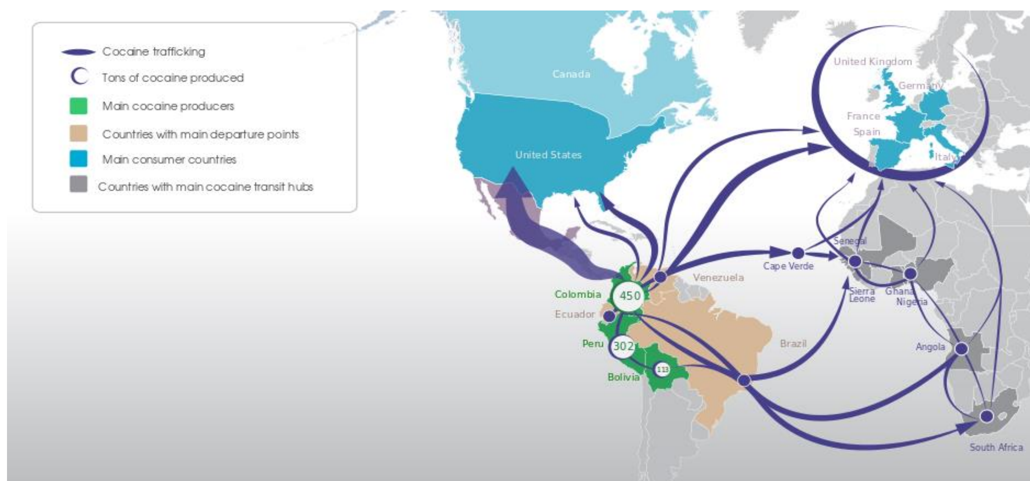


Figure 13. Overview of the main well-known cocaine routes
Source: UNODC. Presentation by Sandeep Chawla and Angela Me, "Challenges in estimating the production of pure cocaine HCl," at the EU Conference "Improving responses to organised crime and drug trafficking along the cocaine route," Rome, 28-30 May 2013.

References

Andrade, T., Santiago, L., Amari, E. and Fischer, B. 2011. 'What a pity!' – Exploring the use of 'pitilho' as harm reduction among crack users in Salvador, Brazil. *Drugs: Education, Prevention and Policy* 18(5): 382-386.

Beaver, Alyssa L. 2010. Getting a fix on cocaine sentencing policy: reforming the sentencing scheme of the Anti-Drug Abuse Act of 1986. *Fordham Law Review* 78(5): 2531-2575. Available at: http://fordhamlawreview.org/assets/pdfs/Vol_78/Beaver_April_2010.pdf

Behrens, D.A., Caulkins, J.P., Tragler, G., Haunschmied, J.L. and Feichtinger, G. 1999. A dynamic model of drug initiation: implications for treatment and drug control. *Mathematical Biosciences* 159(1): 1-20.

Behrens, D.A., Caulkins, J.P., Tragler, G. and Feichtinger, G. 2000. Optimal control of drug epidemics: prevent and treat – but not at the same time? *Management Science* 46(3): 333-347.

Caulkins, J.P., Behrens, D.A., Knoll, C., Tragler, G. and Zuba, D. 2004. Markov Chain Modeling of Initiation and Demand: the case of the US cocaine epidemic. *Health Care Management Science* 7(4): 319-329.

de Alarcón, R. 1969. The spread of heroin abuse in a community. *Bulletin on Narcotics* XXI(3): 17-22. Available at: https://www.unodc.org/unodc/en/data-and-analysis/bulletin/bulletin_1969-01-01_3_page004.html

Duailibi, L.B., Ribeiro, M. and Laranjeira, R. 2008. Profile of cocaine and crack users in Brazil. *Cadernos de Saúde Pública* 24(Suppl. 4): 545-557.

Dunn, J., Laranjeira, R.R., Da Silveira, D.X., Lúcia Formigoni, M.O.S. and Ferri, C.P. 1996. Crack cocaine: An increase in use among patients attending clinics in São Paulo: 1990-1993. *Substance Use & Misuse* 31(4): 519-527.

EMCDDA. 2012. *National report 2011: Italy.* Lisbon: European Monitoring Centre for Drugs and Drug Addiction. Available at: http://www.emcdda.europa.eu/html.cfm/index191672EN.html

EMCDDA. 2014. *European Drug Report 2014: trends and developments*. Lisbon: European Monitoring Centre for Drugs and Drug Addiction. Available at: http://www.emcdda.europa.eu/publications/edr/trends-developments/2014

Everingham, S. and Rydell, C.P. 1994. *Modeling the Demand for Cocaine*. Santa Monica, California: RAND.

Haim, D.Y., Lippmann, M.L., Goldberg, S.K. and Walkenstein, M.D. 1995. The pulmonary complications of crack cocaine: A comprehensive review. *Chest* 107(1): 233-240.

Hunt, L.G. and Chambers, C.D. 1976. *The Heroin Epidemics.* New York: Spectrum Publications.

Mackintosh, D.R. and Stewart, G.T. 1979. A mathematical model of a heroin epidemic: implications for control policies. *Journal of Epidemiology and Community Health* 33(4): 299-304.

Mammone, A., Fabi, F., Colasante, E., Siciliano, V., Molinaro, S., Kraus, L. and Rossi, C. 2014. New indicators to compare and evaluate harmful drug use among adolescents in 38 European countries. *Nordic Studies on Alcohol and Drugs* 31(4): 343-358.

Noto, A.R., Moura, Y.G., Nappo, S.G., Galduroz, J.C.F. and Carlini, E. A. 2002. Admissions for mental and behavioural disorders due to the use of psychoactive substances: A national epidemiological survey between 1988 and 1999. *Jornal Brasileiro de Psiquiatria* 51(2): 113-121.

Nutt, D.J., King, L.A., Saulsbury, W. and Blakemore, C. 2007. Development of a rational scale to assess the harm of drugs of potential misuse. *The Lancet* 369(9566): 1047-1053.

Nutt, D.J., King, L.A. and Phillips, L.D. (on behalf of the Independent Scientific Committee on Drugs). 2010. Drug harms in the UK: a multicriteria decision analysis. *The Lancet* 376(9752): 1558-1565.

Restrepo, C.S., Carrillo, J.A., Martínez, S., Ojeda, P., Rivera, A.L. and Hatta, A. 2007. Pulmonary complications from cocaine and cocaine-based substances: Imaging manifestations. *RadioGraphics* 27(4): 941-956.

Reuter, P. 2001. The need for dynamic models of drug markets. *Bulletin on Narcotics* Volume LIII, Nos. 1 and 2, *Dynamic Drug Policy: Understanding and Controlling Drug Epidemics.* Available at: https://www.unodc.org/unodc/en/data-and-analysis/bulletin/bulletin_2001-01-01_1_page003.html

Reuter, P., Ebener, P. and McCaffrey, D. 1994. Patterns in drug use. In Besharov, D. (ed.), *When Drug Addicts Have Children: Reorienting Society's Response*, pp. 3-31. Washington, DC: American Enterprise Press.

Reuter, Peter H., MacCoun, Robert J., Murphy, Patrick, Abrahamse, Allan and Simon, Barbara. 1990. *Money from Crime: A Study of the Economics of Drug Dealing in Washington, D.C.* Santa Monica, CA: RAND Corporation.

Santos Cruz, M., Andrade, T., Bastos, F.I., Leal, E., Bertoni, N., Melo Villar, L., Tiesmaki, M. and Fischer, B. 2013. Key drug use, health and socio-economic characteristics of young crack users in two Brazilian cities. *International Journal of Drug Policy* 24(5): 432-438.
UNODC. 2012. *World Drug Report 2012*. Vienna: United Nations Office on Drugs and Crime. Available at: http://www.unodc.org/unodc/en/data-and-analysis/WDR-2012.html
van Amsterdam, J., Opperhuizen, A., Koeter, M. and van den Brink, W. 2010. Ranking the harm of alcohol, tobacco and illicit drugs for the individual and the population. *European Addiction Research* 16: 202-207.
van Amsterdam, J., Pennings, E., Brunt, T. and van den Brink, W. 2013. Physical harm due to chronic substance use. *Regulatory Toxicology and Pharmacology* 66(1): 83-87.

Further reading

Canadian Centre on Substance Abuse. Canadian Drug Summary: Cocaine. http://www.ccsa.ca/Resource%20Library/CCSA-Cocaine-Drug-Summary-2014-en.pdf
DrugWarFacts.org. Cocaine & Crack. http://www.drugwarfacts.org/cms/Cocaine#sthash.dzhqFXcX.dpbs
European Monitoring Centre for Drugs and Drug Addiction (EMCDDA). Annual Reports 2004-2014. http://www.emcdda.europa.eu/publications
EMCDDA. 2007. Cocaine and crack cocaine: a growing public health issue. http://www.emcdda.europa.eu/html.cfm/index44746EN.html
EMCDDA and Europol. 2010. Cocaine: a European Union perspective in the global context. http://www.emcdda.europa.eu/publications/joint-publications/cocaine
EMCDDA. 2011. Cocaine and crack cocaine. Annual report 2011: the state of the drugs problem in Europe. http://www.emcdda.europa.eu/online/annual-report/2011/cocaine/1
Health Canada. 2011. Canadian Alcohol and Drug Use Monitoring Survey: Summary of results for 2011. http://www.hc-sc.gc.ca/hc-ps/drugs-drogues/stat/_2011/summary-sommaire-eng.php
Inter-American Drug Abuse Control Commission (CICAD) and Inter-American Observatory on Drugs (OID). 2011. Report on Drug Use in the Americas, 2011. http://www.cicad.oas.org/oid/pubs/druguse_in_americas_2011_en.pdf
National Institute on Drug Abuse. Cocaine. http://www.drugabuse.gov/drugs-abuse/cocaine
Office of National Drug Control Policy. 2014. What America's Users Spend on Illegal Drugs: 2000-2010. http://www.whitehouse.gov/sites/default/files/ondcp/policy-and-research/wausid_results_report.pdf
UNODC. World Drug Reports 2004-2014. http://www.unodc.org/wdr2014/en/previous-reports.html
UNODC. 2014. Colombia: Coca cultivation survey 2013. http://www.unodc.org/documents/crop-monitoring/Colombia/Colombia_coca_cultivation_survey_2013.pdf
UNODC. Data for Africa. https://www.unodc.org/unodc/en/data-and-analysis/Data-for-Africa.html

Health Consequences of Cocaine Use

Laura Brandt & Gabriele Fischer
Centre for Public Health & Department for Psychiatry and Psychotherapy
Medical University Vienna

Abstract

Cocaine use prevalence varies considerably between countries worldwide due to vastly different drug markets. Prevalence rates do not necessarily indicate treatment demand for problematic cocaine use or dependence. The heterogeneity on country level in addition to varying risk factors on an individual level – including social and environmental factors, psychiatric co-morbidities, intensity and frequency of cocaine consumption – affect potential health consequences. Route of administration also needs to be considered when evaluating the risk related to cocaine use in a population. Many recreational cocaine users will eventually stop without any intervention and will not experience problems related to cocaine consumption. However, a small but significant minority will develop relevant health problems with all related features of addiction including social and forensic problems. This chapter provides an overview of somatic and psychiatric health consequences related to recreational and long-term use of cocaine and crack-cocaine. Direct somatic health consequences due to the vasoconstrictive characteristics of cocaine are cardiovascular problems including stroke and myocardial infarction. Characteristics of cocaine that are directly toxic to cells lead to necrosis of the skin, soft tissue, and cartilage, primarily related to inhalation of cocaine. The most frequent psychiatric consequences are psychotic disorders, including delirium and hallucinations, as well as the development of cocaine use disorders. Cessation of cocaine use typically leads to mood disturbances with depressed features, low drive and increased appetite. Special high-risk groups such as cocaine-abusing pregnant women show heterogeneous results on the toxicological foetal effects. Finally, indirect consequences of cocaine consumption are related to high-risk behaviours such as infectious diseases through unprotected sex or sharing of injection equipment as well as violence and car accidents.

Keywords: Cocaine use disorder, somatic health consequences, cardiovascular, neurological, pulmonary, mental health, infectious disease transmission.

Cocaine is the second most commonly used illicit drug in the world, following cannabis, with significant differences between countries due to vastly different drug markets (EMCDDA 2007, 2014a; Haasen et al. 2005). Table 1 gives an overview of the annual prevalence of cocaine use in different regions worldwide. It should be noted that prevalence data presented here are derived from different studies with varying methodologies; thus, figures are not readily comparable between regions and have to be considered with caution.

Importantly, cocaine use prevalence in a country does not necessarily indicate treatment demand for problematic cocaine use or dependence. This is evident by comparing the annual cocaine use prevalence (Table 1) with the percentage of patients in drug treatment with cocaine as their primary drug of abuse (Table 2), highlighting the many co-varying factors on country level (additional to varying risk factors on an individual level) that need to be considered when evaluating the risk related to cocaine use in a population. These include the availability and quality of prevalence data; availability, price and purity of cocaine; economic situation of the country; availability of treatment options and the organisation of the treatment system.

While many cocaine users will not experience problems related to cocaine consumption, a small but significant minority will develop health-related problems such as cardiovascular, neurologic and pulmonary problems, mental health issues and infectious diseases, as well as cocaine dependence with all related features of addiction. These adverse health consequences are linked to the effects of the drug itself as well as the route of admission (smoking, inhalation, and/or injection) (EMCDDA 2014b). Whereas cocaine is frequently snorted or injected, the main route of admission for alkaloidal cocaine (ie, 'freebase' or crack-cocaine) is smoking.

All cocaine-related health consequences are highly dependent on the intensity and frequency of consumption. Furthermore, it needs to be considered that a significant percentage of cocaine users additionally uses one or more licit or illicit drug (EMCDDA 2007). Thus, acute and long-term health consequences are most likely even higher among poly-drug users; however, there is little evidence on the quantity of these potential interactions (Degenhardt and Hall 2012). Finally, it is difficult to determine whether associations between drug use and health consequences are causal, and to quantify the magnitude of the effect due to the many confounding variables impacting a person's health such as poverty, unemployment, homelessness/unstable housing situations, lower socio-economic status and a chaotic lifestyle, as well as legal problems and incarceration (Degendardt and Hall 2012, Grund et al. 2010).

Direct somatic health consequences

The likelihood of toxic effects of cocaine use increases with increasing effective dose (ie, greater potency or amount of substance, or more effective route of admission). The most common adverse health consequences directly related to both acute and chronic cocaine use are cardiovascular and cerebrovascular disorders as well as neurological impairments (Egred and Davis 2005). Pulmonary problems are mainly related to smoking cocaine, and characteristics of cocaine that are directly toxic to cells lead to necrosis of the skin, soft tissue, and cartilage, primarily due to inhalation of the substance (Restrepo et al. 2007, Glauser and Queen 2007).

Cardiovascular effects

Acute cardiac side-effects of cocaine use include coronary arterial vasoconstriction, platelet aggregation, increased myocardial oxygen demand (from hypertension, tachycardia and hypertrophy) and direct myocardial damage (Hollander and Henry 2006, Lippi et al. 2010). The typical high-risk patient presenting in the emergency department with cocaine-related cardiovascular problems is male, aged 18-45, shows concomitant use of alcohol and tobacco, and is admitted for trauma or accident during weekends or holidays (Lippi et al. 2010, EMCDDA 2014c, Mena et al. 2013).

Chronic cocaine abuse is related to an increased risk of coronary artery disease and cardio-myopathy (EMCDDA 2014c). Coronary spasm, decrease in blood flow and activation of platelets may result in the development of coronary thrombosis (Zhou et al. 2004, McKee et al. 2007) and myocardial infarction (Rezkalla and Kloner 2007). Furthermore, cocaine use has been identified as a potential cause of aortic dissection (Hollander and Henry 2006). In general, the health consequences of long-term cocaine use are likely to be underestimated due to the frequently unspecific and chronic nature of pathologies and the difficulty of establishing a causal link with the abused drug (EMCDDA 2010).

There is a broad evidence base investigating the association between cocaine use and myocardial ischemia and infarction (Lippi et al. 2010, Afonso et al. 2007, Mohamed et al. 2008, Satran et al. 2005, Lucena et al. 2010, Nawrot et al. 2011). Randomised controlled trials and prospective studies indicate that cocaine users with normal / nondiagnostic electrocardiogram, cardiovascular MRI and/or CT angiography are at low risk of cardiac events (Hendel et al. 2012, Paraschin et al. 2012).

Table 1. Annual prevalence of cocaine use as a percentage of the population aged 15-64

Region	**Europe**		**Americas**		**Oceania**	**Africa**				**Asia**		
Sub-region	*Eastern Europe*	*Western & Central Europe*	*Northern America*	*South America*	*Australia*	*Eastern Africa*	*Northern Africa*	*South Africa*	*Western & Central Africa*	*Eastern Asia*	*Near and Middle East/South-West Asia*	*South Asia*
Average	3.1	4.75	1.4	0.9	2.1	0.3[1]	0.03	1.02	0.45	0.8	0.2	0.04[2]
Lowest estimate	0.3 (Romania)	1.7 (Greece)	0.5 (Mexico)	0.2 (Ecuador)	-	-	0.01 (Algeria)	0.29	0.2 (Cabo Verde)	0.01 (Indonesia)	0.0 (Afghanistan)	-
Highest estimate	9.2 (Czech Republic)	9.6 (Spain)	2.3 (USA)	2.1 (Uruguay)	-	-	0.05 (Morocco)	1.1	0.7 (Nigeria)	0.25 (China, Hong Kong SAR)	1.06 (Israel)	-

[1] Only data from Kenya available for this region; [2] Only data from the Maldives available for this region.

Table 2. Cocaine as primary drug of abuse among persons treated for drug problems in 2012 or last year available (%)

Region	**Europe**		**Americas**		**Oceania**	**Africa**				**Asia**		
Sub-region	*Eastern Europe*	*Western & Central Europe*	*Northern America*	*South America*	*Australia*	*Eastern Africa*	*Northern Africa*	*Southern Africa*	*Western & Central Africa*	*Eastern Asia*	*Near and Middle East/South-West Asia*	*South Asia*
Average	1.6	10.0	21.0	60.3	0.6	2.5	0.1	7.0	4.3	0.9	2.4	1.0
Lowest estimate	0.2 (Czech Republic)	0.1 (Finland)	12.8 (USA)	32.1 (Colombia)	-	7.7 (Eritrea)	0.2[1]	0.9 (Swaziland)	0.8 (Ghana)	0.0 (Taiwan & Thailand)	0.2 (Iran)	0.6[2]
Highest estimate	4.9 (Slovenia)	40.5 (Spain)	28.9 (Canada)	91.2 (Uruguay)	-	9.7 (Kenya)	-	24.4 (Namibia)	20.6 (Burkina Faso)	5.6 (Indonesia)	20.4 (Lebanon)	-

[1] Only data from Algeria available for this region; [2] Only data from India available for this region.

Source: https://data.unodc.org

However, other prospective evaluations of the prevalence of myocardial damage in patients without a history of cardiac symptoms, using cardiovascular magnetic resonance (CMR), showed a high prevalence of cardiac damage (Aquaro et al. 2011), with marked elevations in arterial pressure and increased arrhythmic activity related to cocaine use, which are likely responsible for the increased risk of myocardial infarction (Secemsky et al. 2011).

An important aspect to consider is that cocaine is often 'cut' with other agents to potentiate its euphoric effects. One of the most prominent of these agents is levamisole, which has pro-thrombotic effects and increases the risk of thrombotic vasculopathy in cocaine users (Dy and Wiemik 2012). Importantly, cocaine use is just one potential cardiac risk factor, considering that the majority of cocaine users consume additional licit and illicit substances, with cigarettes and alcohol significantly negatively impacting cardiac outcome (EMCDDA 2007, Afonso et al. 2007, Lucena et al. 2010, Kertesz et al. 2007).

Neurological effects

The primary neuropathological effects of cocaine use are related to its vasoconstrictive effects, namely stroke, haemorrhages and blood clots (Grund et al. 2010). Information about neurological effects of cocaine use is scarce and based mainly on case reports and small case series. The etiology of cocaine-related cerebrovascular events remains unclear; however, vasospasm, cerebral vasculitis, impaired haemostasis and platelet function, cardioembolism and decreased cerebral blood flow have been proposed as possible mechanisms (Treadwell and Robinson 2007, Büttner 2012). Chronic cocaine use may be related to deficits in brain perfusion and associated cognitive deficits, which may or may not resolve after a period of abstinence (Nnadi et al. 2005).

Pulmonary effects

Cocaine use has been associated with a variety of pulmonary complications: barotrauma, haemoptysis and pulmonary haemorrhage, primarily associated with smoking of crack-cocaine; airway injury and asthma related to smoking as well as nasal inhalation of cocaine; pulmonary oedema, emphysema, infection and aspiration pneumonia from smoking as well as intravenous abuse of cocaine (Restrepo et al. 2007). The risk of adverse effects associated with smoking cocaine is increased by other combustion products such as talc, silica and lactose (Restrepo et al. 2007, Drent et al. 2012). Long-term cocaine use can lead to pulmonary hypertension (Glauser and Queen 2007, Chin et al. 2006). An acute pulmonary syndrome specifically related to smoking crack is the 'crack lung', clinically presenting with fever, shortness of breath, pleuristic chest pain, haemoptysis, melanoptysis, hypoxemia and respiratory failure (Mégarbane and Chevillard 2013). Importantly, in investigating pulmonary effects of cocaine use, the high tobacco smoking prevalence in this population always has to be considered a major confounder of results (Leece et al. 2013).

Other direct health effects

Based on case reports and small case series, an association of intranasal cocaine use with septal necrosis and perforation has been established (Glauser and Queen 2007). One of the most common adverse effects of cocaine snorting is cocaine-induced midline destructive lesion (CIMDL) due to vasoconstriction at the nasal lining mucusoa leading to ischemia of the tissue (Dinis-Oliveira et al. 2012).

In addition, a variety of renal complications related to cocaine use have been reported (Blowey 2005, Zimmerman 2012). Other direct health consequences of cocaine abuse include muscle injury and rhabdomolysis as well as ischemic injury to the gastrointestinal tract including bowel ischemia, infarction and perforation. The cutting agent levamisole is associated with an increased risk of agranulocytosis as well as retiform purpura and skin necrosis (Zimmerman 2012).

Overdose

Cocaine overdose is defined less clearly compared to other drugs and may include excited delirium potentially resulting in cardiac arrest, and

physical symptoms such as nausea and vomiting, chest pain, increased body temperature, increased heart rate, irregular breathing, palpitations, intense sweating and seizures (Kaye and Darke 2004). A significant risk factor for cocaine-related overdose death is use of other drugs, specifically opioids, with cocaine having an exacerbating effect on respiratory depression caused by opioids, and alcohol (Shah et al. 2008).

Cocaine toxicity or overdose does not seem to be dose specific or limited to a specific route of admission, even though injecting the drug likely poses the greatest risk of overdose (Bertol et al. 2008). In addition, attenuation or loss of tolerance, for example during incarceration, increases the risk of fatal overdose after administration of a dose previously tolerated (Farrell and Marsden 2008).

Incidence estimates for cocaine-related fatal overdose are imprecise (Ribeiro et al. 2006, Degenhardt et al. 2005), mainly due to the fact that for determining cause of death, the presence of cocaine in fluids or tissue is not sufficient to prove that death was due to cocaine consumption (Carvalho et al. 2013).

Effects of cocaine use during pregnancy

Prevalence estimates of cocaine use during pregnancy range from 3.1% in Spain, as an example for Europe, over 0.4% for Western Australia to 0.3% for the US and are derived from isolated studies using various methodologies (Pichini et al. 2005, Havens et al. 2009, Werler et al. 2003).

The actual extent of harm remains largely unknown. Studies on this topic are either retrospective, have small numbers of subjects or, most importantly, do not adequately control for influences of other factors such as socio-demographic status, lack of prenatal care, psychiatric co-morbidities or concomitant use of other substances (Glauser and Queen 2007, Schiller and Allen 2004, Brandt et al. 2014, Goel et al. 2011, Benningfield et al. 2010).

Pregnant women using cocaine constitute a small but important target group. Heavy cocaine use during pregnancy is primarily associated with preterm/abnormal labour leading to neonates with a low birth weight (Grund et al. 2010, Glauser and Queen 2007, Ogunyemi and Hernandez-Loera 2004). Studies on the effects of maternal cocaine use on foetal development demonstrate inconsistent results, with subtle effects being reported from well-controlled studies (Schiller and Allen 2004). Potential long-term consequences of prenatal cocaine exposure are cognitive deficiencies and behavioural problems (Lester and Lagasse 2010, Fisher et al. 2011, Lester et al. 2012, Richardson et al. 2013). Importantly, cocaine use during pregnancy is frequently associated with intrauterine poly-substance exposure and a related violent environment affecting the physical, mental and emotional development of children.

Mental health consequences

Following the hypothesis that the faster a drug reaches the brain and starts to act, the greater its reinforcing effects, cocaine causes a rapid psychological dependence (Nelson et al. 2006). It is estimated that around 5% of cocaine users will develop dependence during the first year of use, and a fifth of those will become long-term cocaine-dependent patients (Karila et al. 2012). Specific social settings and subpopulations such as nightlife participants, sex workers, homeless people and marginalised young adults show significantly elevated rates of cocaine use ranging from 10-60% (Grund et al. 2010). Especially in nightlife settings cocaine is frequently used in addition to alcohol, and increased doses of both substances are taken when used in combination (Gossop et al. 2006, van der Poel et al. 2009).

Socio-demographic status, primarily employment and social integration, as well as psychiatric co-morbidities, certain personality characteristics (ie, psychoticism and neuroticism) and genetic variations are important determinants of whether cocaine is used recreationally – ie, occasional use of intranasal cocaine in rather well-defined settings and time-frames – or problematically, including smoking crack or injecting cocaine frequently in chaotic settings and often in

combination with other licit or illicit drugs (Grund et al. 2010, Gossop et al. 2006, Prinzleve et al. 2004, Falck et al. 2008, Zuo et al. 2008, Prisciandaro et al. 2011).

It is also vital to consider sex differences in the response to cocaine and in the development of cocaine dependence (Becker 2009, Carroll and Anker 2010). Women transition faster from first cocaine use to requiring treatment, a phenomenon known as the telescoping effect, report shorter cocaine-free periods, and experience greater cocaine craving as a response to physiological and psychological stressors (Back et al. 2005, Kerstetter et al. 2012).

Acute cocaine use produces euphoria, increased energy and libido, fatigue and appetite suppression, and increased self-confidence and alertness (EMCDDA 2013, Ciccarone 2011). Acute cocaine-related psychiatric symptoms include agitation, insomnia, anxiety, paranoia, panic attacks, aggression, hallucinations, suicidal thoughts and psychosis (EMCDDA 2014c, Ciccarone 2011). The prevalence of psychotic symptoms, primarily hallucinatory symptoms and delusions, is substantial in cocaine-dependent individuals, affecting approximately two-thirds of subjects (Vorspan et al. 2012, Roncero et al. 2013, Mahoney et al. 2008, Cubells et al. 2005); however, they typically resolve with abstinence (Cubells et al. 2005).

The prevalence rate of psychiatric disorders among cocaine-dependent subjects is high, with the most frequent co-morbidities being mood disorders, post-traumatic stress disorder (PTSD), attention deficit/hyperactivity disorder (ADHD) and other dependencies (Grund et al. 2010, Falck et al. 2004, Conway et al. 2006).

The relationship between depression and drug use is complex: drug use may be a form of self-medication for depression; depression may develop as a result of drug abuse; both conditions may occur as the result of common factors (Daniulaityte et al. 2010, Wisniewski et al. 2006). Both daily and non-daily crack use as well as daily cocaine use are predictors of more severe depressive symptoms; however, non-drug factors such as unstable housing situation, gender, age and health status have to be considered in addressing depressive symptoms in stimulant users (Daniulaityte et al. 2010, Nyamathi et al. 2012, Zule et al. 2008). In addition, bipolar disorder and substance use disorder is a frequent co-morbidity (Post and Kalivas 2013).

Patients with a fully remitted stimulant use disorder show significantly elevated levels of anhedonia and amotivation (Leventhal et al. 2008). Furthermore, cocaine use suppresses appetite, a view supported by the observation that cessation of regular cocaine use can cause rapid problematic weight gain (Cowan and Devine 2008). This distressing phenomenon can constitute a barrier for quit attempts and might lead to relapse after successful cessation, especially in women (Allen et al. 2014). Besides the appetite-suppressing mechanism of cocaine, it may also lead to perturbations in fat regulation (Ersche et al. 2013). Regarding eating disorders, cocaine use may be an effort to avoid the consequences of overeating (Root et al. 2010).

Cocaine use is also related to partner as well as non-partner aggression (Murray et al. 2008). The increased prevalence of violent behaviour observed among crack users seems to be mediated by factors that make some individuals more vulnerable to crack use, such as socio-demographic characteristics, psychiatric variables and non-cocaine substance use disorders (Murray et al. 2008, Vaughn et al. 2010).

Indirect health consequences

Indirect health consequences of cocaine use are defined as any health problem not directly caused by the pharmacological effects of the drug.

The transmission of blood-borne viruses is primarily associated with high-frequency and/or long-term use of cocaine (Oliveira-Filho et al. 2013, Santibanez et al. 2005). Injecting drug users (IDUs) account for most hepatitis C (HCV) infections, with the highest infection risk in the first three years of injecting use (Castro-Sánchez et al.

2012, Ré et al. 2008). HCV prevalence estimates among non-injecting users who sniff or smoke stimulants range between 2.3% and 35.3% (Scheinmann et al. 2007), and between 2.3% and 81% among crack smokers (Grund et al. 2010, Fischer et al. 2008).

Injecting drug use and smoking cocaine have both been identified as high-risk factors for HIV transmission (McCoy et al. 2004, DeBeck et al. 2009). The prevalence of HIV varies greatly across different populations of IDUs with estimates from 12% to over 40% (Mathers et al. 2008). HIV prevalence estimates among cocaine smokers range between 7.5% and 23.0%, and are strongly associated with risky sexual behaviour (Grund et al. 2010). In addition, numerous studies report an acceleration of HIV disease due to cocaine use (Nair et al. 2005, Duncan et al. 2007, Reynolds et al. 2006, Baum et al. 2009, Buch et al. 2011, Silverstein et al. 2012, Reynolds et al. 2009, Fiala et al. 2005, Dhillon et al. 2007, Cook et al. 2008).

Cocaine use, specifically high frequency, binge and long-term crack-cocaine use, is positively associated with the number of sexual partners, inconsistent condom use, and exchanging sex for money or drugs, leading to an increased risk of sexually transmitted infection (STI) including HIV for both men and women (Maranda et al. 2004, Timpson et al. 2010, Schönnesson et al. 2008); however, women who use crack cocaine seem to be at particularly high risk for sexual risk taking (Gollub et al. 2010, Harzke et al. 2009, Nunes et al. 2007, Miller et al. 2007, Soares de Azevedo et al. 2007, Brewer et al. 2007, Buchanan et al. 2006). Furthermore, there is a well-documented association of cocaine use before or during intercourse to risky sexual behaviour, especially unprotected anal sex and HIV transmission in men who have sex with men (Boone et al. 2013, Mimiaga et al. 2010, Ober et al. 2009). Finally, intimate partner violence occurs frequently among crack users and may be associated with reduced capacity to practise safe sex (Kalokhe et al. 2012).

Even though cocaine use is clearly related to patterns of risk behaviour, experimental studies suggest that cocaine does not negatively influence the fitness to drive; higher levels of cocaine in combination with sleep deprivation, however, may have detrimental effects on self-perception, critical judgement and risk-taking (EMCDDA 2012). Investigating the real-world situation, a roadside survey conducted in 13 European countries analysed blood or oral fluids from 50,000 drivers and found a prevalence of 0.42% for cocaine (Ibid.). Looking into drivers seriously injured in an accident, however, cocaine was the second most common illicit drug (following THC), with a prevalence of up to 1.3%, suggesting a medium increased relative risk of being seriously injured or killed in an accident while positive for cocaine. The biggest problem with illicit drugs, however, is their consumption in combination with alcohol, which was found in 2.3-13.2% of drivers seriously injured and in 4.3-7.9% of those killed in an accident (Ibid.).

Conclusion

All cocaine-related health consequences are highly dependent on the intensity and frequency of use as well as the route of admission. Many recreational users will not experience health problems related to cocaine consumption and eventually cease use without assistance (EMCDDA 2014b). A small but important target group, especially those with a history of long-term cocaine use, will develop serious health problems (EMCDDA 2010). Psychiatric co-morbidities as well as various social factors such as poverty, unemployment, unstable housing, socio-economic status, chaotic lifestyle and legal problems are negative predictors for developing cocaine-related somatic and/or mental health problems (Degenhardt and Hall, 2012, Grund et al. 2010). Furthermore, it needs to be considered that cocaine is often not the primary/only drug of abuse and one or more licit or illicit substances are used in addition (EMCDDA 2007).

Myocardial infarction in younger patients should alert physicians and drug screenings are important – always in accordance with ethics standards (informed consent). In cocaine-abusing patients exploration also has to include an

assessment of intimate partner violence as well as a screening for infectious diseases. This highlights the importance for clinical practitioners to be aware of the various risks (mental and somatic) associated with cocaine use and base every clinical decision on a sound and comprehensive diagnosis. Of course, the cultural background of a country is one of the key indicators for prevalence of cocaine consumption and related consequences.

References

Afonso, L., Mohammad, T. and Thatai, D. 2007. Crack Whips the Heart: A Review of the Cardiovascular Toxicity of Cocaine. *The American Journal of Cardiology* 100(6): 1040-1043.

Allen, A.A., Oncken, C. and Hatsukami, D. 2014. Women and Smoking: The Effect of Gender on the Epidemiology, Health Effects, and Cessation of Smoking. *Current Addiction Reports* 1(1): 53-60.

Aquaro, G.D., Gabutti, A., Meini, M., Prontera, C., Pasanisi, E., Passino, C. et al. 2011. Silent myocardial damage in cocaine addicts. *Heart* doi:10.1136/hrt.2011.226977.

Back, S.E., Brady, K.T., Jackson, J.L., Salstrom, S. and Zinzow, H. 2005. Gender differences in stress reactivity among cocaine-dependent individuals. *Psychopharmacology* 180(1): 169-176.

Baum, M.K., Rafie, C., Lai, S., Sales, S., Page, B. and Campa, A. 2009. Crack-cocaine use accelerates HIV disease progression in a cohort of HIV-positive drug users. *Journal of Acquired Immune Deficiency Syndromes* 50(1): 93-99.

Becker, Jill B. 2009. Sexual differentiation of motivation: a novel mechanism? *Hormones and Behavior* 55(5): 646-654.

Benningfield, M.M., Arria, A.M., Kaltenbach, K., Heil, S.H., Stine, S.M., Coyle, M.G. et al. 2010. Co-occurring Psychiatric Symptoms Are Associated with Increased Psychological, Social, and Medical Impairment in Opioid Dependent Pregnant Women. *The American Journal on Addictions* 19(5): 416-421.

Bertol, E., Trignano, C., Di Milia, M.G., Di Padua, M. and Mari, F. 2008. Cocaine-related deaths: an enigma still under investigation. *Forensic Science International* 176 (2-3): 121-123.

Blowey, D.L. 2005. Nephrotoxicity of over-the-counter analgesics, natural medicines, and illicit drugs. *Adolescent Medical Clinics* 16(1): 31-43.

Boone, M.R., Cook, S.H. and Wilson, P. 2013. Substance use and sexual risk behavior in HIV-positive men who have sex with men: an episode-level analysis. *AIDS and Behavior* 17(5): 1883-1887.

Brandt, L., Leifheit, A., Finnegan, L. and Fischer, G. 2014. Management of Substance Abuse in Pregnancy: Maternal and Neonatal Aspects. In Galbally, M., Snellen, M. and Lewis, A. (eds.), *Psychopharmacology and Pregnancy: Treatment Efficacy, Risks, and Guidelines*, pp. 169-195. Berlin and Heidelberg: Springer.

Brewer, T.H., Zhao, W., Metsch, L.R., Coltes, A. and Zenilman, J. 2007. High-risk behaviors in women who use crack: knowledge of HIV serostatus and risk behavior. *Annals of Epidemiology* 17(7): 533-539.

Buch, S., Yao, H., Guo, M., Mori, T., Su, T. and Wang, J. 2011. Cocaine and HIV-1 interplay: molecular mechanisms of action and addiction. *Journal of Neuroimmune Pharmacology* 6(4): 503-515.

Buchanan, D., Tooze, J.A., Shaw, S., Kinzly, M., Heimer, R. and Singer, M. 2006. Demographic, HIV risk behavior, and health status characteristics of "crack" cocaine injectors compared to other injection drug users in three New England cities. *Drug and Alcohol Dependence* 81(3): 221-229.

Büttner, A. 2012. Neuropathological alterations in cocaine abuse. *Current Medicinal Chemistry* 19(33): 5597-5600.

Carroll, M.E. and Anker, J.J. 2010. Sex differences and ovarian hormones in animal models of drug dependence. *Hormones and Behavior* 58(1): 44-56.

Carvalho, V.M., Fukushima, A.R., Fontes, L.R., Fuzinato, D.V., Florio, J.C. and Chasin, A.M. 2013. Cocaine postmortem distribution in three brain structures: A comparison with whole blood and vitreous humour. *Journal of Forensic and Legal Medicine* 20(3): 143-145.

Castro-Sánchez, A., Shkedy, Z., Hens, N., Aerts, M., Geskus, R., Prins, M. et al. 2012. Estimating the force of infection for HCV in injecting drug users using interval-censored data. *Epidemiology and Infection* 140(6): 1064-1074.

Chin, K.M., Channick, R.N. and Rubin, L.J. 2006. Is methamphetamine use associated with idiopathic pulmonary arterial hypertension? *CHEST Journal* 130(6): 1657-1663.

Ciccarone, Daniel. 2011. Stimulant abuse: pharmacology, cocaine, methamphetamine, treatment, attempts at pharmacotherapy. *Primary Care: Clinics in Office Practice* 38(1): 41-58.

Conway, K.P., Compton, W., Stinson, F.S. and Grant, B.F. 2006. Lifetime comorbidity of DSM-IV mood and anxiety disorders and specific drug use disorders: results from the National Epidemiologic Survey on Alcohol and Related Conditions. *The Journal of Clinical Psychiatry* 67(2): 247-257.

Cook, J.A., Burke-Miller, J.K., Cohen, M.H., Cook, R.L., Vlahov, D., Wilson, T.E. et al. 2008. Crack cocaine, disease progression, and mortality in a multi-center cohort of HIV-1 positive women. *AIDS* 22(11): 1355-1363.

Cowan, J. and Devine, C. 2008. Food, eating, and weight concerns of men in recovery from substance addiction. *Appetite* 50(1): 33-42.

Cubells, J.F., Feinn, R., Pearson, D., Burda, J., Tang, Y., Farrer, L.A. et al. 2005. Rating the severity and character of transient cocaine-induced delusions and hallucinations with a new instrument, the Scale for Assessment of Positive Symptoms for Cocaine-Induced Psychosis (SAPS-CIP). *Drug and Alcohol Dependence* 80(1): 23-33.

Daniulaityte, R., Falck, R., Wang, J., Carlson, R.G., Leukefeld, C.G. and Booth, B.M. 2010. Predictors of depressive symptomatology among rural stimulant users. *Journal of Psychoactive Drugs* 42(4): 435-445.

DeBeck, K., Kerr, T., Li, K., Fischer, B., Buxton, J., Montaner, J. et al. 2009. Smoking of crack cocaine as a risk factor for HIV infection among people who use injection drugs. *Canadian Medical Association Journal* 181(9): 585-589.

Degenhardt, L. and Hall, W. 2012. Extent of illicit drug use and dependence, and their contribution to the global burden of disease. *The Lancet* 379(9810): 55-70.

Degenhardt, L., Roxburgh, A. and Barker, B. 2005. Underlying causes of cocaine, amphetamine and opioid related deaths in Australia. *Journal of Clinical Forensic Medicine* 12(4): 187-195.

Dhillon, N.K., Williams, R., Peng, F., Tsai, Y., Dhillon, S., Nicolay, B. et al. 2007. Cocaine-mediated enhancement of virus replication in macrophages: implications for human immunodeficiency virus-associated dementia. *Journal of NeuroVirology* 13(6): 483-495.

Dinis-Oliveira, R.J., Carvalho, F., Duarte, J.A., Brandao Proenca, J., Santos, A. and Magalhães, T. 2012. Clinical and forensic signs related to cocaine abuse. *Current Drug Abuse Reviews* 5(1): 64-83.

Drent, M., Wijnen, P. and Bast, A. 2012. Interstitial lung damage due to cocaine abuse: pathogenesis, pharmacogenomics and therapy. *Current Medicinal Chemistry* 19(33): 5607-5611.

Duncan, R., Shapshak, P., Page, J.B., Chiappelli, F., McCoy, C.B. and Messiah, S.E. 2007. Crack cocaine: effect modifier of RNA viral load and CD4 count in HIV infected African American women. *Frontiers in Bioscience* 12: 1488-1495.

Dy, I.A. and Wiernik, P.H. 2012. Cocaine-levamisole thrombotic vasculopathy. *Seminars in Thrombosis and Hemostasis* 38(8): 780-782.

Egred, M. and Davis, G.K. 2005. Cocaine and the heart. *Postgraduate Medical Journal* 81(959): 568-571.

EMCDDA. 2007. *Cocaine and crack cocaine: a growing public health issue.* Lisbon: European Monitoring Centre for Drugs and Drug Addiction. Available at: http://www.emcdda.europa.eu/html.cfm/index44746EN.html [Accessed 28 August 2014]

EMCDDA. 2010. Health consequences of cocaine use. In *Annual Report 2010: the state of the drugs problem in Europe*. Lisbon: European Monitoring Centre for Drugs and Drug Addiction. Available at: http://www.emcdda.europa.eu/online/annual-report/2010/cocaine/4 [Accessed 28 August 2014]

EMCDDA. 2012. *Driving under the influence of drugs, alcohol and medicines in Europe – findings from the DRUID project.* Lisbon: European Monitoring Centre for Drugs and Drug Addiction. Available at: http://www.emcdda.europa.eu/publications/thematic-papers/druid [Accessed 28 August 2014]

EMCDDA. 2013. *Cocaine and crack drug profile*. European Monitoring Centre for Drugs and Drug Addiction website. Available at: http://www.emcdda.europa.eu/publications/drug-profiles/cocaine#pharmacology [Accessed 28 July 2014]

EMCDDA. 2014a. *European Drug Report 2014: Trends and Developments.* Lisbon: European Monitoring Centre for Drugs and Drug Addiction. Available at: http://www.emcdda.europa.eu/publications/edr/trends-developments/2014 [Accessed 28 August 2014]

EMCDDA. 2014b. *Treatment for cocaine dependence: reviewing current evidence*. Lisbon: European Monitoring Centre for Drugs and Drug Addiction. Available at: http://www.emcdda.europa.eu/topics/pods/treatment-for-cocaine-dependence [Accessed 28 August 2014]

EMCDDA. 2014c. *Emergency health consequences of cocaine use in Europe*. Lisbon: European Monitoring Centre for Drugs and Drug Addiction. Available at: http://www.emcdda.europa.eu/topics/pods/cocaine-related-emergencies [Accessed 28 August 2014]

Ersche, K.D., Stochl, J., Woodward, J.M. and Fletcher, P.C. 2013. The skinny on cocaine: insights into eating behavior and body weight in cocaine-dependent men. *Appetite* 71(1): 75-80.

Falck, R.S., Wang, J., Siegal, H.A. and Carlson, R.G. 2004. The prevalence of psychiatric disorder among a community sample of crack cocaine users: an exploratory study with practical implications. *The Journal of Nervous and Mental Disease* 192(7): 503-507.

Falck, R.S., Wang, J. and Carlson, R.G. 2008. Among long-term crack smokers, who avoids and who succumbs to cocaine addiction? *Drug and Alcohol Dependence* 98(1-2): 24-29.

Farrell, M. and Marsden, J. 2008. Acute risk of drug-related death among newly released prisoners in England and Wales. *Addiction* 103(2): 251-255.

Fiala, M., Eshleman, A.J., Cashman, J., Lin, J., Lossinsky, A.S., Suarez, V. et al. 2005. Cocaine increases human immunodeficiency virus type 1 neuroinvasion through remodeling brain microvascular endothelial cells. *Journal of NeuroVirology* 11(3): 281-291.

Fischer, B., Powis, J., Cruz, M.F., Rudzinski, K. and Rehm, J.L. 2008. Hepatitis C virus transmission among oral crack users: viral detection on crack paraphernalia. *European Journal of Gastroenterology & Hepatology* 20(1): 29-32.

Fisher, P.A., Lester, B.M., DeGarmo, D.S., Lagasse, L.L., Lin, H., Shankaran, S. et al. 2011. The combined effects of prenatal drug exposure and early adversity on neurobehavioral disinhibition in childhood and adolescence. *Development and Psychopathology* 23(3): 777-788.

Glauser, J. and Queen, J.R. 2007. An overview of non-cardiac cocaine toxicity. *The Journal of Emergency Medicine* 32(2): 181-186.

Goel, N., Beasley, D., Rajkumar, V. and Banerjee, S. 2011. Perinatal outcome of illicit substance use in pregnancy – comparative and contemporary socio-clinical profile in the UK. *European Journal of Pediatrics* 170(2): 199-205.

Gollub, E.L., Armstrong, K., Boney, T., Mercer, D., Chhatre, S., Fiore, D. et al. 2010. Correlates of trichomonas prevalence among street-recruited, drug-using women enrolled in a randomized trial. *Substance Use & Misuse* 45(13): 2203-2220.

Gossop, M., Manning, V. and Ridge, G. 2006. Concurrent use and order of use of cocaine and alcohol: behavioural differences between users of crack cocaine and cocaine powder. *Addiction* 101(9): 1292-1298.

Grund, J., Coffin, P., Jauffret-Roustide, M., Dijkstra, M., De Bruin, D. and Blanken, P. 2010. The fast and furious – cocaine, amphetamines and harm reduction. In EMCDDA, *Harm Reduction: Evidence, Impacts and*

Challenges, pp. 191-232. Lisbon: European Monitoring Centre for Drugs and Drug Addiction. Available at: http://www.emcdda.europa.eu/publications/monographs/harm-reduction

Haasen, C., Prinzleve, M., Gossop, M., Fischer, G., Casas, M. and the CocaineEU team. 2005. Relationship between cocaine use and mental health problems in a sample of European cocaine powder or crack users. *World Psychiatry* 4(3): 173-176.

Harzke, A.J., Williams, M.L. and Bowen, A.M. 2009. Binge use of crack cocaine and sexual risk behaviors among African-American, HIV-positive users. *AIDS and Behavior* 13(6): 1106-1118.

Havens, J.R., Simmons, L.A., Shannon, L.M. and Hansen, W.F. 2009. Factors associated with substance use during pregnancy: Results from a national sample. *Drug and Alcohol Dependence* 99(1-3): 89-95.

Hendel, R.C., Ruthazer, R., Chaparro, S., Martinez, C., Selker, H.P., Beshansky, J.R. et al. 2012. Cocaine-Using Patients With a Normal or Nondiagnostic Electrocardiogram: Single-Photon Emission Computed Tomography Myocardial Perfusion Imaging and Outcome. *Clinical Cardiology* 35(6): 354-358.

Hollander, J.E. and Henry, T.D. 2006. Evaluation and management of the patient who has cocaine-associated chest pain. *Cardiology Clinics* 24(1): 103-114.

Kalokhe, A.S., Paranjape, A., Bell, C.E., Cardenas, G.A., Kuper, T., Metsch, L.R. et al. 2012. Intimate partner violence among HIV-infected crack cocaine users. *AIDS Patient Care and STDs* 26(4): 234-240.

Karila, L., Petit, A., Lowenstein, W. and Reynaud, M. 2012. Diagnosis and consequences of cocaine addiction. *Current Medicinal Chemistry* 19(33): 5612-5618.

Kaye, S. and Darke, S. 2004. Non-fatal cocaine overdose among injecting and non-injecting cocaine users in Sydney, Australia. *Addiction* 99(10): 1315-1322.

Kerstetter, K.A., Ballis, M.A., Duffin-Lutgen, S., Carr, A.E., Behrens, A.M. and Kippin, T.E. 2012. Sex differences in selecting between food and cocaine reinforcement are mediated by estrogen. *Neuropsychopharmacology* 37(12): 2605-2614.

Kertesz, S.G., Pletcher, M.J., Safford, M., Halanych, J., Kirk, K., Schumacher, J. et al. 2007. Illicit drug use in young adults and subsequent decline in general health: the Coronary Artery Risk Development in Young Adults (CARDIA) Study. *Drug and Alcohol Dependence* 88(2-3): 224-233.

Leece, P., Rajaram, N., Woolhouse, S. and Millson, M. (2013). Acute and chronic respiratory symptoms among primary care patients who smoke crack cocaine. *Journal of Urban Health* 90(3): 542-551.

Lester, B.M. and Lagasse, L.L. 2010. Children of addicted women. *Journal of Addictive Diseases* 29(2): 259-276.

Lester, B.M., Lin, H., DeGarmo, D.S., Fisher, P.A., LaGasse, L.L., Levine, T.P. et al. 2012. Neurobehavioral disinhibition predicts initiation of substance use in children with prenatal cocaine exposure. *Drug and Alcohol Dependence* 126(1-2): 80-86.

Leventhal, A.M., Kahler, C.W., Ray, L.A., Stone, K., Young, D., Chelminski, I. et al. 2008. Anhedonia and Amotivation in Psychiatric Outpatients with Fully Remitted Stimulant Use Disorder. *The American Journal on Addictions* 17(3): 218-223.

Lippi, G., Plebani, M. and Cervellin, G. 201). Cocaine in acute myocardial infarction. *Advances in Clinical Chemistry* 51: 53-70.

Lucena, J., Blanco, M., Jurado, C., Rico, A., Salguero, M., Vazquez, R. et al. 2010. Cocaine-related sudden death: a prospective investigation in south-west Spain. *European Heart Journal* 31(3): 318-329.

Mahoney, J.J., Kalechstein, A.D., De La Garza, R. and Newton, T.F. 2008. Presence and Persistence of Psychotic Symptoms in Cocaine- versus Methamphetamine-Dependent Participants. *The American Journal on Addictions* 17(2): 83-98.

Maranda, M.J., Han, C. and Rainone, G.A. 2004. Crack cocaine and sex. *Journal of Psychoactive Drugs* 36(3): 315-322.

Mathers, B.M., Degenhardt, L., Phillips, B., Wiessing, L., Hickman, M., Strathdee, S.A. et al. 2008. Global epidemiology of injecting drug use and HIV among people who inject drugs: a systematic review. *The Lancet* 372(9651): 1733-1745.

McCoy, C.B., Lai, S., Metsch, L.R., Messiah, S.E. and Zhao, W. 2004. Injection drug use and crack cocaine smoking: independent and dual risk behaviors for HIV infection. *Annals of Epidemiology* 14(8): 535-542.

McKee, S.A., Applegate, R.J., Hoyle, J.R., Sacrinty, M.T., Kutcher, M.A. and Sane, D.C. 2007. Cocaine use is associated with an increased risk of stent thrombosis after percutaneous coronary intervention. *American Heart Journal* 154(1): 159-164.

Mégarbane, B. and Chevillard, L. 2013. The large spectrum of pulmonary complications following illicit drug use: features and mechanisms. *Chemico-Biological Interactions* 206(3): 444-451.

Mena, G., Giraudon, I., Álvarez, E., Corkery, J.M., Matias, J., Grasaasen, K. et al. 2013. Cocaine-related health emergencies in Europe: a review of sources of information, trends and implications for service development. *European Addiction Research* 19(2): 74-81.

Miller, M., Korves, C.T. and Fernandez, T. 2007. The social epidemiology of HIV transmission among African American women who use drugs and their social network members. *AIDS Care* 19(7): 858-865.

Mimiaga, M.J., Reisner, S.L., Fontaine, Y., Bland, S.E., Driscoll, M.A., Isenberg, D. et al. 2010. Walking the line: stimulant use during sex and HIV risk behavior among Black urban MSM. *Drug and Alcohol Dependence* 110(1-2): 30-37.

Mohamad, T., Kondur, A., Vaitkevicius, P., Bachour, K., Thatai, D. and Afonso, L. 2008. Cocaine-Induced Chest Pain and β-Blockade: An Inner City Experience. *American Journal of Therapeutics* 15(6): 531-535.

Murray, R.L., Chermack, S.T., Walton, M.A., Winters, J., Booth, B.M. and Blow, F.C. 2008. Psychological aggression, physical aggression, and injury in nonpartner relationships among men and women in treatment for substance-use disorders. *Journal of Studies on Alcohol and Drugs* 69(6): 896-905.

Nair, M.P.N., Mahajan, S.D., Schwartz, S.A., Reynolds, J., Whitney, R., Bernstein, Z. et al. 2005. Cocaine modulates dendritic cell-specific C type intercellular adhesion molecule-3-grabbing nonintegrin expression by dendritic cells in HIV-1 patients. *The Journal of Immunology* 174(11): 6617-6626.

Nawrot, T.S., Perez, L., Künzli, N., Munters, E. and Nemery, B. 2011. Public health importance of triggers of myocardial infarction: a comparative risk assessment. *The Lancet* 377(9767): 732-740.

Nunes, C.L.X., Andrade, T., Galvão-Castro, B., Bastos, F.I. and Reingold, A. 2007. Assessing risk behaviors and prevalence of sexually transmitted and blood-borne infections among female crack cocaine users in Salvador-Bahia, Brazil. *Brazilian Journal of Infectious Diseases* 11(6): 561-566.

Nyamathi, A., Branson, C., Idemundia, F., Reback, C., Shoptaw, S., Marfisee, M. et al. 2012. Correlates of depressed mood among young stimulant-using homeless gay and bisexual men. *Issues in Mental Health Nursing* 33(10): 641-649.

Nelson, R.A., Boyd, S.J., Ziegelstein, R.C., Herning, R., Cadet, J.L., Henningfield, J.E. et al. 2006. Effect of rate of administration on subjective and physiological effects of intravenous cocaine in humans. *Drug and Alcohol Dependence* 82(1): 19-24.

Nnadi, C.U., Mimiko, O.A., McCurtis, H.L. and Cadet, J.L. 2005. Neuropsychiatric effects of cocaine use disorders. *Journal of the National Medical Association* 97(11): 1504-1515.

Ober, A., Shoptaw, S., Wang, P., Gorbach, P. and Weiss, R.E. 2009. Factors associated with event-level stimulant use during sex in a sample of older, low-income men who have sex with men in Los Angeles. *Drug and Alcohol Dependence* 102(1-3): 123-129.

Ogunyemi, D. and Hernández-Loera, G.E. 2004. The impact of antenatal cocaine use on maternal characteristics and neonatal outcomes. *The Journal of Maternal-Fetal and Neonatal Medicine* 15(4): 253-259.

Oliveira-Filho, A.B., Sawada, L., Pinto, L.C., Locks, D., Bahia, S.L., Brasil-Costa, I. et al. 2013. HCV infection among cocaine users in the state of Pará, Brazilian Amazon. *Archives of Virology* 158(7): 1555-1560.

Paraschin, K., Guerra De Andrade, A. and Rodrigues Parga, J. 2012. Assessment of myocardial infarction by CT angiography and cardiovascular MRI in patients with cocaine-associated chest pain: a pilot study. *British Journal of Radiology* 85(1015): e274-e278.

Pichini, S., Puig, C., Zuccaro, P., Marchei, E., Pellegrini, M., Murillo, J. et al. 2005. Assessment of exposure to opiates and cocaine during pregnancy in a Mediterranean city: preliminary results of the "Meconium Project". *Forensic Science International* 153(1): 59-65.

Post, R.M. and Kalivas, P. 2013. Bipolar disorder and substance misuse: pathological and therapeutic implications of their comorbidity and cross-sensitisation. *The British Journal of Psychiatry* 202(3): 172-176.

Prinzleve, M., Haasen, C., Zurhold, H., Matali, J.L., Bruguera, E., Gerevich, J. et al. 2004. Cocaine use in Europe – a multi-centre study: patterns of use in different groups. *European Addiction Research* 10(4): 147-155.
Prisciandaro, J.J., McRae-Clark, A.L., Moran-Santa Maria, M.M., Hartwell, K.J. and Brady, K.T. 2011. Psychoticism and neuroticism predict cocaine dependence and future cocaine use via different mechanisms. *Drug and Alcohol Dependence* 116(1-3): 80-85.
Ré, V., Gallego, S., Farías, A., Barbás, G., Kremer, L., Díaz, M.P. et al. 2008. Hepatitis C and HIV coinfection in central region of Argentina: prevalence, genotype characterization and risk factors. *Enfermedades Infecciosas y Microbiología Clínica* 26(7): 423-425.
Restrepo, C.S., Carrillo, J.A., Martínez, S., Ojeda, P., Rivera, A.L. and Hatta, A. 2007. Pulmonary Complications from Cocaine and Cocaine-based Substances: Imaging Manifestations. *RadioGraphics* 27(4): 941-956.
Reynolds, J.L., Mahajan, S.D., Aalinkeel, R., Nair, B., Sykes, D.E., Agosto-Mujica, A. et al. 2009. Modulation of the proteome of peripheral blood mononuclear cells from HIV-1-infected patients by drugs of abuse. *Journal of Clinical Immunology* 29(5): 646-656.
Reynolds, J.L., Mahajan, S.D., Bindukumar, B., Sykes, D., Schwartz, S.A. and Nair, M.P.N. 2006. Proteomic analysis of the effects of cocaine on the enhancement of HIV-1 replication in normal human astrocytes (NHA). *Brain Research* 1123(1): 226-236.
Rezkalla, S.H. and Kloner, R.A. 2007. Cocaine-induced acute myocardial infarction. *Clinical Medicine & Research* 5(3): 172-176.
Ribeiro, M., Dunn, J., Sesso, R., Costa Dias, A. and Laranjeira, R. 2006. Causes of death among crack cocaine users. *Revista Brasileira de Psiquiatria* 28(3): 196-202.
Richardson, G.A., Larkby, C., Goldschmidt, L. and Day, N.L. 2013. Adolescent initiation of drug use: effects of prenatal cocaine exposure. *Journal of the American Academy of Child & Adolescent Psychiatry* 52(1): 37-46.
Roncero, C., Martínez-Luna, N., Daigre, C., Grau-López, L., Gonzalvo, B., Pérez-Pazos, J. et al. 2013. Psychotic symptoms of cocaine self-injectors in a harm reduction program. *Substance Abuse* 34(2): 118-121.
Root, T.L., Pinheiro, A.P., Thornton, L., Strober, M., Fernandez-Aranda, F., Brandt, H. et al. 2010. Substance use disorders in women with anorexia nervosa. *International Journal of Eating Disorders* 43(1): 14-21.
Santibanez, S.S., Garfein, R.S., Swartzendruber, A., Kerndt, P.R., Morse, E., Ompad, D. et al. 2005. Prevalence and correlates of crack-cocaine injection among young injection drug users in the United States, 1997–1999. *Drug and Alcohol Dependence* 77(3): 227-233.
Satran, A., Bart, B.A., Henry, C.R., Murad, M.B., Talukdar, S., Satran, D. et al. 2005. Increased prevalence of coronary artery aneurysms among cocaine users. *Circulation* 111(9): 2424-2429.
Scheinmann, R., Hagan, H., Lelutiu-Weinberger, C., Stern, R., Des Jarlais, D.C., Flom, P.L. et al. 2007. Non-injection drug use and Hepatitis C Virus: a systematic review. *Drug and Alcohol Dependence* 89(1): 1-12.
Schiller, C. and Allen, P.J. 2004. Follow-up of infants prenatally exposed to cocaine. *Pediatric Nursing* 31(5): 427-436.
Schönnesson, L.N., Atkinson, J., Williams, M.L., Bowen, A., Ross, M.W. and Timpson, S.C. 2008. A cluster analysis of drug use and sexual HIV risks and their correlates in a sample of African-American crack cocaine smokers with HIV infection. *Drug and Alcohol Dependence* 97(1-2): 44-53.
Secemsky, E., Lange, D., Waters, D., Goldschlager, N.F. and Hsue, P.Y. 2011. Hemodynamic and arrhythmogenic effects of cocaine in hypertensive individuals. *The Journal of Clinical Hypertension* 13(10): 744-749.
Shah, N.G., Lathrop, S.L., Reichard, R.R. and Landen, M.G. 2008. Unintentional drug overdose death trends in New Mexico, USA, 1990-2005: combinations of heroin, cocaine, prescription opioids and alcohol. *Addiction* 103(1): 126-136.
Silverstein, P.S., Shah, A., Weemhoff, J., Kumar, S., Singh, D.P. and Kumar, A. (2012). HIV-1 gp120 and drugs of abuse: interactions in the central nervous system. *Current HIV Research* 10(5): 369-383.
Soares de Azevedo, R.C., Botega, N.J. and Guimarães, L.A.M. 2007. Crack users, sexual behavior and risk of HIV infection. *Revista Brasileira de Psiquiatria* 29(1): 26-30.

Timpson, S.C., Williams, M.L., Bowen, A.M., Atkinson, J.S. and Ross, M.W. 2010. Sexual activity in HIV-positive African American crack cocaine smokers. *Archives of Sexual Behavior* 39(6): 1353-1358.

Treadwell, S.D. and Robinson, T.G. 2007. Cocaine use and stroke. *Postgraduate Medical Journal* 83(980): 389-394.

van der Poel, A., Rodenburg, G., Dijkstra, M., Stoele, M. and van de Mheen, D. 2009. Trends, motivations and settings of recreational cocaine use by adolescents and young adults in the Netherlands. *International Journal of Drug Policy* 20(2): 143-151.

Vaughn, M.G., Fu, Q., Perron, B.E., Bohnert, A.S.B. and Howard, M.O. 2010. Is crack cocaine use associated with greater violence than powdered cocaine use? Results from a national sample. *The American Journal of Drug and Alcohol Abuse* 36(4): 181-186.

Vorspan, F., Brousse, G., Bloch, V., Bellais, L., Romo, L., Guillem, E. et al. 2012. Cocaine-induced psychotic symptoms in French cocaine addicts. *Psychiatry Research* 200(2-3): 1074-1076.

Werler, M.M., Bower, C., Payne, J. and Serna, P. 2003. Findings on potential teratogens from a case-control study in Western Australia. *Australian and New Zealand Journal of Obstetrics and Gynaecology* 43(6): 443-447.

Wisniewski, A.B., Brown, T.T., John, M., Cofrancesco, J., Golub, E.T. and Ricketts, E.P. 2006. Cortisol levels and depression in men and women using heroin and cocaine. *Psychoneuroendocrinology* 31(2): 250-255.

Zhou, W., Lin, P.H., Bush, R.L., Nguyen, L. and Lumsden, A.B. 2004. Acute arterial thrombosis associated with cocaine abuse. *Journal of Vascular Surgery* 40(2): 291-295.

Zimmerman, J.L. 2012. Cocaine intoxication. *Critical Care Clinics* 28(4): 517-526.

Zule, W.A., Morgan-Lopez, A.A., Lam, W.K.K., Wechsberg, W.M., Luseno, W.K. and Young, S.K. 2008. Perceived neighborhood safety and depressive symptoms among African American crack users. *Substance Use & Misuse* 43(3-4): 445-468.

Zuo, L., Kranzler, H.R., Luo, X., Yang, B., Weiss, R., Brady, K. et al. 2008. Interaction between two independent CNR1 variants increases risk for cocaine dependence in European Americans: a replication study in family-based sample and population-based sample. *Neuropsychopharmacology* 34(6): 1504-1513.

Analysis of Different Drug Policy Approaches and Consequences

Francesco Fabi, Luca Di Censi and Carla Rossi
National Council for the Social Sciences, Italy

Abstract

In this chapter drug laws and policies and their consequences are considered. An important report was released by the Global Commission on Drug Policy in September 2014. In it, the Commission calls for an end to the criminalisation of drug users and proposes the legal regulation of *responsible* drug use. Punitive drug laws are frequently considered the most effective deterrent against drug use. This idea is not supported by evidence, since incidence studies have shown that consumption follows epidemic dynamics. Moreover, like any public intervention, prohibitionist drug policy approaches may have unintended, undesirable consequences and the overall outcome can be negative. The regulation schemes in producing and consuming countries are analysed. It is worth noting that, in consuming countries, a general 'prohibitionist' approach is nonetheless applied in different ways. Illegal drug trafficking creates the vast profit margins that enrich organised crime groups responsible for undermining peace, security, transparency and competitiveness around the globe. According to the 2010 Prague Declaration (www.praguedeclaration.com), an unbiased analysis of costs and benefits arising from different policy approaches and forms of intervention is required. Further considerations derive from the EU project JUST/2010/DPIP/AG/1410, "New methodological tools for policy and programme evaluation," which has developed a 'corruption index'. This turns out to be approximately proportional to the amount of drug money in the economy; corruption strongly influences country competitiveness. Based on the consideration that innovative approaches have been recently implemented for cannabis in various countries, a scenario analysis is envisaged under the hypothesis that similar approaches might be adopted to regulate cocaine.

Keywords: Drug policies, unintended consequences, health indicators, drug trafficking and corruption, evidence based policies

The Global Commission on Drug Policy released a new report in September 2014. In the report the Commission calls for an end to the criminalisation of drug users and responsible legal regulation of drugs.

The report title is "Taking Control: Pathways to Drug Policies that Work", and it provides a global descriptive analysis of the negative consequences deriving from the present laws and policies that need to be urgently changed, as pointed out in the foreword by the Chair:

> *"We are driven by a sense of urgency. There is a widespread acknowledgment that the current system is not working, but also recognition that change is both necessary and achievable. We are convinced that the 2016 United Nations General Assembly Special Session (UNGASS) is an historic opportunity to discuss the shortcomings of the drug control regime, identify workable alternatives and align the debate with ongoing debates on the post-2015 development agenda and human rights."*
>
> ***Fernando Henrique Cardoso***
> *Former President of Brazil (1994-2002)*

In all areas of public policy, interventions designed to achieve a specific goal may have unpredictable (or not well forecasted) effects. Some of these unintended consequences may be rather undesirable and the global outcome more negative than positive. This is true of prohibitionist drug law and policy approaches.

As described in the previous Chapter 1, the main indicators to measure demand reduction intervention effectiveness are drug use (epidemic) prevalence and incidence. More specific indicators, measuring the policy results with respect to public health and criminality, are based on the health and criminal consequences of the behaviour of consumers, influenced by law and policy. In general, it can be concluded that past and present demand reduction strategies, based also on interventions against supply, have not been effective at all, judging by cocaine prevalence, incidence and diffusion trends all over the world, as shown in Chapter 1.

Incidence studies have shown that consumption trends have epidemic dynamics, not influenced by present policy interventions (Figure 1 in Chapter 1). Thus, standard demand and supply interventions directed towards dealers, users and non-users are generally not effective, particularly if they do not allow for consumer rehabilitation and behaviour modification. This ineffectiveness is a consequence of current drug laws and policies that consider cocaine as an illegal substance, pushing heavy cocaine users towards criminal activities, including substance dealing, but also many other illegal activities, to get the necessary money to consume cocaine and, at the same time, providing organised crime with an extremely profitable trade. These laws and policies also seem to allow drug traffickers to extend their influence and increase their profit. It is clear from the study of supply routes and the evolution of new markets – in countries that previously had low prevalence of use – that traffickers expand the market by conquering new areas whenever the already conquered territories show epidemic plateaus among consumers. Up to now, this strategy has been extremely successful. Examples of the deployment of this strategy can be seen in Figures 8, 10, 11 and 12 of Chapter 1.

Changes in practice should be based on a complete and rigorous evaluation of policies rather than on ideological principles. There are already many studies available indicating policy directions which work and those which do not work (most of which are policies currently in force). This constitutes a body of knowledge that should be taken into account.

Some examples of drug laws and policies correctly evaluated in terms of their negative and positive consequences

The enforcement of overly punitive laws for drug offences has not only proven ineffective in reducing the production, trafficking and consumption of illicit substances, but has shown many negative consequences, including overloading criminal justice systems, fuelling prison overcrowding and exacerbating negative health impacts.

Punitive drug law enforcement is predicated on the idea that criminalisation serves as a deterrent. This theory is not supported by evidence: research indicates that criminalising drug users actually worsens drug-related problems, as does strong law enforcement. Criminalisation introduces political and practical obstacles to the implementation of proven health-producing interventions.

US Anti-Drug Abuse Act of 1986

Unfortunately, important politicians regularly subscribe to the appealing rhetoric of 'zero tolerance' and creating 'drug-free' societies rather than using an informed approach based on evidence. For example, after bouncing back and forth between the Democratic-controlled House and the Republican-controlled Senate, as each party jockeyed for political advantage, the Anti-Drug Abuse Act of 1986 finally passed both houses a few weeks before the November elections.

This federal law, with mandatory minimum sentences for drug crimes based on the amount of drugs involved, had no impact on cocaine epidemics, as can be seen in Figure 1 of Chapter 1. It also had no other positive results. Table 1 below shows the mandatory minimum sentences for quantities of different substances. In a case involving a charge that carries a mandatory minimum sentence, a judge cannot impose a sentence below that minimum, except if requested by the Justice Department. This exception arises when the government says that a drug offender has given "substantial assistance" to the government for the prosecution of another drug offender. One of the common ways for the Justice Department to get testimony in drug cases is to offer to some drug offenders the possibility of a more lenient sentence if they testify against other drug offenders.

In 1988, Congress passed another pre-election Anti-Drug Law. One of the provisions was urged by the Department of Justice to simply close a little loophole. The change was to apply the mandatory sentences intended for high-level traffickers in the 1986 law to anyone who was a member of a drug trafficking conspiracy. The effect of this amendment was to make everyone in a conspiracy liable for every act of the conspiracy. Within six years, the number of drug cases in federal prisons increased by 300%. From 1986 to 1998 it was up by 450%.

One result of the conspiracy amendment is that low-level traffickers can get very long sentences. They can also be the victims of lies by co-defendants who have figured out how to cut a deal and manipulate the sentencing laws to their advantage.

A drug offender, while in jail awaiting trial, may learn the names of other persons awaiting trial. He may learn that he can easily make up a story that will get him out of prison fairly soon if his story provides "substantial assistance" in the prosecution of someone else as a "high-level trafficker". A clever informant can prove that someone else is a "high-level trafficker" without too much trouble. This legally-incentivised snitching has many negative consequences on the general population of consumers and non-consumers alike, as well on the legal system (Sterling 1999).

Some quantitative evaluation is also available. In Friedman et al. (2006, 2011), specific data analyses can be found to understand associations between punitive policies and incarcerations and the population prevalence of injection drug users (IDUs) and HIV seroprevalence among injectors, for heroin as well as cocaine users. Estimates of drug injector prevalence and of HIV seroprevalence among injectors in 89 large US metropolitan areas were regressed (correlated) on three measures of legal repressiveness (hard drug arrests per capita; police employees per capita; and corrections expenditures per capita). All three measures of legal repressiveness were positively associated with HIV prevalence among injectors.

In particular, changes in arrests per capita for heroin and cocaine possession were not associated with changes in IDUs per capita. In linear regression, hard drug-related arrest rates were positively associated with the population rate of IDUs. Increased arrests were also associated with less reduction in mortality among IDUs with AIDS – and thus with more deaths.

Type of drug	Five Year Sentence Without Parole	Ten Year Sentence Without Parole
LSD	1 gram	10 grams
Marijuana	100 plants/100 kilos	1000 plants/1000 kilos
Crack cocaine	5 grams	50 grams
Powder cocaine	500 grams	5 kilos
Heroin	100 grams	1 kilo
Methamphetamine	10 grams	100 grams
PCP	10 grams	100 grams

Table 1. Mandatory minimum sentences for first time drug offenders set by the Anti-Drug Abuse Act. **Source:** Sterling 1999.

These findings suggest that legal repressiveness may have little deterrent effect on drug injection and a high cost in terms of HIV and perhaps other diseases among injectors and their partners. They also indicate that alternative methods of maintaining social order should be investigated, such as harm reduction, which prevents HIV transmission, increases referrals to treatment and is a better foundation for drug policy (Friedman et al. 2006, 2011).

Drug laws in Italy, Portugal and the Czech Republic (similar re drug users but different re substance classification / overall policy approach)

Other countries have also introduced restrictive modifications of their drug laws, aiming for political advantage. One such European country is Italy: in 2006, just before national elections, the less repressive law was changed into a more repressive one, causing quite negative consequences, in particular among young people starting substance use. In order to better understand this point, an important new indicator can be used to compare three countries and to evaluate and measure the negative consequences of harder repression, in particular for substance dealing. We will first summarise the three countries' laws, which are described in more detail in Ventura and Rossi (2013) and Ventura et al. (2015).

Italy

Law 49 of 21 February 2006, known as the Fini-Giovanardi Law, amended the previous legislation by increasing sanctions and restrictions on drug use. The passing of the law was controversial in itself due to its insertion in the legislative Act preparing for the Winter Olympic Games in Turin. The legislation was inspired by the 'zero tolerance' approach, which has shown itself ineffective in many previous and diverse circumstances. Foremost was the abolition of any distinction between soft drugs and hard ones. The legislation represented a view of the drug user as a criminal rather than as a patient, although personal possession was not criminalised. Restriction through the threat of penalisation is emphasised over harm reduction and rehabilitation. Implicit in the problem of incarcerating Italian drug users is the issue of overcrowded prisons in the country (EMCDDA 2013).

Portugal

Since 1 July 2001, the possession of any drug for personal use without authorisation is an administrative issue rather than a criminal one. Emphasis is placed on education and treatment rather than restriction. 'Dissuasion Commissions' are an institutional framework which facilitates the evaluation and treatment of users, instead of imprisoning them. When an individual is found in possession of no more than 10 daily doses of drugs and is not under suspicion of supply offences, his or her case will be transmitted to the Commission for the Dissuasion of Drug Abuse (CDT), where it will be determined whether the person is an occasional or dependent user, or a dealer. Various sanctions may occur, ranging from warnings to forfeiture of professional and firearms licences. Possession of more than 10 daily doses or being charged with selling drugs means the individual will be sent to the criminal court. The 2001 legislation was an outgrowth of the recommendation for decriminalisation of both 'hard' and 'soft' drug possession and use by a government-appointed committee in 1998, the Commission for the National Strategy to Combat Drugs. Portugal has a history of viewing drug consumption as a health issue, and this has fostered a policy that focuses on treatment rather than restriction.

Czech Republic

The Czech Republic has the most liberal legislation in Europe in terms of the variety and quantity of substances allowed. On 1 January 2010, substances from marijuana to cocaine, ecstasy and heroin were decriminalised in small quantities. Further reforms since then have empowered judges to consider addiction and other circumstances regarding the offender in order to impose sentences alternative to imprisonment, such as treatment. Drug addiction is seen as a public health rather than criminal problem.

The strategy employed is comprehensive and is based on four pillars: prevention, treatment and reintegration, harm reduction, and supply reduction. The harshest sanctions are directed at drug trafficking through organised crime. Membership of an organisation is considered an aggravating circumstance for trafficking convictions. All three laws decriminalise consumption. Supply reduction aspects of the laws are quite different, but are generally not taken into account when discussing and evaluating demand reduction interventions. However, demand is highly influenced by supply, as can be shown by comparing cocaine consumption among sixteen-year-old students in different countries (Mammone et al. 2014).

It is worth reporting the results of a comparison using the new Poly-Drug Score (PDS) indicator (Fabi et al. 2014), based on van Amsterdam et al. (2010) toxicological substance scores, which measures the health consequences of poly-drug use: the higher the value of the indicator, the higher the frequency of use and the dangerousness of the substances used and/or poly-drug use. Using the 2011 data base of the European School Survey Project on Alcohol and Other Drugs (ESPAD), the lifetime prevalence of drug use among sixteen-year-old students in 38 countries can be estimated. The lifetime prevalence of use of any drug is shown in Figure 1. It can be seen that the prevalence in Portugal is lower than in Italy, whereas in the Czech Republic it is much higher (the highest among the 38 countries). However, considering only prevalence to evaluate the consequences of drug policy may result in a quite rough and biased judgment.

If we calculate the new PDS indicator in the three countries, we get, as mean values, PDS=0.44 for Italy, PDS=0.18 for Portugal and PDS=0.17 for the Czech Republic. This means that less harmful behaviour among sixteen-year-old students can be observed in the less restrictive countries (Portugal and Czech Republic). In Italy, indeed, the PDS indicator is the highest, as the median, of the 38 countries, as reported in Table 2 (where Portugal is 16th and Czech Republic 26th). Thus, prevalence alone cannot be used to measure the effects of drug laws and policies. New drug use trends need new indicators.

Similar comparisons based on other data provide similar conclusions regarding the evaluation of the drug laws and policies in the three countries (Fabi et al. 2014). This can be seen, for example, in Table 3, where the mean age of problem drug users (PDUs) assisted by services are reported for Italy and the Czech Republic. It is clear that the approach of the Czech Republic, where harm reduction is a priority, is more efficient in reducing negative consequences by emphasising therapy and rehabilitation. In Italy, in contrast, harm reduction is not a priority and furthermore is poorly implemented. It would be quite interesting and useful to further analyse the impact of prevention and harm reduction interventions in countries such as the Czech Republic that show good outcomes on, for example, healthier behaviour by users.

A significant body of research on cocaine users, recruited outside what is traditionally conceived as the 'drug dependent population', has been carried out in many European countries and outside Europe. These studies show a large variety of patterns and life histories of use other than 'addictive' use. This kind of behaviour is facilitated in countries where harm reduction is a pillar of drug policy, as in the Czech Republic and Portugal (as opposed to Italy), and is known as the 'self-regulation model'. This model is embedded in harm reduction, while taking some of its cornerstones in new directions. It can innovate drug services as well as drug policies, shifting the main purpose away from 'elimination' to 'regulation' of drug use, with the aim of creating and strengthening users' informal controls while reducing the harms of punitive laws and policies (Zuffa and Ronconi 2015).

Another crucial point differentiating Italy from most other countries and, in particular, from Portugal and the Czech Republic, was abolition in 2006 of any distinction between soft drugs and hard ones for dealers and consumers. This had the 'unintended' – but expected – consequence of increasing poly-drug dealing, which extended poly-drug use, in particular among young people.

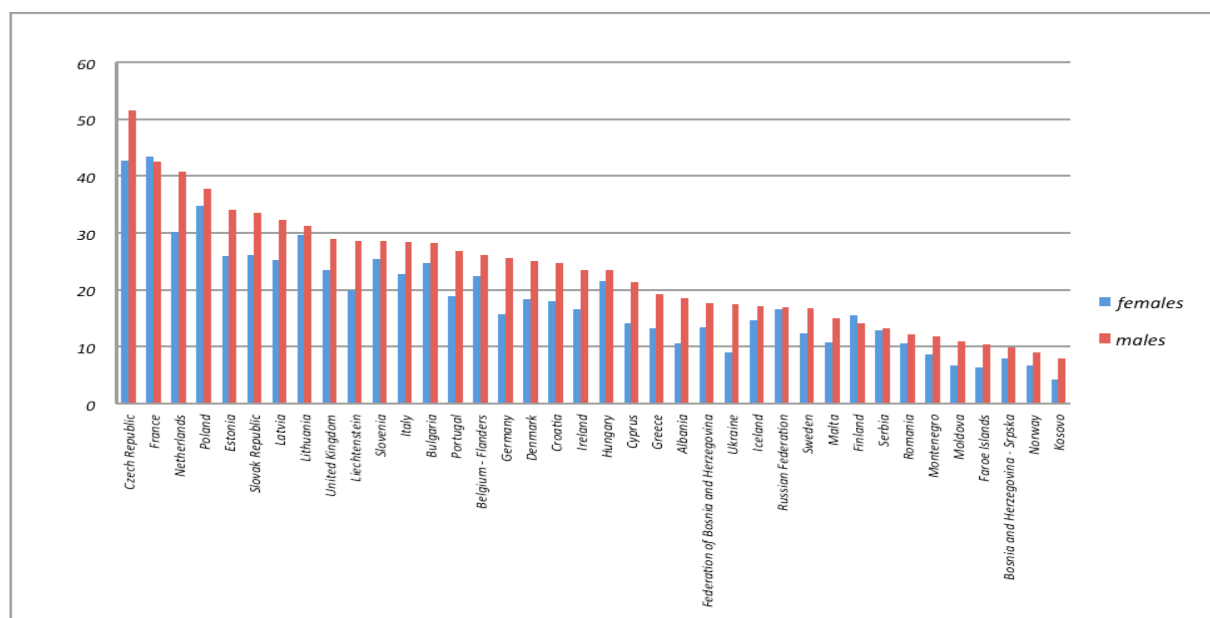


Figure 1. Lifetime prevalence of drug use (%) among sixteen-year-old students, by gender
Source: ESPAD 2011 sample

The Italian data about poly-drug dealing are reported in more detail in Mascioli and Rossi (2014). Here, the difference between Italy and other countries is illustrated by Figure 2, obtained from a survey aimed at estimating the drug market, conducted on behalf of the European Commission (Trautman et al. 2013). In the other countries, the lower penalties for dealing cannabis and other soft drugs imply rather different markets for soft and hard drugs, encouraging the use of soft drugs, in particular among young people, as historically happened in the Netherlands for specific reasons (Ventura and Rossi 2013).

In Italy, poly-drug dealing started to increase as soon as the Fini-Giovanardi law was launched, as shown in Figure 3. Also the number of dealers increased by 10% from 2005 to 2009 (Mascioli and Rossi 2014).

Poly-drug dealing and, in particular, the availability of cocaine among cannabis dealers is a possible cause of the higher percentage of cocaine users among sixteen-year-olds in Italy, compared to Portugal and the Czech Republic. In this comparison, it is interesting to observe that Portugal is on the main cocaine trafficking route to Europe while Italy is not. Another analysis that leads to similar considerations has been conducted recently by using the same consumer data as in Trautman et al. (2013).

The evidence to support the above analysis comes from a study of CAST (cannabis abuse screening test) scores. A recursive partitioning analysis, using survey data from the Czech Republic, Italy, the Netherlands and Sweden, was performed by Blankers et al. (2014). Only for Italy are high CAST values strictly correlated with the use of cannabis and cocaine together, whereas in the other three countries the consumers with high CAST scores use cannabis alone.

Thus, it can be concluded that the Italian drug law facilitated the expansion of the cocaine market, poly-drug dealing and poly-drug use.

Table 2. Country poly-drug scores (PDS) (median, mean), ordered by median value

Country	**PDS**	
	Median	Mean
Italy	0.27	0.44
Federation of Bosnia and Herzegovina	0.19	0.44
Albania	0.12	0.46
France	0.08	0.24
United Kingdom	0.08	0.23
Netherlands	0.08	0.23
Moldova	0.08	0.12
Cyprus	0.07	0.34
Belgium - Flanders	0.07	0.21
Montenegro	0.05	0.3
Iceland	0.05	0.26
Malta	0.05	0.24
Bulgaria	0.05	0.21
Slovenia	0.05	0.2
Germany	0.05	0.19
Portugal	0.05	0.18
Liechtenstein	0.04	0.27
Ireland	0.04	0.24
Russian Federation	0.04	0.2
Hungary	0.04	0.2
Croatia	0.04	0.18
Denmark	0.04	0.17
Latvia	0.04	0.17
Slovak Republic	0.04	0.17
Poland	0.04	0.17
Czech Republic	0.04	0.17
Norway	0.04	0.16
Sweden	0.04	0.16
Ukraine	0.04	0.15
Finland	0.04	0.14
Romania	0.04	0.13
Estonia	0.04	0.12
Faroe Islands	0.04	0.07
Serbia	0.03	0.19
Greece	0.03	0.17
Kosovo	0.03	0.15
Lithuania	0.03	0.13
Bosnia and Herzegovina - Srpska	0.02	0.15

Source: Mammone et al. 2014

Table 3. Mean age of PDUs assisted in the services in Italy and the Czech Republic in 2012

	Italy		Czech Republic	
	Male	Female	Male	Female
Mean age	36.18	35.36	30.47	27.21

Source: Mammone et al. 2014

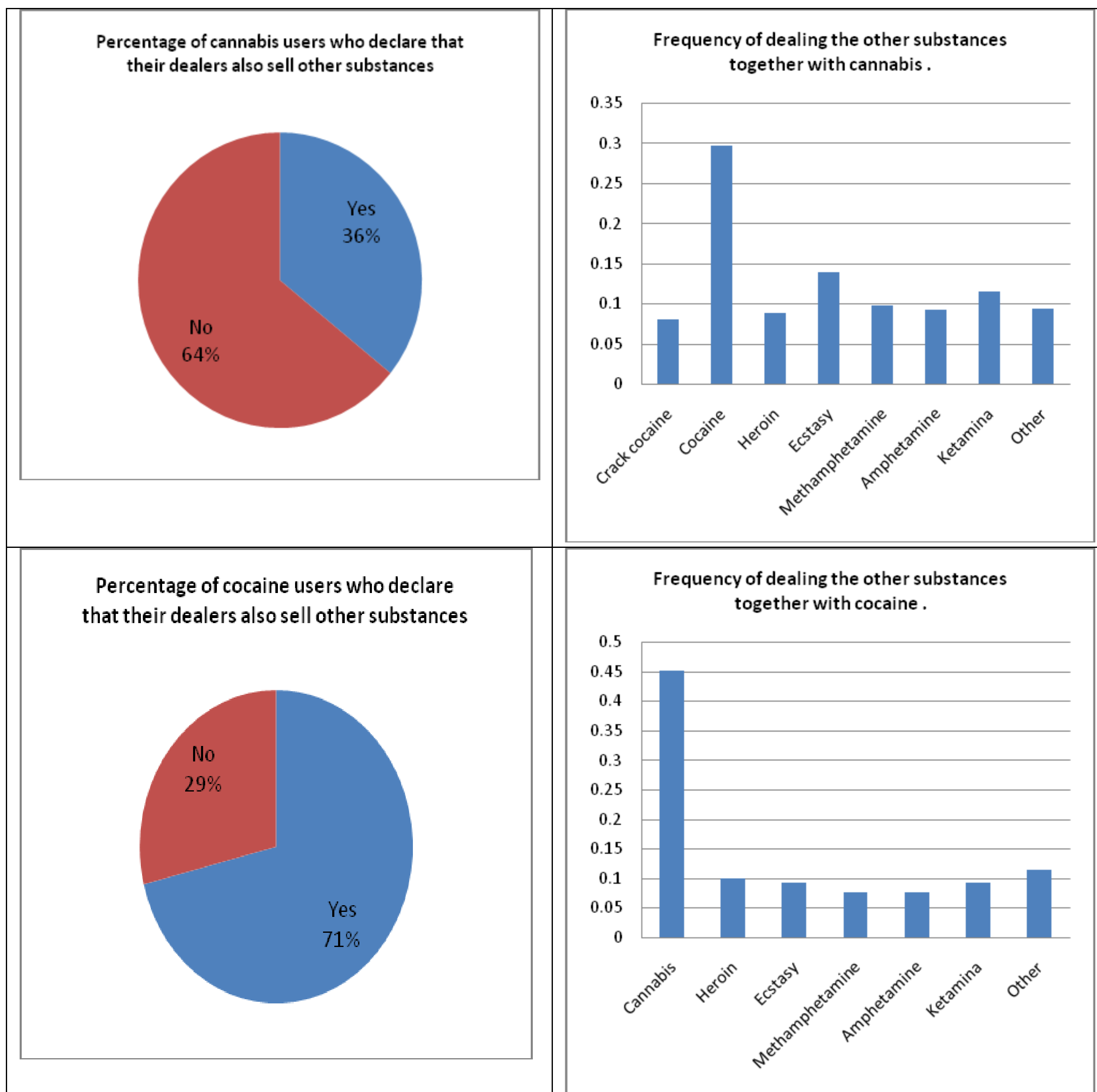


Figure 2. Poly-drug dealing according to declaration of Italian cannabis and cocaine users
Source: Mascioli and Rossi 2015

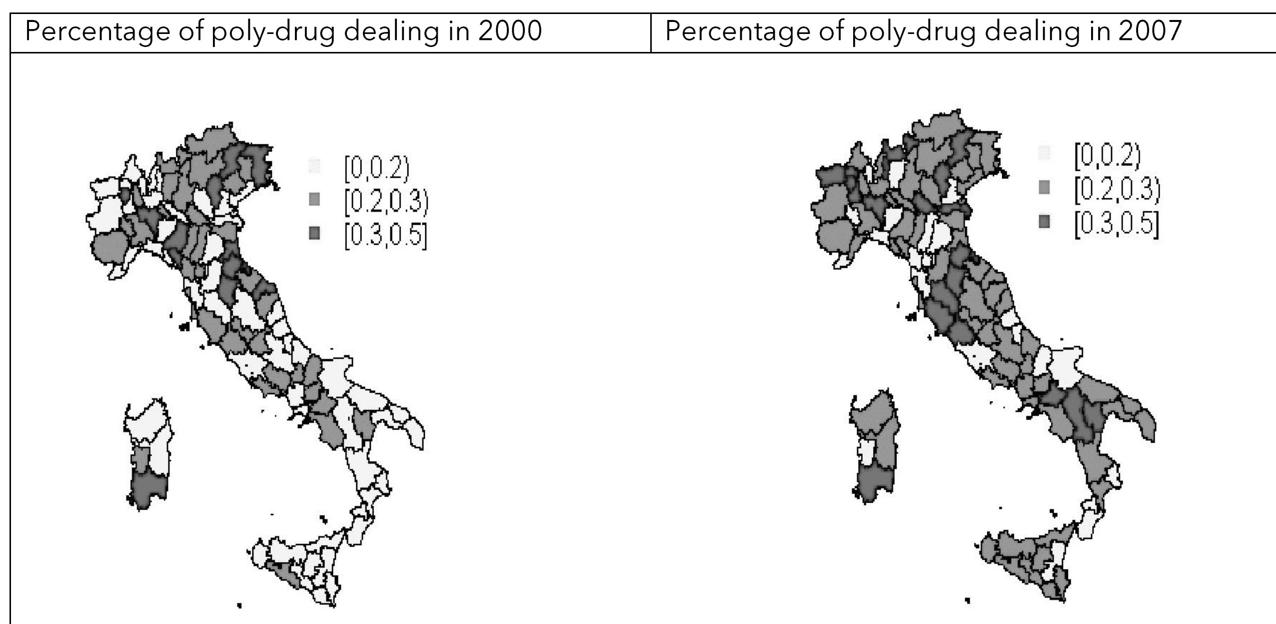


Figure 3. Poly-drug dealers in police data base for Italian provinces before and after the Fini-Giovanardi drug law. **Source:** Mascioli and Rossi 2015.

In other words, the conclusions provided by Solivetti (2001) are still valid and can even be strengthened. In particular, the more repressive Fini-Giovanardi drug law did not result in curbing the spread of drugs; on the contrary, it increased with a measurable impact on poly-drug dealing and poly-drug use.

By studying the prevalence of sixteen-year-old student cocaine users in the ESPAD data (Figure 4), the importance of the supply side in combination with local drug policy can also be seen.

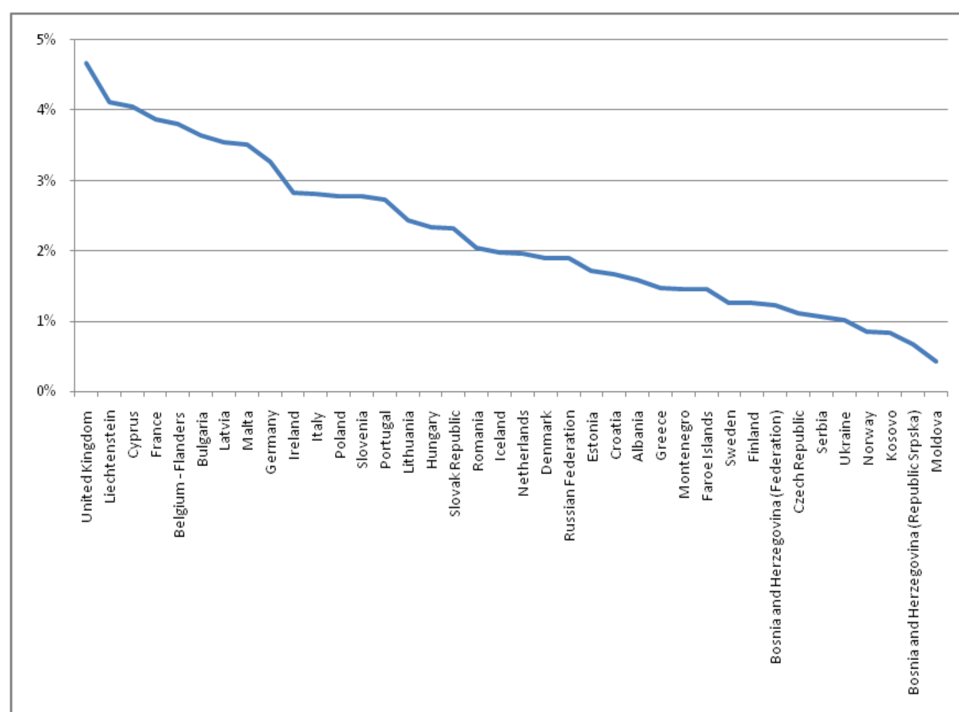


Figure 4. Lifetime cocaine prevalence among sixteen-year-olds at school in 38 ESPAD project countries, 2011. **Source:** Mammone et al. 2014.

As the above graph shows, the United Kingdom has the highest prevalence and the UK also lies on the main cocaine trafficking route from South America to Europe. Portugal is also an EU harbour for the main cocaine trafficking route, but the prevalence is much lower (about half). The drug law in Portugal has been the least restrictive law in Europe since 2000 and the local policy is coherent with this approach, as explained above. Thus, less repressive interventions such as standard demand reduction seem more effective than the harsher drug policies of many other countries. In general, the other countries show higher prevalence, particularly the countries first reached by the cocaine trafficking routes. Prevalence rates are lower in the east European countries, reached only more recently from routes through Africa and the Mediterranean Sea.

General considerations about approaches to drug laws and policies during the last 50 years in the world

In the debate about prohibition (or legalisation), the unintended consequences of restrictive enforcement policies must be considered. They are highly significant – in a negative sense – for the drug using population, as shown above, but also for all citizens, for example by creating huge criminal parallel markets with all the further consequences of this criminal activity.

In Colombia, approximately 2.6 million acres of land were aerially sprayed with toxic chemicals as part of drug crop eradication efforts (the 'war on drugs') between 2000 and 2007. Despite the destructive impact on livelihoods and land, the number of locations used for illicit coca cultivation actually increased during that period. These interventions were not very successful regarding coca production either, as coca cultivation, even if reduced in terms of hectares, has been estimated

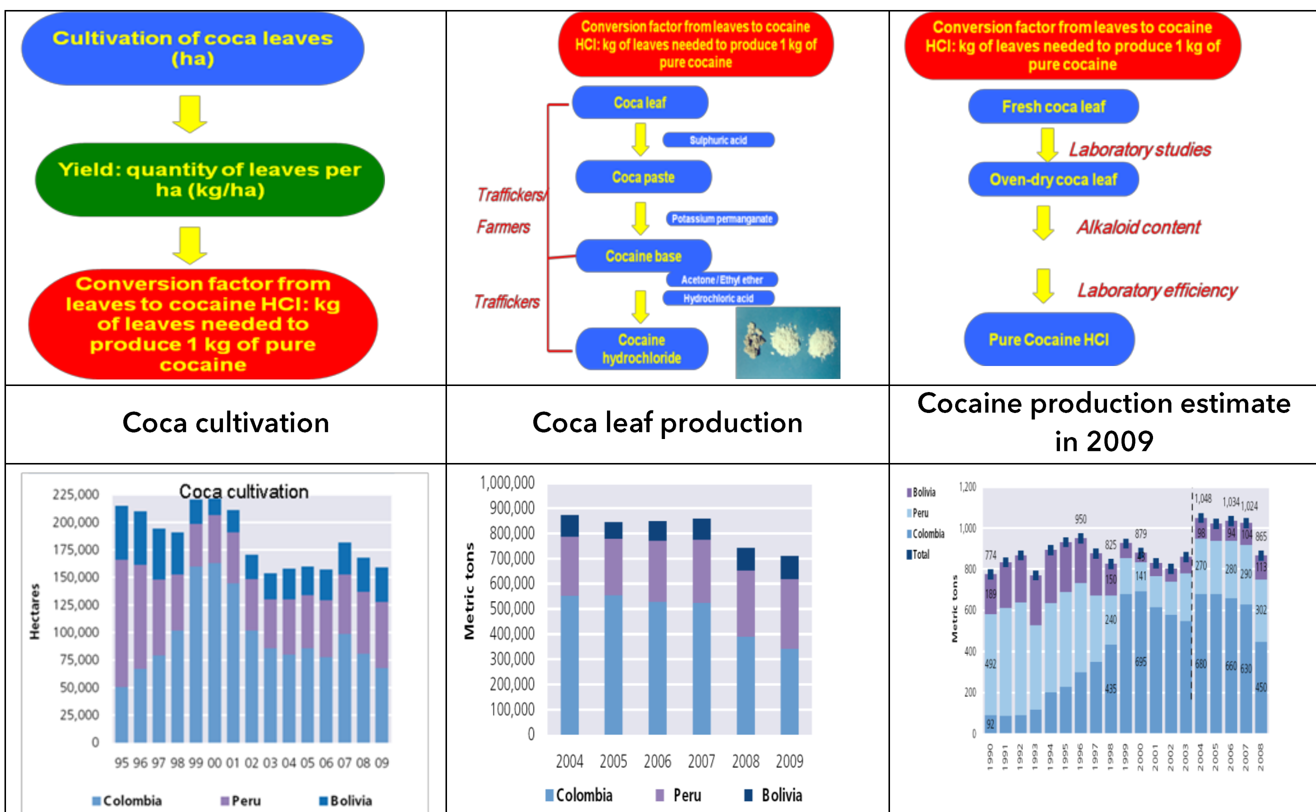


Figure 5. Estimated cocaine production potential

Source: UNODC. Presentation by Sandeep Chawla and Angela Me, "Challenges in estimating the production of pure cocaine HCl," at the EU Conference "Improving responses to organised crime and drug trafficking along the cocaine route," Rome, 28-30 May 2013.

to have led to higher cocaine production, as explained in Figure 5. This means that the criminal organisations that invest in drug (cocaine) trafficking aim to expand the market whatever restrictive laws imply in terms of drug supply and demand interventions.

The UNODC estimates the value of the transnational cocaine trade at US$88 billion per year, also stressing that this trade is the most important of all illegal trades in terms of revenue and profits (Figure 6).

Most of the proceeds from drug trafficking are re-invested in the same activity, but also in the legal economy. The proceeds invested in the legal economy have consequences ranging from the distortion of investment and prices to unfair competition and the weakening of institutions. Besides the direct economic consequences of drug trafficking, one must also consider the burden and costs of increased health problems, violence and corruption.

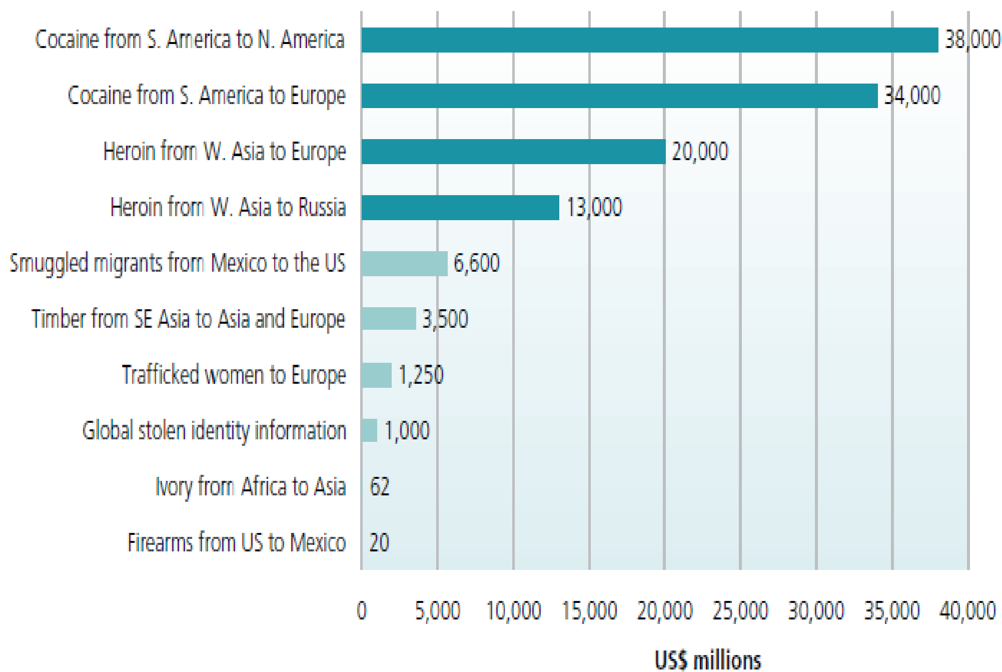


Figure 6. Estimated illicit financial flows from drug trafficking and other transnational organised crimes, 2008. **Source:** UNODC: http://www.unodc.org/documents/data-and-analysis/Studies/Illicit_financial_flows_2011_web.pdf.

In fact, the laundering of illegally obtained money and its subsequent entry into the legal economy cannot happen without connivance or at least carelessness at the institutional level and this complicity is obtained through corruption. As well as promoting organised crime directly, corruption also favours it indirectly through a reduction in meritocracy and, therefore, competitiveness. This in turn generates unemployment and youth problems, which are likewise functional to organised crime, resulting in the perverse circuit shown in Figure 7.

As part of the EU project JUST / 2010 / DPIP / AG / 1410, New methodological tools for policy and programme evaluation (www.drugpolicyevaluation.eu), the transparency index provided by Transparency International (http://www.transparency.org/surveys/index.html#cpi) was compared with the proceeds from drug markets (Table 4). In the extensive analysis by Caserta and Rossi (2013), the correlation between the two values was explored and is shown to be very high (correlation coefficient=0.99, where the maximum possible value is 1). This means that the corruption index is almost proportional to drug

money and that negative consequences for country populations are proportional to the local illegal drug markets, with influences also on corruption and competitiveness, as shown below in Figure 7.

Since 1999, the level of competitiveness has been evaluated yearly by the World Economic Forum, which publishes a detailed yearly report, the "Global Competitiveness Report" (available on the WEF website: http://www.weforum.org/issues/global-competitiveness).

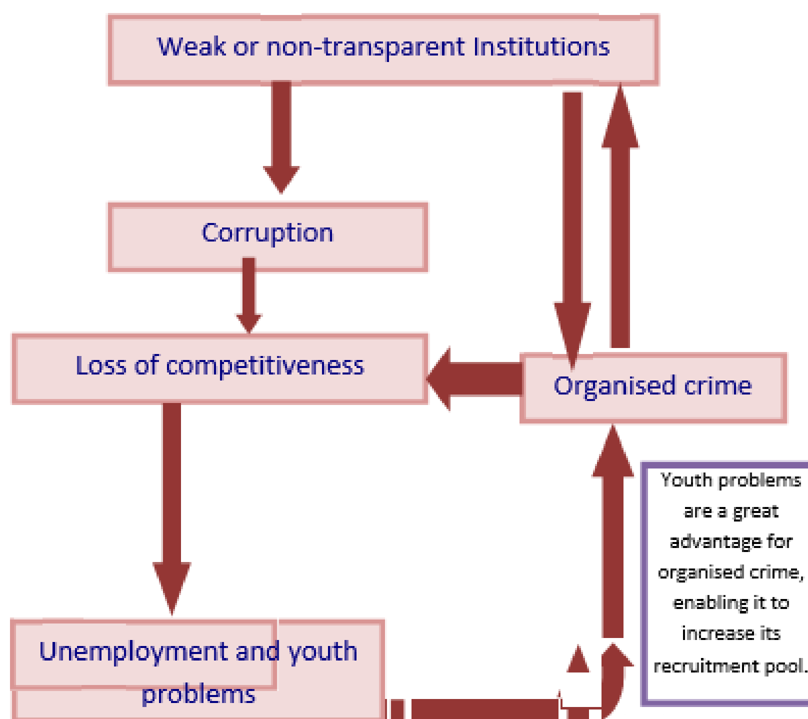


Figure 7. Diagram of how the perverse cycle "weakness of institutions - loss of competitiveness" works. **Source:** Caserta and Rossi 2013

Table 4. Estimated proceeds from drug trafficking and trade in six countries in certain years and the corruption index for the same years

Country	Year of study	Proceeds from drugs in billion US$	Proceeds from drugs per million inhabitants	Corruption index=10-Transparency index
United States	2000	64	0.21	2.2
United Kingdom	2004	8.4	0.14	1.4
Australia	2003	1.5	0.07	1.2
Netherlands	2003	2.07	0.12	1.1
Germany	2008	13.8	0.17	2.1
Italy	2010	31.58	0.53	6.1

Source: Caserta and Rossi 2013

If we consider two previously discussed and compared countries, Italy and Portugal, the relation between the transparency index and competitiveness can be looked at in some detail. The transparency indexes (maximum possible value 10) are Italy -- Transparency index=3.9, Portugal --- Transparency index=6, about 50% higher than Italy. Competitiveness can be compared in detail by a radar graph (Figure 8). Even if Portugal is a much smaller country, it shows generally higher competitiveness than Italy, except in two items more linked to the size of the countries. In particular, infrastructure, institutions, innovation, technological readiness and financial market development score better in Portugal than in Italy.

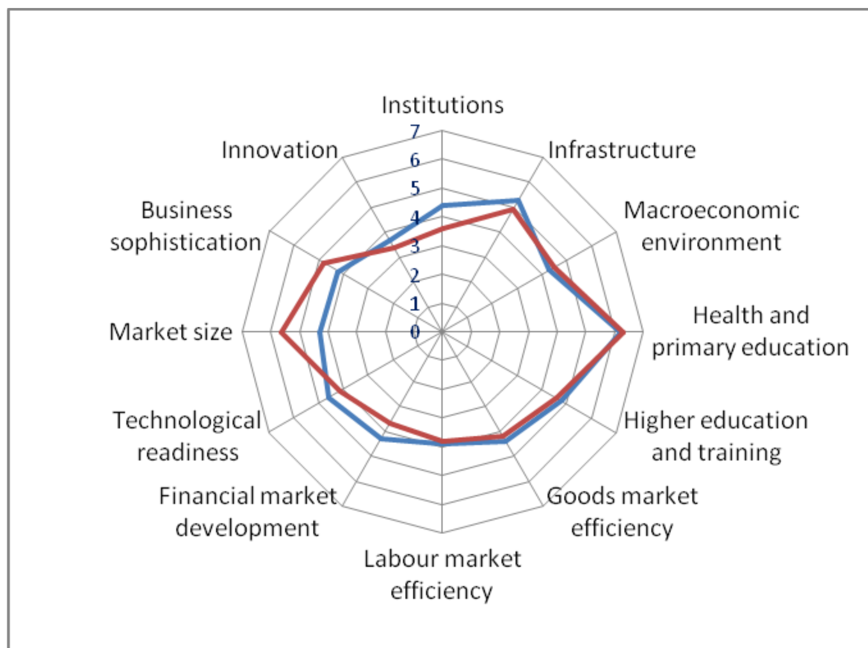


Figure 8. Comparison of competitiveness of Portugal (blue) and Italy (red) in various aspects. **Source:** Caserta and Rossi 2013

If the correlation between transparency and competitiveness indexes in the world is explored, a very high correlation=0.91 is found. This means that competiveness is more or less proportional to transparency, thus less corruption implies higher well-being for the general population, and this aspect is negatively correlated with drug money. Thus, drug laws and policies which are based on ideology and not on scientific evidence, promoting -- albeit unintentionally -- the interests of criminal organisations in drug markets, should be revised urgently. The quantitative analyses suggest that a more efficient and less repressive drug law approach improves many outcomes and reduces negative consequences.

Drug laws and policies promising positive outcomes

A starting point to conclude this chapter must be the acknowledgement that prohibition is counterproductive, bearing in mind rising global drug consumption and all the other negative aspects of the phenomenon, as exemplified above and in Chapter 1. It creates the vast profit margins that sustain the illegal trade and enriches organised crime groups responsible for undermining peace, security, transparency and competitiveness around the globe. An unbiased analysis is required to evaluate the unintended negative consequences of drug law enforcement and the costs and benefits arising from different policy approaches and forms of intervention.

If progress is to be made in the future, drug policy-related harms must be prevented and reduced. A key endeavour for states is to ensure that unachievable goals such as a 'drug-free world' are abandoned. Rather, their focus must be on ensuring pragmatic goals, targets and indicators that prioritise the safety, health and human rights of all people, as explicitly stated in 2010 at the Prague Conference on Urban Drug Policies in the Globalised World.

These considerations are also made, and clearly explained, in the 2014 document "Debating Drugs: How to Make the Case for Legal Regulation" by the Transform Drug Policy Foundation. Other interesting documents on drug policy are available on the TDPF website.

Quoting from the preface of the "Debating Drugs" document:

> *This is a guide to making the case for the legal regulation of drugs from a position of confidence and authority. Organised into 12 key subject areas, it provides an at-a-glance summary of the arguments for legal regulation, followed by commonly heard concerns and effective responses to them. (…)*
>
> *(…) 'Legalisation' is merely a process – namely, of making an illegal drug legal – but 'legal regulation' refers to the end point of this process: the controls that will be put in place on the production, supply and use of the drug once it has been legalised. (...)*
>
> *It is also useful to explain what motivates those who support legal regulation. Transform, along with most other reform advocates, propose that drug policy should:*
>
> - *protect the young and vulnerable;*
> - *reduce crime;*
> - *improve health;*
> - *promote security and development;*
> - *provide good value for money;*
> - *and protect human rights.*

As a general conclusion, all the national policies analysed above fail to achieve some of the very reasonable aims stated above. Even the Portugal and Czech Republic drug laws, while tending to achieve the first points on the list, do not succeed in preventing the flow of income from drugs to criminal organisations. At the very least, this has negative effects regarding the points *promote security and development* and *provide good value for money,* since drug supply remains in the hands of criminal organisations, as recognised also by police from The Netherlands at the 2010 Conference on Urban Drug Policies in Prague.

The regulation of drugs should be pursued because they are risky, not because they are safe. Different models of regulation can be applied for different drugs. Dangerous drugs are much more risky when they are produced, sold and consumed in an unregulated criminal environment. Drugs of unknown strength are sold with no quality controls, often cut with adulterants which cause greater health problems to users. Putting accountable governments and regulatory bodies in control of this market can significantly reduce risks and harms for consumers. The regulation and management of risky products and behaviours is a key function of all government authorities around the world, and is the norm in almost all other areas of policy and law. Governments regulate alcohol and cigarette consumption, medicines, the use of fireworks, power-tools and high-risk sports. If the potential risks of drugs are to be contained and minimised, governments must apply the same regulatory logic to the development of effective drug policies. They should always remember the historically well-documented consequences of the US alcohol prohibition law, and the appropriate decision taken at the end, without waiting too long and causing huge and costly harm to populations.

Going back to the "Debating Drugs" document (Kushlick et al. 2014), we find a quite interesting summary of possible models of legal regulation for various kinds of substances:

- *Prescription – The riskiest drugs, such as injectable heroin, are prescribed to people who are registered as dependent on drugs by a qualified and licensed medical practitioner. This model can also include extra tiers of regulation, such as the requirement that drug consumption take place in a supervised medical venue.*
- *Pharmacy – Licensed medical professionals serve as gatekeepers to a range of drugs – such as amphetamines or MDMA – dispensing rationed quantities to people who wish to use them. Additional controls, such as licensing of purchasers, could also be implemented.*
- *Licensed sales – Licensed outlets sell lower-risk drugs at prices determined by a regulatory authority, in accordance with strict licensing conditions, such as a ban on all forms of advertising and promotion, no sales of non-drug products, no sales to minors, and health and safety information on product packaging.*
- *Licensed premises – Similar to pubs, bars, or cannabis 'coffee shops', licensed premises can sell lower-risk drugs for on-site consumption, subject to strict licensing conditions similar to those for licensed sales, described above. Additional regulation, such as partial vendor liability for customers' behaviour, may also be enforced.*
- *Unlicensed sales – Drugs of sufficiently low risk, such as coffee or coca tea, require little or no licensing, with regulation needed only to ensure that appropriate production practices and trading standards are followed, and that product descriptions and labelling (which includes use-by dates and ingredient lists) are accurate.*

At this point, two examples of countries that early (Switzerland) and recently (Uruguay) adopted two different approaches for two different substances are of interest.

Switzerland (prescription): In the 1980s, Switzerland was faced with a growing public health crisis relating to injecting heroin use. Rather than resort to failed punitive responses, the Swiss government became part of the wave of European harm reduction pioneers, implementing a raft of measures including needle and syringe programmes (NSP) and opiate substitution treatment. Indeed, Switzerland pioneered an innovative new model of heroin assisted therapy (HAT) in which long term users who had failed on other programmes were – alongside other forms of psycho-social support – prescribed pharmaceutical heroin which could be injected under medical supervision in a local day clinic. The impressive outcomes on a range of key health and criminal justice metrics has led to similar programmes being launched in other countries including Canada, Germany, the Netherlands and the UK. Evaluation is widely available in many documents and papers on the internet (search using keywords such as "heroin / supply / Swiss / Uchtenhagen"). Ambros Uchtenhagen was the Swiss researcher on drugs and, in particular, on heroin use who provided the first design of the intervention. A summary can be found in Strang et al. (2012).

Uruguay (licensed sales): In 2013, Uruguay became the first state to pass legislation to legalise and regulate cannabis for non-medical uses. The Uruguayan model involves a greater level of government control than the more commercial models in the US states of Washington and Colorado. Under the control of a newly established regulatory body, only production of specified herbal cannabis products by state-licensed growers is permitted. Sales are permitted only via licensed pharmacies, to registered adult Uruguayan residents – at prices set by the new regulatory body. There is a complete ban on all forms of branding, marketing and advertising, and tax revenue will be used to fund new cannabis risk education campaigns. Limited home-growing is also allowed.

Suggestions for cocaine regulation

In order to choose the cocaine legalisation approach among those reported above, it is necessary to consider all the results of behaviour and health studies on cocaine consumption. Interesting results have been obtained by studies on self-regulation of cocaine users. These were presented at the Eighth International Society for the Study of Drug Policy (ISSDP) Conference in 2014 in Rome, in particular by Zuffa and Ronconi (2015). These important studies need to be extended and repeated when cocaine is legalised.

The information from the analysis of health consequences shows that some derive also for non-problematic cocaine users, as reported in Chapter 2 in particular:

> *"Direct somatic health consequences due to the vasoconstrictive characteristics of cocaine are cardiovascular problems including stroke and myocardial infarction. Characteristics of cocaine that are directly toxic to cells lead to necrosis of the skin, soft tissue, and cartilage, primarily related to inhalation of cocaine."*

Consequences of this kind were observed in the studies on mortality and hospitalisation data presented at the Eighth ISSDP Conference in 2014 in Rome, in particular by Burgio et al. (2015) and Grippo et al. (2015). These studies should likewise be extended and conducted in other countries and situations, in particular to monitor the positive and negative effects of cocaine regulation.

Much worse health consequences derive directly from prohibition. Traffickers and, in particular, dealers supply illegal cocaine highly adulterated with substances that generate serious damage, as quality control is not available for illegal cocaine.

These considerations on users' behaviour and health consequences and the toxicological studies by van Amsterdam et al. (2010, 2013) and Nutt et al. (2007, 2010)[1] where the cocaine toxic score is higher than amphetamine but lower than alcohol and heroin, suggest that the licensed sales option, as described above, should be chosen for cocaine. The considerations that suggest this approach come also from various studies on consumption and health. From toxic analysis the effects of cocaine use are rather similar to alcohol, which may be benign or toxic depending on the kind of beverage and quantity. Once legalised, both prevention and rehabilitation can be improved. Cost regulation reduces profits from illegal goods and quality control reduces the health consequences.

An important general result on alcohol consumption behaviours shows that it is less harmful in the producer countries (for instance Mediterranean countries) than in the solely consumer countries (Sweden is an example), due to the cultural framework. This suggests a similar regulation for cocaine, which will need to be correctly evaluated by monitoring in future years.

---

[1] The drug ranking methodology used by Nutt et al. has been criticised by Rolles and Measham (2011). In particular they argue that: *"The delphic methodology used is highly vulnerable to subjective judgements and even the more robust measures, such as drug related death and dependence, can be understood as socially constructed. The failure of the model to disaggregate drug use harms from those related to the policy environment is also highlighted. Beyond these methodological challenges the utility of single figure index harm rankings is questioned, specifically their role in increasingly redundant legal frameworks utilising a harm-based hierarchy of punitive sanctions. If analysis is to include the capacity to capture the complexity relating to drug using behaviours and environments; specific personal and social risks for particular using populations; and the broader socio-cultural context to contemporary intoxication, there will need to be acceptance that analysis of the various harm vectors must remain separate – the complexity of such analysis is not something that can or should be over generalised to suit political discourse or outdated legal frameworks."* This assertion is valid of course but does not consider that in the same period van Amsterdam et al. made a similar analysis to rank substances, independently and using a different Delphi approach, and derived a quite similar ordering of substances. Ranking substance harm is quite important to evaluate and compare drug policy effects and positive or negative consequences collectively for different user populations and is accepted at international level, as shown, for example, in Mammone et al. (2014) and reported above.

References

Blankers, M., Frijns, T., Belackova, V., Rossi, C., Svensson, B., Trautmann, F. and van Laar, M. 2014. Predicting Cannabis Abuse Screening Test (CAST) scores: a recursive partitioning analysis using survey data from Czech Republic, Italy, the Netherlands and Sweden. *PLOS ONE* 9(9): e108298. doi:10.1371/journal.pone.0108298.

Burgio, A., Grippo F., Pappagallo, M. and Crialesi, R. 2015. Hospitalization for drug-related disorders in Italy: trends and comorbidity. *Epidemiology, Biostatistics and Public Health* 12(1) – Suppl. 1.

Caserta, P. and Rossi, C. 2013. *Corruption, competitiveness and illicit drug market: a quantitative analysis*. Rome: Universitalia. ISBN 978-886507-408-4.

EMCDDA. 2013. *EU Drug Markets Report: a strategic analysis*. Lisbon: European Monitoring Centre for Drugs and Drug Addiction. Available at: http://www.emcdda.europa.eu/publications/joint-publications/drug-markets

Fabi, F., Mammone, A. and Rossi, C. 2014. New indicators of illegal drug use to compare drug user populations for policy evaluation. *Epidemiology, Biostatistics and Public Health* 11(2): 8891-1 - 8891-9.

Friedman, S.R., Cooper, H.L., Tempalski, B., Keem, M., Friedman, R., Flom, P.L. and Des Jarlais, D.C. 2006. Relationships of deterrence and law enforcement to drug-related harms among drug injectors in US metropolitan areas. *AIDS* 20(1): 93-99.

Friedman, S.R., Pouget, E.R., Chatterjee, S., Cleland, C.M., Tempalski, B., Brady, J.E. and Cooper, H.L.F. 2011. Drug Arrests and Injection Drug Deterrence. *American Journal of Public Health* 101(2): 344-349.

Grippo, F., Pappagallo, M., Burgio, A. and Crialesi, R. 2015. Drug induced mortality in Italy: a multiple cause approach on Italian causes of death register. *Epidemiology, Biostatistics and Public Health* 12(1) – Suppl. 1.

Kushlick, D., Murkin, G., Powell, M., Rolles, S. and Sánchez, L. 2014. *Debating Drugs: how to make the case for legal regulation*, Bristol: Transform Drug Policy Foundation, Available at: http://www.tdpf.org.uk/resources/publications/debating-drugs-how-make-case-legal-regulation

Mammone, A., Fabi, F., Colasante, E., Siciliano, V., Molinaro, S., Kraus, L. and Rossi, C. 2014. New indicators to compare and evaluate harmful drug use among adolescents in 38 European countries. *Nordic Studies on Alcohol and Drugs* 31(4): 343-358.

Mascioli, F. and Rossi, C. 2015. Useful supply indicators for evaluating law enforcement efficacy, the size of the drug market and other issues. *Proceedings of the Eighth ISSDP Conference*. Rome: Universitalia.

Nutt, D.J., King, L.A., Saulsbury, W. and Blakemore, C. 2007. Development of a rational scale to assess the harm of drugs of potential misuse. *The Lancet* 369(9566): 1047-1053.

Nutt, D.J., King, L.A. and Phillips, L.D. (on behalf of the Independent Scientific Committee on Drugs). 2010. Drug harms in the UK: a multicriteria decision analysis. *The Lancet* 376(9752): 1558-1565.

Rolles, S. and Measham. F. 2011. Questioning the method and utility of ranking drug harms in drug policy. *International Journal of Drug Policy* 22(4): 243-246.

Solivetti, L.M. 2001. *Drug Use Criminalization v. Decriminalization: An Analysis in the Light of the Italian Experience*. Bern: Swiss Federal Office of Public Health.

Sterling, Eric E. 1999. Drug Laws and Snitching: A Primer. Online companion feature to "Snitch," Frontline, PBS, 12 January 1999. Available at: http://www.pbs.org/wgbh/pages/frontline/shows/snitch/primer/

Strang, J., Groshkova, T. and Metrebian, N. 2012. *New heroin-assisted treatment: Recent evidence and current practices of supervised injectable heroin treatment in Europe and beyond*. Lisbon: EMCDDA.

Tenthoff, M. 2008. Alternative Developments, Economic Interests and Paramilitaries in Uraba. TNI Drug Policy Briefing Nr. 27. Available at: http://www.undrugcontrol.info/en/issues/alternative-development/item/3173-alternativedevelopments-economic-interests-andparamilitaries-inuraba?pop=1&tmpl=component&print=1

Trautman, F., Kilmer, B. and Turnbull, P. (eds.). 2013. Further insights into aspects of the illicit EU drugs market. Luxembourg: European Commission.

Van Amsterdam, J., Opperhuizen, A., Koeter, M. and van den Brink, W. 2010. Ranking the harm of alcohol, tobacco and illicit drugs for the individual and the population. *European Addiction Research* 16(4): 202-207.

Van Amsterdam, J., Pennings, E., Brunt, T. and van den Brink, W. 2013. Physical harm due to chronic substance use. *Regulatory Toxicology and Pharmacology* 66(1): 83-87.

Ventura, E. and Rossi, C. (eds.) 2013. *Drug laws in Europe: main features and comparisons*. Rome: Universitalia. ISBN 978-88-6507-401-5.

Ventura, E., Wagner, H. and Rossi, C. 2015. New indicators of health among adolescent drug users and evaluation of drug policies comparing countries. *Epidemiology, Biostatistics and Public Health* 12(1) – Suppl. 1.

Zuffa, G. and Ronconi, S. 2015. Cocaine and stimulants, the challenge of self-regulation in a harm reduction perspective. *Epidemiology, Biostatistics and Public Health* 12(1) – Suppl. 1.

Further reading

EADPP - European Alliance on Drug Policy and Practice. 2006. Comments regarding the Green Paper of the European Commission on the role of the Civil Society in Drug Policy in the European Union.
http://ec.europa.eu/justice/anti-drugs/files/contribution-eadpp-netherlands_en.pdf
EMCDDA. 2007. Cocaine and crack cocaine: a growing public health issue.
http://www.drugs.ie/resourcesfiles/ResearchDocs/Europe/Research/2007/TDSI07002ENC.pdf
EMCDDA. 2007. Treatment of Problem Cocaine Use: A Review of the Literature.
http://www.emcdda.europa.eu/html.cfm/index18945EN.html
EMCDDA. 2010. Harm reduction: evidence, impacts and challenges.
http://www.emcdda.europa.eu/publications/monographs/harm-reduction
EMCDDA and Europol. 2010. Cocaine: a European Union perspective in the global context.
http://www.emcdda.europa.eu/publications/joint-publications/cocaine
EU drugs strategy 2005-2012. http://www.emcdda.europa.eu/html.cfm/index6790EN.html
Global Commission on Drugs. 2014. Taking Control: Pathways to Drug Policies That Work.
http://www.gcdpsummary2014.com/#foreword-from-the-chair
INCB - International Narcotics Control Board. 2010. Report 2009. http://www.incb.org
Prague Declaration on the Principles of Effective Local Drug Policies. www.praguedeclaration.com
UNODC. 2014. Perú: Monitoreo de Cultivos de Coca 2013. http://www.unodc.org/documents/crop-monitoring/Peru/Peru_Monitoreo_de_cultivos_de_coca_2013_web.pdf
UNODC. 2014. Colombia: Coca cultivation survey 2013. http://www.unodc.org/documents/crop-monitoring/Colombia/Colombia_coca_cultivation_survey_2013.pdf
Vienna Declaration. http://www.viennadeclaration.com/the-declaration

THE **BECKLEY**
FOUNDATION

BECKLEY PARK
OXFORD OX3 9SY
UNITED KINGDOM

+44 (0) 1865 351 209
+44 (0) 1865 351 019

www.beckleyfoundation.org