The world drug problem and sustainable development

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WORLD DRUG REPORT 2016

UNITED NATIONS OFFICE ON DRUGS AND CRIME

Vienna

World Drug Report

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PREFACE

The *World Drug Report 2016* comes at a decisive moment, just months after Member States, at a special session of the General Assembly, adopted a comprehensive set of operational recommendations on the world drug problem.

The session was only the third in the history of the General Assembly to focus on drugs, and the resulting outcome document, entitled "Our joint commitment to effectively addressing and countering the world drug problem", provides a concrete way forward to take action on shared challenges.

In the outcome document, Member States reaffirmed their commitment to addressing persistent, new and evolving challenges in line with the three international drug control conventions, which were recognized as allowing States parties sufficient flexibility to design and implement national drug policies consistent with the principle of common and shared responsibility.

The operational recommendations contained in the outcome document encompass measures to address demand and supply reduction, as well as to improve access to controlled medicines while preventing their diversion; they cover human rights, youth, children, women and communities and highlight emerging challenges and the need to promote long-term, comprehensive, sustainable, development-oriented and balanced drug control policies and programmes that include alternative development.

The text highlights the importance of drug abuse prevention and treatment; encourages the development, adoption and implementation of alternative or additional measures with regard to conviction or punishment; and promotes proportionate national sentencing policies, practices and guidelines for drug-related offences.

Now the international community must come together to make good on its commitments.

The *World Drug Report 2016*, which provides a comprehensive overview of major developments in drug markets, trafficking routes and the health impact of drug use, supports comprehensive, balanced and integrated rights-based approaches.

This year's report offers insight into the wide-ranging impact of drugs not only on the health and well-being of individuals, but also on the people around them — families and communities. This can include such harms as HIV, as well as the threat of violence, faced in particular by women and children.

The report also flags the alarming rise in heroin use in some regions. While the challenges posed by new psychoactive substances remain a serious concern, heroin continues to be the drug that kills the most people. This resurgence must be addressed urgently.

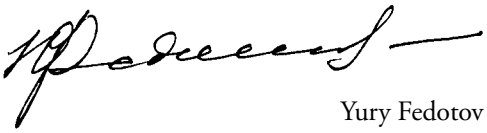
The report looks at issues of gender, marginalization, stigmatization, violence and human rights, and considers how counter-narcotics strategies can be sensitive to environmental concerns such as deforestation and pollution. It examines the use of the "dark net" and new technologies for drug trafficking, as well as the potential of illicit drug profits to fund terrorism and violent extremism.

Moreover, the 2016 report's thematic chapter focuses on the interlinkages between drugs and development and the importance of "development-sensitive" drug control policies. This is a topic of particular relevance: as Governments noted in the outcome document, "efforts to achieve the Sustainable Development Goals and to effectively address the world drug problem are complementary and mutually reinforcing".

The research contained in the report can support effective drug and development policies. The evidence is clear: illicit drug cultivation and manufacturing can be eradicated only if policies are aimed at the overall social, economic and environmental development of communities; confronting drug trafficking and its associated violence requires strong, transparent and fair criminal justice institutions and targeted efforts to dismantle transnational organized criminal organizations; prevention and treatment of drug use work if they are based on scientific evidence and are gender-sensitive; and the excessive use of imprisonment for drug-related offences of a minor nature is ineffective in reducing recidivism and overburdens criminal justice systems.

There is clearly much work to be done to tackle the many evolving and emerging challenges posed by drugs. The outcome document and its operational recommendations offer a solid foundation, one built on agreed frameworks, informed by evidence and based on the principle of common and shared responsibility.

This report, as with all of the Office's expertise and on-the-ground experience in addressing the many aspects of the world drug problem, is at the disposal of Member States as they strive to meet this call to action.



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Executive Director
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Acknowledgements

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EXPLANATORY NOTES

The boundaries and names shown and the designations used on maps do not imply official endorsement or acceptance by the United Nations. A dotted line represents approximately the line of control in Jammu and Kashmir agreed upon by India and Pakistan. The final status of Jammu and Kashmir has not yet been agreed upon by the parties. Disputed boundaries (China/India) are represented by cross-hatch owing to the difficulty of showing sufficient detail.

The designations employed and the presentation of the material in this publication do not imply the expression of any opinion whatsoever on the part of the Secretariat of the United Nations concerning the legal status of any country, territory, city or area, or of its authorities or concerning the delimitation of its frontiers or boundaries.

Countries and areas are referred to by the names that were in official use at the time the relevant data were collected.

All references to Kosovo in the present publication should be understood to be in compliance with Security Council resolution 1244 (1999).

Since there is some scientific and legal ambiguity about the distinctions between "drug use", "drug misuse" and "drug abuse", the neutral terms "drug use" and "drug consumption" are used in the present report.

All uses of the word "drug" in this report refer to substances under the control of the international drug control conventions.

All analysis contained in this report is based on the official data submitted by Member States to the United Nations Office on Drugs and Crime through the annual report questionnaire unless indicated otherwise.

The data on population used in the present report are from: United Nations, Department of Economic and Social Affairs, Population Division, *World Population Prospects: The 2015 Revision.*

References to dollars ($) are to United States dollars, unless otherwise stated.

References to tons are to metric tons, unless otherwise stated. R stands for the correlation coefficient, used as measure of the strength of a statistical relationship between two or more variables, ranging from 0 to 1 in case of a positive correlation or from 0 to -1 in case of a negative correlation; R^2 stands for the square of the coefficient of correlation.

The following abbreviations have been used in the present report:

ATS	amphetamine-type stimulants
CICAD	Inter-American Drug Abuse Control Commission (Organization of American States)
CND	Commission on Narcotic Drugs
EMCDDA	European Monitoring Centre for Drugs and Drug Addiction
Europol	European Police Office
GDP	gross domestic product
ha	hectares
INCB	International Narcotics Control Board
INCSR	International Narcotics Control Strategy Report of the United States State Department
INTERPOL	International Criminal Police Organization
MDMA	3,4-methylenedioxymethamphetamine
MSM	Men who have sex with men
MDPV	3,4-methylenedioxypyrovalerone
NIDA	National Institute on Drug Abuse (United States)
NPS	new psychoactive substances
OECD	Organization for Economic Cooperation and Development

PMMA	*para*-methoxymethamphetamine
PWID	people who inject drugs
alpha-PVP	*alpha*-pyrrolidinopentiophenone
SAMHSA	Substance Abuse and Mental Health Services Administration (United States of America)
SCORE	Sewage Analysis CORe group Europe
UNAIDS	Joint United Nations Programme on HIV/AIDS
UNDP	United Nations Development Programme
UNFDAC	United Nations Fund for Drug Abuse Control
WCO	World Customs Organization
WHO	World Health Organization

EXECUTIVE SUMMARY

"We reiterate our commitment to strengthen our efforts in addressing and countering emerging and persistent challenges and threats of all aspects of the world drug problem … and we recommend the following: … promote, as appropriate, the use and analysis of relevant, reliable and objective data … to improve the implementation of comprehensive, integrated and balanced national drug control strategies, policies and programmes … and encourage the sharing of best practices and lessons learned."

Outcome document of the special session of the General Assembly on the world drug problem, entitled "Our joint commitment to effectively addressing and countering the world drug problem"

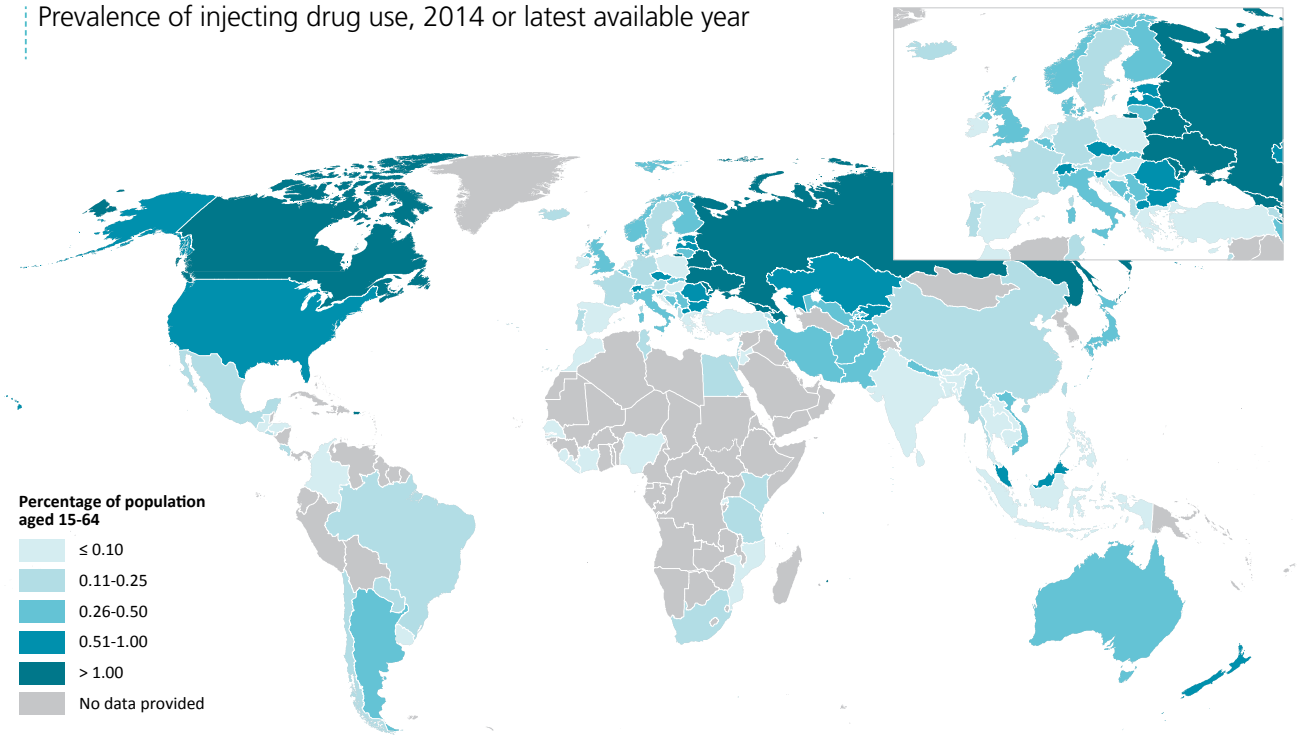
The *World Drug Report 2016* is published in the wake of the landmark moment in global drug policy, the special session of the General Assembly on the world drug problem. Chapter I provides a global overview of the supply of and demand for opiates, cocaine, cannabis, amphetamine-type stimulants (ATS) and new psychoactive substances (NPS), as well as their impact on health. It also reviews the scientific evidence on polydrug use, treatment demand for cannabis and developments since the legalization of cannabis for recreational use in some parts of the world. Chapter II focuses on the mechanisms of the interaction between the world drug problem and all aspects of sustainable development through the lens of the Sustainable Development Goals.

Drug use and its health consequences

It is estimated that 1 in 20 adults, or a quarter of a billion people between the ages of 15 and 64 years, used at least one drug in 2014. Roughly the equivalent of the combined populations of France, Germany, Italy and the United Kingdom, though a substantial amount, it is one that does not seem to have grown over the past four years in proportion to the global population. Nevertheless, as over 29 million people who use drugs are estimated to suffer from drug use disorders, and of those, 12 million are people who inject drugs (PWID), of whom 14.0 per cent are living with HIV, the impact of drug use in terms of its consequences on health continues to be devastating.

With an estimated 207,400 drug-related deaths in 2014, corresponding to 43.5 deaths per million people aged 15-64, the number of drug-related deaths worldwide has also remained stable, although unacceptable and preventable. Overdose deaths contribute to between roughly a third and a half of all drug-related deaths, which are attributable in most cases to opioids. The time period shortly after release from prison is associated with a substantially

Prevalence of injecting drug use, 2014 or latest available year



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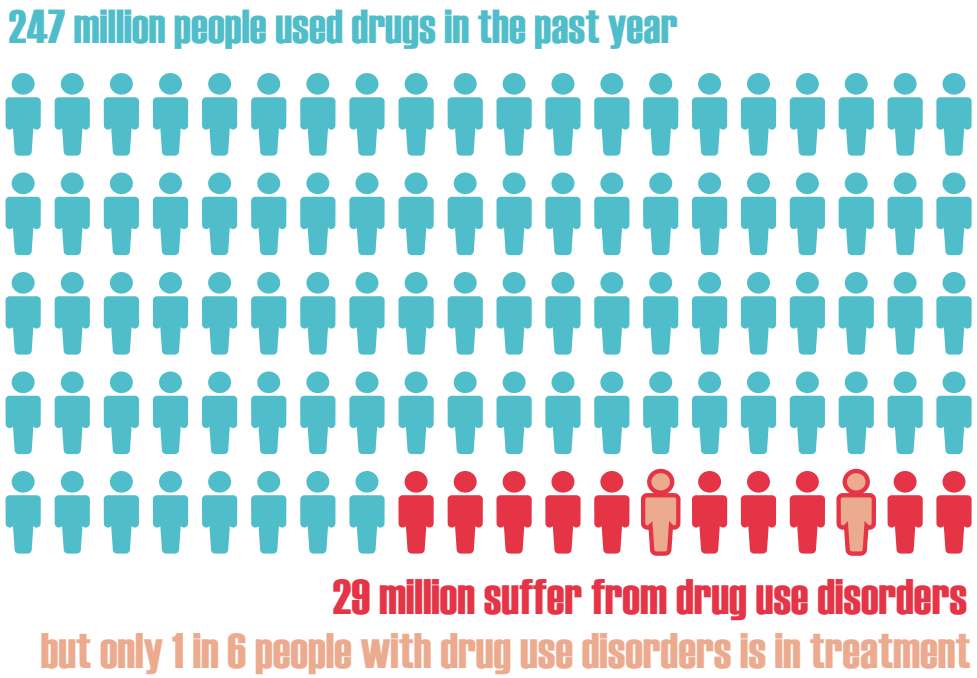
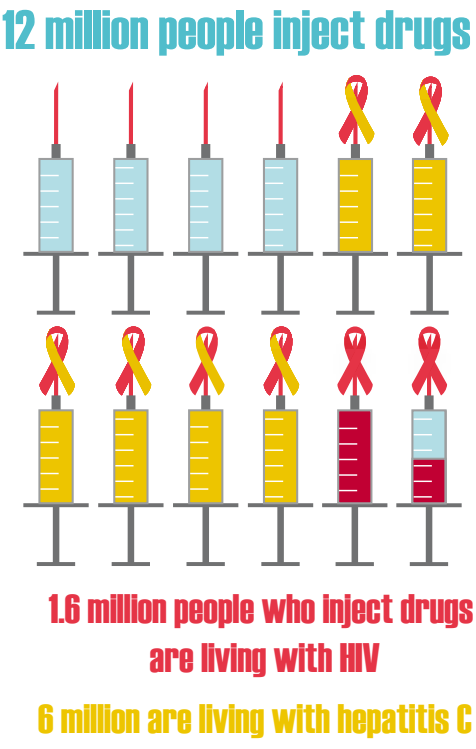


increased risk of death from drug-related causes (primarily as a result of drug overdoses), with a mortality rate much higher than from all causes among the general population.

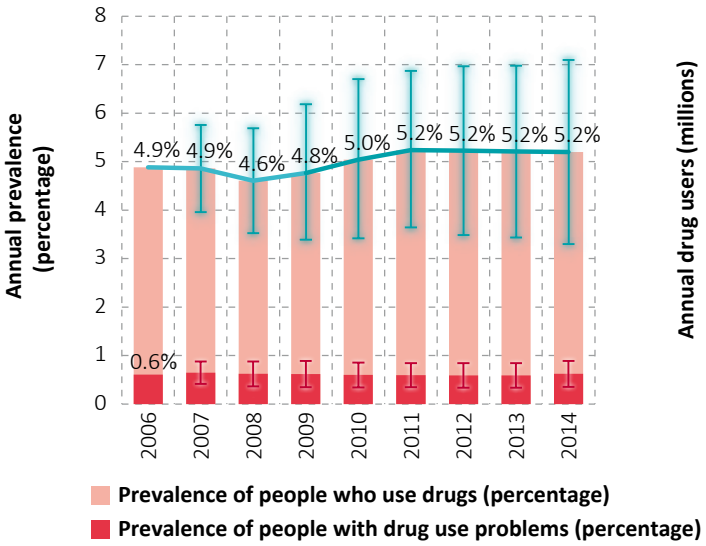
In many countries, prisons remain a high-risk environment for infectious diseases, which is a significant concern for prison health. A number of studies report high levels of drug use in prison, including the use of opiates and injecting drug use. In addition, the prevalence of HIV, hepatitis and tuberculosis among persons held in prison can be substantially higher than among the general population. However, despite the high-risk environment and scientific evidence for effective health interventions, there are significant gaps in prevention and treatment services in many prisons around the world.

PWID experience some of the most severe health-related harms associated with unsafe drug use, overall poor health outcomes, including a high risk of non-fatal and fatal overdoses, and a greater chance of premature death. One in seven PWID is living with HIV, and one in two with hepatitis C**.** PWID are a key at-risk population for HIV and hepatitis, with almost a third of new HIV infections outside sub-Saharan Africa occurring among PWID. Moreover, studies have found people who inject stimulants to engage in more risky sexual behaviours, resulting in a higher risk of HIV infection than for those injecting opiates.

Cannabis remains the most commonly used drug at the global level, with an estimated 183 million people having used the drug in 2014, while amphetamines remain the second most commonly used drug. With an estimated 33 million users, the use of opiates and prescription opioids is less common, but opioids remain major drugs of potential harm and health consequences. The fact that a sharp increase in heroin use has been documented in some markets (particularly North America) where it was previously declining, shows that heroin remains one of the major drugs of public health concern.



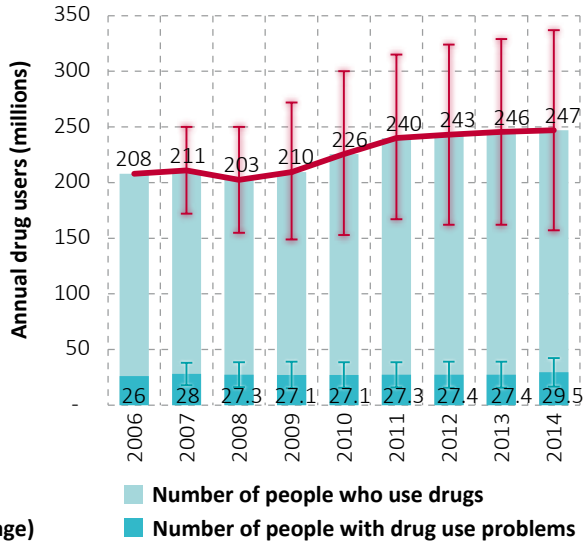
Global trends in the estimated prevalence of drug use, 2006-2014



Source: Responses to the annual report questionnaire.

Note: Estimated percentage of adults (ages 15-64) who used drugs in the past year.

Global trends in the estimated number of people who use drugs, 2006-2014



Source: Responses to the annual report questionnaire.

Note: Estimates are for adults (ages 15-64), based on past-year use.

As an overall trend at the global level, the use of cannabis has remained stable over the past three years. In some subregions, however, particularly North America and Western and Central Europe, cannabis use has increased. After a period of stability, since 2010 cocaine use has also been rising, mainly because of an increase in cocaine use in South America. On the other hand, the use of amphetamines appears to be stable, but that may underplay the situation in subregions, specifically East and South-East Asia, where recent information on the extent of drug use is unavailable.

Making the global picture of drug use more blurred is the fact that many people who use drugs, both occasionally and regularly, tend to be polydrug users who use more than one substance concurrently or sequentially. For example, the non-medical use of prescription drugs, synthetic stimulants and NPS in lieu of or in combination with more conventional drugs clouds the distinction between users of a particular drug, presenting an interlinked or cyclical epidemic of drug use and related health consequences in recent years.

Treatment related to cannabis use has been increasing in many regions over the past decade. In Europe, an increase in the numbers in treatment for cannabis use has been observed in several countries, despite a decline in the number of frequent (monthly) users. The proportion of people seeking treatment for the first time for cannabis use disorders remains high globally, with nearly half of the people treated for cannabis use disorders being first-time entrants. Changes in patterns of the people in treatment for cannabis use may be attributed to a number of factors, including practices in referrals by the criminal justice system and an expansion in the provision of treatment for cannabis in some countries. While there is some evidence that higher potency cannabis is now more widely available in Europe and the United States, how this might translate into greater harm for cannabis users is not clearly understood.

On average, younger people are seeking treatment for cannabis and amphetamines use disorders more than for other drugs. This reflects the trends in increasing use of cannabis and amphetamines and the resulting increase in people seeking treatment for disorders related to the use of cannabis and amphetamines. People in treatment for opioid- or cocaine-related disorders are typically in their thirties, and, in many subregions, this reflects an ageing cohort of users in treatment and an overall decrease in the proportion of treatment demand.

Overall, men are three times more likely than women to use cannabis, cocaine or amphetamines, whereas women are more likely than men to engage in the non-medical use of opioids and tranquilizers. Gender disparities in drug use are more attributable to opportunities to use drugs in a social environment than to either gender being more or less susceptible or vulnerable to the use of drugs. Moreover, while in most surveys the prevalence of drug use among young people is reportedly higher than among adults, the gender divide in drug use is narrower among young people than among adults.

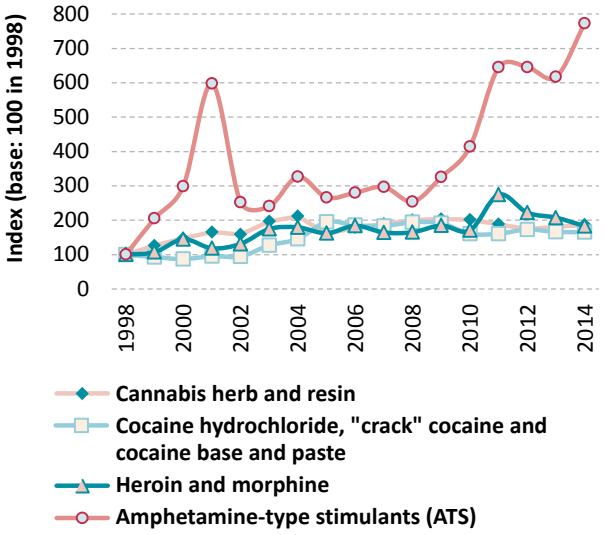
DRUG SUPPLY AND MARKETS

The most widely cultivated drug crop continues to be cannabis, which was reported by 129 countries over the period 2009-2014, far more than the 49 countries that reported opium poppy cultivation (mostly located in Asia and the Americas) and the 7 countries that reported coca cultivation (located in the Americas). Leaving aside the disparity in their respective numbers of cultivating countries, opium poppy cultivation has been decreasing in the past year while coca cultivation has been rising.

Cannabis also continues to be the most trafficked drug worldwide, while there has been a large increase in seizures of synthetic drugs. Although there were 234 substances under international control in 2014 (244 in January 2016), the bulk of trafficking (based on reported drug seizures, which reflect both law enforcement activity and drug flows) was concentrated on a far smaller number of substances. Cannabis in its various forms was intercepted in 95 per cent of reporting countries in 2014 and accounted for over half of the 2.2 million drug seizure cases reported to the United Nations Office on Drugs and Crime (UNODC) that year, followed by ATS, opioids and coca-related substances.

In all countries, more men (90 per cent of the total, on average) than women are brought into formal contact with the criminal justice system for trafficking in drugs or for possession of drugs for personal use. However, the reporting of gender-disaggregated data has improved over the years and shows an increased number of women arrested for drug-related offences in absolute terms. Nevertheless, the proportion of women in drug-related arrests, while fluctuating, showed a downward trend over the 1998-2014 period, particularly for drug trafficking-related offences.

Trends in the quantities of drugs seized worldwide, 1998-2014



Source: Responses to the annual report questionnaire.

Drug supply via the Internet, including via the anonymous online marketplace, the "dark net", may have increased in recent years. This raises concerns in terms of the potential of the "dark net" to attract new populations of users by facilitating access to drugs in both developed and developing countries.

Opiates

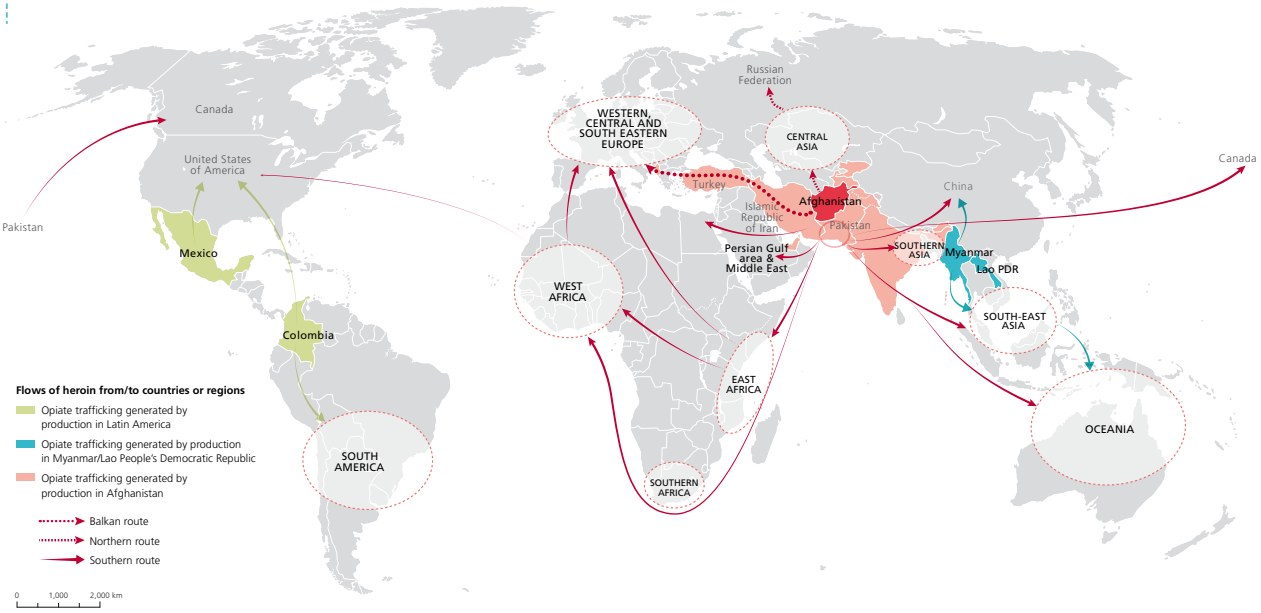
Primarily carried out in South-West Asia and, to a lesser extent, in South-East Asia and Latin America, global opium production in 2015 fell by 38 per cent from the previous year to some 4,770 tons, i.e., to the levels of the late 1990s. The decrease was primarily a consequence of a decline in opium production in Afghanistan (a decrease of 48 per cent from the previous year), mainly as a result of poor yields in the country's southern provinces. However, at 183,000 hectares, Afghanistan still accounted for almost two thirds of the global area under illicit opium poppy cultivation, which decreased by 11 per cent from the previous year to around 281,000 hectares.

UNODC estimates indicate that the global number of opiate users (i.e., users of opium, morphine and heroin) has changed little in recent years and that opiates continued to affect some 17 million people in 2014. It seems unlikely that the sharp decline in opium production in 2015 will lead to major shortages in the global heroin market given the high opium production levels of previous years. The build-up or depletion of previous years' opium inventories may be used to offset annual changes in production and maintain the supply of heroin to user markets. It may take a period of sustained decline in opium production for the repercussions to be felt in the heroin market.

Indeed, the global opiate market appears to be stable despite important regional changes. There are indications that heroin use may be undergoing a resurgence in some countries where it was previously declining. Heroin use increased in North America in the past decade, which resulted in an increase in the level of heroin-related deaths. Long-term trends, in contrast, have been stable or declining in Western and Central Europe since the late 1990s. There are early signs, however, of a surge in the heroin market, with an increase in the availability and use of heroin in some markets in Europe, as well as a major increase in the size of individual seizure cases of heroin destined for Europe. Meanwhile, based on trend perceptions reported to UNODC, the use of opioids may have grown in Africa. Overall opiate use in Asia is reported by experts to have remained largely unchanged over the period 1998-2014, whereas opiate use in Oceania has declined.

The global interception rate for opiates doubled from the period 1980-1997 (particularly after the special session of the General Assembly on the world drug problem in 1998) to the 2009-2014 period. The largest amount of opiates

Main trafficking flows of heroin



Source: UNODC, responses to annual report questionnaire and individual drug seizure database.

Notes: The trafficking routes represented on this map should be considered broadly indicative and based on data analyses rather than definitive route outlines. Such analyses are based on data related to official drug seizures along the trafficking route as well as official country reports and responses to annual report questionnaires. Routes may deviate to other countries that lie along the routes and there are numerous secondary flows that may not be reflected. The boundaries shown on this map do not imply official endorsement or acceptance by the United Nations. Dashed lines represent undetermined boundaries. The dotted line represents approximately the Line of Control in Jammu and Kashmir agreed upon by India and Pakistan. The final status of Jammu and Kashmir has not yet been agreed upon by the parties. The final boundary between the Sudan and South Sudan has not yet been determined.

seized takes place in South-West Asia, followed by Europe. Accounting for 75 per cent of global opium seizures, 61 per cent of global morphine seizures and 17 per cent of global heroin seizures, the largest aggregated opiate seizures worldwide in 2014 were reported by the Islamic Republic of Iran.

The so-called "Balkan route", which supplies Western and Central Europe with Afghan opiates, through Iran (Islamic Republic of) and Turkey via South-Eastern Europe, continues to be the most important conduit for heroin trafficking. However, the so-called "southern route" (through Pakistan or the Islamic Republic of Iran by sea to the Gulf region, Africa (particularly East Africa), South Asia and, to a lesser extent, South-East Asia, the Oceania region and North America), has grown in importance. Meanwhile, opiate trafficking on the so-called "northern route", from Afghanistan to neighbouring States in Central Asia, the Russian Federation and other countries of the Commonwealth of Independent States, has started to undergo a resurgence after the decline in the period 2008-2012, while trafficking out of the Golden Triangle is on the increase, mainly due to rising levels of opium production in Myanmar after 2006. Moreover, heroin trafficking in the Americas continues to increase, with heroin and morphine seizures rising from an average of 4 tons over the period 1998-2008 to 7 tons per year over the period 2009-2014, in line with reported increases in opium production in Latin America over those periods.

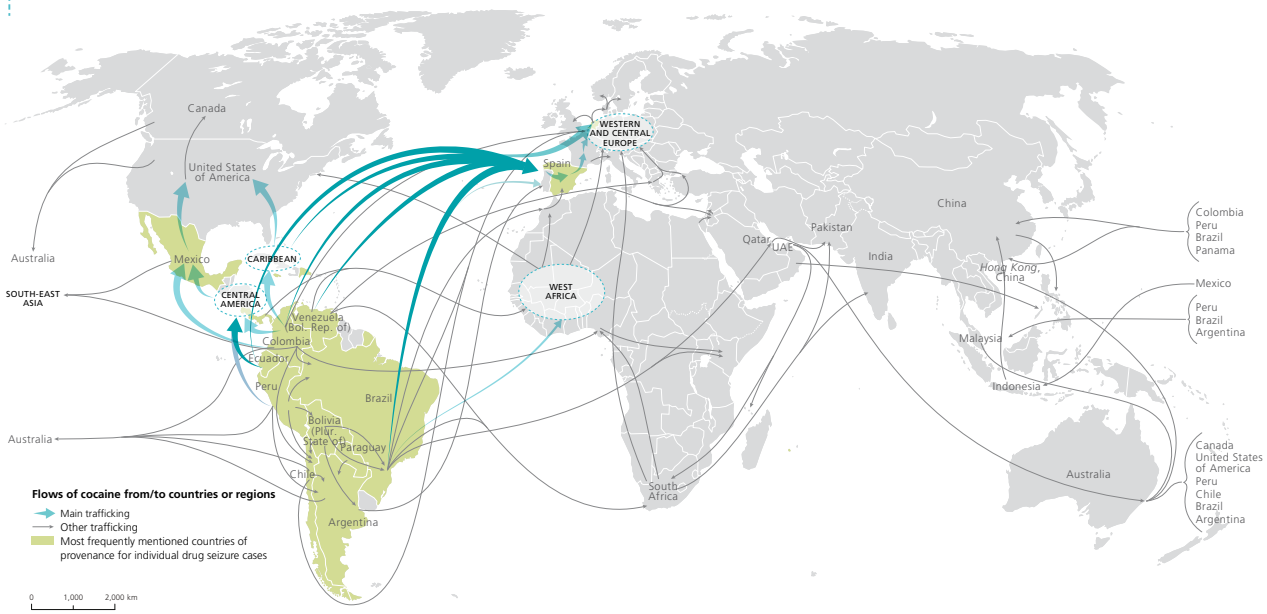
Cocaine

Although global coca bush cultivation in 2014 increased by 10 per cent from the previous year, the actual area under coca bush cultivation was the second smallest since the late 1980s. Global cocaine manufacture was slightly higher than in the previous year but still 24-27 per cent lower than the peak in 2007, and thus basically back to the levels reported in the late 1990s. At the same time, there are indications that the increase in global cocaine manufacture observed in 2014 was not a one-off event and may have continued in 2015.

Cocaine trafficking via Africa may be regaining importance, and there are signs of increases in the trafficking of cocaine to Asia, particularly to East and South-East Asia and the Middle East, as cocaine seizures in Asia tripled from an average of 0.45 tons per year over the period 1998-2008 to 1.5 tons per year over the period 2009-2014. In Oceania, the cocaine market appears to be stabilizing, following rapid growth over the past decade.

Despite these regional fluctuations, the annual prevalence of cocaine use remained largely stable at the global level over the period 1998-2014, fluctuating at between 0.3 and 0.4 per cent of the population aged 15-64. However, as the population has grown, the number of cocaine users has increased, from some 14 million in 1998 to 18.8 million in 2014. Meanwhile, it is likely that there has been a decline in per capita consumption of cocaine, prompted by a decline in the amount of cocaine available for con-

Main trafficking flows of cocaine



Source: UNODC, responses to annual report questionnaire and individual drug seizure database.

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sumption over the period 2007-2014, mainly linked to a drop in cocaine production in the Andean region. In parallel, the number of heavy cocaine users in North America has declined. This points to an overall shrinking of the cocaine market, although the number of (recreational rather than regular) cocaine users in several emerging markets continues to rise.

Cannabis

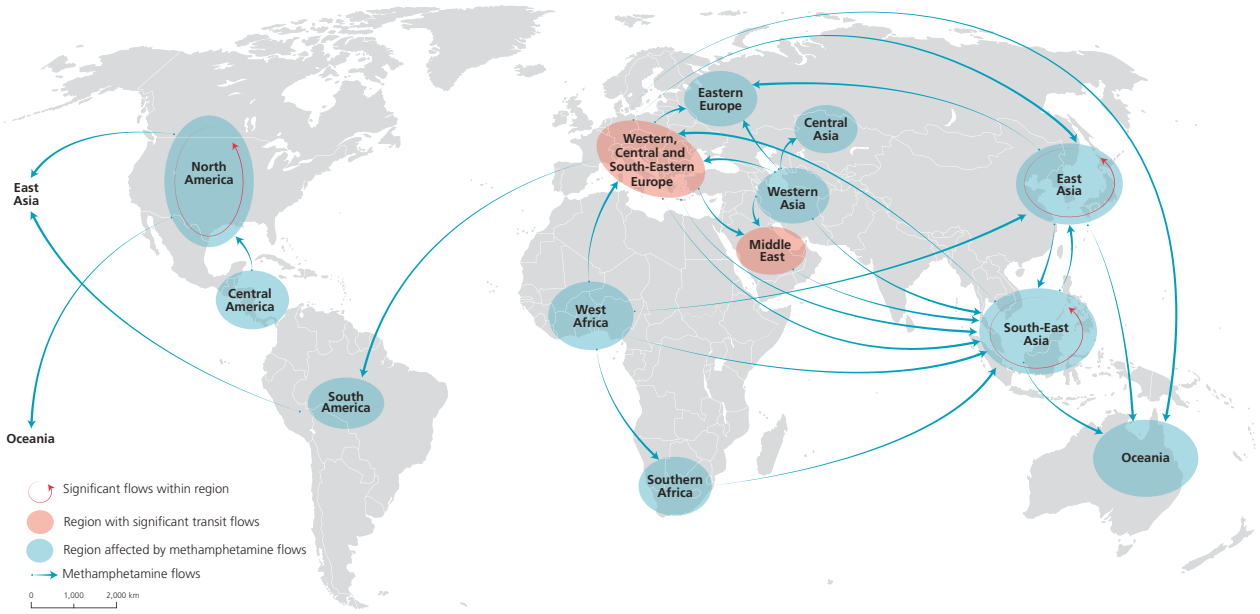
Despite major changes in some regions, global cannabis consumption has remained somewhat stable in recent years. In 2014, some 3.8 per cent of the global population had used cannabis in the past year, a proportion that has remained stable since 1998. Given the global population growth, this has gone in parallel with an increase in the total number of cannabis users since 1998. The Americas, followed by Africa, remain the main production and consumption regions for cannabis herb, with about three quarters of all cannabis herb seizures worldwide taking place in the Americas in 2014, the largest amounts in North America, while Africa accounted for 14 per cent of all cannabis herb seizures and Europe for 5 per cent. On the other hand, Europe, North Africa and the Near and Middle East remain the principal markets for cannabis resin, the majority of which continues to be produced in Morocco and Afghanistan, as reflected in information provided by Member States on the sources of cannabis resin seized. Accounting for 40 per cent of the total, the largest amounts of cannabis resin seized in 2014 took place once again in Western and Central Europe.

In the United States, although outcome measures such as the burden on the health and criminal justice systems need to continue to be monitored regularly, recent data from the states that have legalized marijuana for recreational use show an increase in cannabis use, as well as in public health and public safety indicators (cannabis-related emergency room visits, hospitalizations, traffic accidents and related deaths), while cannabis-related arrests, court cases and criminal justice system referrals into treatment have declined.

Synthetics: amphetamine-type stimulants and new psychoactive substances

After three years of relative stability, ATS seizures reached a new peak of more than 170 tons in 2014. Since 2009, global amphetamine seizures have fluctuated annually between about 20 and 46 tons, while "ecstasy" seizures more than doubled in 2014, to 9 tons, compared with the annual averages of 4-5 tons since 2009. For the past few years, methamphetamine seizures have accounted for the largest share of global ATS seizures annually, but, although methamphetamine is a feature of ATS markets worldwide, it is particularly dominant in East and South-East Asia and North America. Since 2009, those subregions together have annually accounted for most global methamphetamine seizures. Compared with other subregions, North

Interregional trafficking flows of methamphetamine, 2011-2014



Source: UNODC, responses to annual report questionnaire.

Note: The origins of the flow arrows do not necessarily indicate the source/manufacture of methamphetamine. These arrows represent the flows as perceived by recipient countries. Flow arrows represent the direction of methamphetamine trafficking and are not an indication of the quantity trafficked. The boundaries shown on this map do not imply official endorsement or acceptance by the United Nations. Dashed lines represent undetermined boundaries. The dotted line represents approximately the Line of Control in Jammu and Kashmir agreed upon by India and Pakistan. The final status of Jammu and Kashmir has not yet been agreed upon by the parties. The final boundary between the Sudan and South Sudan has not yet been determined.

America has consistently reported the largest amount of methamphetamine seizures each year, whereas between 2009 and 2014, methamphetamine seizures reported in East and South-East Asia almost quadrupled.

In Oceania, strong increases in methamphetamine seizures have been recorded since 2012. There is a growing number of users of crystalline methamphetamine in the region, as well as increased frequency of use among certain user groups, an increase in methamphetamine purity and a decline in purity-adjusted prices, all of which could aggravate the negative impact on the health of individuals and on society in general.

Large amounts of amphetamine tablets labelled with the brand name "Captagon" were reported to have been seized in the Middle East between March 2014 and November 2015. In 2013 and 2014, amphetamine seizures reported in the Middle East were mostly perceived to have originated in Lebanon and the Syrian Arab Republic. Over the same period, some countries reporting amphetamine seizures in the Middle East found that these were intended for trafficking onward to other destinations within the region.

The NPS market continues to be characterized by the large number of new substances being reported. Although data collection for 2015 is still in progress, 75 new substances have been reported to UNODC for the first time, compared with a total of only 66 new substances reported in 2014. Between 2012 and 2014, most substances reported for the first time belonged to the group of synthetic cannabinoids, but the data reported for 2015 so far show a different pattern: firstly, almost as many synthetic cathinones (20) were reported for the first time as were synthetic cannabinoids (21); secondly, a wide range of substances (21) not belonging to any of the major groups identified in previous years were reported for the first time, which included synthetic opioids (e.g., fentanyl derivatives) and sedatives (e.g., benzodiazepines).

Significant quantities of NPS seized have been reported over the past few years. The global market for synthetic NPS continues to be dominated by synthetic cannabinoids (seizures of 32 tons), with North America (specifically the United States with 26.5 tons of seizures) accounting for the largest quantities seized worldwide in 2014, out of the global total of 34 tons (excluding plant-based NPS and ketamine). However, global seizures of synthetic cathinones have been steadily increasing since they were first reported in 2010, with seizures tripling to 1.3 tons in 2014 from the previous year.

UNODC monitoring of NPS since 2008 has so far shown a rather dynamic supply situation with elements of persistence (a small number of substances emerge, spread and stay for several years) and change (a considerable number of substances appear for a short time or only locally).

THE WORLD DRUG PROBLEM AND SUSTAINABLE DEVELOPMENT

"We welcome the 2030 Agenda for Sustainable Development, and we note that efforts to achieve the Sustainable Development Goals and to effectively address the world drug problem are complementary and mutually reinforcing."

Outcome document of the special session of the General Assembly on the world drug problem, entitled "Our joint commitment to effectively addressing and countering the world drug problem"

The world drug problem is intertwined with all aspects of sustainable development. The analysis of the drug problem, and the response thereto, through the lens of the Sustainable Development Goals reveals the mechanisms of this interaction. All areas of sustainable development, as identified in the 17 Sustainable Development Goals, shape the nature and dynamic of the drug problem. At the same time, the impact of the drug problem, and the response thereto, on development can be observed at the individual, community and national levels. In analysing those linkages, the 17 Sustainable Development Goals have been divided into five broad areas: social development, economic development, environmental sustainability, peaceful, just and inclusive societies, and partnership.

Social development

Sustainable Development Goal 10. Reduce inequality within and among countries

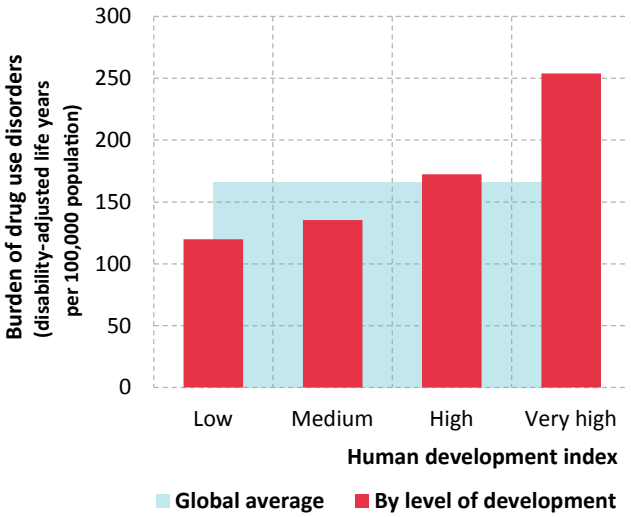
The failure to accept or understand that drug dependence is a health condition feeds the cycle of marginalization that often affects people with drug use disorders, making their recovery and social integration more challenging. Furthermore, stigmatizing attitudes towards people who use drugs, which may extend to staff in health-care services, can affect the delivery of effective treatment to those who most need it.

Health

Sustainable Development Goal 3. Ensure healthy lives and promote well-being for all at all ages

The Global Burden of Disease Study indicates that opioids, cocaine, amphetamines and cannabis together accounted for almost 12 million life years lost due to premature death or disability in 2013, of which more than 8 million were linked to opioid use disorders. One of the risk factors for the negative health impact of drugs stems from their mode of administration. Injecting drug use, in particular, carries a much greater risk of overdose and infection, including the transmission of blood-borne viruses, such as HIV and hepatitis C, than does smoking, swallowing, snorting or inhaling drugs. Drug use may have repercussions on the health of society in general as PWID may become a group through which sexually transmitted diseases are passed on to other subgroups and the general population. Some studies also corroborate the hypothesis that the use of certain stimulants (whether injected or not) may also influence sexual behaviour itself, thereby increasing the likelihood of high-risk behaviour and sexual transmission — a pattern that raises concern particularly in the case of specific at-risk groups such as men who have sex with men.

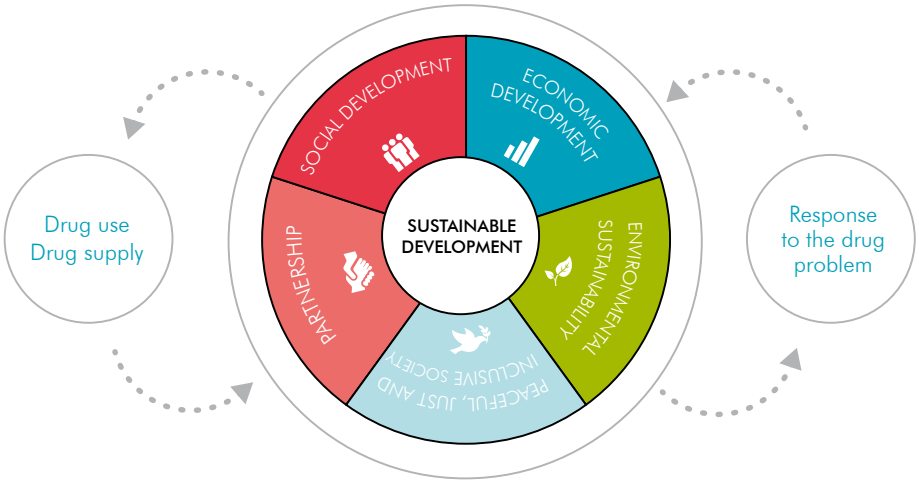
The health impact of drug use increases with development



Sources: Human development index from the United Nations Development Programme (UNDP); data on burden of disease (disability-adjusted life years) are from the Institute for Health Metrics and Evaluation, University of Washington, GBD Compare, 2015. Available from http://vizhub.healthdata.org/gbd-compare.

Among its targets, Sustainable Development Goal 3 explicitly includes strengthening "the prevention and treatment of substance abuse, including narcotic drug abuse". Drug policies based on scientific evidence can, through measures such as prevention and treatment, mitigate the negative health impact of drug use. But when policies are not appropriately tuned to the principles of the international drug control conventions, they can undermine the accessibility of controlled drugs for both medical and research purposes. Three quarters of the global population still have little or no access to medicines containing narcotic drugs and have inadequate access to treatment for moderate to severe pain. The importance of the accessibility of essential medicines, which typically include controlled drugs such as morphine, codeine, diazepam and phenobarbital, has

The world drug problem and sustainable development: a complex relationship



been recognized in target 3.b of the Sustainable Development Goals.

Women, girls and youth

Drug use undermines the aspect of sustainable development related to gender equality and the empowerment of women and girls. There are marked differences between male and female drug users in terms of preferred drugs and drug-related vulnerabilities. Coupled with the fact that users of several drug types are predominantly male, this leads to a danger that the entire continuum of care may fail to cater adequately for the needs of female drug users, who also have a lack of access to such services.

Sustainable Development Goal 5. Achieve gender equality and empower all women and girls

Women affected by drug dependence and HIV are more vulnerable and more stigmatized than men. They suffer from co-occurring mental health disorders to a greater extent than men, and they are more likely to have been victims of violence and abuse. Women often also bear a heavy burden of violence and deprivation associated with the drug dependence of family members, hindering the achievement of the sustainable development target of eliminating all forms of violence against all women and girls. Female offenders and prisoners, especially those with drug use disorders, face particular hardship as, in many instances, criminal justice systems are not yet equipped for the special needs of women.

Drug use often affects people during their most productive years. When youth become trapped in a cycle of drug use, and even in the drug trade itself, as opposed to being engaged in legitimate employment and educational opportunities, distinct barriers are effectively raised to the development of individuals and communities.

Economic development

Sustainable Development Goal 1. End poverty in all its forms everywhere

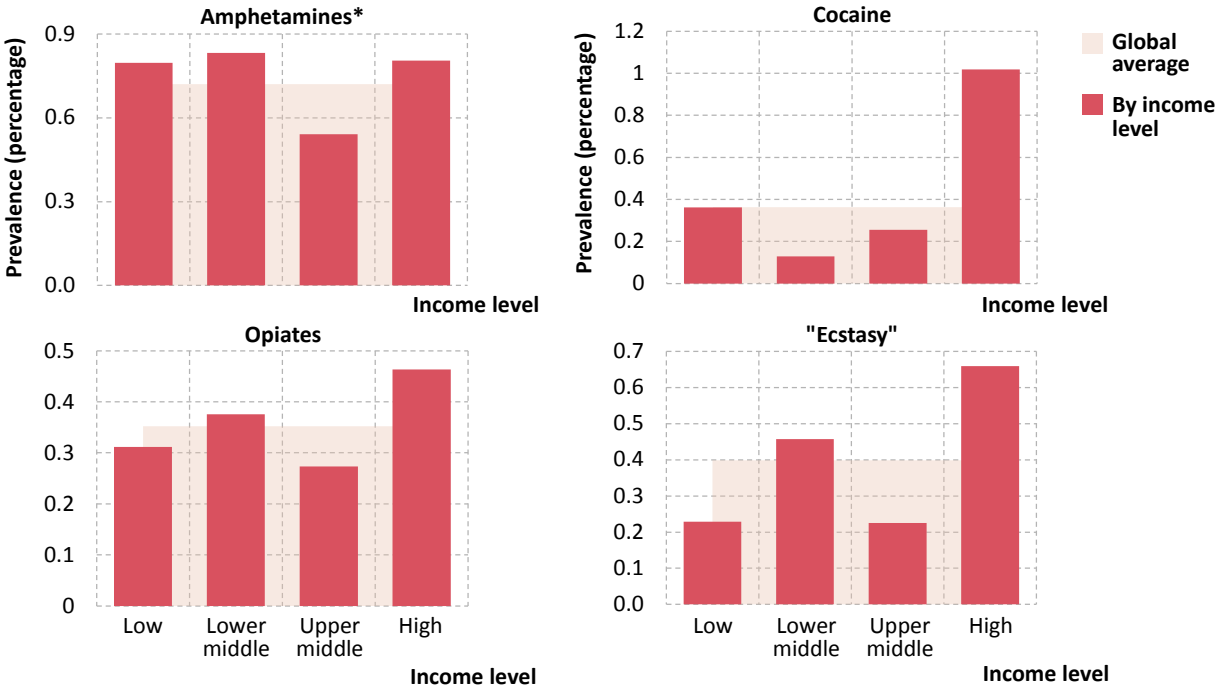
The toll taken by the drug problem may vary in size and shape across countries, both developed and developing, but in one way or another it affects all. Vulnerability to drugs, be it in terms of cultivation, production, trafficking or use, exists in countries at all levels of development.

The relationship between economic development and drugs is particularly evident in the case of the illicit cultivation of drug crops. In rural areas, socioeconomic elements such as poverty and a lack of sustainable livelihoods are important risk factors leading farmers to engage in illicit cultivation. They are also manifestations of poor levels of development which, alongside other development issues linked to security and governance, are enabling elements of large-scale illicit cultivation.

Higher socioeconomic groups have a greater propensity to initiate drug use than lower socioeconomic groups, but it is the lower socioeconomic groups that pay the higher price as they are more likely to become drug dependent

Poverty also has strong links with drug use, albeit in a complex and mutually reinforcing manner. Indeed, the brunt of the drug use problem is borne by people who are poor in relation to the societies in which they live, as can be seen in stark terms in the wealthier countries. More broadly, there is a strong association between social and

The impact of income on drug use depends on the type of drug



Source: World Bank (for income levels) and UNODC estimates based on responses to the annual report questionnaire and other official sources (for drug use data).

* *Including prescription stimulants.*

economic disadvantage and drug use disorders. This pattern can also be seen when looking at different reflections of marginalization and social exclusion, such as unemployment and low levels of education.

Beyond development, a multitude of factors, including geographic location, play a role in shaping the drug problem in a given country. Proximity to a drug-producing area or a major drug trafficking route can, for example, explain the above-average rates of opiate use in the Near and Middle East and South-West Asia, and use of cocaine, including "crack" cocaine, in South America and West Africa. A breakdown of national data on people who use drugs, based on income level, shows, however, that "high-income" countries tend to have a higher prevalence of past-year drug use across the drug categories. Drugs that can command a relatively high price, and ultimately higher profits for traffickers, find an easier foothold in countries with relatively higher levels of per capita income. In the case of substances such as cocaine and heroin, the level of economic development contributes to the formation of consumer markets that are large in terms of both number of users and total revenue.

Different levels of socioeconomic well-being within individual countries also have an effect on the type of drugs used. For example, in the United States, the association between drug use and unemployment is much stronger in the case of "crack" cocaine than other types of cocaine.

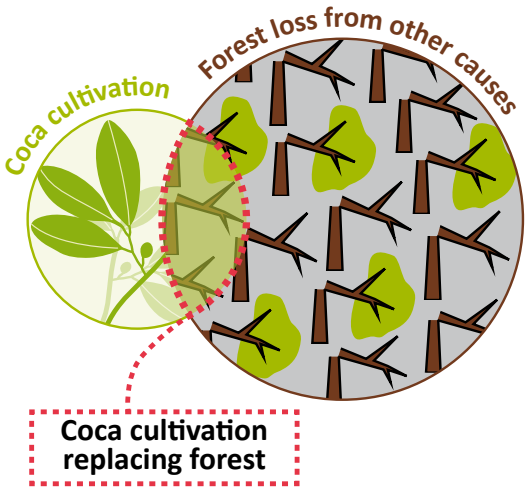
Drug markets tend to be influenced by local idiosyncrasies in both developed and developing countries, but sizeable markets for certain substances, notably cocaine and synthetic substances, have taken hold in developed countries before subsequently expanding to developing countries. Prime examples are the emergence of "ecstasy" and other hallucinogens in North America and Europe, as well as the ongoing proliferation of the consumption of NPS in Europe, Japan and North America. The relationship between development and the drug problem thus needs to be viewed in dynamic terms.

Environmental sustainability

Sustainable Development Goal target 15.5. Take urgent and significant action to reduce the degradation of natural habitats, halt the loss of biodiversity and, by 2020, protect and prevent the extinction of threatened species

Illicit crop cultivation often occurs in forested areas and contributes to deforestation when it results in the clearing of woodland. Moreover, illicit crop cultivation frequently takes place in biodiversity hotspots hosting a large number of species with a limited habitat, some of which are protected areas. It tends to occur close to the agricultural frontier, which demarcates the border between pristine forest and developed areas, and can result in the clearing of forests. Although empirical evidence and rigorous analysis do not support the claim that illicit cultivation is the

Coca cultivation and deforestation in perspective



major driver of deforestation, research does suggest that a lack of rural development drives the phenomenon. Analysis has shown, moreover, that drug trafficking can have a direct impact on deforestation through the construction of infrastructure such as landing strips and illegal roads, as well as indirectly through the privatization of public land to create "narco-estates". When eradication induces a displacement of the location of drug crops it may result in deforestation as farmers react to eradication initiatives and seek places out of the reach of law enforcement.

The disposal of chemicals used in the illicit manufacture of cocaine and opiates can also have negative consequences on the environment, contributing to pollution and health hazards in rural communities. In the case of synthetic drugs, the consequences in urban settings not only pose health risks but may also have an impact on the urban and industrial environment.

Peaceful, just and inclusive societies

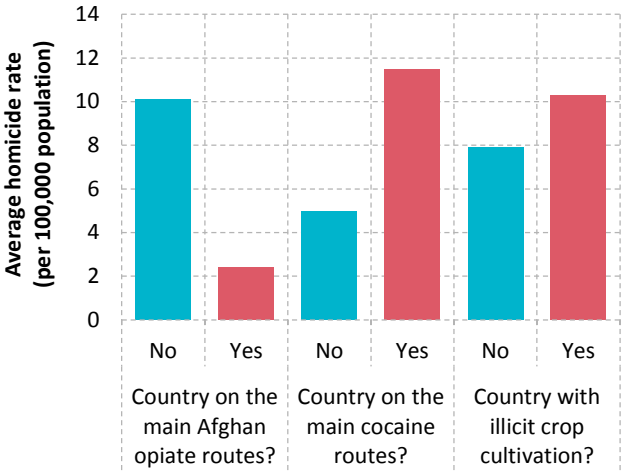
Violence, rule of law, corruption, illicit financial flows

Sustainable Development Goal 16. Promote peaceful and inclusive societies for sustainable development, provide access to justice for all and build effective, accountable and inclusive institutions at all levels

Among the targets associated with Sustainable Development Goal 16, those related to reducing violence, strengthening the rule of law and access to justice, and fighting organized crime, economic crime (corruption and bribery) and illicit financial flows, all have significant links with the world drug problem and the response to it.

Different stages of the drug problem result in different manifestations of violence. Drug use may lead to violence

Globally, there is no clear-cut relationship between drug supply and violence



Source: *UNODC Homicide Statistics* (2015). Available at www.unodc.org/unodc/en/data-and-analysis/homicide.html.

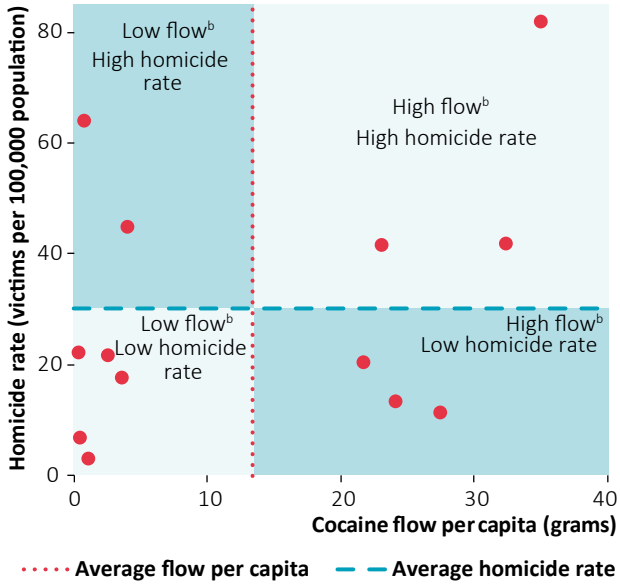
related to the psychoactive effects of drugs, as well as to crime committed in order to obtain funds for purchasing drugs. The intensity of drug-related violence is greatest, however, when associated with drug trafficking (systemic violence), as the example of Latin America shows. The traumatic effects of violence can also increase vulnerability to drug use.

Yet drug trafficking and production do not necessarily produce violence, as illustrated by the low levels of homicide in transit countries affected by the opiate trafficking routes in Asia. Characteristics of the market and drug trafficking organizations may explain variations: market competition can generate violence in illicit markets, while differences in the internal structure of trafficking networks, which may be characterized by varying degrees of cohesiveness and hierarchy, can also play a role.

The profits associated with the drug trade are a key motivation for non-State armed groups, including terrorist organizations, to engage in or facilitate drug trafficking. In a number of countries, resources generated in illicit markets such as drug markets have played a role in complicating and extending armed conflicts, often increasing their overall lethality. In general, the drug trade flourishes where State presence is weak, where the rule of law is unevenly applied and where opportunities for corruption exist. At the same time, the wealth and power of drug trafficking organizations provide them with resources to buy protection from law enforcement agents, from politicians and the business sector, thereby reinforcing corruption.

Profit is generated across the entire chain of drug production and distribution, but it is at the final stage that it tends to be highest. A recent UNODC study estimated that almost half of the profit made along the major heroin trafficking route from Afghanistan to Europe was gener-

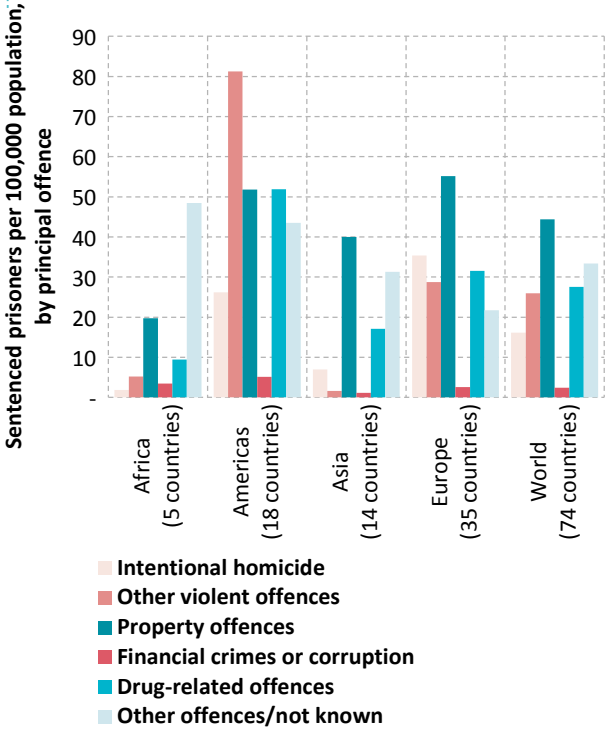
The connection between drug trafficking and violence in Latin American countries[a] is not an automatic one



Sources: Estimates of the flow of cocaine based on United States, Office of National Drug Control Policy, "Cocaine Smuggling in 2010", January 2012; homicide data from UNODC Homicide Statistics (2016). Available at www.unodc.org/unodc/en/data-and-analysis/homicide.html.

a Data were available for 13 countries.
b All flows are expressed per capita.

Almost one in five sentenced prisoners is serving time for a drug offence



Source: Note by the Secretariat on world crime trends and emerging issues and responses in the field of crime prevention and criminal justice (E/CN.15/2016/10).

ated in the four largest European consumer markets: France, Germany, Italy and the United Kingdom. Nevertheless, the size of the illicit economy associated with drugs, relative to the licit economy, tends to be higher in drug-producing countries, partly because of their relatively smaller economies. This is particularly pronounced in the case of Afghanistan, where, according to UNODC estimates, the total value of the illicit opiate economy was $2.8 billion in 2014 — equivalent to 13 per cent of the country's gross domestic product (GDP). The laundering of such illegal proceeds occurs through many different channels, from small, decentralized techniques such as the use of money orders or remittances, to sophisticated uses of front businesses. These forms of illicit financial flows are essential for the survival of criminal groups and constitute a major threat to sustainable development.

Partnership

17 PARTNERSHIPS FOR THE GOALS

Sustainable Development Goal 17. Strengthen the means of implementation and revitalize the global partnership for sustainable development

Sustainable Development Goal 17 has a strong link with the principles of international cooperation and shared responsibility, embedded in the drug control conventions. But when analysed together, donor development assistance and donor assistance in drug-related sectors show opposing trends: official development assistance has increased overall, whereas assistance in drug-related sectors has actually decreased significantly since 2008.

How do drug interventions impact sustainable development?

Drug supply and demand reduction efforts

Efforts to eliminate illicit crop cultivation can impact the income source and employment opportunities of farmers and farm labourers. Research has also shown that such efforts have positive development outcomes in the affected communities only if they include development measures to ensure alternative livelihoods and restore security and rule of law. Examples in Colombia and Peru have shown that effective alternative development programmes can weaken the population's ties with armed groups and drug trafficking.

Law enforcement interventions aim to restore the rule of law, the cornerstone of governance and sustainable development, and can also influence the availability of drugs in illicit markets, not only by reducing supply through interdiction but also by increasing the risk for traffickers, which raises the price of drugs in consumer markets. However, enforcement activities by authorities can also generate violence, particularly when they affect the internal and

external structure of illegal markets. Research suggests that targeting enforcement and policing on both the protagonists and the elements in the drug trafficking chain that generate the greatest profit and the most violence can be particularly effective in reducing violence. On the other hand, strategies that focus on rapidly disrupting drug trafficking organizations and reducing violence in the short term can sometimes lead to more violence.

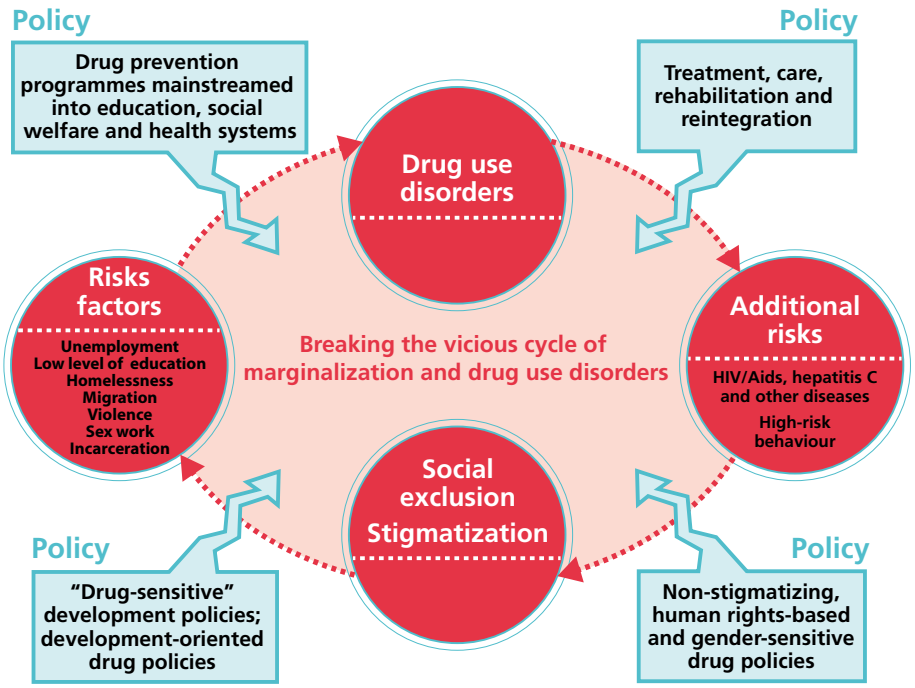
Prevention, early intervention treatment, care, recovery, rehabilitation and social integration measures, and the entire continuum of care for people who use drugs, when based on scientific evidence, reduce drug use and thus its impact on public health, which is one of the most important components of the well-being of society. Some of the above measures have also been shown to decrease a range of other risky behaviours such as aggressiveness and truancy. The benefits affect both people who use drugs themselves and society in general, and such efforts have proved effective in preventing, for example, HIV and viral hepatitis.

Drug demand reduction interventions are effective when they rely on evidence-based measures, including those aimed at minimizing the adverse public health and social consequences of drug use, such as appropriate needle and syringe programmes, opiate substitution therapy, antiretroviral therapy and other relevant interventions that prevent the transmission of HIV, viral hepatitis and other blood-borne diseases associated with drug use. Compulsory confinement in drug treatment centres, on the other hand, often worsens the already problematic lives of people who use drugs and people with drug dependence, particularly the youngest and most vulnerable.

Criminal justice systems and the costs of drug policies

As in the case of law enforcement operations in general, when operations are implemented by impartial, transparent and efficient institutions in compliance with human rights standards, they promote the rule of law and equal justice. But when law enforcement operations go against those principles, incentives may be created for indiscriminate repression and for the violation of citizen rights.

On the basis of limited available data, globally more than three quarters of all those held in prison for drug-related offences have been convicted for drug trafficking and less than a quarter for offences related to personal consumption. There are differences across jurisdictions in terms of definitions, prosecutorial discretion or types and severity of sanctions for drug offences. In some regions, countries exercise more punitive approaches, which may result in incarceration, when dealing with people apprehended for minor drug offences, such as possession of small quantities of drugs for personal consumption. On the other hand, several countries have chosen to limit punishment by adopting alternative measures to incarceration or punishment in minor personal consumption cases without aggravating circumstances (for example, fines, warnings, probation or counselling). The excessive use of imprisonment for drug-related offences of a minor nature is ineffective in reducing recidivism and overburdens criminal justice systems, preventing them from efficiently coping with more serious crime. The provision of evidence-based treatment and care services to drug-using offenders, as an alternative to incarceration, has been shown to substantially increase recovery and reduce recidivism.



Cost of drug policies

Many of the costs arising both directly and indirectly from the drug problem can be quantified in monetary terms. Several economic studies have done so, and their results show that the cost ranged between 0.07 and 1.7 per cent of GDP of the countries studied. Moreover, the majority of countries studied registered a high percentage of overall costs attributable to drug demand and supply reduction interventions (such as prevention, treatment and law enforcement), as opposed to productivity losses and any other indirect costs. It is important to bear in mind that, although those economic studies generally take into account a wide variety of costs, which arise directly and indirectly out of the drug problem, this is usually limited to costs that can be quantified in monetary terms. The non-tangible costs, such as loss of life and impaired quality of life, are frequently not quantified, and when quantified it is usually with reference to a non-monetary metric, such as years of life lost or years lived with a disability. While such studies can be very useful in assessing the economic toll taken on society because of drugs, other considerations also need to come into play when assessing the impact of the world drug problem and in devising policy responses.

Impact of development on the world drug problem

Development can reduce the vulnerability of farmers to engaging in illicit cultivation and production and can bring sustainable reduction in drug cultivation. However, if development interventions are not sensitive to the vulnerabilities of communities to specific drug issues, they may inadvertently trigger dynamics that increase illicit cultivation, as shown by the example of large development programmes in the early 1960s and 1970s in the Andean region.

Initiatives that facilitate trade and ease trade barriers are employed to promote economic development, but globalization may also have ramifications for drug trafficking. By fostering the expansion of trade and global transportation networks, trade openness can also facilitate the cooperation and the formation of alliances among criminal organizations across different countries and, in some cases, reduce the opportunity for law enforcement agencies to monitor international trade.

The geographical spread of the use of certain drugs, such as cocaine and synthetic drugs, is less concentrated today than it was in the past, while Europe, North America and Oceania are increasingly affected by the consumption of NPS. At the same time, rapid economic growth is taking place in large parts of the world where certain drugs are still virtually unknown. It is therefore crucial to bear in mind the potential ramifications of development on drug use, and the experience of developed countries can be enlightening in this regard.

CONCLUSIONS AND POLICY IMPLICATIONS

Development and countering the world drug problem need to work in symbiosis

Many drug policy interventions directly or indirectly result in an improvement in the level of development of their target populations, while operations designed to improve sustainable development often address the vulnerability of people or communities affected by the drug problem and can ultimately help address it. However, as drug and development policies can have an inadvertently counterproductive effect on each other, the two streams of intervention — development and countering the world drug problem — need to work in symbiosis.

In order to be sustainable development-sensitive, efforts to address the world drug problem need:

- To be in line with the requirements of the international human rights instruments.
- To be gender-sensitive, so as to consider the special needs of women and their greater level of stigmatization when designing prevention programmes, treatment interventions for drug dependence, as well as the criminal justice response to drug-related offences.
- To be environmentally friendly, so as to ensure that the curtailment of the illicit supply chain for drugs does not cause deforestation or other environmental damage.
- To ensure that "no one is left behind", by, for example, considering the special needs of men who have sex with men when targeting the spread of infectious diseases among PWID, and the special needs of migrants, including international as well as internal migrants, who can be particularly vulnerable to drug use.
- To overcome the stigmatization of drug users, as this can lead to further marginalization.
- To be based on scientific evidence, so that drug policies can address the core aspects of social development and public health.

At the same time, development interventions should take into account the complex interconnectedness of development and the world drug problem, as well as the potential risks associated with social and economic change. In particular, while continuing to address lack of development in general, policymakers should factor in the specific needs and vulnerabilities of communities affected, so that development efforts do not inadvertently open up space to drug markets.

Success depends on a dual track of development intitiatives.

As the targeting of specific communities affected by the drug problem with a broad sweep of general development strategies may be ineffective, a dual track is needed: maintaining specialized drug interventions in synergy with general developmental investments. This approach has already been embraced in the concept of alternative development and can be expanded to other aspects of the drug problem. Specific drug-related development initiatives need to be mainstreamed into general development initiatives. This can include prevention programmes built into the educational, social welfare and health systems; the strengthening of treatment for drug use and of the provision of care and rehabilitation and reintegration services in the health-care and social welfare systems; training and capacity-building in law enforcement agencies; and raising awareness of the complexity of the drug problem, including the promotion of non-stigmatizing approaches, across all relevant State institutions.

Promotion of an effective human rights-based criminal justice response to the drug problem

Governance and the rule of law represent a crucial area in which the links between the drug problem and development have not been sufficiently recognized. Guaranteeing the rule of law needs to be viewed as a concept wider than mere coercion; it also encompasses inclusive access to justice delivered fairly, in full respect of human rights, through a robust system that places authority in the hands of relevant institutions, with appropriate safeguards.

The first option for people with drug use disorders who are brought into contact with the criminal justice system for minor offences should be an alternative to incarceration. Approaches to tackling minor offences related to drug use disorders through treatment and care as an alternative to imprisonment require effective coordination between the health and justice systems. A set of basic principles to promote the use of non-custodial measures, as well as legal safeguards for persons subject to alternatives to imprisonment, are set forth in the United Nations Standard Minimum Rules for Non-custodial Measures (the Tokyo Rules) and in the United Nations Rules for the Treatment of Women Prisoners and Non-custodial Measures for Women Offenders (the Bangkok Rules).

The right to security also needs to be respected in the implementation of effective drug-control measures. This right requires that State authorities act in compliance with the rule of law and international norms and standards concerning, inter alia, the use of force, the protection of victims and the treatment of offenders. The right to security also implies safety from crime and violence and a corresponding duty of State authorities to prevent and suppress drug trafficking and other related organized-criminal activities that specifically threaten individual citizens.

The dynamics between violence and drug trafficking need to be understood better

The relationship between violence and the production or trafficking of drugs is complex. Violence is not a foregone conclusion of drug trafficking. Factors that determine violence include the level of competition between drug trafficking organizations and how they operate, the sociopolitical conditions of a particular location, levels of corruption and the strength of the underlying rule of law. To avoid the escalation of violence, interventions to eliminate drug trafficking have to be sensitive to the circumstances.

Most health consequences of drug use are preventable

Drug use continues to produce negative health consequences, particularly in relation to injecting drug use and drug use disorders. Many of those consequences are preventable and can be avoided through the provision of services such as needle and syringe programmes, overdose prevention, opiate substitution therapy and other evidence-based drug dependence treatment that scientific evidence has proved to be effective. Drug overdose is preventable if substances such as naloxone (a drug that can immediately reverse the effects of opioid overdose) are widely available to people who use opioids.

Drug use and its health consequences should be prevented and treated in prisons

The human rights of people in prisons and other closed settings must continue to be ensured while they are in detention, including their right to health services, particularly for drug dependence treatment and for the prevention and treatment of HIV, hepatitis and tuberculosis. A higher risk of death for people with drug use disorders after release from prison points to the need for appropriate interventions such as prison-based opioid substitution therapy, pre-release education on overdose prevention, the availability of naloxone on release from prison, and post-release follow-up.

Heroin still requires the attention of the international community

Drug markets have seen great diversification in the past few years, with the emergence of new substances, new combinations of polydrug use and new injecting behaviours involving stimulants carrying higher risks of infectious diseases. Attention to recent trends should not, however, overshadow the importance of continuing to focus on trends related to a "traditional" drug such as heroin. The resurgence in heroin use, leading to fatal consequences, has been documented in a few countries where it was previously in decline, demonstrating that heroin is not a problem unique to the older generation and that it still needs to be prioritized by the international community. The recent sharp decline in opiate production in Afghanistan should not be overestimated as both the vulnerability, and opportunity, of farmers to cultivating opium poppy have not drastically changed.

Worrying developments in the amphetamine market in the Middle East require closer monitoring

The recent data emerging from the Near and Middle East on "Captagon" (increased seizures, local manufacture and the availability of precursors) show worrying signals for a subregion where drug manufacturing and trafficking have the potential to exacerbate a challenging situation of porous borders, violent conflict, insurgency and limited government control in certain areas. In the past, other regions affected by similar vulnerabilities experienced the development of a drug-violence nexus in which drug manufacture/trafficking and conflict become mutually reinforcing elements. More information, particularly on drug use, is needed in the Near and Middle East to help understand if and how the observed increase in seizures indicates greater drug consumption in the subregion and what the potential implications for drug policy may be.

Greater efforts needed to enhance forensic capacity and monitoring systems for new psychoactive substances

Information on the use of NPS and their health consequences remains limited. Understanding the NPS problem in order to address it more effectively requires efforts on different fronts: supporting countries to improve their forensic capacity relating to NPS detection and to develop or improve monitoring systems that can effectively collect information on the use of NPS and their health consequences. More research is needed to understand the effects on and the risks to users who consume such products, and how to communicate those risks. Also key is understanding the wide range of national legislative responses that have been put in place by Member States in different regions to address the dynamics of the NPS market.

Increased provision of science-based prevention and treatment programmes for cannabis use is needed

Cannabis has been gaining a higher level of visibility at a health-care policy level, in international research and as a result of recent changes in legalization in some parts of the world. An analysis of the numbers in treatment for cannabis use in the United States and Europe shows an increase over the long term. In Europe, the consistent increase observed in the numbers of people entering treatment for cannabis use is a reflection, in part, of the expansion in the provision of treatment programmes to address the needs of cannabis users, including several programmes targeted at adolescents and young adults. It is important that science-based prevention programmes are available

for adolescents and young people so as to prevent the early initiation of cannabis use, and that treatment interventions such as Screen and Brief Intervention (SBI) are available for people who already use cannabis, so as to prevent progression into drug use disorders.

Continual monitoring of new cannabis policies is recommended

Although it is still too early to evaluate the impact of new cannabis policies, the evidence collected to date in the United States points to an increase in cannabis use in states where referendums have led to the legalization of recreational marijuana use. New challenges have emerged in some states of the United States (notably Colorado), including the marketing of unregulated cannabis products (edibles) with a high content of tetrahydrocannabinol (THC). Moreover, there is evidence of an increasing number of cannabis users driving under the influence, as well as an increase in cannabis-related emergency room visits and hospitalizations. However, cannabis-related arrests and court cases related to cannabis offences have decreased. All of these outcome measures would need to be rigorously monitored and evaluated over a period of time before a final assessment can be made.

Treatment and care: greater focus on polydrug use is a necessity

Polydrug use and the increased complexity of shifts between the use of different drug types pose challenges to people responding to emergencies related to drug use, as well as to those treating drug use disorders. In such instances polydrug use can compromise treatment efforts that are drug specific. Pharmacologically assisted treatment of disorders related to opioid use has proved effective, whereas for other drugs such as stimulants and cannabis, the treatment interventions available are mostly psychosocial and behavioural. This situation requires policymakers and practitioners to be more aware of emerging trends in drug use and to have mechanisms in place to detect and diagnose a wider range of substances used. Furthermore, there is a need to develop guidelines that are science-based for pharmacologically assisted treatment and behavioural therapies for treating people suffering from drug use disorders as a result of multiple drug use.

Legislation, technical assistance and capacity building are key for dealing with the growing importance of the "dark net"

Law enforcement and the criminal justice system in many countries are still not in a position to deal effectively with the anonymous online marketplace known as the "dark net". Apart from practical problems, there are a number of other difficult legal issues that need to be addressed, including: the identification of the responsible jurisdiction, combined with the routine international sharing of information, especially when the physical location of sellers and buyers is unknown; the use of undercover agents (both online and offline) to infiltrate such networks in order to gather evidence and undermine the criminal business model; and the development and implementation of legislation to require suspects to reveal passwords/decryption information when charged with an offence. The provision of technical assistance and capacity-building for Member States to collect and exploit digital evidence is key to addressing the threat posed by drug trafficking via the Internet.

CHAPTER 2

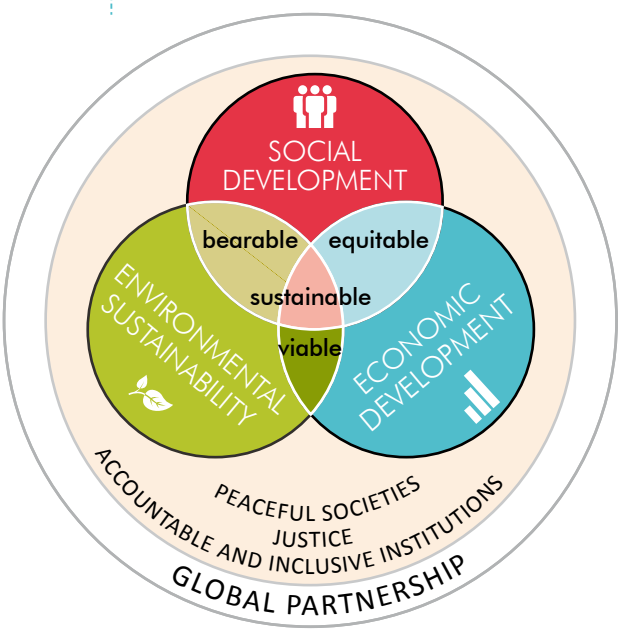
THE WORLD DRUG PROBLEM AND SUSTAINABLE DEVELOPMENT

INTRODUCTION

From illicit cultivation and production to trafficking and use, the world drug problem, with all its ramifications, is intertwined with a vast array of social, economic and environmental issues. This exerts great pressure on development efforts, which in turn have an influence on the drug problem. Interventions made in response to the drug problem themselves generate further interplay with the broader development and social context and introduce additional, sometimes unforeseen, complexity to this dynamic. The importance of this interaction is increasingly being recognized by the international community, as reflected in the discussions on the Sustainable Development Goals and the special session of the General Assembly on the world drug problem held in 2016.

The concept of development, together with the engagement by the international community in this area, is reflected in the Millennium Development Goals, followed by the recently formulated 2030 Agenda for Sustainable Development.[1] The 17 Sustainable Development Goals and their targets are integrated and indivisible and balance the three dimensions of development: economic, social and environmental. The new development agenda also recognizes that sustainable development cannot be realized without peace and security, and that peace and security will be at risk without sustainable development. Factors that give rise to violence, insecurity and injustice, such as inequality, corruption, poor governance and illicit financial and arms flows, are addressed in the development agenda.

FIG. 1 Dimensions of sustainable development



1 See General Assembly resolution 70/1.

The present chapter uses the framework of the Sustainable Development Goals to examine the interplay between the drug problem and the broader development context. It clusters the discussion around five topics — social development; economic development; environmental sustainability; peaceful, just and inclusive societies; and partnership — in the light of the world drug problem and the global response thereto. Specifically, the present chapter seeks to elucidate the interplay between each of these aspects of sustainable development on the one hand, and the issue of drugs on the other, while distinguishing between the drug problem as a phenomenon (illicit drug use, production and trafficking) and the response to the drug problem.

In analysing the interaction between social development and the world drug problem, the first section in this chapter summarizes the evidence of the social costs of illicit drug use, the most important being its effects on the health of people who use drugs. The section also investigates the health impact of drug use across levels of development. Other aspects addressed include the impact on the families of people who use drugs and their communities, and the marginalization and stigmatization of people who use drugs and the repercussions of that, particularly on their employment opportunities. The section also addresses the impact of the response to the drug problem on social development, with reference to, for example, alternative development, as well as the availability of drugs for medical and scientific purposes.

The second section, on economic development, addresses the question of how the level of economic development relates to drug use and the formation of illicit drug markets, by examining indicators at the national level. The analysis attempts to identify patterns describing the evolution of the drug problem and the role of development. It also discusses socioeconomic factors at the subnational level, focusing on marginalization and poverty. The economic cost of drug use resulting from loss of productivity is also taken into account, as are the costs associated with efforts by state institutions to help drug users.

The third section, on environmental sustainability, presents evidence on the environmental impact of illicit drug cultivation, production and trafficking, as well as drug supply reduction interventions, including deforestation and biodiversity loss.

The fourth section, on peaceful, just and inclusive societies, addresses topics that have been recently introduced into the international development agenda through the Sustainable Development Goals. It examines different forms of violence in connection with drugs, including links to terrorism and insurgency, and it discusses the long-term and short-term outcomes of the response to the drug

FIG. 2 Analytical framework of the thematic chapter

problem. In addition, the section investigates the extent to which drug trafficking is intrinsically associated with violence, describes how the drug problem can be an enabler or an outcome of violence, and highlights the role of the underlying rule of law in shaping this relationship. It also explores how the criminal justice system influences, and is influenced by, the drug problem, looking in particular at how drug trafficking can undermine the system, as well as the role of law enforcement in influencing drug prices and markets. Moreover, the discussion covers the impact of criminal justice on people who use drugs, the extent of the resource drain on the system arising from the incarceration of drug users, and alternatives to imprisonment. In addition, the section describes the mutually reinforcing relationship between the drug problem and corruption and addresses the scale and the impact of illicit financial flows arising from drug trafficking and production.

Last but not least, the section on partnership looks at development assistance data provided by countries and highlights divergent trends between overall development assistance on the one hand and the assistance provided for the drug-related sectors on the other, underlining the need to redress this imbalance in the context of the 2030 Agenda for Sustainable Development.

Figure 2 schematizes the interactions discussed in this chapter, which serve as a template for most of the subsections in the chapter.

A. SOCIAL DEVELOPMENT

Impact of drug use on social development

Public health impact

There are numerous ways in which illicit drug use, production and trafficking can have an impact on sustainable development. Principal among them are the negative consequences for public health, which, as its absence precludes human development in every other dimension, lies at the heart of sustainable development.

Sustainable Development Goal 3. Ensure healthy lives and promote well-being for all at all ages

The impact of illicit drug use on the health of people who use drugs and, more generally, on public health is notorious and well documented. Target 3.5 of the Sustainable Development Goals is to strengthen "the prevention and treatment of substance abuse, including narcotic drug abuse". Prevention, treatment, care, recovery, rehabilitation and social reintegration measures and programmes all play a role in addressing the problem of drug use and reducing the negative health impact on society.

In addition to medical conditions resulting directly from the psychoactive and physiological effects of drugs, certain forms of drug use and modes of administration are important risk factors for contracting other diseases; this not only affects people who use drugs but also the people with whom they come into contact. As discussed in the previ-

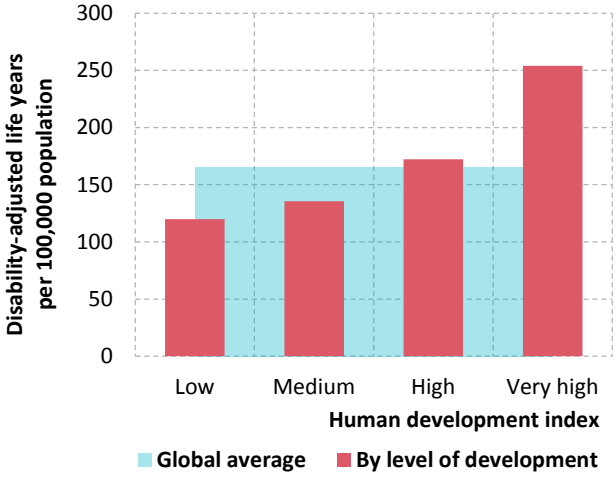
ous chapter, there are many potential health risks and outcomes for people who use drugs, including overdose, suicide, trauma, mental health problems, disability and premature death.

People who develop dependence and become affected by drug use disorders are those who account for the vast majority of negative health consequences among people who use drugs. UNODC estimates that, as of 2014, out of a quarter of a billion past-year drug users, more than 29 million had a drug use disorder (see page 1). Sporadic or regular drug use that has not progressed to drug dependence can still carry some health risks, particularly if it has the potential to change the user's behaviour when he or she is under the influence of drugs; even a single episode, or small number of episodes, can have damaging effects. Since products sold in the illegal drug market under a certain name may contain a wide variety of substances, and people who use drugs do not have information about the contents of what they consume, there are also additional risks. Moreover, episodic drug use itself carries the risk of evolving into drug-dependent use.

Certain people who use drugs may manage to lead socially integrated lives in parallel with regular drug use and thus do not conform to the stereotypical image of a problem drug user, but that does not prevent the development of drug dependence, and the harm caused by drug use may only be felt in the long term. In general, the consequences of drug use may develop independently in two different aspects of an individual's life: health and social. In some cases, there may be health conditions with a limited impact on an individual's social life; in other cases, the social impact of drug use may be more serious than the health aspects. Broadly speaking, the social consequences of drug use may emerge only at later stages of the development of drug use disorders.

Globally, roughly 200,000 people lose their lives each year to causes attributed to drug use. People who regularly use drugs tend to live with disability and die early. The Global Burden of Disease Study quantifies the adverse health impact of hundreds of diseases, injuries and risk factors. It indicates that opioids, cocaine, amphetamines and cannabis together accounted for almost 12 million years of life lost[2] because of premature death or disability in 2013, of which more than 8 million were linked to the use of opioids.[3] Based on data from the study, developed countries appear to be disproportionately affected by the overall health impact of drug use (see figure 3).

FIG. 3 Burden of drug use disorders[a] per 100,000 population, by level of development, 2013



Source: Human development index from the United Nations Development Programme (UNDP); data on burden of disease (disability-adjusted life years) from the Institute for Health Metrics and Evaluation, University of Washington, GBD Compare, 2015. Available from http://vizhub.healthdata.org/gbd-compare.

Note: The designations "low", "medium" etc. based on the human development index are those used by UNDP.

[a] *The sum of the burden attributed to opioids, cocaine, cannabis and amphetamines, excluding "Other drugs".*

Target 3.3 of the Sustainable Development Goals
By 2030, end the epidemics of AIDS, tuberculosis, malaria and neglected tropical diseases and combat hepatitis, water-borne diseases and other communicable diseases

Epidemics and communicable diseases have a negative impact on the health of millions of people and constitute a major challenge to sustainable development, which are among the reasons why target 3.3 of the Sustainable Development Goals is aimed at ending, by 2030, the epidemics of AIDS and tuberculosis and combating hepatitis, water-borne diseases and other communicable diseases. To improve prevention and treatment of these diseases, better understanding of their risk factors is needed. One of the biggest risk factors associated with the use of drugs stems from their mode of administration, particularly injecting drug use. Smoking, swallowing, snorting or inhaling a drug can lead to a variety of health problems, but injecting a drug carries a much greater risk of overdose, vein damage, abscesses and infection, in particular the transmission of blood-borne viruses such as HIV and hepatitis C.

It is currently estimated that some 11.7 million people worldwide inject drugs, of whom around 1.6 million (14.0 per cent) are living with HIV. People who inject drugs (PWID) are estimated to make up appromately 5-10 per cent of all people living with HIV,[4] and injecting drug use

2 The figure for all drugs, including the category "Other drug use disorders", was 18 million years of life lost.

3 Christopher J. L. Murray and others, "Global, regional, and national disability-adjusted life years (DALYs) for 306 diseases and injuries and healthy life expectancy (HALE) for 188 countries, 1990-2013: quantifying the epidemiological transition", *The Lancet*, vol. 386, No. 10009 (2015), pp. 2145-2191.

4 UNAIDS, "AIDS by the numbers" (Geneva, 2013).

accounts for around 30 per cent of new HIV infections outside sub-Saharan Africa.[5, 6] Scientific estimates of the probability of HIV transmission ensuing from exposure to an infected source indicate that needle-sharing drug use carries one of the higher risks of transmission per exposure (albeit much lower than transmission by blood transfusion or mother-to-child transmission without antiretroviral therapy).[7, 8]

HIV transmission is not the only health consequence associated with drug use. According to data on the global burden of disease, drug use as a risk factor accounted for 32 per cent of deaths caused by cirrhosis resulting from hepatitis C and 14 per cent of deaths caused by liver cancer.[9]

Drug use can also have an impact on public health by increasing the risk of road traffic accidents (driving while under the influence of drugs) and accidents in the workplace, which not only cause serious harm to people who use drugs but also to the people around them.

Sexual behaviour and the health impact of drug use

Although indirect, one mechanism whereby drug use may have repercussions on the health of society in general is linked to the sexual behaviour of people who use drugs. This is of particular concern in the case of at-risk groups such as PWID, for whom an increased risk of transmission caused by drug use itself can be the very cause (or a major driver) of a high prevalence of certain sexually transmitted infections.When non-injecting drug use increases the likelihood of risk-taking behaviour among other at-risk groups, such as men who have sex with men (MSM) and transgender individuals, that can also have an impact.

Research confirms that there are links between drug use patterns and sexual behaviour. It is difficult to disentangle causalities between drug use and sexual behaviour, but the following patterns have been documented: transmission of sexually transmitted infections from people who use drugs to spouses and partners; people who use drugs engaging in sex work as a way to fund drug use; and people who use drugs engaging in high-risk sexual behaviour while under the influence of certain drugs, especially stimulants and "party drugs". Local reports from India, Myanmar and Ukraine have documented HIV epidemics associated with injecting drug use that have spread to the general population chiefly through heterosexual contact.[10]

A report by the Commission on AIDS in Asia[11] described one example in Indonesia in which HIV did not spread in the sex industry until a few years after it had reached a very high level among PWID.

It has been hypothesized that the use of certain drugs increases or decreases sexual desire and levels of sexual activity and has a disinhibiting effect, making users less likely to engage in safer sex, thus exacerbating the negative health impact of drug use. Stimulants such as cocaine and ATS are the most commonly cited drugs linking drug use with high-risk sexual behaviour and HIV transmission. It has also been argued that many people use the disinhibiting effects of amphetamines to facilitate sex, including high-risk sex, and that the impulsivity produced by amphetamines makes users potentially more likely to engage in unprotected sex. For example, a study in the United States found methamphetamine use to be related to increased, unprotected sexual activity and the risk of contracting sexually transmitted diseases, including HIV, irrespective of gender, age, race, ethnicity or sexual orientation.[12]

Impact of drug use on gender equality and the empowerment of women

Sustainable Development Goal 5. Achieve gender equality and empower all women and girls

Women affected by drug use disorders are more vulnerable and more stigmatized than men. They suffer from co-occurring mental health disorders to a greater extent than men and they are more likely to have been victims of violence and abuse. However, they are far less likely to enter drug treatment programmes than men, which can reduce their opportunities to reintegrate into society and exacerbate their sense of stigmatization as people who use drugs.[13] Drug use may thus have a direct negative impact on gender equality and the empowerment of women.

There are many aspects of the drug problem that have an impact on gender equality and therefore on social development. Given that there are many more men than women who use drugs, research, guidelines and training programmes concerning people who use drugs remain largely

5 UNAIDS, *The Gap Report: People Who Inject Drugs* (Geneva, 2014).

6 *World Drug Report 2015* (United Nations publication, Sales No. E.15.XI.6), p. 6.

7 Pragna Patel and others, "Estimating per-act HIV transmission risk: a systematic review", *AIDS*, vol. 28, No. 10 (2014), pp. 1509-1519.

8 Rebecca F. Baggaley and others, "Risk of HIV-1 transmission for parenteral exposure and blood transfusion: a systematic review and meta-analysis", *AIDS*, vol. 20, No. 6 (2006).

9 Institute for Health Metrics and Evaluation, GBD Compare. Available at www.healthdata.org/.

10 Steffanie A. Strathdee and Susan G. Sherman, "The role of sexual transmission of HIV infection among injection and non-injection drug users", *Journal of Urban Health*, vol. 80, No. 4, Suppl. 3 (2003),pp. iii7-iii14.

11 *Redefining AIDS in Asia: Crafting an Effective Response – Report of the Commission on AIDS in Asia* (New Delhi, Oxford University Press, 2008).

12 F. Molitor and others, "Association of methamphetamine use during sex with risky sexual behaviors and HIV infection among non-injection drug users", *Western Journal of Medicine*, vol. 168, 1998, pp. 93-97.

13 *World Drug Report 2015*, p. 17.

male-focused and fail to address the specificities of female drug use patterns. The impact of drug use is also greater on women than on men because women tend to lack access to the continuum of care for drug use disorders.

Women who use drugs face several issues and problems that enhance their vulnerability to HIV (as well as other major health issues) such as sex work, sexually transmitted infections, viral hepatitis, mental health problems, reproductive health issues, childcare, stigma and violence, in addition to a lack of gender-sensitive health services.[14] Women who inject drugs, in particular, are an often hard-to-reach and highly vulnerable group, to the extent that even data relating to them are more limited than data relating to their male counterparts.

An indirect consequence of drug use on the health of women is that HIV is not only transmitted between PWID through the sharing of injecting equipment but also from (predominantly male) PWID to their spouses and other sexual partners owing to inadequate use of protection such as condoms. Although they also have their own set of risk factors, generally there is a risk incurred by the female sex partners of men who inject drugs, who share injecting equipment, have multiple sex partners, practice limited condom use, engage in sexual violence and have low risk perception and disclosure of HIV status and drug use, as well as low uptake for HIV testing.[15] In a study of over 4,000 female sex partners of men who inject drugs in India, young age, early marriage (more than half had been married before the age of 18), unsupportive partners, diagnosable mental health problems (mainly depression), poor decision-making powers and economic dependence characterized many of the women, who also reported high rates of exposure to domestic violence but low rates of seeking help in such situations.[16]

Drug use and intimate partner or family-related violence

Drug use has been identified as a major risk factor for family-related violence. As this type of violence particularly affects women and girls, drug use can effectively be seen to be a factor contributing to violence against women and girls, which, according to target 5.2 of the Sustainable Development Goals, needs to be eliminated in all its forms, in the public and private spheres.

> *Target 5.2 of the Sustainable Development Goals*
> Eliminate all forms of violence against all women and girls in the public and private spheres, including trafficking and sexual and other types of exploitation

14 Tasnim Azim, Irene Bontell and Steffanie A. Strathdee, "Women, drugs and HIV", *International Journal of Drug Policy*, vol. 26, Suppl. 1 (2015), pp. S16-S21.

15 Ibid.

16 UNODC Regional Office for South Asia, *Women and Substance Use in India: Women, Substance Use and Vulnerability*, Pratima Murthy, ed. (New Delhi, 2008).

A study in Afghanistan found that drug use led to domestic violence, with over half of family members interviewed reporting that they had been hit by or had hit out at a drug-using relative during a confrontation regarding the latter's drug use.[17] In India, physical violence by family members was reported by 43 per cent of a sample of 179 women with a male family member currently using drugs, and verbal aggression was reported by 50 per cent.[18]

Research indicates that the pathways leading to drug use are different for men and women, with the initial period of a woman's drug-using career significantly related to their relationship with men.[19] A study in the United States of 416 women in opioid substitution treatment (using methadone) found that frequent use of "crack" by women who use drugs increased the likelihood of subsequent violence from intimate partners.[20]

Women who inject drugs may also experience violence, perpetrated by intimate partners or law enforcement personnel (or clients if the women are sex workers). Research also shows that women who experience intimate partner violence are less likely to use condoms and more likely to share injecting equipment, to have multiple sexual partners and to trade sex.[21]

Impact of problem drug use on the family, children and youth

"People are at the centre of sustainable development … and the commitment was made … to benefit all, in particular the children of the world, youth and future generations of the world." [22]

Another way in which drug use can have a negative impact on social development is by undermining the functioning of society's basic cell — the family — and the welfare of children and youth, upon whom its future hinges.

Family

Different patterns of drug use have different types and degrees of impact. In some situations, drug use may make little or limited difference to the family; in other cases, it may have distinct effects on family structures and on mari-

17 UNODC, *Impacts of Drug Use on Users and Their Families in Afghanistan* (Vienna, 2014).

18 P. Murthy, *Women and Drug Abuse: The Problem in India* (India, Ministry of Social Justice and Empowerment and United Nations International Drug Control Programme, Regional Office for South Asia, 2002).

19 Tammy L. Anderson, "Drug use and gender", in *Self-destructive Behavior and Disvalued Identity*, vol. 4, *Encyclopedia of Criminology and Deviant Behavior*, Charles E. Faupel and Paul M. Roman, eds. (Philadelphia, Brunner-Routledge, 2001), pp. 285-289.

20 Nabila El-Bassel and others, "Relationship between drug abuse and intimate partner violence: a longitudinal study among women receiving methadone", *American Journal of Public Health*, vol. 95, No. 3 (2005), pp. 465-470.

21 Azim, Bontell and Strathdee, "Women, drugs and HIV" (see footnote 14).

22 Wording proposed by the Open Working Group on Sustainable Development Goals

tal relationships, family violence and child abuse and neglect and on the family economy. Drug use is often associated with child abuse and domestic violence and is also a leading contributor to marital dissatisfaction, family breakups and rejection of family members.[23]

A UNODC study on people who use drugs in Afghanistan found that nearly 70 per cent of family members of people who use drugs had experienced financial problems as a result of a family member's drug use, which led to a reduction in overall family income caused by a decrease in the financial contribution by the person using drugs. Family members interviewed reported that 60 per cent of drug-using relatives who had been employed prior to using drugs had subsequently lost their jobs. Almost half of the family members interviewed also said they had been forced to borrow money as a result of drug use in the family; almost 70 per cent reported that they had faced financial difficulties as a result of that drug use; and a third of all family members indicated that they had gone without food or other basic necessities as a result.[24]

While drug-using parents may have a negative impact on their children's development, drug use by children, teenagers and young adults can also have a profound impact on a family, affecting the dynamics and relationships with parents, siblings and other members of the extended family, often eliciting feelings of anger, sadness, anxiety, shame and loss. Parents of drug-using children have linked deterioration of their own physical and psychological health to the stress and conflictual nature of living with their child's drug problem. Siblings of drug-using children may experience the loss of a close relationship with their drug-using brother or sister and may themselves be exposed or deliberately introduced to drug use that leads to more problematic use.[25]

Children

Sustainable Development Goal 4. Ensure inclusive and equitable quality education and promote lifelong learning opportunities for all

Target 16.2 of the Sustainable Development Goals
End abuse, exploitation, trafficking and all forms of violence against and torture of children

Children appear as a group of special concern in several of the Sustainable Development Goals, in particular Goal 1 (target 1.2 of which covers children living in poverty), Goal 2 (which covers malnutrition), Goal 3 (which covers mortality among newborns and children), Goal 4 (which covers education) and Goal 16 (target 16.2 of which covers violence against children). The development of children is, however, directly in the hands of their parents, whose parenting skills have a profound effect on their offspring. Unstable and inconsistent family and living environment factors, such as transient living conditions, inconsistent caretaking and violence resulting from drug-using parents, have been linked to psychological and emotional development problems among children. Moreover, parents who use drugs may be absent because they are incapacitated by drug use or spending time procuring drugs, in treatment or in prison.[26]

A study undertaken in Ireland suggested that opiate dependence has a specific impact on parenting processes, particularly on the physical and emotional availability of parents and on the capacity of parents to provide an emotionally consistent environment. The factors involved relate to the parents' focus on the supply and acquisition of drugs, the impact of intoxication and withdrawal from opioids, preoccupation with drugs and instability of moods. Drug-using parents reported that they were aware of their limitations as parents and were dissatisfied with their levels of availability, emotional responsiveness and stability regarding their children.[27]

Youth

Target 4.4 of the Sustainable Development Goals
By 2030, substantially increase the number of youth and adults who have relevant skills, including technical and vocational skills, for employment, decent jobs and entrepreneurship

Drug use often affects people during their most productive years, and the entrapment of youth in both drug use and the illicit drug trade itself, as opposed to engagement in legitimate employment and educational opportunities, poses distinct barriers to the development of individuals and communities. Depending on a wide range of factors associated with the culture and context of that use, such as the type of drugs and the availability of particular drugs, young people may be vulnerable and at risk of drug use.

There is not a straight cause-and-effect relationship between development and the involvement of youth in illicit drug use and drug trafficking, as these factors are all associated with each other. A key feature in understanding risk factors for youth is their interconnectedness, especially relating to the onset of drug use disorders.[28]

23 Kenneth J. Gruber and Melissa F. Taylor, "A family perspective for substance abuse: implications from the literature", *Journal of Social Work Practice in the Addictions*, vol. 6, Nos. 1 and 2 (2006), pp.1-29.

24 *Impacts of Drug Use on Users and Their families in Afghanistan*.

25 Marina Barnard, *Drug Addiction and Families* (London, Jessica Kingsley Publishers, 2006).

26 Marija G. Dunn and others, "Origins and consequences of child neglect in substance abuse families", *Clinical Psychology Review*, vol. 22, No. 7 (2002), pp.1063-1090.

27 Diane M. Hogan, "The impact of opiate dependence on parenting processes: contextual, physiological and psychological factors", *Addiction Research and Theory*, vol. 15, No. 6 (2007), pp. 617-635.

28 Charlie Lloyd, "Risk factors for problem drug use: identifying vul-

Impact of social development on the drug problem

An entire area of development interventions, namely alternative development, exists for the express purpose of reducing illicit drug crop cultivation, among other things. There is ample evidence that it is only when interventions have succeeded in improving the development status of communities that they turn away from illicit cultivation.[29]

More broadly, just as drug use has serious ramifications for development, certain socioeconomic factors, such as poverty, poor education and lack of health-care services, can have a negative impact on drug use. Inequality, social deprivation and lack of alternative livelihoods, to name but a few, can all be viewed as deficiencies in development that feed one or another aspect of the drug problem. Poverty, unemployment, poor education, domestic violence and social disadvantage are vulnerabilities linked to social development that can be conducive to drug use. Moreover, people with drug use disorders whose lives are characterized by low levels of literacy and education may have limited understanding of the potentially harmful effects of drugs, particularly relating to the risk of drug dependence, because of a general lack of accurate, practical and realistic information about drugs and their effects.[30]

Countries with well-developed and articulated healthcare delivery systems, well trained staff and efficient procedures for the issuance and processing of both import and export authorizations tend to fare better in ensuring the availability of opioids for medical purposes. According to the International Narcotics Control Board (INCB), the consumption of narcotic drugs for pain relief is concentrated primarily in countries in North America, Western Europe and Oceania,[31] some of which are also regions with a high level of documented misuse of prescription opioids. Based on data by the National Center for Health Statistics,[32] every year since 2002 more than 40 per cent of the total number of overdose deaths in the United States have been related to prescription opioids. Street gang members have capitalized on the problem of misuse of prescription opioids in the United States by trafficking prescription drugs, specifically hydrocodone and oxycodone.[33]

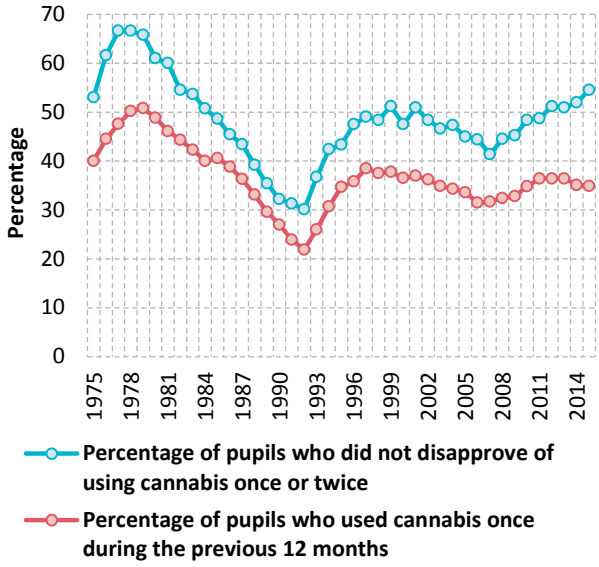
Social norms and drug use

Another indirect way that social development can have an influence on the drug problem is by supporting or undermining existing structures of society that can increase (or decrease) vulnerability to drug use. One aspect of this is related to changing social norms, whereby an individual's inclination to engage in drug use, particularly the initiation of drug use or of a new type of drug-using behaviour, is influenced by the level of acceptability that individuals perceive to be associated with that particular behaviour within their immediate acquaintances, family, community, peer group and society in general.

As society and social norms change, the inclination to engage in drug use may therefore also undergo change. For example, in families where drugs are used or attitudes towards their use are positive, the incidence of drug use among children is higher than in families where drug use is low and where attitudes towards drug use are not as permissive. One study showed that children of people with drug use disorders are seven times more likely than their peers to grow up with drug and alcohol problems.[34]

The results of school surveys in the United States provide an indicator of the acceptability of using cannabis, as measured by the percentage of pupils who did not disapprove of people (over 18 or older) who try cannabis once or twice; the trend in this indicator over the period 1975-2015 mirrors the trend in prevalence of cannabis use. Indeed, this disapproval indicator is a slightly better pre-

FIG. 4 Use of cannabis compared with attitudes towards cannabis use among twelfth graders in the United States, 1975-2015



Source: Monitoring the Future study: United States, Department of Health and Human Services (1975-1994), and Institute for Social Research, University of Michigan (1995-2015).

nerable groups", *Drugs: Education, Prevention and Policy*, vol. 5, No. 3 (1998), pp. 217-232.

29 See *World Drug Report 2015*, chap. II.

30 UNODC Country Office for Afghanistan, "Community drug profile No.5: an assessment of problem drug use in Kabul city", (Kabul, 2003), p. 25.

31 INCB, "Availability of narcotic drugs for medical use". Available at www.incb.org.

32 https://www.drugabuse.gov/related-topics/trends-statistics/overdose-death-rates.

33 United States, DEA, *2015 National Drug Threat Assessment Summary* (October 2015).

34 Neil P. McKeganey and others, "Preteen children and illegal drugs", *Drugs: Education, Prevention and Policy*, vol. 11, No. 4 (2004), pp. 315-327.

dictor of the trend in cannabis use than the perceived ease of availability of cannabis. Although this pattern is observable over the long term, in recent years the trends have begun to diverge, which may be linked to developments in the policy on cannabis in some states of the United States.

A similar pattern emerges from the results of a recent study of drug use among the school population in Chile (covering pupils between the eighth year of primary school and the fourth year of secondary school). In 2013, past-year prevalence of cannabis use rose sharply (reaching 30.6 per cent, up from 19.5 per cent in 2011); at the same time, several perception indicators (including parental disapproval) showed significant shifts towards greater acceptability of cannabis use and a decrease in the perception of risk.[35]

One study of already socially excluded young people who were living in impoverished areas in the United Kingdom of Great Britain and Northern Ireland, where there were changing illicit drug markets and few opportunities in the local economy, found that young people experienced an erosion of normative cultural barriers between recreational and problematic drug use and had an increased risk of transitioning from cannabis to heroin use.[36] This is likely to be true for similarly impoverished groups in the rapidly changing drug markets of developing countries.

A review of over 50 articles on school-based education programmes to prevent the use of drugs and other substances identified various cultural components used to adapt the programmes to different schools and settings and evaluated whether the inclusion of such components enhanced outcomes. The study found that among the components that enhanced the outcomes for participants in the school-based drug use prevention programmes was the incorporation of positive values of the participants' cultural and ethnic identities, such as religiosity.[37]

Migration and drug use

Target 10.7 of the Sustainable Development Goals
Facilitate orderly, safe, regular and responsible migration and mobility of people, including through the implementation of planned and well-managed migration policies

One of the numerous perils of migration is that it can affect drug use patterns not only because it may expose migrants to new drugs, but also because migrants often find themselves living in new and challenging circumstances away from the support of their families and other networks. A UNODC study in Afghanistan, in which interviews were conducted with more than 3,000 people who had been using drugs (opium, cannabis, heroin and tranquillizers) for more than six months on a regular basis, found that 26 per cent of the people interviewed had started using drugs in the Islamic Republic of Iran and 8 per cent had started using drugs in Pakistan.[38] Participants in focus-group discussions in all provinces mentioned that the problems faced by migrants could drive them to use drugs. An earlier study in Afghanistan yielded similar results; of the opium users, 40 per cent (all men) had initiated their opiate use in the Islamic Republic of Iran and 4 per cent had initiated their opiate use in Pakistan.[39]

While migration itself can directly affect drug use patterns, the absence of safe and accessible channels for migration contributes (together with various root causes such as environmental disasters, conflict and political and social upheaval) to the displacement of populations, the formation of communities of internally displaced persons and refugees and the deterioration of many aspects of life, exacerbating poverty and creating unemployment. This leads to conditions conducive to the emergence of illicit drug use, which may arise, for example, as an escape from social stress and post-conflict conditions.

Studies on the mental health of populations displaced by conflict have brought out the links with post-traumatic stress disorder and depression, both potential triggers for initiating or escalating drug use.[40] Research conducted in six settings of protracted displacement for refugees and internally displaced people — in Iran (Islamic Republic of), Kenya, Liberia, Pakistan, Thailand and northern Uganda — found that a range of narcotic drugs, psychoactive substances and other substances, such as opiates, khat, benzodiazepines and alcohol, contributed to wide-reaching health, social and protection problems. The study also found that displacement experiences, including dispossession, livelihood restriction, hopelessness and an uncertain future may make communities particularly vulnerable to drug use and its effects, and changing social norms and networks (including the population in the surrounding area) may result in changed and potentially more harmful patterns of use and resultant social costs.[41]

35 Chile, Servicio Nacional para la Prevención y Rehabilitación del Consumo de Drogas y Alcohol, Ministerio del Interior y Seguridad Pública, "Décimo estudio nacional de drogas en población escolar: principales resultados nacionales" (Santiago de Chile, Observatorio Chileno de Drogas, 2014).

36 Robert MacDonald and Jane Marsh, "Crossing the Rubicon: youth transitions, poverty, drugs and social exclusion", *International Journal of Drug Policy*, vol.13, No. 1 (2002), pp. 27-38.

37 Anne M. Gewin and Bobby Hoffman, "Introducing the cultural variables in school-based substance abuse prevention", *Drugs: Education, Prevention and Policy*, vol. 23, No. 1 (2016), pp. 1-14.

38 *Impacts of Drug Use on Users and Their Families in Afghanistan* (see footnote 17).

39 UNODC, "Drug use in Afghanistan: 2009 survey – executive summary" (2009).

40 Zachary Steel and others, "Association of torture and other potentially traumatic events with mental health outcomes among populations exposed to mass conflict and displacement: a systematic review and meta analysis", *Journal of the American Medical Association*, vol. 302, No. 5 (2009), pp. 537-549.

41 Nadine Ezard and others, "Six rapid assessments of alcohol and other substance use in populations displaced by conflict", *Conflict and Health*, vol. 5, No. 1 (2011).

Migrants can develop problems related to the use of drugs and other substances while in their country of origin, in transit, in temporary refuge or in resettlement, and a variety of risk factors for developing drug dependence in those settings have been reported, including male gender, exposure to war trauma, displacement and coexisting mental health problems.[42]

Links between social exclusion, stigma and drug use

Target 10.2 of the Sustainable Development Goals
By 2030, empower and promote the social, economic and political inclusion of all

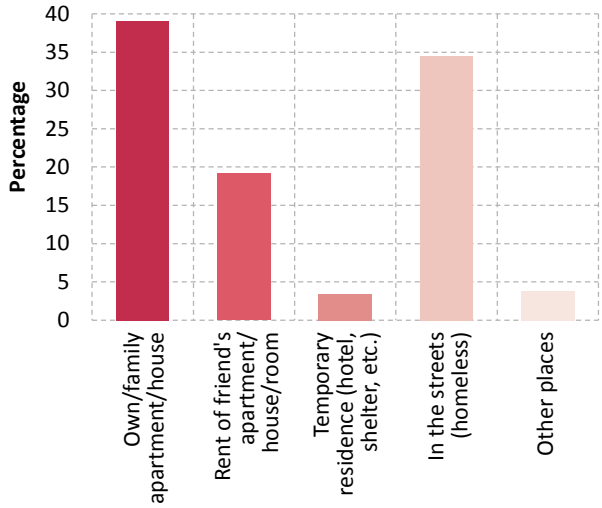
Target 10.3 of the Sustainable Development Goals
Ensure equal opportunity and reduce inequalities of outcome, including by eliminating discriminatory laws, policies and practices and promoting appropriate legislation, policies and action in this regard

Clearly, not all people who use drugs are marginalized and not all marginalized people are people who use drugs. Nevertheless, marginalization can be viewed as contributing to drug use, just as drug use can be viewed as contributing to the marginalization of some users: drug use can cause a deterioration in living conditions, while processes of social marginalization can be a reason for initiating drug use.[43]

Since marginalization is not easy to measure directly, it does not lend itself to quantitative research. However, several categorical risk factors for marginalization have been shown to be linked to drug use, including unemployment, homelessness, incarceration, sex work and vulnerable youth (such as young victims of family abuse and violence).[44] For example, a cohort study among homeless people in the four largest cities of the Netherlands (Amsterdam, Rotterdam, The Hague and Utrecht) found that cannabis had been used in the past month by 43 per cent of adult homeless people and by 63 per cent of young homeless people.[45] A study carried out in Ireland found 67 per cent of homeless ex-prisoners to be drug-dependent.[46]

High-risk behaviours, such as injecting drug use and sharing injecting equipment, are also reported to be high among homeless people.[47] Research conducted in 2015 by Homeless Link, a charitable company in the United

FIG. 5 Living situation of regular "crack" users in Brazil



Source: *A Profile of Users of Crack and/or Similar Drugs in Brazil* (Brazil, National Drug Policy Secretariat, 2013).

Kingdom, found that 34 per cent of people "sleeping rough" (sleeping in uncomfortable conditions, typically outdoors) had used heroin in the previous month and 37 per cent had used "crack" or cocaine.[48] Elsewhere, a study focusing on the profile of regular[49] users of "crack" or similar smokeable forms of cocaine (thus excluding cocaine salt) in Brazil[50] found that more than a third of those users spent a significant time on the streets and that less than a quarter of them had been to secondary school, although more than 95 per cent had been in school at some point in their lives. The study also found that more than 70 per cent of the users shared their drug using equipment, a pattern which raises concerns about the transmission of infections, especially viral hepatitis. Moreover, prevalence of HIV among these users was eight times higher than the prevalence rate in the general population of Brazil (5.0 per cent versus 0.6 per cent).

Drug use itself can also contribute to marginalization. In some societies, the stigma of being drug users and discrimination drive people who use drugs to the margins of society. People with drug use disorders are frequently distanced from their communities and families. The marginalization and stigmatization of people who regularly use drugs also have a negative impact on their employment opportunities and social relationships. Stigma and social exclusion can lead to a loss of human capital, as people who use drugs are unable to contribute to or participate

42 Kamaldeep Bhui and Nasir Warfa, "Drug consumption in conflict zones in Somalia", *PLoS Medicine*, vol. 4, No. 12 (2007).

43 EMCDDA, *Annual Report 2003: The State of the Drugs Problem in the European Union and Norway* (Lisbon, 2003).

44 Ibid.

45 Margriet van Laar and others, *Report to the EMCDDA by the Reitox National Focal Point: The Netherlands Drug Situation 2014* (Lisbon, 2015).

46 Claire Hickey, *Crime and Homelessness 2002* (Dublin, Focus Ireland and PACE, 2002).

47 *Annual Report 2003:The State of the Drugs Problem in the European Union and Norway.*

48 Stephen Holland, "Homeless health data finds heroin and cocaine dependency more prevalent amongst women than men", 5 August 2015. Available at www.homeless.org.uk/.

49 A "regular user" was defined as a person who had used the substances on 25 days or more in the previous six months.

50 Brazil, National Drug Policy Secretariat, "Perfil dos usuários de crack e/ou similares no Brasil" (Rio de Janeiro, 2013).

in a range of community activities such as civic duties, voluntary work, sports clubs, religious gatherings and cultural events. Stigma also contributes to poor mental and physical health, non-completion of drug treatment and increased involvement in high-risk behaviour such as sharing injecting equipment.[51]

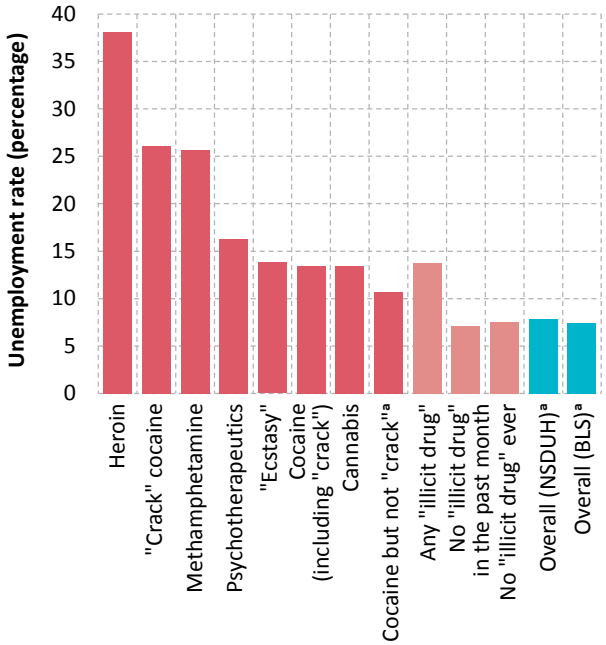
Drug dependence and unemployment: a vicious cycle

There is a clear positive association between drug dependence and social disadvantage, including unemployment and poverty. The relationship between drug use and employment status is complex and characterized by reciprocal causality: drug use exacerbates the risk of unemployment, while unemployment increases the risk of drug use.

Drug use can hamper a person's employment prospects by reducing productivity and the chance of finding work. Conversely, unemployment can cause stress and anxiety, financial difficulties, dissatisfaction and disaffection, which are all risk factors for initiation, perpetuation, intensification or resumption of drug use. In the United States, for example, the prevalence of past-month use of any drug among the population aged 18 years or older averaged 18 per cent among the unemployed, 10 per cent among part-time workers, 8 per cent among full-time workers and less than 6 per cent among those in the "other" category, such as retirees.[52] Data from EMCDDA for 30 European countries[53] suggest that, as of 2013, among all persons accessing treatment for drug use disorders who were in the labour force, at least half were unemployed.[54] A UNODC study on drug use in Afghanistan also found distinct links between drug use and employment status.[55]

A detailed breakdown of employment status among past-month users of drugs in the United States brings out different levels of association between drug use and unemployment across the various drug types. Heroin, methamphetamine and "crack" cocaine were the drugs most closely associated with unemployment, both in terms of the unemployment rate among past-month users and in terms of the increased likelihood of being a past-month user among the unemployed (compared with employed people). The unemployment rate among past-month heroin users was 38 per cent, while unemployed people were almost 10 times more likely to be heroin users than people in full-time employment (prevalence rates of 0.59 per cent and 0.060 per cent, respectively). The association was much stronger in the case of "crack" cocaine than cocaine in general (see figures 6 and 7).

FIG. 6 Unemployment[a] among past-month drug users in the United States, by drug type, 2013



Source: United States, National Survey on Drug Use and Health, Substance Abuse and Mental Health Services Administration (SAMHSA), Center for Behavioral Health Statistics and Quality, *National Survey on Drug Use and Health, 2013*; data extracted from the National Addiction and HIV Data Archive Program, hosted by the Inter-university Consortium for Political and Social Research at the University of Michigan (http://doi.org/10.3886/ICPSR35509.v3).

a For details, including an explanation of the methodological differences in the unemployment rate based on data from the National Survey on Drug Use and Health (NSDUH) and the Bureau of Labor Statistics (BLS), see the online methodology section of the present report.

There are several mechanisms whereby problem drug use can affect an individual's chances of finding and keeping a job. First, people with drug use disorders can suffer from a range of serious personal, health, lifestyle and other problems that need to be addressed before they are in a position either to complete welfare-to-work programmes successfully or to take up and retain paid employment.[56] Second, drug use may be associated with other factors, such as lack of qualifications, low levels of literacy and poor employment histories, which themselves reduce the competiveness

51 James D. Livingston and others, "The effectiveness of interventions for reducing stigma related to substance use disorders: a systematic review", *Addiction*, vol. 107, No. 1 (2012), pp. 39-50.

52 Alejandro Badel and Brian Greaney, "Exploring the link between drug use and job status in the U.S.", *Regional Economist*, July 2013. Available at www.stlouisfed.org/publications/regional-economist/july-2013/exploring-the-link-between-drug-use-and-job-status-in-the-us.

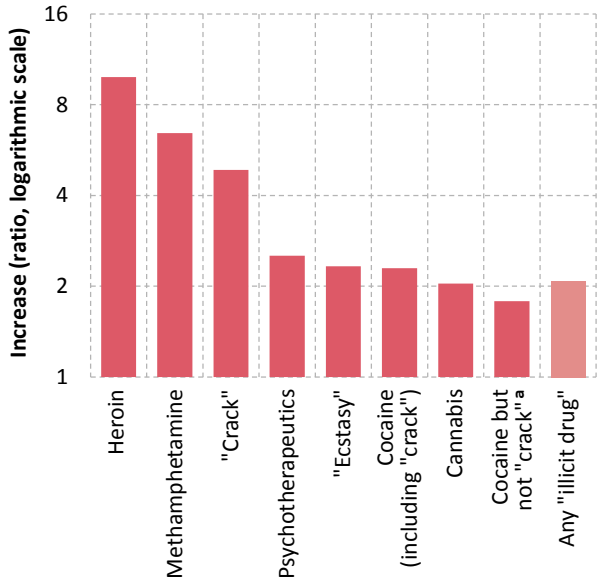
53 These data refer to the 28 member States of the European Union, Norway and Turkey.

54 Fifty per cent corresponds to the proportion of entrants classified as "unemployed/discouraged", among the total of number of entrants with known employment status, excluding students. This total includes persons whose status was classified as "other" as well as "receiving social benefits/pensioners/house-makers/disabled". It is likely that these categories include people who are not in the labour force; if this were taken into account, the proportion of unemployed people would be higher.

55 *Impacts of Drug Use on Users and Their Families in Afghanistan*.

56 Peter A. Kemp and Joanne Neale, "Employability and problem drug users", *Critical Social Policy*, vol. 25, No. 1 (2015), pp. 28-46.

FIG. 7 Increased likelihood of being a past-month drug user among the unemployed population, compared with the population in full-time employment in the United States, by drug type, 2013



Source: United States, National Survey on Drug Use and Health, SAMHSA, Center for Behavioral Health Statistics and Quality, *National Survey on Drug Use and Health, 2013*; data extracted from the National Addiction and HIV Data Archive Program, hosted by the Inter-university Consortium for Political and Social Research at the University of Michigan (http://doi.org/10.3886/ICPSR35509.v3).

[a] *See the online methodology section of the present report.*

of people who use drugs on the job market.[57] Third, additional barriers may arise from social circumstances, such as the exclusion of people from job opportunities because of a criminal record and the stigmatization of people who use drugs, with the resultant discriminatory practices by employers and providers of social services (such as childcare). Fourth, many people with drug use disorders may be acutely aware that limited skills, poor or no qualifications, gaps in their work history, particularly related to imprisonment, and a criminal record can make looking for a job extremely challenging, to the extent that it may seem a pointless venture.[58]

Drug use can limit the opportunities of a person entering or remaining in the workforce, whereas frustration caused by the failure to find adequate employment can increase drug consumption, creating a vicious cycle, particularly in the case of drug-dependent persons.

57 Harry Sumnall and Angelina Brotherhood, *Social Reintegration and Employment: Evidence and Interventions for Drug Users in Treatment*, EMCDDA Insights No. 13 (Luxembourg, Publications Office of the European Union, 2012).

58 J. Spencer and others, *Getting Problem Drug Users (Back) into Employment* (London, United Kingdom Drug Policy Commission, 2008).

How stigma can affect the effectiveness of drug responses

Just as a good level of social development enhances the efficacy of government efforts to counter the drug problem, deficiencies in the social milieu may hamper efforts to reduce illicit drug supply and demand. In particular, the stigmatizing attitudes towards people who use drugs that may extend to staff in health-care services can get in the way of their ability to deliver effective treatment to drug users.

Several studies have identified stigma as a significant barrier to accessing health-care and treatment services for drug users, with some health-care providers holding negative beliefs about people with drug use disorders, including overuse of system resources, non-investment in their own health, abuse of the system through drug-seeking and diversion, and failure to adhere to recommended treatment and care.[59, 60] Surveys of health professionals have indicated that they may hold negative or stereotypical views of people with drug dependence, which are likely to compromise the provision of high-quality care, while studies of nurses found that negative and punitive attitudes towards people who use drugs are relatively common. Judgmental, unsympathetic or hostile attitudes and views held by health professionals are likely to discourage individuals with drug-related problems from accessing health-care services.[61]

Generally, PWID may be perceived as a threat to health-care staff, as well as the community, because they are a potential cause of fear and vigilance, partly as a result of the perceived threat of needle-related injuries and of transmission of blood-borne viruses. A study to examine the extent of discrimination and stigma related to hepatitis C infection experienced by 274 PWID in Sydney, Australia, found that over half (52 per cent) reported discrimination in health-care settings as a result of having tested positive for hepatitis C, and 65 per cent reported that such discrimination was a result of being a drug user, with females more likely than males to experience discrimination because of their status with regard to hepatitis C.[62] According to UNAIDS, health-care services may even exclude PWID or treat them badly when they ask for help.[63]

59 Livingston and others, "The effectiveness of interventions for reducing stigma related to substance use disorders".

60 T. M. Ronzani, J. Higgings-Biddle and E. F. Furtado, "Stigmatization of alcohol and other drug users by primary care providers in Southeast Brazil", *Social Science and Medicine*, vol. 69, No. 7 (2009), pp. 1080-1084.

61 Natalie Skinner and others, "Stigma and discrimination in health-care provision to drug users: the role of values, affect, and deservingness judgments", *Journal of Applied Social Psychology*, vol. 37, No. 1 (2007), pp. 163-186.

62 Shah E. Habib and Lester V. Adorjany, "Hepatitis C and injecting drug use: the realities of stigmatization and discrimination", *Health Education Journal*, vol. 62, No. 3 (2003), pp. 256-265.

63 *The Gap Report* (see footnote 5).

The punitive approaches of law enforcement authorities with regard to people who use drugs can contribute to their marginalization, particularly when those approaches lead to high levels of incarceration (for a more detailed discussion, see the subsection entitled "Criminal justice").

Drug responses and social development

Target 3.5 of the Sustainable Development Goals
Strengthen the prevention and treatment of substance abuse, including narcotic drug abuse and harmful use of alcohol

Drug demand reduction efforts and the entire continuum of care for people who use drugs, when successful, reduce drug use and therefore its impact on public health. The benefits affect both the people who use drugs and society in general, and such efforts have proved effective in preventing the transmission of, for example, HIV and viral hepatitis. Drug use prevention programmes have also been shown to lead to a decrease in a range of other risky behaviours, such as aggressiveness and truancy.

Effective strategies for countering the drug problem exist, but it takes a well-developed framework to implement them effectively. Even at the level of monitoring the extent of drug use, developed countries are typically better placed than developing countries to assess the extent of the problem. For example, heroin use in Europe has undergone a significant decline in recent years, and this improvement has been attributed in part to increased effectiveness in drug demand reduction efforts, specifically a dramatic increase in treatment availability, which removed a significant proportion of the demand from the market.[64]

Experience has provided an abundance of evidence on how drug demand reduction programmes can have a positive impact.[65, 66] Programmes are more effective when they recognize that drug use can be the result of multiple causes, and when they incorporate not only drug-specific components, but also skills that help individuals to deal effectively with the challenges of each phase of life, such as relationship skills for adolescents or parenting skills for parents. The results are also enhanced when the interventions employ and expand the use of evidence-based tools systematically. Moreover, the entire continuum of care interventions can be even more effective when it incorporates evidence-based measures aimed at minimizing the adverse public health and social consequences of drug abuse, including appropriate medication-assisted therapy programmes, injecting equipment programmes as well as antiretroviral therapy and other relevant interventions that prevent the transmission of HIV, viral hepatitis and other blood-borne diseases associated with drug use. The implementation of evidence-based programmes remains at very low levels of coverage in many parts of the world[67] and is still under-funded.[68]

Impact of alternative development on social development

When successful, alternative development programmes also lead to the broader development of the affected communities. In Myanmar, for example, alternative development projects in Wa Special Region 2 resulted in several benefits on the health front: vaccinations reduced infant mortality and eliminated leprosy among children; and electricity and potable water were brought to some townships. In Thailand, alternative development resulted in increased access to education, health services and potable water, with a resulting decline in the incidence of malaria and smallpox. In Pakistan, alternative development efforts in Dir District, Khyber Pakhtunkhwa (formerly North-West Frontier Province), resulted in the provision of drinking water infrastructure, an effective immunization programme and the improvement of roads, thereby enhancing accessibility to social services. Alternative development programmes often create and strengthen social organizations and generally enhance the level of organization of rural communities, enabling progress on various fronts, especially when such programmes encourage the direct participation of beneficiaries in the design, planning and implementation of projects. A discussion of the social component of alternative development, including detailed examples, can be found in chapter II of the *World Drug Report 2015*.

Availability of drugs for medical and scientific purposes

Target 3.b of the Sustainable Development Goals
Support the research and development of vaccines and medicines […], provide access to affordable essential medicines and vaccines, […]

Target 3.b of the Sustainable Development Goals is closely linked to the objective of drug control, which is to ensure access to controlled drugs for medical and research purposes while preventing diversion and abuse. In the preamble to the Single Convention on Narcotic Drugs of 1961 as amended by the 1972 Protocol, the parties to the Convention recognized that the medical use of narcotic drugs continues to be indispensable for the relief of pain and suffering and that adequate provision must be made to ensure the availability of narcotic drugs for such purposes.

64 EMCDDA, *Annual Report 2012: The State of the Drugs Problem in Europe* (Lisbon, 2012).

65 "International standards for the treatment of drug use disorders: draft for field testing" (E/CN.7/2016/CRP.4).

66 See UNODC, *International Standards On Drug Use Prevention* (Vienna, March 2013).

67 David P. Wilson and others, "The cost-effectiveness of harm reduction", *International Journal of Drug Policy*, vol. 26, Suppl. No. 1 (2015), pp. S5-S11.

68 UNAIDS, Halving HIV transmission among people who inject drugs: Background note, document UNAIDS/PCB (35)/14.27.

Notwithstanding the clear intentions of the control system, 5.5 billion people, or three quarters of the world's population, have little or no access to medicines containing narcotic drugs and have inadequate access to treatment for moderate to severe pain. WHO estimates that each year 5.5 million terminal cancer patients and 1 million end-stage HIV/AIDS patients, as well as many other people with chronic, non-malignant pain, suffer untreated or under-treated moderate to severe pain, including 800,000 patients with lethal injuries caused by accidents and violence, patients with chronic illnesses, patients recovering from surgery, women in labour (110 million births per year) and paediatric patients.[69]

While some controlled substances play an important role in the management of pain and other medical uses, in some countries the strategies in place to prevent the abuse, misuse and diversion of controlled substances may sometimes affect the availability of those substances. Human Rights Watch reviewed the national drug control strategies of 29 countries and found that 25 of them failed to identify the issue of ensuring availability of controlled substances for medical and scientific use as an objective or to outline specific measures on this issue.[70]

Impact of other drug responses on social development

There are other ways in which the response to the drug problem, particularly efforts to counter the illicit supply of drugs, may impact health and social development. Eradication of illicitly cultivated crops, if not adequately complemented by initiatives to provide alternative livelihoods, may impact the livelihood of already poor farmers and their families. These aspects are discussed below, in the sections on economic development and environmental sustainability.

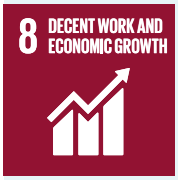
Furthermore, when the response to illicit drug use neglects the health aspects of drug use and treats the problem exclusively as a criminal offence, excessively focusing on punishment, consequences can ensue for the well-being of people who use drugs, of prison populations and of society in general. These aspects are discussed below, in the subsection on criminal justice.

Finally, when the response to the drug problem fails to take into account the particular needs of women, it may contribute to undermining the objectives of gender parity and of the empowerment of women and girls. This applies not only to direct interventions against the drug problem but also to the monitoring of drug use, as women are likely to be under-represented in research identifying prevalence, needs, risks and outcomes of drug use, leading to a gap in appropriate policy development and continuing to perpetuate a lack of understanding of women's specific needs and issues in that area.[71]

B. ECONOMIC DEVELOPMENT

Various Sustainable Development Goals and targets make reference to economic aspects, but Goal 8, dealing with economic growth, and Goal 1, dealing with poverty, are probably the two most relevant in analysing the links between economic development and the drug problem.

Poverty, economic disadvantage and unemployment are some of the enabling factors of illicit crop cultivation and drug production. Economic aspects can also have an impact on the evolution of illicit drug markets, as variations in income levels and purchasing power may influence drug consumption patterns. Just as economic development has an impact on illicit drug markets, the drug problem can also have economic ramifications. The economic cost of drug use that is incurred, for example, when drug-using segments of the workforce do not receive adequate treatment, can impact on productivity. The costs associated with efforts by state institutions to help people who use drugs, such as efforts to provide treatment and rehabilitation, as well as law enforcement efforts, can also have an impact on government budgets.



Sustainable Development Goal 8. Promote sustained, inclusive and sustainable economic growth, full and productive employment and decent work for all

Impact of economic development on the drug problem

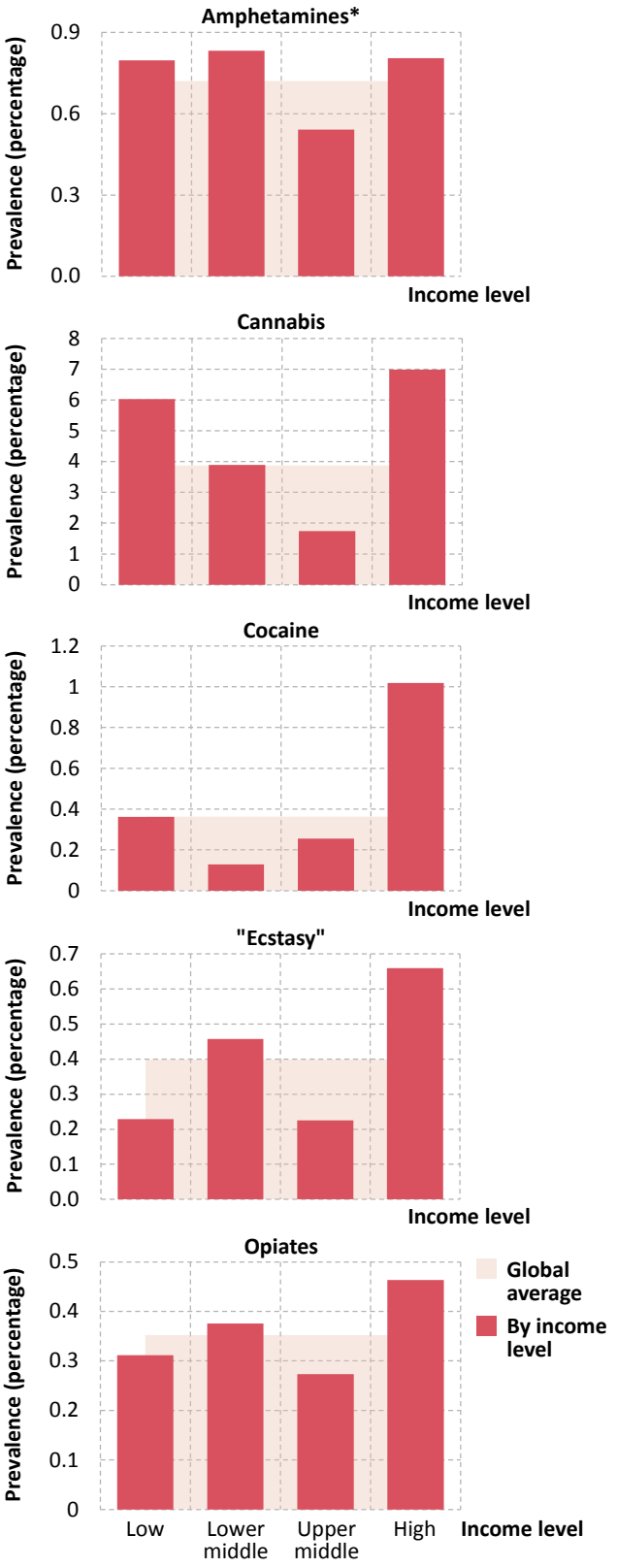
One way to look at how economic development affects the drug problem is to compare the latter across different countries on the basis of their economic development. Such an analysis provides a simplified view, as there are a multitude of factors that can play a role in shaping the drug problem of each country. Proximity to a drug-producing area or to a major drug trafficking route, for example, explains more than economic development the higher than global rates of opiate use in the Near and Middle East and South-West Asia or the higher rates of cocaine use (including "crack" cocaine) in South America and West Africa. Nevertheless, a global macrolevel analysis can still provide insights into how economic development may have a bearing on the drug problem, although the relationship between development and the drug problem needs to be viewed in dynamic terms.

69 WHO, *Ensuring Balance in National Policies on Controlled Substances: Guidance for Availability and Accessibility of Controlled Medicines* (Geneva, 2011).

70 Human Rights Watch, "National drug control strategies and access to controlled medicines" (2015).

71 A. Roberts, B. Mathers and L. Degenhardt, *Women Who Inject Drugs: A Review of Their Risks, Experiences and Needs* (Sydney, National Drug and Alcohol Research Centre, University of New South Wales, 2010).

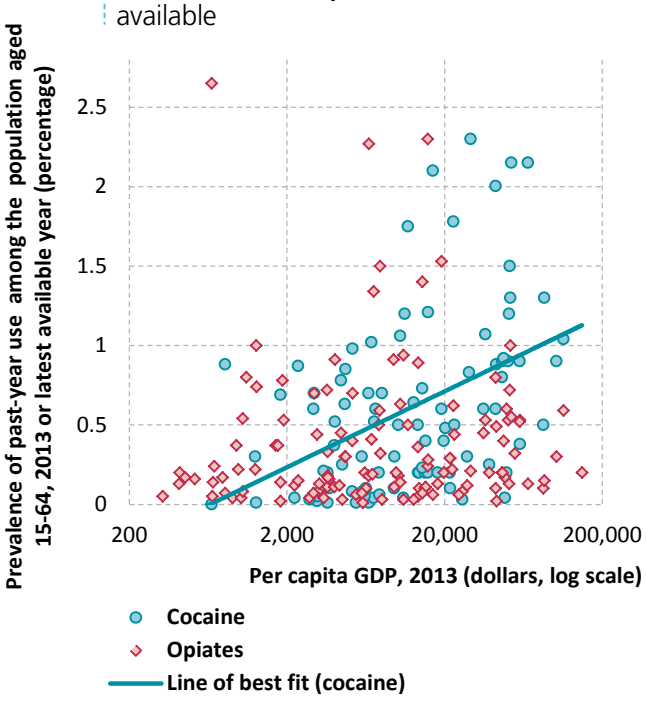
FIG. 8 Prevalence of past-year use of drugs among persons aged 15-64, by drug category and national income, 2013



Source: World Bank (for income levels) and UNODC estimates based on responses to the annual report questionnaire and other official sources (for drug use data).

* *Including prescription stimulants.*

FIG. 9 Prevalence of past-year use of opiates and cocaine versus per capita gross domestic product in countries with national data, 2013 or the latest year for which data are available



Source: World Bank (for per capita gross domestic product (GDP)) and national data and estimates based on responses to the annual report questionnaire and other official sources (for drug use data).

Some patterns manifest themselves at the global level and can be seen in cross-country comparisons based on national indicators; other patterns are intrinsically tied to variations within countries and can be observed from socioeconomic indicators at the subnational level. Some patterns are evident when all drug types are considered together, some emerge when focusing on a single drug type and others can be observed in the interplay and the trade-offs between different drugs.

Economic development and drug use

The present section examines three overarching patterns whereby the level of economic well-being can influence drug use. First, the analysis uses cross-country comparisons to explore to what extent higher national income is conducive to the formation of illicit drug markets. Second, it uses subnational data to examine poverty, together with other forms of economic and social disadvantage,[72] as a risk factor for drug use. Third, it explores the relationship between socioeconomic status and different patterns of drug use.

The first pattern emerges from analysing indicators of drug use and economic development at the national level, as past-year use of drugs of all types is higher in "high-

72 In addition to the discussion of poverty in this section, see the discussion of social exclusion in the section entitled "Social development".

income" countries. As figures 8 and 9 show, cocaine is the drug most clearly associated with high income. The association between the problem of drug use and development can also be noted in terms of disability-adjusted life years (see figure 3, page 65).

Development and the evolution of drug use and consumer markets

Drugs that command a relatively high price, and ultimately greater profits for traffickers, may find an easier foothold in countries with relatively higher levels of per capita income. Although historically there have been different dynamics (including licit use) that have triggered the onset of the use of certain drugs, it is likely that income levels play an important role in enabling drug use to take hold and consolidate. Estimates by United States authorities show the magnitude of the amounts spent on drugs: in 2010, people in the United States who used a drug at least four times a month spent an average of $10,600 a year on cocaine, $17,500 on heroin and $7,860 on methamphetamine.[73] Total annual national expenditure related to the purchase of drugs amounted to $28 billion spent on cocaine, $27 billion on heroin and $13 billion on methamphetamine.

High-income countries are likely to have above-average drug prices and to be more attractive to international drug traffickers. This is particularly the case for cocaine and heroin, which originate in confined and well-defined areas of production, creating a scenario in which consumers worldwide compete for a product with a concentrated supply and leading to a situation in which supply gravitates to those places where the largest profits are to be made. In contrast, cannabis and, to a certain extent, some kinds of ATS can be sourced locally and on a very small scale, sometimes even by self-sufficient consumers.

This may help to explain, for example, why relatively undeveloped countries in Africa, which is not located near cocaine and heroin production areas, have typically had relatively low rates of cocaine and heroin use (prior to some of them becoming cocaine or heroin transit areas), whereas the same cannot be said of the prevalence rates of cannabis use, which have tended to be even higher than the global average. The use of unprocessed drugs such as opium and coca leaf remains largely confined to the places in which they are cultivated, where they have been used for centuries, while their derivatives have not always found a large market in the countries of origin. Heroin use, for example, is quite low in Latin American countries, although opium is cultivated in the subregion and is also processed into heroin.

Just as different drug categories display different patterns, different drug subcategories may also explain some of the complexities of illicit drug markets. For example, although the prevalence of past-year use of cocaine in South America is not very different from the figure for North America, the majority of cocaine users in the United States use cocaine in salt form, whereas in South America the use of other forms of cocaine (in base form) appears to be much more widespread. Moreover, some of the "products" consumed in base form in South America are siphoned off from intermediate stages of the cocaine-processing chain, when they may still contain high levels of impurities and are thus usually considered to have less potential to fetch high prices. In contrast, even "crack" cocaine (used for smoking) in the United States is believed to be obtained from a reverse step that reverts to base form (in this case, "crack") from salt form. Another possible illustration of this pattern is the case of the domestic heroin market in India. Reports by the Government of India indicate that heroin in the domestic retail market is considered to be of "low value" and that this reflects a distinct market from the heroin transiting India from Afghanistan and headed for other destinations.

Within the same country, different sub-types of a given drug category may have quite different patterns of association with the socioeconomic status of users. Economic well-being is not necessarily homogenous within a country and different subgroups may use different drugs to differing degrees. Indeed, certain links between drug use and socioeconomic well-being, such as income levels and employment status, are only visible at the subnational or community level.

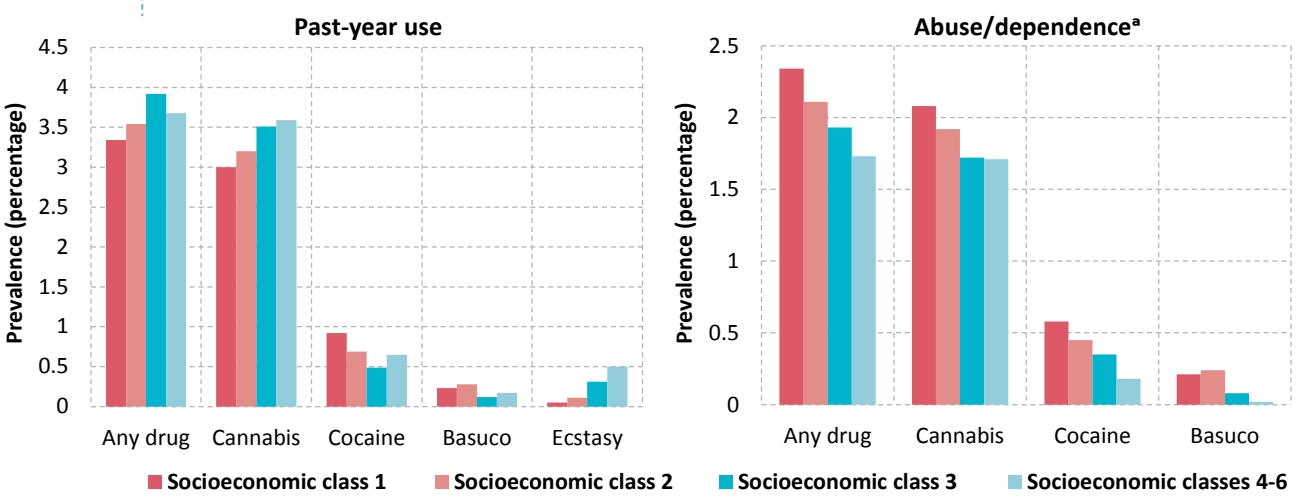
For example, in the United States, the association of drug use with unemployment status is quite different in the case of cocaine salt and "crack" cocaine (see figures 6 and 7 in the section entitled "Social development"). Although this is sometimes attributed to "crack" being cheaper than cocaine salt, it is not clear whether, or in which sense, price can be a determining factor; one study,[74] based on data covering cities in the United States, determined that, in purity-adjusted terms, there were no consistent differences between prices of "crack" and cocaine salt. The study tentatively suggests that, given typical transaction sizes in practice, the minimum cost for achieving intoxication was frequently lower. However, data from a later study[75] indicate that the median costs of "crack" and cocaine transactions are comparable ($27 for cocaine salt versus $25 for "crack" cocaine). Because of their different modes of administration, the typical experience associated with "crack" use is shorter but reportedly more intense than that of cocaine salt, so it can be argued that users of cocaine salt would need to spend more to achieve the same level of intensity. The differences may also extend to the potential for users to develop tolerance and dependence.

73 B. Kilmer and others, *What America's Users Spend on Illegal Drugs: 2000-2010* (Santa Monica, California, Rand Corporation, 2014).

74 Jonathan P. Caulkins, "Is crack cheaper than (powder) cocaine?", *Addiction*, vol. 92, No. 11 (1997) , pp. 1437-1443.

75 Kilmer and others, *What America's Users Spend on Illegal Drugs: 2000-2010.*

FIG. 10 Prevalence of past-year drug use and of drug abuse or dependence[a] in Colombia, by socioeconomic class,[b] 2013



Source: Observatorio de Drogas de Colombia, *Estudio Nacional de Consumo de Sustancias Psicoactivas en Colombia — 2013*, June 2014.

[a] *"Dependence" is defined according to the ICD-10 criteria of the World Health Organization, and "abuse" is defined according to the DSM-IV criteria of the American Psychiatric Association.*

[b] *The socioeconomic classes were ranked so that class 1 was the least wealthy and class 6 the most wealthy.*

Generally, even though wealthy societies appear to be more vulnerable to drug consumption, within those societies, economic and social disadvantage is a significant risk factor for drug consumption to translate into drug dependence and drug use disorders. Poverty is associated with drug use disorders, not because of any link with discretionary income but because poor people are more vulnerable and more likely to live on the margins of society. It is relative poverty and marginalization within one country that affects the development of drug use disorders, rather than absolute levels of income. Moreover, drug use can itself exacerbate poverty and marginalization, creating the potential for a vicious cycle.

Higher socioeconomic groups may play a separate role in facilitating the onset of recreational use as a first step in the subsequent formation and consolidation of illicit drug markets. The mechanisms that drive this interaction merit further study, but they may be attributable to a higher propensity to experiment, higher income levels, higher association with an urban location of residence and different patterns of entertainment among people in the higher socioeconomic brackets. A study on cannabis use demonstrated this phenomenon by drawing on evidence from France, Germany and the United States. The study showed how, at the outset, it was mostly well-educated men in the countries examined who started to experiment with cannabis use. Gradually, this shifted to men with low levels of education. Women followed at lower rates and the change was not as marked; moreover, the people who transitioned to daily cannabis use were predominantly those in the lower socioeconomic bracket.[76]

76 Legleye and others, "Is there a cannabis epidemic model? Evidence from France, Germany and USA". *International Journal of Drug Policy*, vol. 25, No. 6 (2014), pp. 1103-1112.

This pattern is also consistent with data on drug use in Colombia, which show very distinct patterns for past-year drug use and for drug use disorders in different socioeconomic classes. In the case of cannabis and "ecstasy", for example, there is a progressive increase in rates of occasional (past-year) use with higher levels of socioeconomic status (see figure 10), but overall drug use disorders are associated with the lower socioeconomic classes.

Sustainable Development Goal 1. End poverty in all its forms everywhere

As mentioned earlier, poverty is a significant risk factor for drug use; conversely, drug use itself frequently places a significant strain on the finances of people with drug dependence and on their families' finances. The extent of the financial strain brought about by drug use may be related not only to the price of a drug but also to the potential of the person using the drug to develop a tolerance to that particular drug, and hence to its pharmacological properties. In the case of heroin, for example, it is believed that experienced users may seek much higher doses than first-time users. People with fewer economic resources who use drugs may also be exposed to higher levels of harm as they resort to cheaper variants of drugs. Lower prices may be associated with lower purity levels, which imply higher health risks because of the presence of adulterants, by-products and other substances.

The financial difficulties experienced by people with drug dependence are often corroborated by the methods found to have been adopted to generate income. One study in

Brazil focused on the profile of regular[77] users of "crack" or other similar smokeable forms of cocaine (thus excluding cocaine salt).[78] The study estimated that 13 per cent of users had resorted to begging as a source of income during the preceding 30 days, 7.5 per cent were sex workers or had exchanged sex for money, 6 per cent had resorted to illicit activities linked to the sale or distribution of drugs and 9 per cent had resorted to other illicit activities.

Low income levels are relevant not only in themselves, but also in relation to the context and the society in which an individual lives, as income inequality within a society may contribute to the marginalization of the less wealthy. As discussed in the *World Drug Report 2012*, an analysis based on Gini coefficients indicated that countries with high levels of inequality (Gini coefficients exceeding 50) tended to face relatively higher levels of drug problems, mostly as transit or production countries. Societies characterized by high income inequality tend to be more prone to crime, and in some extremely unequal societies, members of marginalized groups may view involvement in criminal activities such as drug trafficking as the only feasible strategy for upward social mobility. Similarly, without realistic hopes of a better future, members of those groups may become disillusioned and more vulnerable to illicit drug use.[79]

Many drug-dependent persons are trapped in a vicious cycle of poverty and drug use because of a wide range of factors, such as family breakdown, lack of education and limited access to employment opportunities and health care. However, even though the causes of poverty and deprivation are to some extent social, they are experienced individually and those who experience them have their own set of reasons and motivations for responding to their circumstances in a particular manner.[80] Not everyone living in a poor community will succumb to drug dependence and it is important to recognize that not all people who are drug-dependent are to be found in the poorest socioeconomic groups.

In sum, poverty, together with other forms of social disadvantage,[81] is strongly associated with drug use disorders, both as a risk factor leading to drug use and as a consequence of drug use. Moreover, in some countries middle or upper socioeconomic classes are associated with higher levels of "recreational" drug use, which may simply be a manifestation of purchasing power or may reflect more willingness, or opportunities, to experiment with drug use.

77 A "regular user" was defined as a person who had used the substance on 25 days or more in the previous six months.

78 "Perfil dos usuários de crack e/ou similares no Brasil" (see footnote 50).

79 *World Drug Report 2012* (United Nations publication, Sales No. E.12.XI.1), p. 88.

80 R. Young, *From War to Work: Drug Treatment, Social Inclusion and Enterprise* (London, Foreign Policy Centre, 2002).

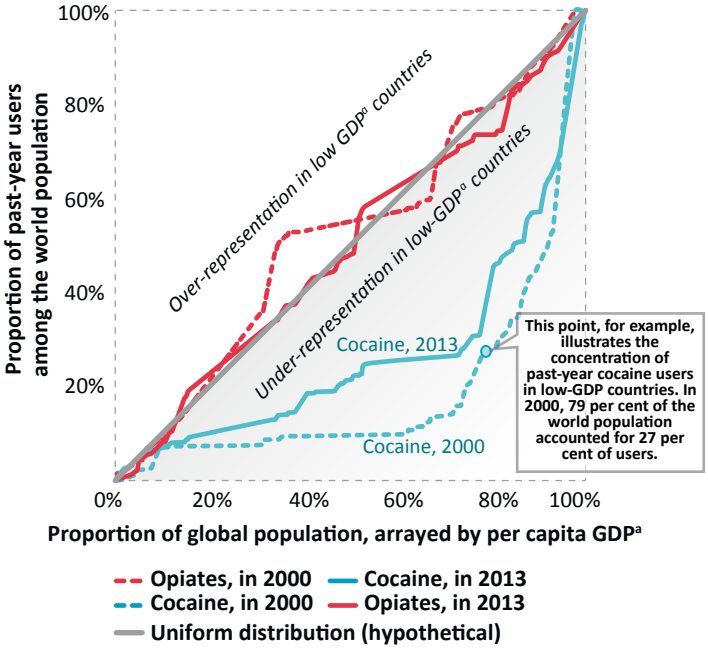
81 In addition to the discussion of poverty in this section, see the discussion of social exclusion in the section entitled "Social development".

Are developing countries following in the steps of developed countries when it comes to patterns of drug use?

The evolution of the global markets for some drug types has been led by the dynamics in developed countries. This is clear from the history of the illicit use of synthetic drugs and cocaine and, based on historical qualitative assessments, it is also true to a large extent for heroin — all drugs that require a certain degree of processing or synthesis. After emerging in developed countries, over time, consumption eventually tends to catch on in countries with lower levels of development. More broadly, the evolution of consumer markets in developing countries seems to follow patterns seen in developed countries (see the discussion below).

Figure 11 shows an overall shift in cocaine use from developed to developing countries between 2000 and 2013. Given the lack of data, the same analysis can only be done for opiates in general rather than specifically for heroin and only since the year 2000.

FIG. 11 Share of past-year cocaine and opiate users among the global population, cumulative with per capita gross domestic product, 2000 and 2013

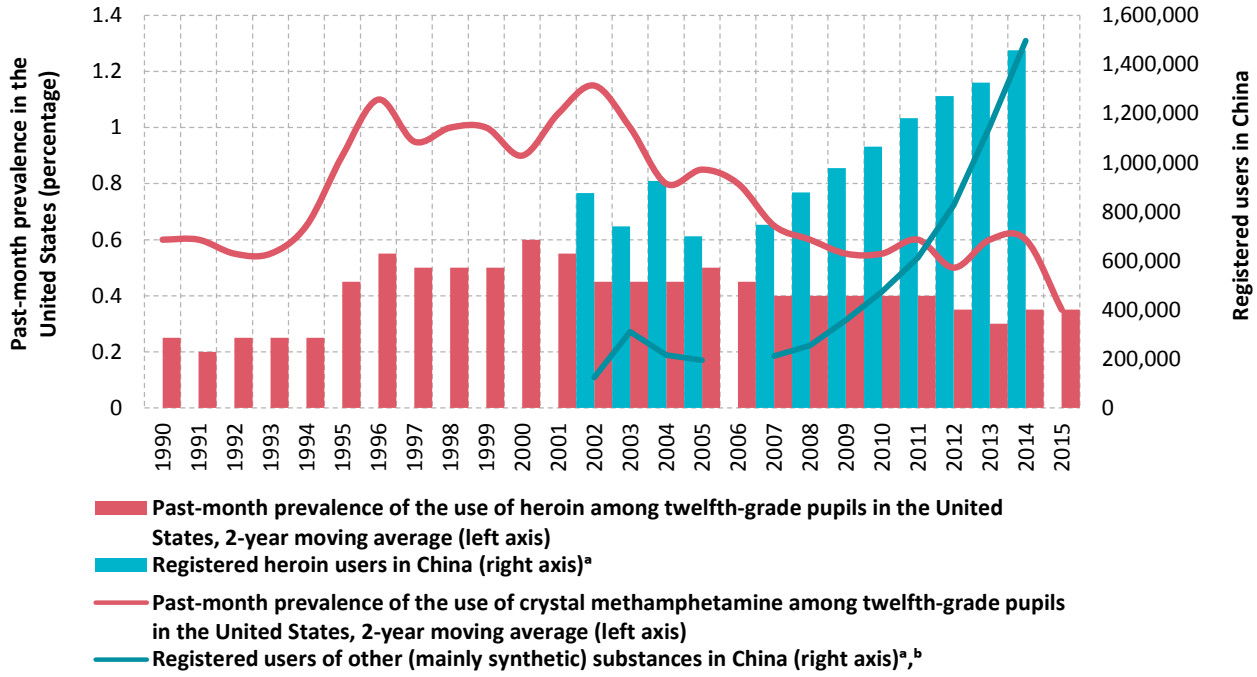


Source: World Bank (for per capita gross domestic product (GDP)) and UNODC estimates based on responses to the annual report questionnaire and other official sources (for drug use data).

[a] *Gross domestic product.*

Consumption of most synthetic drugs and new psychoactive substances (NPS) first emerged in the more developed countries before expanding in less developed countries. Prime examples are the emergence of methamphetamine in Japan and North America near the middle of the twentieth century, the subsequent emergence of "ecstasy" and

FIG. 12 Selected indicators of the use of heroin and other substances in China and the United States, 1990-2015



Source: Office of the National Narcotics Control Commission of China; and Monitoring the Future study, Institute for Social Research, University of Michigan.

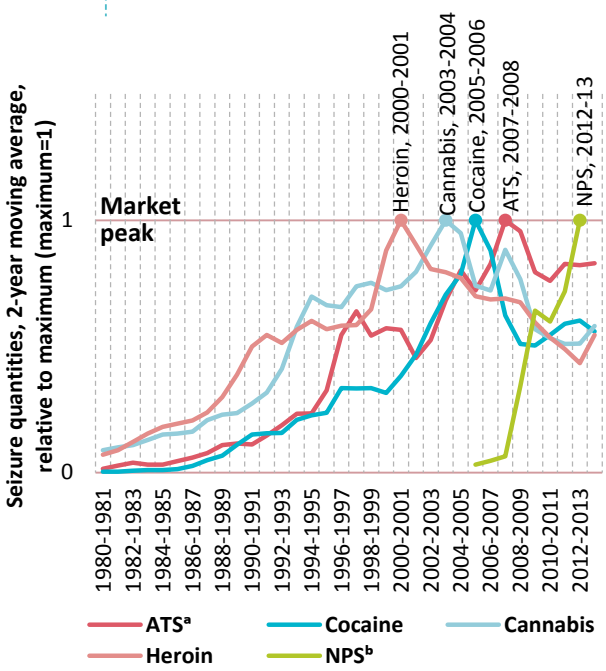
[a] *Data for the period 1990-2001, 2006 and 2015 were not available.*

[b] *The category "other substances" includes mainly synthetic substances such as methamphetamine and ketamine; a comprehensive breakdown for all years was not available.*

other hallucinogens in North America and Europe and the ongoing proliferation of the consumption of NPS in Europe, Japan and North America. It is at a later stage when the use of these substances expanded in less developed countries; for example, the peak in methamphetamine use in the United States happened between 1995-2002, while in China methamphetamine use is a more recent occurrence and the available indicators do not yet show signs of reaching a peak (see figure 12).

The drivers of the emergence of synthetic drug markets in developed countries may be a combination of supply-side and demand-side factors. On the demand side, greater purchasing power, as well as potentially greater inclination and opportunities to experiment with substances for recreational purposes, may play a role. In the case of ATS, however, it appears that the substances' availability for other purposes, including their use in medicine, together with the associated potential for diversion, was crucial in triggering the onset of misuse. In addition, technological innovation and the presence of a variety of precursors and other chemicals in the licit markets facilitated the establishment of clandestine laboratories manufacturing synthetic drugs in developed countries, often close to demand.[82]

FIG. 13 Long-term trends in drug seizures in Western and Central Europe, 1980-2014



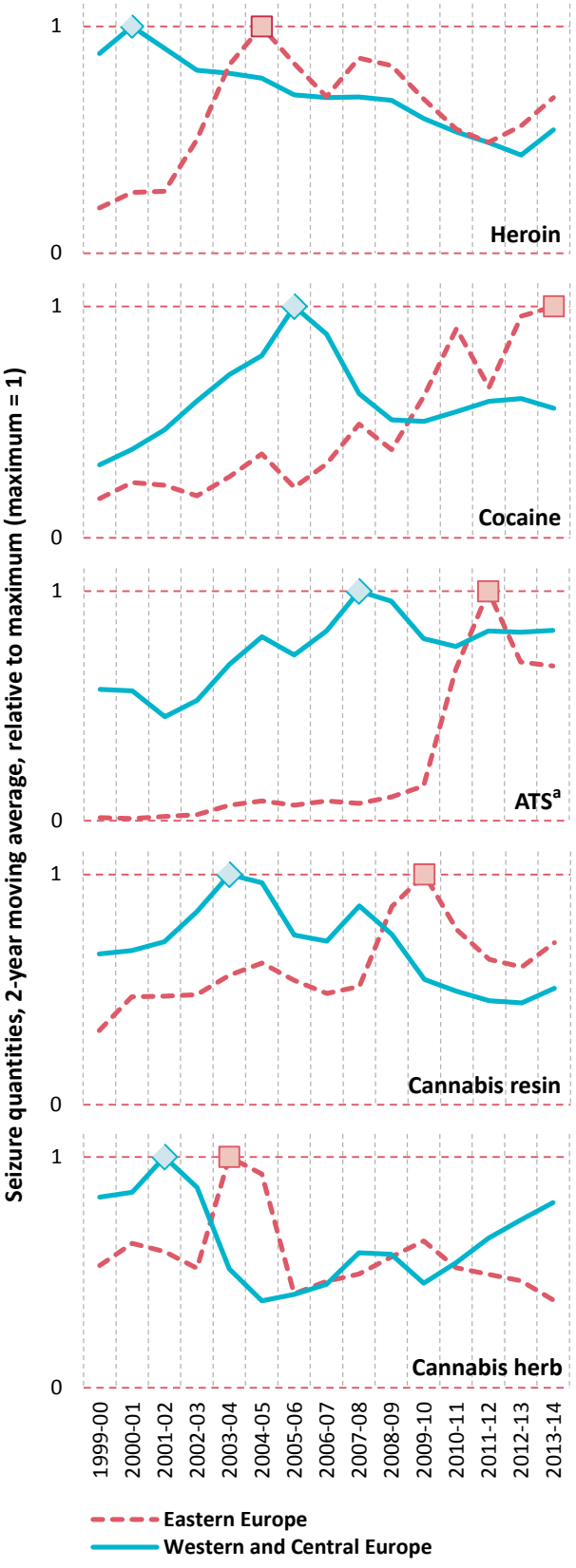
Source: Responses to the annual report questionnaire and other official sources (for data on heroin, cannabis, cocaine and ATS); and EMCDDA (for data on NPS).

[a] *Excluding "ecstasy" and prescription stimulants.*

[b] *Data for NPS refer to countries covered by the early warning system used by EMCDDA, namely the European Union member States, Norway and Turkey; data on NPS for 2014 were not available.*

82 United Nations International Drug Control Programme, *World Drug Report 1997* (Oxford, Oxford University Press, 1997).

FIG. 14 Comparison of seizure trends in Western and Central Europe and in Eastern Europe, by drug type, 1999-2014



Source: Based on responses to the annual report questionnaire and other official sources.

[a] *Excluding "ecstasy" and prescription stimulants.*

Apart from data on drug use, availability indicators also illustrate some patterns in the evolution of the development of illicit drug markets in developed countries and a certain replication of those patterns in the markets of less developed countries. The market in Europe offers a two-fold illustration of these dynamics: first, an apparent situation in which the market in Western and Central Europe may be the first to have become saturated and to have stabilized with respect to most drugs, with an ongoing surge in NPS (see figure 13); and second, an apparent consistent time lag between the situation in Western and Central Europe and the subsequent expansion in Eastern Europe (see figure 14). As with many other social phenomena, development may accelerate the diffusion and a certain homogenization of the drug problem. In effect, an analysis of reported expert perceptions of trends in illicit drug use made across drug types in 2012 also points in this direction: while there appears to have been an overall stabilization in countries of the Organization for Economic Cooperation and Development (OECD) since 2002, other countries tend to perceive the trend as increasing.[83]

How does economic development influence drug trafficking?

Does globalization affect drug trafficking?

Facilitating trade and easing trade barriers are features of globalization that can potentially have an impact on drug trafficking. While the value of trade agreements in boosting economic development is not under question, by fostering the expansion of trade and global transportation networks, trade openness may also facilitate the cooperation and the formation of alliances among criminal organizations in different countries. Such cooperation expands the power and reach of cartels to distant markets and thereby strengthens their ability to evade detection by local law enforcement. Indeed, it has been argued that globalization has driven an overall decline in the retail prices of drugs by increasing the efficiency of their distribution, by reducing the risk premium involved in dealing drugs and by increasing the degree of competition in illicit drug markets.[84]

Strategies adopted to facilitate trade, such as free trade agreements and the establishment of free trade zones, export-processing zones, economic areas and customs unions, may reduce the opportunity for law enforcement authorities, specifically customs authorities, to monitor shipments from their origin to their destination. Such strategies shift the onus of monitoring trade from the country of destination to the point of entry into the broader economic area. This may potentially affect not only trafficking in illicitly produced drugs but also,

83 *World Drug Report 2012*, p. 67.

84 Cláudia C. Storti and Paul De Grauwe, "Globalization and the price decline of illicit drugs", *International Journal of Drug Policy*, vol. 20, No. 1 (2009), pp. 48-61.

Example of development programmes that may have triggered illicit cultivation

In the mid-twentieth century, the Andean nations of Bolivia, Colombia, Ecuador and Peru coordinated efforts to develop road infrastructure into their Amazonian lowlands with the goal of interconnecting the Andean section of the Amazon basin, from Venezuela to Bolivia.[a] The Declaration of the Presidents of America, resulting from a meeting of the Presidents of the American States held in Punta del Este, Uruguay, in April 1967, crystallized the scope and ambition of this massive development plan and included the goals of laying the foundation for economic integration by completing the *Carretera Marginal de la Selva* and modernizing agricultural food production through development, agrarian reform and land settlement. In Peru, a badly conceived agricultural reform that was applied from 1970 onwards destroyed the agricultural companies, distributing the land and properties of the landowners ("*gamonales*") among their workers, leading to the loss of the jobs of many workers, who migrated in search of land and other economic opportunities.

There was an urgent need to expand the agricultural land base,[b] since agricultural modernization and demographic growth, coupled with vastly inequitable land distribution in the Andes, made hundreds of thousands of farmers redundant.[c] Colonization projects emerged to direct and sometimes follow migration flows of Andean farmers seeking land or a new start or fleeing violence.[d, e, f, g, h]

Map 1 shows the location of the development projects in the Andean subregion during this period, as well as the main locations of coca bush cultivation in the 1990s. Colombia opened projects in Meta along the Ariari, at El Retorno in Guaviare, near Florencia Caquetá and Puerto Asís, Putumayo;[c, g, i] but preparations for construction of the road only started in 2012. Colonization projects in Colombia were quickly abandoned in favour of supporting spontaneous colonists, an approach viewed as efficient and effective.[i, j] Colonization projects east of the Andes in Ecuador (not shown on map 1) were small in comparison, directly associated with providing support for colonists along the single and late-starting oil extraction road.[c, j] Bolivia opened projects in Santa Cruz, Chapare and Alto Beni.[e] In Peru, special development projects began in 1980, along the *Carretera Marginal de la Selva*; examples being the special projects of Huallaga Central, Alto Huallaga and Pichis-Palcazú. Aimed at triggering the development of the local population, these projects enabled the settlement, with better development prospects, of Andean and coastal migrants.

Designed to bring socioeconomic development to the subregion, overall, these initiatives may have inadvertently set the stage for the subsequent increase in coca bush cultivation.

[a-j] See the online methodology section of the present report.

depending on the specific arrangements, the diversion of licitly produced substances, particularly precursor chemicals, as the prevention of diversion comes to rely on internal market regulations and safeguards rather than on cross-border protocols. In addition, some agreements may extend to the free movement of people, making the detection and monitoring of drug traffickers more challenging.

The literature presents various hypotheses about the effects of trade openness on the ability of the authorities to reduce drug trafficking. One study that examines the various theories concludes that trade openness decreases the interdiction capabilities of authorities in drug-consuming countries while increasing those of authorities in drug-producing countries. It also finds that greater openness to trade does not have a consistently significant effect on the interdiction capabilities of authorities in transit countries.[85]

Economic development and illicit crop cultivation and drug production

In the relationship between economic development and drugs, nowhere is the link more pronounced than in the case of the illicit cultivation of drug crops. Socioeconomic factors such as poverty and lack of sustainable livelihoods drive farmers in rural areas to engage in illicit crop cultivation and are manifestations of poor levels of development, which, alongside issues of governance, constitute the enablers of large-scale illicit crop cultivation in rural areas.

Socioeconomic data collected through UNODC crop monitoring surveys confirm that poverty is one of the enabling factors of the illicit cultivation of coca bush and opium poppy. For example, the latest survey of illicit cultivation in Myanmar[86] found that the reasons for illicit opium poppy cultivation were predominantly income-related, with village headmen indicating that, on average, the most important use of the income generated by illicit opium poppy cultivation in their villages was buying food, followed by paying debt and paying household property expenses. Most village headmen reported decreases in income among farmers who ceased cultivating opium poppy. Despite this, the average income in poppy-growing villages was still lower than in non-poppy-growing villages,[87] corroborating the thesis that it is the struggle of villagers to make ends meet that leads to their decision to engage in illicit cultivation.

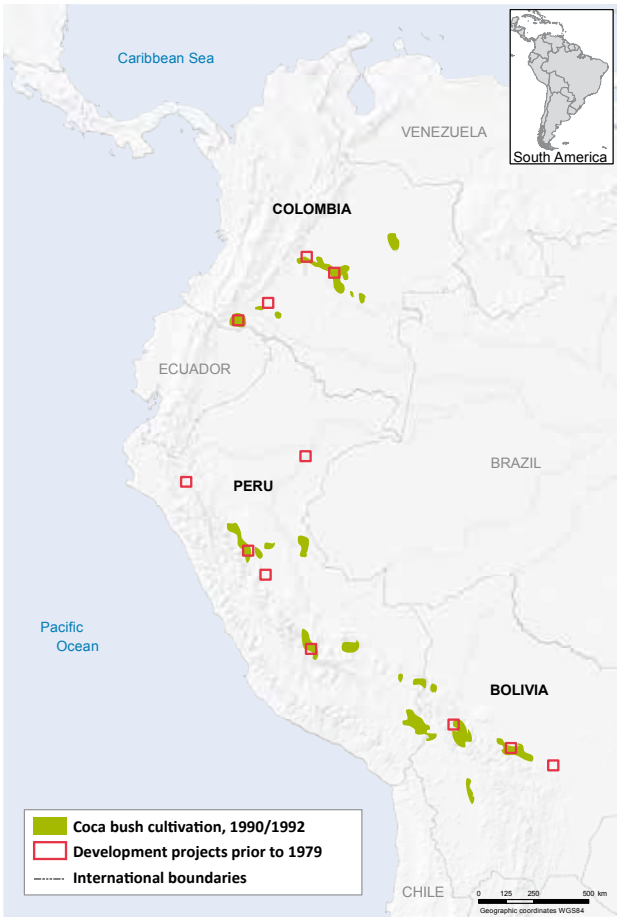
Not all poor farmers are engaged in illicit cultivation, and for certain households and communities the decision to engage in illicit cultivations is related to development issues that go beyond income levels. In Afghanistan, it has been shown that villages growing opium poppy are further

85 Horace A. Bartilow and K. Eom, "Free traders and drug smugglers: the effects of trade openness on States' ability to combat drug trafficking", *Latin American Politics and Society*, vol. 51, No. 2 (2009), pp. 117-145.

86 UNODC, *Southeast Asia Opium Survey 2015: Lao People's Democratic Republic and Myanmar* (Bangkok, 2015).

87 The income was $1,952 per household in non-poppy-growing villages compared with $1,548 per household in poppy-growing villages.

MAP 5 Agricultural development projects in the Andean countries in the 1960s and 1970s and coca bush cultivation in the early 1990s



Source: L. M. Dávalos, K.M. Sanchez and D. Armenteras, "Deforestation and Coca Cultivation Rooted in 20th-Century Development Projects" (forthcoming).

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

from market than non-poppy-growing villages and that there is a relation between opium poppy cultivation and the absence of basic development facilities such as access to power grids.[88] Lack of security and governance has also proved to increase the likelihood of individuals and communities engaging in illicit cultivation.[89]

Economic development can reduce the vulnerability of farmers to engage in illicit crop cultivation and drug production and can bring about a sustainable reduction in such cultivation. One of the clearest examples of successfully reduced illicit crop cultivation is the case of Thailand, where illicit cultivation of opium poppy was reduced from around 17,900 ha in the crop year 1965/1966 to 129 ha in 2003/2004. Although progress was achieved in the context of a broad set of development objectives, the reduction of illicit opium poppy cultivation was also explicitly recognized as one of those objectives. Indeed, the case of Thailand illustrates how two streams of intervention — economic development and drug control — have worked well together to help the hill tribes to benefit from the overall progress made and provide them with alternative sources of income and have led to illicit opium poppy cultivation remaining relatively limited since 2004 (265 ha in 2013, the latest year for which estimates are available).

If development interventions are not sensitive to the vulnerabilities of communities to specific drug issues, they may inadvertently trigger dynamics that increase illicit cultivation. One example is the impact of large development programmes in the early 1960s and 1970s in the Andean subregion, where programmes to modernize agriculture and develop infrastructure were initiated to bring socioeconomic development to the subregion. At the same time, these dynamics may have also set the stage for later increases in coca bush cultivation (see map 1 and box on page 82).

In countries with large-scale illicit crop cultivation in rural areas, the elimination of such cultivation can have an impact on the income and employment opportunities of labourers and farmers. Only when efforts to control illicit crop cultivation are accompanied by development measures to ensure alternative livelihoods can communities enjoy positive economic development.

Two contrasting examples can be seen in Afghanistan, where the illicit opiate economy has created a significant link between the labour market and opium poppy cultivation. The opium ban enforced in Taliban-controlled territory in the growing season 2000/2001, which resulted in a very pronounced drop in opium poppy cultivation, had a negative effect on the rural economy. It led to a significant rise in the level of opium-denominated debt and a dramatic increase in levels of rural unemployment. The economic downturn and problems repaying accumulated debts led to increased migration to Pakistan and the mortgaging of land.[90]

The 2005 opium ban in Nangarhar Province, in southern Afghanistan, offers a contrasting example, as it was accompanied by significant development investments in physical and social infrastructure. After the ban, Nangarhar witnessed significant economic growth between 2009 and 2011, experiencing dramatic increases in job opportunities and wage rates. In the lower-lying districts of the province, along the Kabul river, the initial response to the ban was often to replace opium poppy with a combination of wheat

88 UNODC and Ministry of Counter-Narcotics of Afghanistan, *Afghanistan Opium Survey 2014: Socio-economic Analysis* (March 2015).

89 See *World Drug Report 2015*, pp. 92-97.

90 David Mansfield, Alcis Ltd and Organization for Sustainable Development and Research, *Managing Concurrent and Repeated Risks: Explaining the Reductions in Opium Production in Central Helmand between 2008 and 2011* (Kabul, Afghanistan Research and Evaluation Unit, 2011).

and another cash crop (such as onions in the district of Surkhrud and green beans in the district of Kama), but many farmers adapted to the growing demand from the rapidly expanding urban centres of Jalalabad and Kabul, cultivating a wide range of annual and perennial horticultural crops. Many households experienced a pronounced increase in income-earning opportunities; the economic growth is reflected in the expanding footprint of the markets in the district centres of Kama and Surkhrud, as well as in the district of Jani Khel.[91] Although the improvement in Nangarhar could be observed over a number of years, other more recent developments related to governance issues now threaten to undo the progress achieved in that province.[92]

The region of San Martín in Peru is another example of positive economic development occurring in parallel with efforts to reduce illicit drug supply in rural communities affected by illicit cultivation. Over the period 1996-2000, an average of 3,700 ha of illicit coca bush cultivation were eradicated each year, while agricultural cooperatives were set up and significant international funds were invested. The subsequent years saw significant economic growth in the region, together with sustained eradication of coca bush, even as coca bush cultivation in the rest of Peru rose. In the period 2001-2009, the regional gross domestic product (GDP) rose by 73 per cent.

Impact of the drug problem on economic development

The economic impact of the drug problem is multifaceted and ranges from creating an economy based on illicit activities in the rural areas of developing countries affected by large-scale illicit crop cultivation to discouraging business by fuelling violence, corruption, extortion and protection rackets, notably in transit countries, and to creating costs associated with consumption for individual consumers and for society in general.

Economic profits are generated across the entire chain of illicit drug production and distribution, but it is at the retail stage that profits are typically highest. UNODC, for example, estimated that, in 2009, the average wholesale price of cocaine in Bolivia (Plurinational State of), Colombia and Peru was only 1 per cent of the retail price in the United States (after taking purity levels into account), while the corresponding percentage in Mexico was 7 per cent.[93, 94] As a result, in absolute terms, only a small component of the immediate economic footprint of the global illicit trade in heroin and cocaine is to be found in countries where illicit cultivation of coca bush and opium poppy is concentrated. A recent UNODC report on the illicit flow of trafficked opiates from Afghanistan along the Balkan route found that, in the period 2009-2012, the total gross profit averaged $357 million per year in Afghanistan, compared with $28 billion along the rest of the Balkan route.

However, the size of the illicit economy associated with drugs, relative to the licit economy, tends to be higher in drug-producing countries than in the consumer markets. This is partly because the licit economy in some drug-producing countries is relatively small and partly because supply is concentrated in those few countries. For example, UNODC estimated the total value of the illicit opiate economy in Afghanistan to be $2.8 billion in 2014. This figure, equivalent to 13 per cent of the country's GDP, considerably exceeded the value of the export of licit goods and services in 2014.[95] Based on UNODC estimates[96] of total gross profits related to cocaine trafficking, profits in Colombia were equivalent to 4.1 per cent of that country's GDP in 2009, compared with 0.2 per cent in the case of the United States and 0.36 per cent in the case of the United Kingdom.

In Afghanistan, the illicit economy provides access to labour for a large number of farmers and a source of income for other people involved in the trade and has therefore become embedded in the licit economy.

The macroeconomic impact of the opium economy depends, in particular, on how much of its proceeds actually enter the Afghan economy and how this is allocated between consumption, investment and savings, as well as, more generally, how it translates into demand for domestic and imported goods and services. A joint study by the World Bank and UNODC argues that, whereas farmers and wage labourers can be expected to spend rather than save the bulk of their earnings from the opium economy, mostly on domestic goods and services, opium traffickers and processors are likely to save a substantial proportion of their revenue and spend more on imports. While the opium economy results in a significant net inflow of money into Afghanistan's balance of payments, this is reduced by drug-related outflows of funds (including capital flight, as well as spending on imports).[97, 98]

91 David Mansfield, *Examining the Impact of IDEA-NEW on Opium Production. Nangarhar – A Case Study* (2015).

92 David Mansfield, "The devil is in the details: Nangarhar's continued decline into insurgency, violence and widespread drug production", Brief Series (Kabul, Afghanistan Research and Evaluation Unit, 2016).

93 *World Drug Report 2011* (United Nations publication, Sales No. E.11.XI.10).

94 A discussion of the theories explaining price markup at different stages of the supply chain can be found in Jonathan P. Caulkins and Peter Reuter, "How drug enforcement affects drug prices", in *Crime and Justice: A Review of Research*, vol. 39, No. 1, Michael Tonry, ed. (Chicago, University of Chicago Press, 2010), pp. 213-272.

95 UNODC, *Afghanistan Opium Survey 2014*.

96 UNODC, *Estimating Illicit Financial Flows Resulting from Drug Trafficking and other Transnational Organized Crimes* (Vienna, 2011).

97 Doris Buddenberg and William A. Byrd, eds., *Afghanistan's Drug Industry: Structure, Functioning, Dynamics and Implications for Counter-Narcotics Policy* (UNODC and World Bank, 2006).

98 *World Drug Report 2012*, pp. 115-116.

TABLE 3 Overview of economic evaluations of the costs of the drug problem

Study	Period covered by the data	Cost per capita	Cost as a percentage of GDP[a]
Gonçalves, Lourenço and da Silva (2015)	2010	25 euros (1999 prices)	..
Garcia-Altés and others (2002)	1997	..	0.07
Mark and others (2001)	1996	..	..
Wall and others (2000)	1996	Can$ 43-69[b]	..
Healey and others (1998)	1995	..	..
Mills, Skodbo and Blyth (2013)	2013	..	..
Lievens and others (2016)	2012	66 euros	0.19
Kopp (2015)	2010	36 euros	0.12[c]
Potapchik and Popovich (2014)	2008	..	..
Vanags and Zasova (2010)	2008	..	0.4
Observatorio Argentino de Drogas (2010)	2008	Arg$ 94	0.9
Observatorio Peruano de Drogas (2010)	2002-2010	US$ 6.8	n/a
Slack and others (2009)	2005/2006	..	0.7
Collins and Lapsley (2002)	1998/1999	..	0.85
Collins and Lapsley (2008)	2004/2005	..	0.88[d]
Rehm and others (2006)	2002	Can$ 262	..
Godfrey and others (2002)	2000	..	..
Gordon and others (2006)	2003/2004	..	..
United States Office of National Drug Control Policy (2004)	1992-2002	2002: US$ 650	2002: 1.7
United States Department of Justice (2011)	2007	..	..
Miller and others (2006)[e]	1999	..	..
Fernandez (2012)[e]	2006	..	..

Sources: See the online methodology section of the present report.

Notes: The studies may use different methodologies and take into account different aspects of the drug problem; hence, the results are not directly comparable. Two dots (..) indicate that data are not available or are not reported separately.

[a] *Gross domestic product.*
[b] *The cost calculation was restricted to untreated opioid dependence in one city.*
[c] *The percentage refers to public expenditure only.*
[d] *The cost calculation in the table pertains exclusively to "illicit drug abuse".*
[e] *These two studies focus specifically on the crime-related aspect of the drug problem.*

The cost of the drug problem and drug control policy: the economic perspective

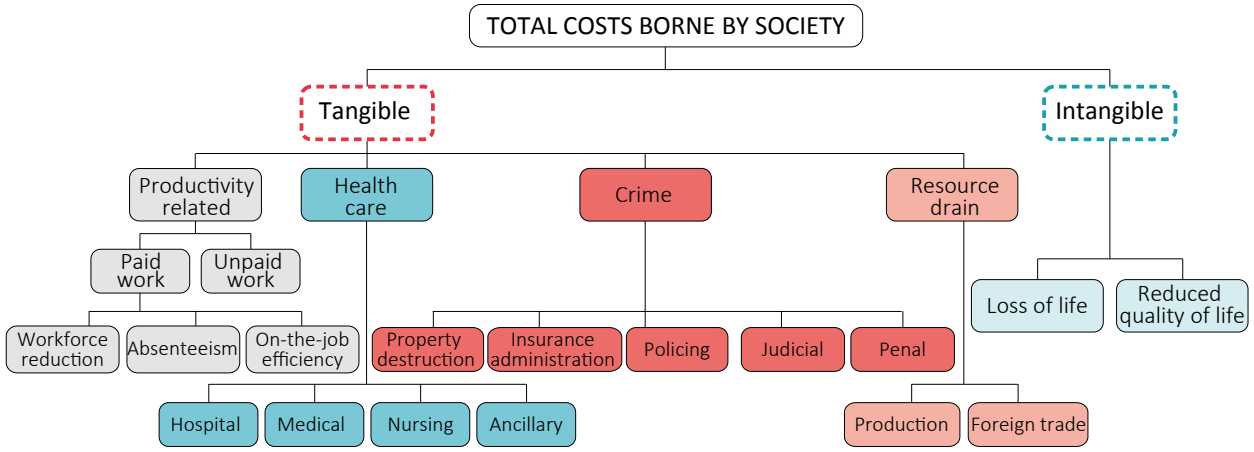
In general, economic studies can be used to quantify the cost borne by society attributable to the drug problem. A review of the literature reveals 22 such studies worldwide (see table 1) that attempt to assess, at the national level, the overall cost attributable to the various aspects of the drug problem (or at least drug use).[99] The studies go beyond tallying the actual monetary disbursements that were made in connection with drugs. While they include the costs associated with the various forms of intervention in response to the drug problem, such as prevention, treatment and law enforcement (the "direct costs"), they also assign a value to other costs, such as the loss of productivity in the workplace associated with drug use ("indirect costs"). A large number of factors, including absenteeism, accidents and conflicts in the workplace, may lead to a decline in productivity as a consequence of drug use.

A review of the literature shows large variations in the cost of illicit drugs in the 14 countries examined. First, the cost in percentage of GDP ranged from 0.07 to 1.7 per cent. Second, the majority of the countries registered a high percentage of costs attributable to drug demand and supply reduction interventions (such as prevention, treatment and law enforcement), incurred to address the drug problem, as opposed to productivity losses and any other indirect costs. Some countries, however, were confronted with considerable productivity losses (57-85 per cent of the total cost). The lost productivity was the result of high levels of morbidity and premature mortality caused by illicit drug use; together with the high number of incarcerations for drug-related crime. Third, the composition of the costs of the response differs from country to country. The studies found, in most countries, high costs for law enforcement compared with health costs. The only exceptions were studies in two European countries, which registered medical costs of 60-65 per cent of the total cost of the interventions in response to the drug problem.

The above-mentioned cost studies were conducted mainly in high-income countries. Most of the studies focused on the costs associated with drug consumption (rather than drug production), by using a hypothetical scenario in which there was no drug use. Indeed, it appears that the

99 In many cases the studies focus on drug use.

FIG. 15 Breakdown of the costs of drug use borne by society



Source: Adapted from D. Collins and others, "Introduction; improving economic data to inform decisions in drug control", *Bulletin on Narcotics*, vol. LII, Nos. 1 and 2 (2000), fig. II.

established standard methodology and analytical framework for such studies are well suited to dealing with drug use but are less well suited when it comes to dealing with illicit drug production and trafficking (for a standardized conceptual breakdown of the costs of drug use, see figure 15).

One of the studies, an economic study in Chile,[100] is rather atypical in that it focused on the impact of drug-related crime. The study covered infringements of the national drug law, as well as other types of crime, such as robbery, sex-related crime and homicide, that can be attributed to drug use or drug trafficking through any of the following three mechanisms: the psychopharmacological link (drug users committing crime under the influence of drugs); the economic-compulsive link (drug users committing crime to fund their drug consumption); and the systemic link (crime related to drug trafficking that was not prosecuted under the drug law).[101] The costs taken into account consisted of the costs of drug law enforcement incurred by the various relevant institutions (mainly the police, the judicial system and the penitentiary system), as well as the cost of lost productivity resulting from incarceration of perpetrators of the above-mentioned crimes.

The study quantified these costs in 2006 at $268 million. A breakdown by type of crime shows that offences against the Chilean drug law per se only accounted for about one third (36 per cent) of the total costs, while the majority (60 per cent) of the costs could be attributed to robbery, including violent robbery. An independent breakdown by type of cost shows that the largest share of drug law enforcement costs was borne by the police (32 per cent of the total), followed by the penitentiaries (25 per cent) and the judicial system (17 per cent). Productivity losses attributable to incarceration for drug-related crimes accounted for virtually all of the remaining costs. The costs were also broken down by drug type, cocaine base ("cocaine base paste") being identified as the drug with the biggest impact, accounting for more than half of the cost, ahead of cocaine salt and cannabis.

Although the economic studies discussed above generally take into account a wide variety of costs that arise directly and indirectly from the drug problem, this is usually limited to costs that can be quantified in monetary terms. Non-tangible costs, such as loss of life or impaired quality of life, are frequently not quantified; and when they are quantified, it is usually done with reference to a non-monetary unit of measure, such as "years of life lost" or "years lived with a disability". While such studies can be very useful in assessing the economic toll that the drug problem has taken on society, other considerations also need to come into play when assessing the impact of the world drug problem and devising policy responses.

C. ENVIRONMENTAL SUSTAINABILITY

Environmental sustainability is embedded throughout the goals of the 2030 Sustainable Development Agenda. Goal 1, ending poverty, is closely linked to Goal 2, target 2.4 of which is to ensure sustainable food production systems and implement resilient agricultural practices. Complementary to this are Goal 13 (combating climate change) and Goal 15 (sustainably managing forests and combating desertification, land degradation and biodiversity loss). Water availability and management are covered in Goal 6, target 6.3 of which includes reducing pollution, eliminating dumping and minimizing the release of hazardous chemicals and materials.

100 M. Fernandez, "The socioeconomic impact of drug-related crimes in Chile", *International Journal of Drug Policy*, vol. 23, No. 6 (2012), pp. 465-472.

101 For a discussion of the different links between drugs and crime, see the subsection on violence.

The illicit cultivation and production of narcotic drug crops touch on all of these concepts. The present section describes how the illicit production of drugs and the drug control response can have adverse effects on ecosystems, for example, by resulting in the clearing of forests to illicitly cultivate drug crops. This section also reviews evidence on how efforts to reduce illicit drug supply may influence the expansion of illicit (and licit) farming activities to new, fragile or eco-sensitive areas; it also explains how well-designed alternative development interventions can improve biodiversity conservation, thereby mitigating climate change.

Illicit drug crop cultivation and drug production and trafficking: their impact on the environment

Deforestation

Deforestation is the principal environmental concern resulting from illicit crop cultivation, in particular coca bush cultivation in South America, opium poppy cultivation in South-East Asia and, to some extent, cannabis cultivation. Deforestation can be a direct or indirect result of illicit crop cultivation: it is a direct result when a piece of woodland is cleared for opium poppy or coca bush cultivation; and it is an indirect result when the various mechanisms associated with illicit crop cultivation, including licit agricultural activities, the formation of pastures and other forms of development and encroachment, have an influence on deforestation.

Target 15.2 of the Sustainable Development Goals
By 2020, promote the implementation of sustainable management of all types of forests, halt deforestation, restore degraded forests and substantially increase afforestation and reforestation globally

Direct deforestation

Farmers may encroach upon forest to illicitly cultivate crops such as coca bush, opium poppy or cannabis plant in remote areas for two reasons: the poor socioeconomic conditions of farmers at the agricultural frontier may push them to look for cash crops; and the illicit nature of this activity and the necessity to keep it a clandestine activity may spur a move to relatively remote areas.

Quantifying the extent of direct deforestation due to illicit cultivation, and the measurement of deforestation in general, is difficult. The net change in forest area over a given period may not reflect the complexity of the process, as losses in one place may be masked by gains in another, or the first transition from forest to non-forest may not be captured. Finally, illicit cultivation is not the only cause of deforestation and, as it often comes with other driving factors, the scale of direct deforestation resulting from such cultivation needs to be put in the context of the broader phenomenon.

According to UNODC estimates, over the period 2001-2014, an annual average of 22,400 ha of coca bush cultivation replaced forest in Colombia.[102] These estimates are done on a year-on-year basis and are therefore much less subject to the limitations associated with long gaps between snapshots in time. Although not directly comparable, data from the Food and Agriculture Organization of the United Nations indicate that net forest conversion in Colombia from all causes averaged 116,000 ha/year over the period 2001-2012; at the same time, the total loss of land with detectable tree cover (over all tree cover classes) averaged 209,900 ha/year.[103] However, specific studies in the Andes that focus more on the relative extent of forest conversion to illicit cultivation compared with other forms of land use suggest that the share of deforestation attributable to direct replacement by coca bush cultivation may be lower than the simple comparison above would suggest.

UNODC undertook a study of a risk area in Colombia of 12.4 million ha (defined as all locations within 1 kilometre of a coca bush cultivation site identified in the period in question) that included an assessment of deforestation.[104] The study found that a total of 2.6 million ha of forest had been lost in that area over the period 2001-2006, of which 5.3 per cent could be directly attributed to coca bush cultivation. A follow-up study[105] over a longer time period (2001-2012) showed that 1.2 per cent of the lost forest area was occupied by coca at the end of the period.

Another study, in the San Lucas mountain range of Colombia, reports land-use data for 2002, 2007 and 2010, based on satellite imagery, which suggest that the share of deforestation attributable to illicit coca bush cultivation was below 2 per cent during the periods 2002-2007 and 2007-2010. This does not, however, account for the possibility of conversion to licit use after deforestation for coca bush cultivation during those periods.[106] Aside from capturing the exact transition from forest to non-forest, which is difficult to attribute to coca bush cultivation or other activity, it clearly emerges from such studies that in the long run, most of the deforested areas became pastures and licit crop cultivation areas, and relatively small parts were dedicated to coca bush cultivation. One long-term study in Peru that analysed imagery from 1986, 1993 and 2007 covering a total area of 1.36 million ha in Pichis-

102 UNODC, *Colombia: Monitoreo de Cultivos de Coca 2014* (Bogotá, 2015).

103 Based on data from M. C. Hansen and others, "High-resolution global maps of 21st-century forest cover change", *Science*, vol. 342, No. 6160 (November 2013), pp. 850-853.

104 UNODC, *Análisis Multitemporal de Cultivos de Coca: Período 2001-2006* (Bogotá, 2006).

105 UNODC, *Análisis Multitemporal de Cultivos de Coca: Período 2001-2012* (Bogotá, 2014).

106 Maria A. Chadid and others, "A Bayesian spatial model highlights distinct dynamics in deforestation from coca and pastures in an Andean biodiversity hotspot", *Forests*, vol. 6, No. 11 (2015).

TABLE 4 Breakdown of deforestation into licit and illicit components: a summary of four studies comparing side-by-side licit and illicit cultivation, by study and region

Location of study area, source and specifics		Coca	Licit uses
San Lucas Mountain Range, Colombia (Chadid and others, 2015)[a]	2007-2010	0.012%	0.70%
	2002-2007	0.004%	0.17%
Pichis-Palcazú, Peru (UNODC 2011)[b]	1993-2007	0.008%	0.56%
	1986-1993	0.112%	0.25%
Southern Colombia (Dávalos and others 2011),[c] 2002-2007	Secondary forest	0.067%	7.57%
	Old-growth	0.013%	0.39%
Central Colombia (Dávalos and others, 2011),[c] 2002-2007	Secondary forest	0.016%	6.98%
	Old-growth	0.024%	1.74%
Northern Colombia (Dávalos and others, 2011),[c] 2002-2007	Secondary forest	0.006%	6.26%
	Old-growth	0.005%	0.91%
Northwestern Amazonia, Colombia, 2001-2009 (Armenteras and others, 2013)[d]	Secondary forest	0.050%	3.03%
	Old-growth	0.026%	0.29%

Note: The "average annual deforestation rate" represents the average annual forest loss over the reference period, expressed as a percentage of the corresponding forest area at the beginning of that period.

[a] *Maria A. Chadid and others, "A Bayesian spatial model highlights distinct dynamics in deforestation from coca and pastures in an Andean biodiversity hotspot", Forests, vol. 6, No. 11 (2015).*
[b] *UNODC and Ministerio del Medio Ambiente del Perú, "Análisis económico de las actividades causantes de la deforestación en Pichis-Palcazú" (Lima, 2011).*
[c] *L. M. Dávalos and others, "Forests and drugs: coca-driven deforestation in tropical biodiversity hotspots", Environmental Science and Technology, vol. 45, No. 4 (2011), pp. 1219-1227.*
[d] *D. Armenteras, N. Rodriguez and J. Retana, "Landscape dynamics in northwestern Amazonia: an assessment of pastures, fire and illicit crops as drivers of tropical deforestation", PLoS ONE, vol. 8, No. 1 (2013).*

Palcazú concluded that, by 2007, 269,000 ha had been deforested, of which 57 per cent consisted of pasture and the remainder consisted mainly of agriculture, with coca bush cultivation occupying only 0.39 per cent of the area.[107]

Indirect deforestation

The above-mentioned studies show that overall deforestation can only be directly attributed to coca bush cultivation to a small extent. Coca bush cultivation takes place in parallel with other human activities that cause deforestation, but this does not mean that there is necessarily a causal relationship between coca bush cultivation and deforestation in general.

Various mechanisms can determine an indirect influence of illicit cultivation on deforestation rates. Farmers who are willing or inclined to engage in such cultivation would naturally penetrate deeper into forests in order to conceal their activity, and this could gradually attract further expansion, licit agriculture, the formation of pastures and other forms of development and encroachment. Profits made by higher-level organizers involved in large-scale consolidation of farm-gate products and the processing of crops into end products such as heroin and cocaine might generate the need for laundering proceeds through activities such as cattle ranching, pasturage and logging, which themselves contribute to deforestation. Moreover, certain characteristics of illicit cultivation areas, such as little (or no) security and weak rule of law, may drive other illegal activities that cause deforestation, such as illegal logging and illegal mining.

Several in-depth analyses have focused on the link between illicit cultivation and deforestation in Colombia (see box on page 89). Several variables were considered in order to investigate the potential effect of illicit crop cultivation systematically, but there is little empirical evidence to support the clear impact of such cultivation on overall deforestation, while outcomes vary from municipality to municipality. For example, in some particular cases in Colombia (i.e. Chocó, Nariño), high levels of coca bush cultivation were in fact directly related to high levels of deforestation. In general, deforestation and coca bush cultivation take place in the same areas, but this does not mean that more coca bush cultivation leads to more deforestation. It seems that actions, conditions and policies to provide incentives for frontier development drive deforestation, and coca is a crop that thrives in those environments. Ultimately, with increased development, the area under coca bush cultivation decreases, but deforestation continues, unless specific countermeasures are taken.

A similar exercise was undertaken to examine the potential relationship between deforestation and opium poppy cultivation in South-East Asia. In this case, maps were used to indicate areas with a high risk of opium poppy cultivation in the Lao People's Democratic Republic and Myanmar. The results of the modelling exercise did not show any evidence of a positive association between the risk of opium poppy cultivation and the probability of deforesta-

107 UNODC and Ministerio del Medio Ambiente del Perú, "Análisis económico de las actividades causantes de la deforestación en Pichis-Palcazú" (Lima, 2011).

Does coca bush cultivation drive deforestation? A case study in Colombia

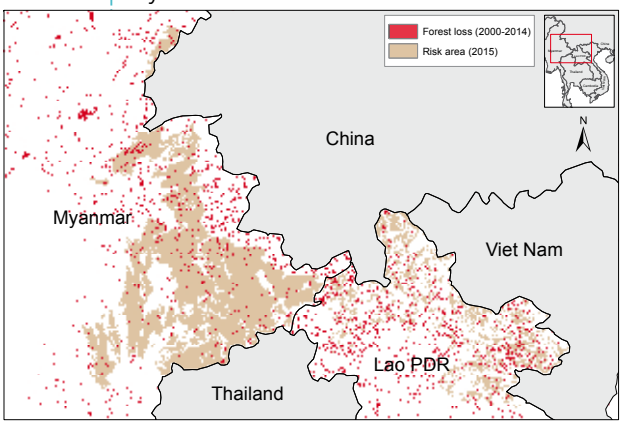
While some studies indicate that there is a relationship between illicit cultivation and deforestation, other in-depth analyses have not confirmed this link and there is little empirical evidence of the impact of illicit cultivation on deforestation. A comparison of deforestation rates in Colombian municipalities and the extent of illicit cultivation fails to bring out clear overarching patterns. After several potential covariates other than coca bush cultivation were included in the model, such as urban population density, road density, the initial forested fraction, the fraction of the population with unsatisfied basic needs and eradication by aerial spraying, the best-fit model indicated that coca bush cultivation was not a significant determinant of deforestation rates.

One study[a] concluded that illicit crop cultivation is a driver of forest fragmentation through the perforation of forests. However, it is not clear if this results in a detectable impact in actual deforestation rates, and the study adds that some of the areas affected are later regenerated.

Another study[b] set out to systematically isolate the potential effect of illicit crop cultivation as a catalyst of forest loss. The model measured the spatial proximity of coca bush cultivation in two ways — the distance to the nearest coca bush cultivation site and the area under such cultivation in the surrounding square kilometre — and examined how the probability of deforestation varied as a function of these two variables. Other variables usually associated with the probability of deforestation were also included in the model: the proportion of forest remaining,[c] distances to roads and rivers,[d, e, f] biophysical characteristics related to agriculture in general, such as climate, slope and aspect[g] and the protection status of the land.[h] The analysis did yield a certain link between coca bush cultivation and deforestation in southern Colombia only, where the probability of deforestation increased with the density of the coca bush cultivation and decreased with the distance from the nearest coca bush cultivation site. Once socioeconomic variables were included, the study did not support the thesis that coca is very different from other crops; instead it hypothesized that what sets municipalities growing coca bush apart is poor rural development, the underlying cause that enables a positive association between population growth and deforestation.

a-h See the online methodology section of the present report.

MAP 6 Deforestation, 2000-2014, and the risk of illicit opium poppy cultivation in the Lao People's Democratic Republic and Myanmar



Source: UNODC opium poppy risk maps; and M. C. Hansen and others, "High-resolution global maps of 21st-century forest cover change", *Science*, vol. 342, No. 6160 (November 2013).

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

tion. This suggests that other factors, possibly socioeconomic factors not included in the model, are the main drivers of deforestation, of which the displacement of forest by opium poppy cultivation is only one component.

Deforestation as a result of drug trafficking

Another aspect of the illicit supply of drugs that may have repercussions on the environment is cocaine trafficking. Instances of deforestation stemming from such trafficking have been recorded in Petén, Guatemala,[108] and in eastern Honduras.[109]

The simplest way in which trafficking facilitates encroachment is the clearing of strips of forest to enable the take-off and landing of light aircraft. However, the phenomenon may extend beyond this, as it can trigger violent land grabs, generate conflict over land tenure, attract not only licit but also other illicit activity and, as mentioned earlier, generate a need to launder illicit proceeds, a need that can be addressed by converting forest for activities such as cattle ranching. One such example may have occurred in the Maya Biosphere Reserve in Guatemala,[110, 111] a vast protected area where drug traffickers may have been able to take over land and impose their territorial control through violence.[112] Rapid increases in the local cattle inventory are thought to respond to the need to launder earnings from drug trafficking.[113] Local smallholders may "sell" the community lands in the reserve under coercion from drug traffickers and then move on, generating more deforestation.[114]

108 Iliana Monterroso and Deborah Barry, "Legitimacy of forest rights: the underpinnings of the forest tenure reform in the protected areas of Petén, Guatemala", *Conservation and Society*, vol. 10, No. 2 (2012), pp. 136-150.

109 Kendra McSweeney and others, "Drug policy as conservation policy: narco-deforestation", *Science*, vol. 343, No. 6170 (2014), pp. 489 and 490.

110 Avrum J. Shriar, "Theory and context in analyzing livelihoods, land use, and land cover: lessons from Petén, Guatemala", *Geoforum*, vol. 55, 2014, pp. 152-163.

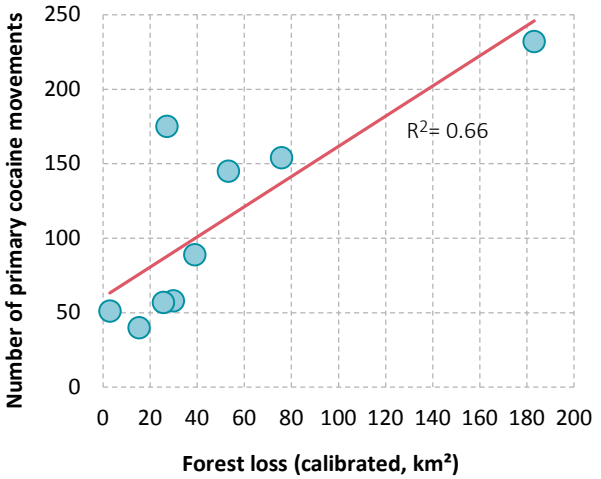
111 Iliana Monterroso and Deborah Barry, *Tenencia de la Tierra, Bosques y Medios de Vida en la Reserva de la Biosfera Maya en Guatemala: Sistema de Concesiones Forestales Comunitarias* (Guatemala City, Centro Internacional de Investigaciones Forestales, Facultad Latinoamericana de Ciencias Sociales, 2009).

112 Ibid.

113 Avrum J. Shriar, "Theory and context in analyzing livelihoods, land use, and land cover" (see footnote 110).

114 Liza Grandia, "Road mapping: megaprojects and land grabs in the

FIG. 16 Forest loss and number of primary cocaine trafficking movements in eastern Honduras, 2004-2012



Source: K. McSweeney and Z. Pearson, "Prying native people from native lands: narco business in Honduras", *NACLA Report on the Americas*, vol. 46, No. 4 (2013).

A quantitative link between drug trafficking and deforestation has been made in the case of Honduras. Forest loss in eastern Honduras over the period 2004-2012 appears to correlate with the number of registered air and maritime landings of cocaine shipments from South America to Honduras, as recorded in the Consolidated Counterdrug Database of the United States Office of National Drug Control Policy. Three interrelated mechanisms may explain this relationship: direct deforestation from landing strips and illegal roads; indirect deforestation from land grabs leading to greater pressure from displaced agriculturalists; and privatization of the public land to create "narco-estates" and launder trafficking assets.[115] The last variant often takes place at the expense of indigenous lands.[116]

Pollution and health hazards arising from chemicals and waste

Target 6.3 of the Sustainable Development Goals
By 2030, improve water quality by reducing pollution, eliminating dumping and minimizing release of hazardous chemicals and materials, halving the proportion of untreated wastewater and substantially increasing recycling and safe reuse globally

Clandestine laboratories processing and manufacturing plant-based and synthetic drugs require significant quantities of precursors and other chemicals, many of which are hazardous to human health and potentially damaging to the environment. These chemicals include solvents; metals and salts; and acids and bases. Exposure to such chemicals can result in numerous health complications, ranging from eye, nose and throat irritation to liver and kidney impairments and bleeding and corrosion in the lungs. Some carry a risk of fire or explosion.[117] Health hazards are of particular concern in the case of synthetic drugs manufactured in urban settings, with a high risk of exposure for large segments of the population, but they also affect individuals who, often because they have no viable alternatives, work in establishments manufacturing plant-based drugs, frequently in inhumane and exploitative conditions.[118] The by-products and unused chemicals are frequently disposed of in urban sewerage systems, other urban settings or, in in the case of processing of plant-based drugs in non-urban areas, the natural environment, including rivers and forests.

The consequences in urban settings not only pose health risks but may also have an impact on the urban and industrial environment. According to the European Police Office (Europol), criminals engaged in the illicit manufacture of drugs may resort to simply dumping chemicals, burying them in the ground, leaving them in stolen trailers and draining liquids into sewerage systems, into or onto the ground or into surface water. Other techniques involve burning waste in stolen motor vehicles or mixing the chemicals with other chemical waste prior to releasing them into the open sea from maritime vessels.[119]

The chemicals used in the illicit supply chain of cocaine and opiates also contribute to pollution and health hazards in rural environments. In late 2005 and early 2006, UNODC undertook a systematic study of the illicit cultivation and processing of coca bush in Colombia, based on a nationwide sample of 1,300 coca bush growers, categorized by geographical region and by landscape.[120] Most of the agrochemicals found in the study to be used by coca bush growers were legal. A comparison of the use levels of the most commonly used legal agrochemicals with the manufacturers' recommendations indicated that, overall, coca bush growers in the study[121] reported using quantities of herbicides and pesticides within the range used by other tropical agriculturalists.

The study also investigated the use of reagents in the illicit processing of coca bush. The detailed data on reagents

northern Guatemalan lowlands", *Development and Change*, vol. 44, No. 2 (2013), pp. 233-259.

115 McSweeney and others, "Drug policy as conservation policy" (see footnote 109).

116 K. McSweeney and Z. Pearson, "Prying native people from native lands: narco business in Honduras", *NACLA Report on the Americas*, vol. 46, No. 4 (2013).

117 EMCDDA and Europol, *Methamphetamine: A European Union Perspective in the Global Context* (Luxembourg, Office for Official Publications of the European Communities, 2009).

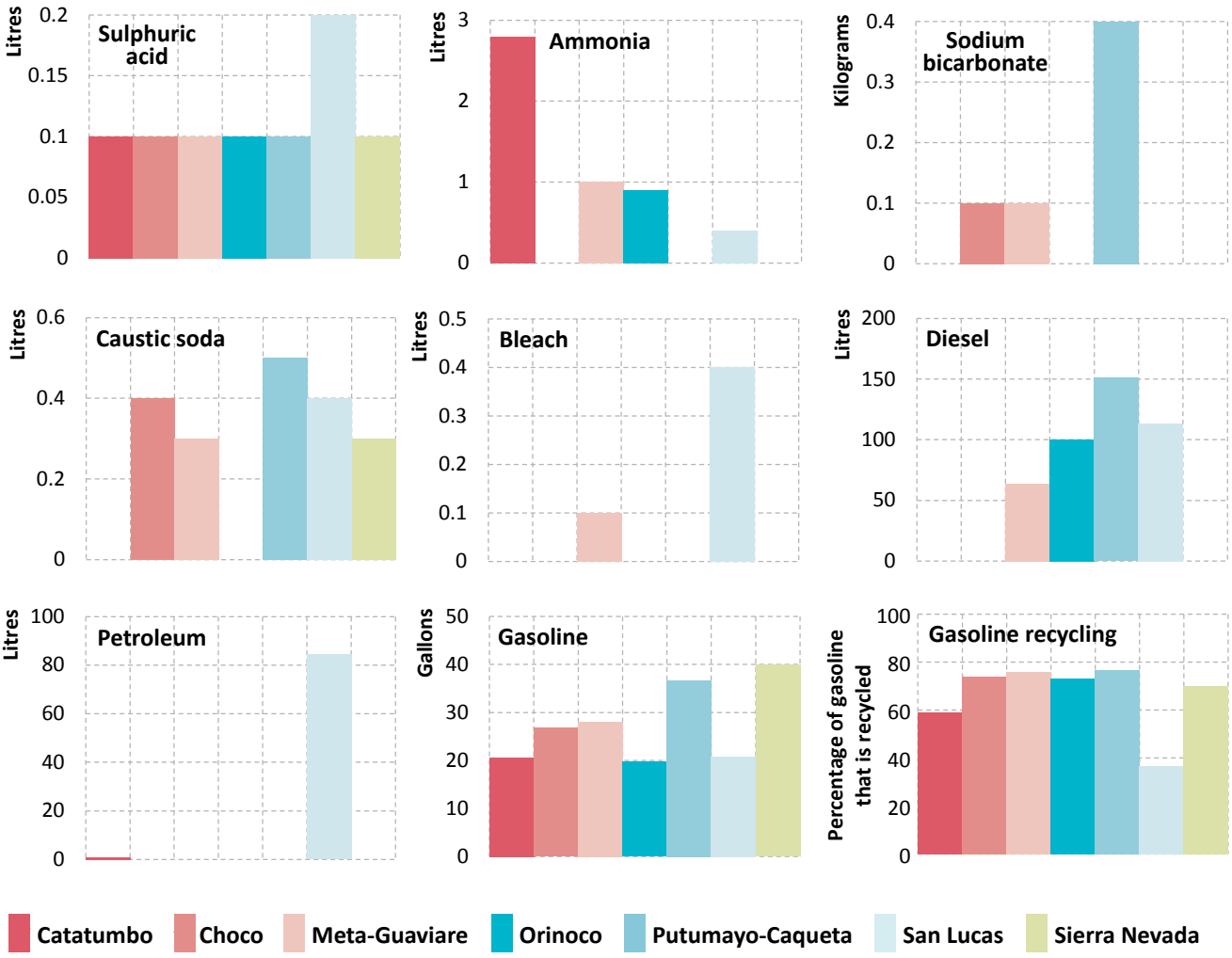
118 Merrill Singer, "Drugs and development: the global impact of drug use and trafficking on social and economic development", *International Journal of Drug Policy*, vol. 19, No. 6 (2008), pp. 467-478.

119 Walter Ego and Aïssata Maïga, "Tallying the hidden environmental costs of drug production", policy brief No. 149 (Stockholm, Institute for Security and Development, 2014).

120 UNODC, *Características Agroculturales de los Cultivos de Coca en Colombia* (Bogotá, 2007).

121 Ibid.

FIG. 17 Regional variation in reagents used to process one oil drum[a] of fresh coca leaves into coca paste in Colombia



Source: UNODC, *Características Agroculturales de los Cultivos de Coca en Colombia* (Bogotá, Sistema Integrado de Monitoreo de Cultivos Ilícitos, 2006).

[a] *Approximately 87.5 kg of fresh coca leaves.*

indicate: a distinct regional variation in the reliance on different organic solvents, whether gasoline, diesel or petroleum; complete dependence on sulphuric acid; and high levels of gasoline recycling, with variation related to fuel costs. There is potential for pollution by the use of the above-mentioned substances by the great number of laboratories, which are scattered throughout the Amazonian forest; however, the combination of high rainfall and reuse probably reduces the environmental impact of these sources. Indeed, in the early 1990s, field observations in Chapare, Bolivia, found that rainfall quickly diluted chemical spills.[122]

Water depletion and salinization

Target 15.3 of the Sustainable Development Goals
By 2030, combat desertification, restore degraded land and soil, including land affected by desertification, drought and floods, and strive to achieve a land degradation-neutral world

In Afghanistan, opium poppy cultivation places an additional strain on the availability of water in areas already affected by water scarcity, and the irrigation methods used also contribute to salinization of desert areas.

According to one report,[123] in the Province of Helmand, which continues to be affected by high levels of opium poppy cultivation (covering 27 per cent of arable land in

122 Ray Henkel, "Coca (*Erythroxylum coca*) cultivation, cocaine production, and biodiversity in the Chapare region of Bolivia", in *Biodiversity and Conservation of Neotropical Montane Forests*, Steven P. Churchill and others, eds. (New York, New York Botanical Garden, 1995), pp. 551-560.

123 John Weier, "From wetland to wasteland: the destruction of the Hamoun Oasis", NASA Earth Observatory, Available at www.earthobservatory.nasa.gov/Features/hamoun.

2014), the combination of drought in the period 1999-2001, unsustainable development and withdrawals for irrigation resulted in a reduction of 98 per cent of the water flow along the lower Helmand river and the complete loss of the formerly rich downstream wetlands. In addition, drought appears to have intensified over time. The real-time record of global precipitation anomalies in the growing seasons (winter and spring) in Afghanistan from winter 2000-2001 until spring 2014 indicates that precipitation in that period was within 10 mm per month of the average in the reference period 1979-2000 in 14 out of the 28 growing seasons, while it was below that range in 12 seasons and above that range in just 2 seasons. At the same time, population growth has not abated, leading to intensification of cropping at the upstream end of canals.[124] Opium poppy cultivation contributes to water scarcity in two ways: by hoarding water from the irrigation system;[125] and by rendering financially viable pumping from the aquifer through tubewells.[126] At times, well-connected and locally powerful opium poppy growers were able to grow opium poppy by the roadside, as they did in Chahar Bolaq, to the extent that no water was available downstream.[127] In contrast, the growers dependent on tube-well irrigation north of the Boghra canal are among the least powerful and most marginal farmers in central Helmand.[128] Nevertheless, the returns on opium poppy enabled even those growers — at least for a while — to pay for the considerable costs of acquiring (or renting) and fuelling pumps, lowering the water table and ultimately degrading the marginal lands.[129] Sustained opium poppy cultivation may have depleted the already low capacity of the soil, leading to decreasing opium yields (such as the exceptionally low yield in the south in 2015), while the process of degradation may have been exacerbated by poor water management.

Biodiversity and protected areas

Target 15.5 of the Sustainable Development Goals
Take urgent and significant action to reduce the degradation of natural habitats, halt the loss of biodiversity and, by 2020, protect and prevent the extinction of threatened species

One of the concerns associated with illicit cultivation is its possible effect on biodiversity. Rather than being evenly distributed throughout the world, biodiversity is concentrated in lowland moist tropical forests,[130, 131] while montane tropical and subtropical forests are recognized as biodiversity hotspots, hosting a large number of species with a small known habitat.[132]

The tropical Andes are the world's most biologically diverse hotspot, accounting for 7 per cent of all plants and 6 per cent of all vertebrates; the Choco lowland forests along the Pacific coast also host a disproportionately large amount of plants and vertebrates. Opium poppy cultivation in the Andes is of particular concern, as the altitude suitable for such cultivation also corresponds to the especially vulnerable Paramo and sub-Paramo ecosystems.[133] To the extent that opium poppy cultivation replaces these ecosystems, it represents one of several threats, along with licit agriculture and the fires associated with it, as well as mining, in the case of Colombia.[134, 135]

The situation is similar in South-East Asia. The highlands of the Lao People's Democratic Republic and Myanmar are part of the Indo-Burma biodiversity hotspot, which is estimated to harbour in excess of 13,500 plant species, 7,000 of which are found nowhere else, but has less than 5 per cent of natural land cover remaining.[136]

Cultivation of coca bush carries its own ramifications for biodiversity. Satellite-based data reveal clusters of persistent coca bush cultivation in protected areas (national parks) in all three coca-producing countries, where licit agriculture may also pose a threat. In Colombia, the protected areas most affected are encircled by a moving front of agriculture including coca bush cultivation in Sierra de La Macarena, Tinigua and Los Picachos national parks (see the Orinoco line in figure 18).

In Peru, the extent of coca bush cultivation in protected areas is limited. An analysis in 2004 of the location of coca cultivation according to potential land use in the three regions of Alto Huallaga, Apurimac-Ene and La Conven-

124 Adam Pain, "Water, management, livestock and the opium economy: the spread of opium poppy cultivation in Balkh", Case Study Series (Kabul, Afghanistan Research and Evaluation Unit, 2007).

125 David Mansfield and Adam Pain, "Opium poppy eradication: how to raise risk when there is nothing to lose?" Briefing Paper Series (Kabul, Afghanistan Research and Evaluation Unit, 2006).

126 David Mansfield, "Between a rock and a hard place: counter-narcotics efforts and their effects in Nangarhar and Helmand in the 2010-11 growing season", Case Study Series (Kabul, Afghanistan Research and Evaluation Unit, 2011).

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128 Mansfield, "Between a rock and a hard place" (see footnote 126).

129 David Mansfield, "Helmand on the move: migration as a response to crop failure", Brief Series (Kabul, Afghanistan Research and Evaluation Unit, 2015).

130 Clinton N. Jenkins, Stuart L. Pimm and Lucas N. Joppa, "Global patterns of terrestrial vertebrate diversity and conservation", *Proceedings of the National Academy of Sciences*, vol. 110, No. 28 (2013).

131 Norman Myers and others, "Biodiversity hotspots for conservation priorities", *Nature*, vol. 403, No. 6772 (2000), pp. 853-858.

132 Thomas Brooks and others, "Global biodiversity conservation priorities", *Science*, vol. 313, No. 5783 (2006), pp. 58-61.

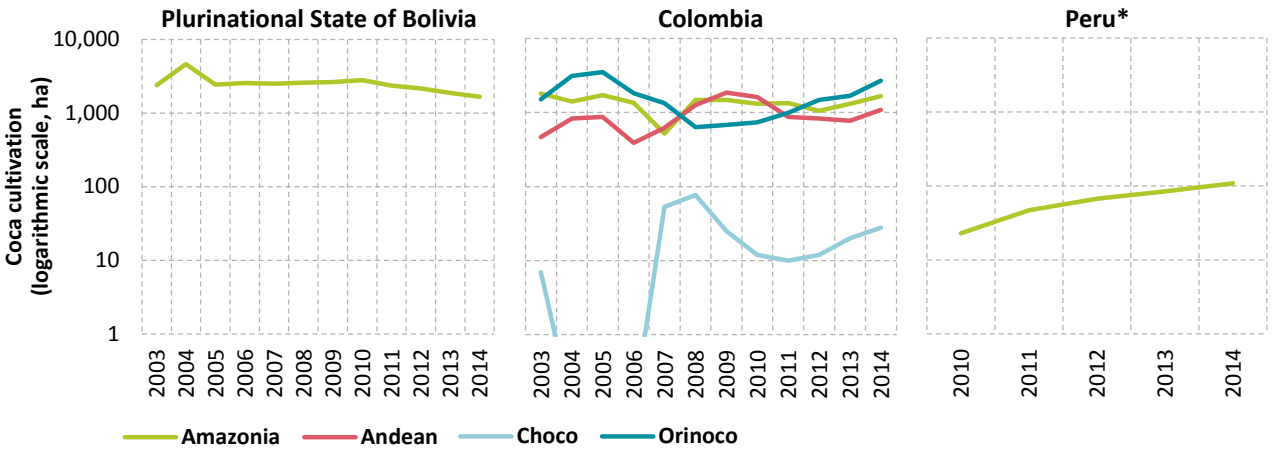
133 David M. Olson and others, "Terrestrial ecoregions of the world: a new map of life on Earth", *BioScience*, vol. 51, No. 11 (2001), pp. 933-938.

134 Natalia Ocampo-Peñuela and Stuart L. Pimm, "Elevational ranges of montane birds and deforestation in the western Andes of Colombia", *PLoS ONE*, vol. 10, No. 12 (2015).

135 Pasquale Borrelli and others, "The implications of fire management in the Andean Páramo: a preliminary assessment using satellite remote sensing", *Remote Sensing*, vol. 7, No. 9 (2015), pp. 11061-11082.

136 Myers and others, "Biodiversity hotspots for conservation priorities" (see footnote 131).

FIG. 18 Coca bush cultivation in protected areas (national parks), Bolivia (Plurinational State of), Colombia and Peru, 2003-2014



*Note: Data from national parks were assigned to each of the ecological regions. *Data for Peru were only available from 2010 onwards.*

ción-Lares revealed that 2 per cent of the land area was occupied by coca cultivation, most of which (90 per cent) was on land without agricultural potential. Slightly less than a quarter of the coca cultivation was in protected areas, while two thirds was on land designated for forest.

In the Plurinational State of Bolivia, the most affected parks are Isiboro Secure and Carrasco. The first overlaps with the Alto Beni deforestation front and the second overlaps with the Chapare-Santa Cruz deforestation front. Coca-related encroachment into the parks dates back at least to the 1980s.[137]

Impact of drug control interventions on the environment

Alternative development

Target 2.4 of the Sustainable Development Goals
By 2030, ensure sustainable food production systems and implement resilient agricultural practices that increase productivity and production, that help maintain ecosystems, that strengthen capacity for adaptation to climate change, extreme weather, drought, flooding and other disasters and that progressively improve land and soil quality

Alternative development is an area of intervention in which efforts to reduce illicit drug supply contend with the socioeconomic conditions of farmers, as well as the environment in which the farmers live and earn their livelihood. Although short-sighted initiatives in the past may have had negative environmental consequences, alternative development has demonstrated that it can have a positive impact on the environment by promoting biodiversity and reforestation. The key elements, which are often critical to ensuring a holistic and sustainable success of alternative development programmes, include communal participation and the promotion of land ownership, community organization, good agricultural practices, including in post-harvest processes, agroforestry and forest management.[138]

One successful instance of alternative development extending to positive environmental effects can be seen in the San Martín Region in Peru, where alternative development initiatives included the replacement of coca production with the production of oil palm, cocoa and coffee and with agroforestry, in addition to reforesting 7.5 per cent of former coca and other crop fields (or about 650 ha). This last activity involved 350 local families. An additional 687 families were involved in 1,415 ha of agroforestry and coffee and cocoa cultivation for fair trade and organic markets. The success of the project rested on the provision of non-conditional support to beneficiaries, whether or not they eradicated coca bush, and on the inclusion of communities as a whole, whether or not they were directly involved in coca production.[139]

Land ownership was emphasized in the context of the Colombian initiative Forest Warden Families Programme, which ran during the period 2003-2013, reaching more than 120,000 families.[140] The project led to the purchase of more than 100,000 ha of land by approximately 30,000 families. The premise of this strategy is that land ownership discourages smallholders from joining or rejoining the coca economy and allows for the development of long-term productive projects. Although deforestation rates were not assessed in the project, land ownership also has the potential to slow down the agricultural frontier.[141]

137 Henkel, "Coca (*Erythroxylum coca*) cultivation" (see footnote 122).

138 See *World Drug Report 2015*, chap. II.

139 UNODC, *San Martín: Análisis Económico del Impacto del Desarrollo Alternativo, en relación a la Deforestación y la Actividad Cocalera* (Lima, 2014).

140 UNODC, *Colombia: Monitoreo de Cultivos de Coca 2013* (Bogotá, 2014).

141 María D. Álvarez, "Forests in the time of violence: conservation

In the past, crop substitution programmes, aimed at replacing illicit crops with licit crops, may have had undesired effects. In South-East Asia, for example, crop substitution has been criticized for promoting the shifting away from swidden agriculture, which allows for fallow periods during which the land may regenerate, towards permanent agriculture.[142] However, in terms of environmental impact, a study in northern Thailand showed how this does not necessarily translate into unsustainable deforestation. In the village of Pah Poo Chom, intensification of agriculture between the 1970s and 1990s took place in parallel with a decline in the overall use of land and the regrowth of forest on the steepest slopes, even as the population increased.

Eradication and displacement

The impact of illicit crop eradication on the environment may have different outcomes and different ramifications depending on the context. If eradication induces a displacement of the location of drug crop cultivation, this may result in negative environmental effects when farmers react to eradication initiatives and seek new cultivation sites that are out of the reach of law enforcement authorities. In Afghanistan, for example, the targeted "food zone" initiative in central Helmand, including eradication, may have played a role in the relocation of opium poppy growers north of the Boghra canal and the associated expansion of the agricultural frontier north of the canal, which almost doubled between 2008 and 2013.[143] This, in turn, may have contributed to soil depletion and other environmental effects north of the canal.

In the Andean countries, the easiest way for farmers to evade law enforcement is to establish their coca bush cultivation sites on relatively inaccessible mountain slopes. One study in the San Lucas mountain range in Colombia[144] obtained statistical confirmation that mountainous areas with some slope had a greater probability of being converted into coca bush cultivation areas, while the probability of converting forest into pasture decreased in very rugged terrain.

The complexity of the potential impact of eradication on the spatial distribution of coca bush cultivation, and associated environmental concerns, is also illustrated by other studies undertaken in Colombia. One study provided quantitative evidence to substantiate an overall shift in coca bush cultivation towards municipalities with a higher proportion of old-growth forest and lower road density over the period 2001-2008.[145] Together, the results provide evidence of coca growers migrating out of areas targeted for spraying and taking coca bush cultivation to new municipalities nearby. This explains the shifting of the Andean and Chocoan forest frontiers by coca bush growers.

Some studies, however, have shown that eradication may slow the advance of the agricultural frontier. Analyses of satellite imagery of eastern Bolivia[146] implied that that was the case. Aggressive campaigns to counter drug trafficking and to eradicate coca bush in the 1990s were identified as the main causes of the decline in forest clearing from the late 1980s to the 1990s. Although drug control policy was not identified as a driver of variation for farmers in Santa Cruz and the forest product sector, similar trends in forest clearing were observed. This highlights the difficulties in separating deforestation associated with or caused by coca bush cultivation from land-use change caused by other activities along the forest frontier.

Another study in Colombia suggested that eradication efforts may contribute to forest regrowth after coca bush cultivation has been abandoned.[147] The study observed that coca production had taken place in 8 of the top 10 municipalities gaining forest vegetation in 2001 and the total amount of coca produced had dropped markedly by 2010 (to 30 per cent of the initial amount), probably as a result of eradication efforts.

The possible impact of aerial spraying on the environment has been a long-debated and controversial issue in Colombia and elsewhere. In Colombia, since 1994, most coca bush eradication has been conducted by aerial spraying with the herbicide glyphosate.[148] Many views and opinions have enriched the discussion over the years and a considerable amount of research has been done, including on the substance glyphosate, spraying mixtures and the precision of spraying; however, the evidence is not conclusive, as some studies indicate that there is no negative impact on the environment while others indicate the contrary.[149]

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142 Chupinit Kesmanee, "The poisoning effect of a lovers triangle: highlanders, opium and extension crops, a policy overdue for review", in *Hill Tribes Today: Problems in Change*, John McKinnon and Bernard Vienne, eds. (Bangkok, White Lotus, 1989), pp. 61-102.

143 Mansfield, "Helmand on the move" (see footnote 129).

144 Chadid and others, "A Bayesian spatial model highlights distinct dynamics".

145 Alexander Rincón-Ruiz, Unai Pascual and Suzette Flantua, "Examining spatially varying relationships between coca crops and associated factors in Colombia, using geographically weight regression", *Applied Geography*, vol. 37 (2013), pp. 23-33.

146 Timothy J. Killeen and others, "Total historical land-use change in eastern Bolivia: who, where, when, and how much?", *Ecology and Society*, vol. 13, No. 1, art. 36 (2008).

147 Ana María Sánchez-Cuervo and others, "Land cover change in Colombia: surprising forest recovery trends between 2001 and 2010", *PLOS ONE*, vol. 7, No. 8 (2012).

148 Ricardo Vargas, "Fumigaciones y política de drogas en Colombia: ¿fin del círculo vicioso o un fracaso estratégico?", in *Guerra, Sociedad y Medio Ambiente*, Martha Cárdenas and Manuel Rodríguez, eds. (Bogotá, Foro Nacional Ambiental, 2004), pp. 353-395.

149 References to research undertaken on the environmental impact of spraying in Colombia can be found in the online methodology section of the present report.

REGIONAL GROUPINGS

This report uses a number of regional and subregional designations. These are not official designations, and are defined as follows:

East Africa: Burundi, Comoros, Djibouti, Eritrea, Ethiopia, Kenya, Madagascar, Mauritius, Rwanda, Seychelles, Somalia, Uganda and United Republic of Tanzania

North Africa: Algeria, Egypt, Libya, Morocco, South Sudan, Sudan and Tunisia

Southern Africa: Angola, Botswana, Lesotho, Malawi, Mozambique, Namibia, South Africa, Swaziland, Zambia and Zimbabwe

West and Central Africa: Benin, Burkina Faso, Cameroon, Cabo Verde, Central African Republic, Chad, Congo, Côte d'Ivoire, Democratic Republic of the Congo, Equatorial Guinea, Gabon, Gambia, Ghana, Guinea, Guinea-Bissau, Liberia, Mali, Mauritania, Niger, Nigeria, Sao Tome and Principe, Senegal, Sierra Leone and Togo

Caribbean: Antigua and Barbuda, Bahamas, Barbados, Bermuda, Cuba, Dominica, Dominican Republic, Grenada, Haiti, Jamaica, Saint Kitts and Nevis, Saint Lucia, Saint Vincent and the Grenadines and Trinidad and Tobago

Central America: Belize, Costa Rica, El Salvador, Guatemala, Honduras, Nicaragua and Panama

North America: Canada, Mexico and United States of America

South America: Argentina, Bolivia (Plurinational State of), Brazil, Chile, Colombia, Ecuador, Guyana, Paraguay, Peru, Suriname, Uruguay and Venezuela (Bolivarian Republic of)

Central Asia and Transcaucasia: Armenia, Azerbaijan, Georgia, Kazakhstan, Kyrgyzstan, Tajikistan, Turkmenistan and Uzbekistan

East and South-East Asia: Brunei Darussalam, Cambodia, China, Democratic People's Republic of Korea, Indonesia, Japan, Lao People's Democratic Republic, Malaysia, Mongolia, Myanmar, Philippines, Republic of Korea, Singapore, Thailand, Timor-Leste and Viet Nam

South-West Asia: Afghanistan, Iran (Islamic Republic of) and Pakistan

Near and Middle East: Bahrain, Iraq, Israel, Jordan, Kuwait, Lebanon, Oman, Qatar, Saudi Arabia, State of Palestine, Syrian Arab Republic, United Arab Emirates and Yemen

South Asia: Bangladesh, Bhutan, India, Maldives, Nepal and Sri Lanka

Eastern Europe: Belarus, Republic of Moldova, Russian Federation and Ukraine

South-Eastern Europe: Albania, Bosnia and Herzegovina, Bulgaria, Croatia, Montenegro, Romania, Serbia, the former Yugoslav Republic of Macedonia and Turkey

Western and Central Europe: Andorra, Austria, Belgium, Cyprus, Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Latvia, Liechtenstein, Lithuania, Luxembourg, Malta, Monaco, Netherlands, Norway, Poland, Portugal, San Marino, Slovakia, Slovenia, Spain, Sweden, Switzerland and United Kingdom of Great Britain and Northern Ireland

Oceania: Australia, Fiji, Kiribati, Marshall Islands, Micronesia (Federated States of), Nauru, New Zealand, Palau, Papua New Guinea, Samoa, Solomon Islands, Tonga, Tuvalu, Vanuatu and small island territories

GLOSSARY

amphetamine-type stimulants — a group of substances composed of synthetic stimulants that were placed under international control in the Convention on Psychotropic Substances of 1971 and are from the group of substances called amphetamines, which includes amphetamine, methamphetamine, methcathinone and the "ecstasy"-group substances (3,4-methylenedioxymethamphetamine (MDMA) and its analogues)

amphetamines — a group of amphetamine-type stimulants that includes amphetamine and methamphetamine

annual prevalence — the total number of people of a given age range who have used a given drug at least once in the past year, divided by the number of people of the given age range, and expressed as a percentage

coca paste (or coca base) — an extract of the leaves of the coca bush. Purification of coca paste yields cocaine (base and hydrochloride)

"crack" cocaine — cocaine base obtained from cocaine hydrochloride through conversion processes to make it suitable for smoking

cocaine salt — cocaine hydrochloride

new psychoactive substances — substances of abuse, either in a pure form or a preparation, that are not controlled under the Single Convention on Narcotic Drugs of 1961 or the 1971 Convention, but that may pose a public health threat. In this context, the term "new" does not necessarily refer to new inventions but to substances that have recently become available

opiates — a subset of opioids comprising the various products derived from the opium poppy plant, including opium, morphine and heroin

opioids — a generic term applied to alkaloids from opium poppy (opiates), their synthetic analogues (mainly prescription or pharmaceutical opioids) and compounds synthesized in the body

poppy straw — all parts (except the seeds) of the opium poppy, after mowing

problem drug users — people who engage in the high-risk consumption of drugs, for example people who inject drugs, people who use drugs on a daily basis and/or people diagnosed with drug use disorders (harmful use or drug dependence), based on clinical criteria as contained in the Diagnostic and Statistical Manual of Mental Disorders (fifth edition) of the American Psychiatric Association, or the International Classification of Diseases (tenth revision) of the World Health Organization

people who suffer from drug use disorders/people with drug use disorders — a subset of people who use drugs. People with drug use disorders need treatment, health and social care and rehabilitation. Dependence is a drug use disorder

prevention of drug use and treatment of drug use disorders — the aim of "prevention of drug use" is to prevent or delay the initiation of drug use, as well as the transition to drug use disorders. Once there is a drug use disorder, treatment, care and rehabilitation are needed

CHAPTER 2 – THE WORLD DRUG PROBLEM AND SUSTAINABLE DEVELOPMENT

Additional sources

Box: Example of development programmes that may have triggered illicit cultivation

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b Raymond E. Crist and Charles M. Nissly, *East from the Andes: Pioneer Settlements in the South American Heartland*, Social Sciences, No. 50 (Gainesville, University of Florida Press, 1973).

c Frans J. Schuurman, Colonization policy and peasant economy in the Amazon basin", *Boletín de Estudios Latinoamericanos y del Caribe*, No. 27 (1979), pp. 29-41.

d Rolf J. Wesche, "The settler wedge of the upper Putumayo River", PhD dissertation, University of Florida, 1967.

e W. Schoop, *Vergleichende Untersuchungen zur Agrarkolonisation der Hochlandindianer am Andenabfall und im Tiefland Ostboliviens*, H. Hagedorn and others, eds., Aachener Geographische Arbeiten (Wiesbaden, Germany, F. Steiner Verlag, 1970).

f V. Jülich, *Die Agrarkolonisation im Regenwald des mittleren Río Huallaga (Peru)*, C. Schott, ed., Marbuger Geographische Schriften (Marburg, Germany, Selbstverlag des Geographischen Institutes der Universität Marburg, 1975).

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i W. Brücher, "Formen und effizienz staatlicher Agrarkolonisation in den östlichen Regenwaldgebieten der tropischen Andenländer", *Geographische Zeitschrift*, vol. 65, No. 1 (1977), pp. 3-22.

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Table 3: Overview of economic evaluations of the costs of the drug problem

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Box: Does coca bush cultivation drive deforestation? A case study in Colombia

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Methodology

Below are specifics concerning the methodology and the definitions of concepts used in the analysis.

Figure 6: Unemployment[a] among past-month drug users in the United States, by drug type, 2013

a The methodology of the United States National Survey on Drug Use and Health (NSDUH) classifies respondents into the categories "Employed full-time", "Employed part-time", "Unemployed", "Other (including not in labor force)" and "12-14–year-olds". The unemployment rate in this figure is the estimated number of "unemployed" individuals as a percentage of the estimated total of the first three categories. The NSDUH survey is undertaken independently of the Current Population Survey, conducted monthly by the United States Bureau of Labor Statistics (BLS), the main source for unemployment statistics. For 2013, the United States Bureau of Labor Statistics provides an estimate of 7.4 per cent for the unemployment rate, among a civilian labour force of 155 million, drawn out of a civilian non-institutional population of 246 million. For the purposes of comparison, the NSDUH survey data yield a rate of 7.9 per cent among a population of 169 million (corresponding to the total of the three categories "Employed full-time", "Employed part-time" and "Unemployed") drawn from a population of 262 million individuals aged 12 or older.

The label 'Cocaine but not "crack" ' refers to the population of individuals who used cocaine, but not "crack" cocaine during the previous month. This may be smaller than the entire population of individuals who used some form of cocaine other than "crack" cocaine during the previous month, as it excludes individuals who may have used "crack" as well as another form of cocaine.

Figure 7: Increased likelihood of being a past-month drug user among the unemployed population, compared with the population in full-time employment in the United States, by drug type, 2013

a The label 'Cocaine but not "crack" ' refers to the use of cocaine during the previous month, without using "crack" cocaine during the same period. This does not coincide with the use of a form of cocaine other than "crack" during the previous month (independently of whether "crack" cocaine was used).

Footnote 214

The "non-agricultural alternative development" category has been defined in the OECD Creditor Reporting System purpose codes (valid for reporting up to and including 2014 flows; available at www.oecd.org), to be applied for "projects to reduce illicit drug cultivation through, for example, non-agricultural income opportunities, social and physical infrastructure".

Footnote 215

The figures for the category "narcotics control" include "development-related" anti-narcotics activities such as educational programmes and awareness-raising campaigns to restrict distribution of illicit drugs, as well as training of police and customs officers. Not included here are donor activities to destroy crops, interdict drug supplies or train and finance military personnel in anti-narcotics activities (see the purpose codes of the OECD Creditor Reporting System Aid Activities database (valid for reporting up to and including 2014 flows), available at www.oecd.org).

Footnote 216

See *Official Records of the Economic and Social Council, 2009, Supplement No. 8* (E/2009/28), chap. I, sect. C.

Footnote 217

The fractions mentioned in this paragraph express the commitments explicitly labelled in the OECD Creditor Reporting System as intended for countries in the beneficiary region, as a proportion of the total commitments, which include funds labelled with unspecified beneficiary countries or broad regions. If it were possible for the funds to be labelled with unspecified beneficiaries assigned to their ultimate beneficiary countries, the proportions could potentially be higher.