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PREFACE

About 230 million people, or 5 per cent of the world's adult population, are estimated to have used an illicit drug at least once in 2010. Problem drug users number about 27 million, which is 0.6 per cent of the world adult population. Throughout the world, illicit drug use appears to be generally stable, though it continues to be rising in several developing countries. Heroin, cocaine and other drugs kill around 0.2 million people each year, shattering families and bringing misery to thousands of other people. Illicit drugs undermine economic and social development and contribute to crime, instability, insecurity and the spread of HIV.

Global opium production amounted to 7,000 tons in 2011. That is more than a fifth less than the peak of 2007 but an increase from the low level of 2010, the year in which a plant disease destroyed almost half of the opium harvest in Afghanistan, which continues to be the world's biggest producer. The total area under coca bush cultivation in the world fell by 18 per cent between 2007 and 2010 and by 33 per cent since 2000. Efforts to reduce cultivation and production of the main plant-based problem drugs have, however, been offset by rising levels of synthetic drug production, including significant increases in the production and consumption of psychoactive substances that are not under international control.

Although Member States are to be commended for their hard work in dealing with the drug problem, often with the support of UNODC, the figures sketched above indicate the scale of the challenge. The response by UNODC has been twofold: first, develop an integrated approach; and second, focus on prevention, treatment, alternative development and the promotion of fundamental human rights.

Developing an integrated approach

Drug trafficking flows have global dimensions. The flows link regions and continents, sometimes with dramatic consequences for the countries they affect. Our research and trend analysis is designed to improve understanding of those issues. The results are fed into integrated programmes to reduce illicit drug supply and demand.

UNODC is building integrated regional programmes, as well as promoting interregional and inter-agency responses. One such inter-agency approach is the United Nations system Task Force on Transnational Organized Crime and Drug Trafficking, established in 2011.

In December 2011, the UNODC Regional Programme for Afghanistan and Neighbouring Countries was launched. To support this programme, UNODC and its partners have created cross-border, intelligence and precursor control initiatives to share information and experience and to conduct joint operations. All these regional initiatives are interlinked with existing law enforcement networks.

There are also new initiatives for countering money-laundering and for coupling law enforcement with alternative livelihoods. An initiative has been launched to disrupt drug trafficking by sea in West and South Asia. UNODC has also launched a new Regional Programme for South-Eastern Europe to focus action on areas where heroin flowing along the Balkan route enters Europe.

A regional hub for Central America and the Caribbean has been developed in Panama. The strengthened UNODC Regional Office for Mexico and countries in that region will be linked to the hub. In the Dominican Republic and Mexico, centres of excellence are being established to promote drug demand reduction.

A network of prosecutors in Central America is using best practices to strengthen criminal justice in the region. At the same time, the Container Control Programme is expanding, operating in more countries and controlling containers transported by sea, as well as by air. In West and Central Africa, successes are being achieved through the establishment of transnational crime units.

In South-East Asia, UNODC provides the groundwork for cross-border cooperation between the countries of the Greater Mekong subregion, helps secure sustainable livelihoods through alternative development schemes and gives countries an evidence base for taking action against the interrelated threats of organized crime and drug trafficking.

UNODC is also improving capacities to counter money-laundering and corruption in all regions by interrupting the flow of illicit drug proceeds, which are used by criminal networks to carry out further criminal activities.

Rebalancing drug control policy through alternative development, prevention, treatment and fundamental human rights

UNODC will continue to build international cooperation and to help Member States respond to these threats. If we are to confront these challenges, however, both supply and demand need to be reduced. There is growing recognition that treatment and rehabilitation of illicit drug users are more effective than punishment.

Of course, this does not mean abandoning law enforcement activities; instead, the supply and demand sides need to complement each other. This means balancing our efforts against drug trafficking with alternative development programmes for farmers and helping drug users to be rehabilitated and reintegrated into society.

Alternative development is the key to reducing illicit drug

crop cultivation and drug production. At present, only around one quarter of all farmers involved in illicit drug crop cultivation worldwide have access to development assistance. If we are to offer new opportunities and genuine alternatives, this needs to change.

UNODC is also promoting activities that significantly reduce illicit drug demand. Such activities are necessary because of growing signs of drug use in the so-called transit countries. For example, there are increasing numbers of cocaine users in West and Central Africa; and the highest prevalence rates for opium and heroin use are in Afghanistan and the Islamic Republic of Iran.

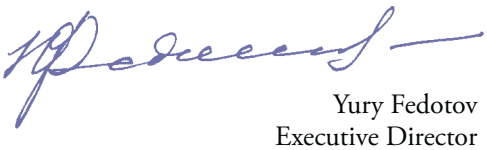
Drug control means restoring the balance and paying greater attention to the health side by reducing overdoses, psychiatric problems and the incidence of infections such as HIV and hepatitis. Prevention, treatment, rehabilitation, reintegration and health all have to be recognized as key elements in the global strategy to reduce drug demand. To support its activities, UNODC takes an approach based on human rights, the international drug control conventions and international standards and norms.

Moving forwards not backwards

Recently several countries facing high rates of violence, kidnapping, corruption and human trafficking related to transnational organized crime and drug trafficking have called for international assistance. These countries need our support. It is our shared responsibility to do everything possible to help.

In doing so, we need to be equally clear about the importance of the international conventions on drugs, organized crime and corruption. Indeed, almost everything mentioned in this preface — focusing on drug demand, rehabilitation and reintegration, alternative development, shared responsibility and fundamental human rights — are underscored in the conventions.

The Commission on Narcotic Drugs put this succinctly when, in its resolution 55/3, on the 100th anniversary of the International Opium Convention, it expressed its determination to strengthen action and cooperation at the national, regional and international levels towards the goals of the international drug control conventions, which remain the cornerstone of the international drug control system. Our direction is guided by the international conventions on drug control and crime prevention. We need to move as one; if not, we risk going backwards, not forwards.



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CONTENTS

PREFACE iii
EXPLANATORY NOTES vii
EXECUTIVE SUMMARY 1

1. RECENT STATISTICS AND TREND ANALYSIS OF ILLICIT DRUG MARKETS

A. Extent of illicit drug use and health consequences 7
B. Illicit opiate market 26
C. Cocaine market 35
D. Cannabis market 43
E. Illicit market for amphetamine-type stimulants 51

2. THE CONTEMPORARY DRUG PROBLEM: CHARACTERISTICS, PATTERNS AND DRIVING FACTORS

A. What are the fundamental characteristics of the contemporary illicit drug problem 59
B. How have the patterns of the drug problem shifted over time 72
C. Which factors shape the evolution of the problem 86
D. Conclusion 97

ANNEX
Regional groupings 99

GLOSSARY 100

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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 due 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 this report.

The data on population used in this report are from: United Nations, Department of Economic and Social Affairs, Population Division, *World Population Prospects: The 2010 Revision.* Available from http://esa.un.org/undp/wpp.

The following symbols have been used in the tables throughout the report:

Two dots (..) indicate that data are not available or are not seperately reported.

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

References to "tons" are to metric tons, unless otherwise stated.

The following abbreviations have been used in this Report:

AIDS	acquired immunodeficiency syndrome
ATS	amphetamine-type stimulant
BZP	N-benzylpiperazine
CICAD	Inter-American Drug Abuse Control Commission (Organization of American States)
mCPP	m-chlorophenylpiperazine
DEA	Drug Enforcement Administration (United States of America)
EMCDDA	European Monitoring Centre for Drugs and Drug Addiction
Europol	European Police Office
FARC	Revolutionary Armed Forces of Colombia
GDP	gross domestic product
ha	hectare
HIV	human immunodeficiency virus
INTERPOL	International Criminal Police Organization
IRA	Irish Republican Army
LSD	lysergic acid diethylamide
MDA	methylenedioxyamphetamine
MDE	methylenedioxyethylamphetamine
MDMA	methylenedioxymethamphetamine
3,4-MDP-2-P	3,4-methylenedioxyphenyl-2-propanone
MDPV	methylenedioxypyrovalerone
4-MMC	4-methylmethcathinone
OECD	Organisation for Economic Co-operation and Development
P-2-P	1-phenyl-2-propanone
PKK	Kurdistan Workers' Party
PMK	piperonyl methyl ketone
SIM	subsciber identity module
SMS	short message service
THC	tetrahydrocannabinol
WHO	World Health Organization

EXECUTIVE SUMMARY

Chapter I of this year's World Drug Report provides an overview of recent trends and the drug situation in terms of production, trafficking and consumption and the consequences of illicit drug use in terms of treatment, drug-related diseases and drug-related deaths.

Chapter II presents a long-term perspective on the characteristics and evolution of the drug problem and the main factors that shaped it. It starts with a discussion of the main characteristics of the contemporary drug problem, followed by an overview of the shifts observed over the last few decades, before concluding with an analysis of the driving factors that shaped the evolution of the drug problem, including a brief outlook for its likely future direction.

CHAPTER I. RECENT STATISTICS AND TREND ANALYSIS OF ILLICIT DRUG MARKETS

Latest available data indicate that there has been no significant change in the global status quo regarding the use, production and health consequences of illicit drugs, other than the return to high levels of opium production in Afghanistan after a disease of the opium poppy and subsequent crop failure in 2010. But while the troubled waters of the world's illicit drug markets may appear to be stagnant, shifts and changes in their flows and currents can be observed below the surface. These are significant and also worrying, not because of how they currently impact on the data but because they are proof of the resilience and adaptability of illicit drug suppliers and users and because of the potential future repercussions of those shifts and changes in the world's major drug markets.

The global picture

The extent of global illicit drug use remained stable in the five years up to and including 2010, at between 3.4 and 6.6 per cent of the adult population (persons aged 15-64). However, some 10-13 per cent of drug users continue to be problem users with drug dependence and/or drug-use disorders, the prevalence of HIV (estimated at approximately 20 per cent), hepatitis C (46.7 per cent) and hepatitis B (14.6 per cent) among injecting drug users continues to add to the global burden of disease, and, last but not least, approximately 1 in every 100 deaths among adults is attributed to illicit drug use.

Opioids continue to be the dominant drug type accounting for treatment demand in Asia and Europe and also contribute considerably to treatment demand in Africa, North America and Oceania. Treatment for cocaine use is mainly associated with the Americas, while cannabis is the main drug causing treatment demand in Africa. Demand for treatment relating to the use of amphetamine-type stimulants (ATS) is most common in Asia.

Globally, the two most widely used illicit drugs remain cannabis (global annual prevalence ranging from 2.6 to 5.0 per cent) and ATS, excluding "ecstasy", (0.3-1.2 per cent) but data relating to their production are scarce. Total production and cultivation of coca is known to be stable, while the production of opium has returned to levels comparable to 2009. Global annual prevalence of both cocaine and opiates (opium and heroin) has remained stable, with ranges from 0.3-0.4 per cent and 0.3-0.5 per cent, respectively, of the adult population aged 15-64:

Annual prevalence and number of illicit drug users at the global level, 2010

	Prevalence (percentage)		Number (thousands)	
	Low	High	Low	High
Cannabis	2.6	5.0	119 420	224 490
Opioids	0.6	0.8	26 380	36 120
Opiates	0.3	0.5	12 980	20 990
Cocaine	0.3	0.4	13 200	19 510
Amphetamine-type stimulants	0.3	1.2	14 340	52 540
"Ecstasy"	0.2	0.6	10 480	28 120
Any illicit drug	3.4	6.6	153 000	300 000

Opioids

With estimated annual prevalence ranging from 0.6 to 0.8 per cent of the population aged 15-64, the use of opioids (mainly heroin, morphine and non-medical use of prescription opioids) is stable in all of the main markets. After a blip in global production in 2010, caused by a disease of the opium poppy in Afghanistan, production has now more or less returned to its 2009 level. Average wholesale and retail prices in the most regularly monitored markets for opiates, in Western and Central Europe and the Americas, have also shown little change since 2009, but this does not reflect the situation seen in such major opium-producing countries as Afghanistan and Myanmar where, despite an increase in opium production, farm-gate prices continued to rise in 2010 and 2011.

The latter may imply that illicit demand for opium and its derivatives is continuing to increase in spite of the recent recovery of opium production. While it is difficult to identify one specific reason for this, it could be an underestimation of global heroin consumption, especially in countries in Asia that are major markets and countries in Africa that are possible emerging markets, or to an expansion in the market for raw opium (not processed into heroin), which could feed increased opium consumption and, perhaps, a parallel illicit market for opiates such as morphine. High prices at source could also be explained by speculation in the local market.

It is too early to know exactly the impact of the 2010 opium crop failure in Afghanistan on the major illicit markets for opiates, but a general decrease in seizures in 2010 occurred in most of the countries supplied by Afghan opiates and a heroin shortage was observed in some European countries in 2010-11. There are indications that this shortage has encouraged users in some countries to replace heroin with other substances such as desomorphine (also known as "krokodil"), acetylated opium (known as "kompot") and synthetic opioids such as fentanyl and buprenorphine.

Although large quantities of heroin continue to be trafficked along the main Balkan route, leading from Afghanistan to Western and Central Europe via South-Eastern Europe, declining seizures were reported in most of the countries in those regions in 2010. However, the coastal markets of Africa are reporting increasing seizures, as are countries in South-East Asia. Whether this implies that traffickers are seeking alternative routes or that heroin use is on the increase in those places, the lack of available data makes it impossible to draw definitive conclusions. But one thing is clear: the opiate market continues to be extremely flexible and adaptable.

Cocaine

The general stability of global cocaine use and manufacture masks different trends in different regions and countries. Available data on cultivation, yield and trafficking indicate that there has been an overall decline in global manufacture of cocaine, prompted by a major decline in cocaine manufacture in Colombia in the five-year period 2006-2010. A sizeable shift has taken place as coca bush cultivation and coca production increased in the same period in the other two coca-producing countries, Bolivia (Plurinational State of) and Peru, which are becoming increasingly important producers.

The major markets for cocaine continue to be in North America, Europe and Oceania (mainly Australia and New Zealand). North America has seen a marked decline in cocaine use, mainly due to a decline in the United States, from 3.0 per cent (2006) to 2.2 per cent (2010) among adults aged 15-64; however, there has not been such a decline in Europe, where cocaine use stabilized over the same period. Latest data from Australia show an increase in cocaine use.

There is evidence that, while the United States market continued to be almost exclusively supplied by cocaine produced in Colombia, from 2006 there was a shift in the European markets, which compensated, at least partially, for the shortage of cocaine produced in Colombia with cocaine produced in Bolivia (Plurinational State of) and Peru. The decline in seizures in Europe, despite the apparent stability of the region's cocaine supply, implies that a change in trafficking modes is occurring as traffickers may be making increasing use of containers. In the United States of America, the decrease in availability of cocaine has been reflected by rising prices since 2007. In Europe, however, no dramatic changes in prices have been observed since 2007. Overall, they remained at the same level in dollar terms between 2007 and 2010 and even decreased in some countries.

An additional factor influencing the availability of, and overall demand for, cocaine in different regions is the emergence of new, albeit small, cocaine markets in, for example, Eastern Europe and South-East Asia. There is also some evidence that cocaine trafficking through West Africa may have had a spillover effect on countries in that subregion, with cocaine emerging as a drug of major concern, along with heroin. Some data indicate an expansion of the cocaine market, particularly of "crack" cocaine, in some countries of South America.

Amphetamine-type stimulants

The illicit manufacture of ATS (mainly methamphetamine, amphetamine and "ecstasy"), the second most widely used class of drugs worldwide, is difficult to measure because it is widespread and often on a small scale. While the use and global seizures of ATS remained largely stable, 2010 was marked by an increase in methamphetamine seizures to more than double the amount in 2008, partly due to seizures increasing in Central America and East and South-East Asia. For the first time since 2006, global methamphetamine seizures surpassed global amphetamine seizures, which fell by 42 per cent (to 19.4 tons) mainly as a result of a decrease in seizures in the Near and Middle East and South-West Asia.

Despite a significant rise in the dismantling of clandestine amphetamine laboratories, amphetamine seizures in Europe continued their downward trend, reaching their lowest level since 2002 (5.4 tons). There are signs, however, of a recovery in the European "ecstasy" market, with seizures of "ecstasy"-group substances more than doubling (from 595 kg in 2009 to 1.3 tons in 2010). The drug's availability and use also appear to be on the increase in the United States, while there has also been an increase in "ecstasy" seizures in Oceania and South-East Asia.

There is also growing evidence to suggest that criminal organizations involved in smuggling ATS, particularly methamphetamine, exploit West Africa in a similar way to cocaine traffickers. Seizures of methamphetamine from West Africa started to increase in 2008; the substance was being smuggled into East Asian countries, predominantly Japan and the Republic of Korea.

Cannabis

Cannabis is the world's most widely used illicit substance: there are between 119 million and 224 million cannabis users worldwide, and consumption is stable. Cannabis seizure and eradication data suggest that the production of cannabis herb (marijuana) is increasingly widespread, but the often localized, small-scale nature of cannabis cultivation and production make it very difficult to assess. New

data on larger-scale global production of cannabis resin (hashish) are only available for Afghanistan.

The relative importance of cannabis resin and herb varies by region, with cannabis resin being dominant in the Near and Middle East and South-West Asia, cannabis resin and herb markets being comparable in size in North Africa and Europe. The rest of the world, including the United States, where production continues to be high, is dominated by cannabis herb. Data for Africa is hard to come by but seizure data suggest that herb is also the dominant form of cannabis in that region, except in North Africa where resin is predominant.

The production of cannabis resin is assumed to be very small in Europe yet the region is the world's biggest market for cannabis resin and North Africa has long been Europe's predominant supplier. Most of the North African cannabis resin consumed in Europe traditionally comes from Morocco, but recent data show that that country's relative importance as a supplier could be on the wane. Indeed, Afghanistan now appears to be one of the most important countries worldwide in terms of cannabis resin production.

The proliferation of indoor cannabis cultivation sites and differing trends in prices and seizures of cannabis herb and resin indicate that there may be a shift in the European cannabis market away from the dominance of resin towards herb, with most European Union member States reporting the cultivation of cannabis herb to be a phenomenon that appears to be on the increase.[1] Though usually small-scale, indoor cultivation sites may also include major operations run by organized criminal groups who often choose to supply local markets in order to reduce the risks involved in cannabis trafficking.

Furthermore, the rise in indoor cultivation of cannabis is often related to an increase in cannabis potency, which is reflected in the data only to a limited extent. Such increases in potency may explain, in part at least, the increase in treatment demand among cannabis users, though this may also be related to the cumulative effects of prolonged use of cannabis.

Beyond the traditional "highs": new substances and the non-medical use of prescription pharmaceuticals

Global figures for the non-medical use of prescription drugs other than opioids and amphetamines are not available. Nevertheless, this is reportedly a growing health problem, with prevalence rates higher than for numerous controlled substances in many countries. In the United States, for example, lifetime, annual and monthly prevalence of non-medical use of psychotherapeutics (mostly pain relievers) among persons aged 12 and over was reported as 20.4, 6.3 and 2.7 per cent, respectively, for 2010,[2] higher rates than for any drug other than cannabis. And while illicit drug use among males in general greatly exceeds that among females, the non-medical use of tranquillizers and sedatives among females, in those countries where data are available (in South America, Central America and Europe), is a notable exception to the rule (and exceeds the use of cannabis).[3] There is also evidence that these substances are increasingly being used in combination with more traditional illicit substances, in polydrug use designed to either enhance or counterbalance their effects.

New chemically engineered psychotropic substances designed to remain outside international control are also increasingly being used and identified. Numerous countries in all regions, particularly Europe, North America and Oceania, reported the use of such substances as an emerging trend in 2010. The most notable of these substances included the methcathinone analogue 4-methylmethcathinone (also known as mephedrone), and methylenedioxypyrovalerone (MDPV), which are often sold as "bath salts" or "plant food" and used as substitutes for controlled stimulants such as cocaine or "ecstasy". Similarly, piperazine derivatives[4] are also being sold as substitutes for "ecstasy", while several synthetic cannabinoids that emulate the effect of cannabis but contain uncontrolled products have been detected since 2008 in herbal smoking blends.

Drug trafficking organizations continue to adapt their manufacturing strategies in order to avoid detection, and such changes in the illicit manufacturing process of synthetic substances present new challenges to drug control authorities worldwide.

Data challenges

Considerable challenges also remain in the reporting of trend data on illicit drug use, production and trafficking. The main challenges continue to be the availability and reporting of data on different aspects of illicit drug demand and supply in Member States. The lack of data is particularly acute in Africa and parts of Asia, where data on the prevalence of illicit drug use and trends remain vague at best. Other aspects such as prices and purity of drugs, seizures and trafficking patterns and methodological difficulties in estimating in some regions the illicit production of substances — particularly cannabis and ATS — make it difficult to analyse and present a complete picture of the

1 European Monitoring Centre for Drugs and Drug Addiction, *Annual Report 2011: The State of the Drugs Problem in Europe* (Luxembourg, Publications Office of the European Union, 2011).

2 United States of America, Department of Health and Human Services, Substance Abuse and Mental Health Services Administration, *Results from the 2010 National Survey on Drug Use and Health: Summary of National Findings*, NSDUH Series H-41, HHS Publication No. SMA 11-4658 (Rockville, Maryland, 2011).

3 In fact, monthly prevalence of tranquillizer use among females in South America (1.3 per cent) and Europe (4.2 per cent) is greater than annual prevalence of the use of cannabis among females in South America (1.0 per cent) or Europe (3.5 per cent).

4 These include N-benzylpiperazine (BZP) and 3-trifluoromethylphenylpiperazine.

ever-evolving illicit drug market. Most of the challenges can be overcome by sustained efforts in priority regions and countries to support and improve the collection of quality data on these different aspects of illicit drug use. It is only then that the ebb and flow of the world's illicit drug market can be properly measured.

CHAPTER II. THE CONTEMPORARY DRUG PROBLEM: CHARACTERISTICS, PATTERNS AND DRIVING FACTORS

What are the fundamental characteristics of the contemporary illicit drug problem

While psychoactive substances have been consumed for thousands of years, the drug problem has developed some key characteristics over the last few decades, against a backdrop of rapid socioeconomic transitions in a number of countries. Illicit drug use is now characterized by a concentration among youth — notably young males living in urban environments — and an expanding range of psychoactive substances. Although established illicit drug markets in many developed countries have shown signs of stabilization, the growth of drug use seems to continue in many developing countries.

While illicit drug production, trafficking and use remain issues of concern, the international drug control system appears to have kept the consumption of illegal drugs well below the levels reported for legal psychoactive substances. Global estimates suggest that past-month prevalence of tobacco use (25 per cent of the population aged 15 and above) is 10 times higher than past-month prevalence of illicit drug use (2.5 per cent). Annual prevalence of the use of alcohol is 42 per cent (the use of alcohol being legal in most countries), which is eight times higher than annual prevalence of illicit drug use (5.0 per cent). Heavy episodic weekly drinking is eight times more prevalent than problem drug use. Drug use accounts for 0.9 per cent of all disability-adjusted life years lost at the global level, or 10 per cent of all life years lost as a result of the consumption of psychoactive substances (drugs, alcohol and tobacco).

Drug consumption levels would likely be higher without an age-containment effect at work. The international drug control system seems to be acting as a brake on drug use, particularly among adults who are less willing to transgress laws by consuming drugs. While the initiation of psychoactive substance use typically occurs during the teens or early years of adulthood, the (legal) use of tobacco and alcohol continues in much larger proportions with age in the same population groups. The use of khat — which is legal in a number of countries — shows the same patterns. While the prevalence of khat use in Yemen among persons aged 61 and above is just 13 per cent lower than among those in the age group 21-30, the use of cannabis in the United States is some 93 per cent lower among those aged 61 and above than among those aged 21-30. In other words, the use of legal psychoactive substances tends to be far more homogeneously distributed across age groups than the use of illegal drugs.

There is also a pronounced gender gap in relation to illicit drug consumption, with use levels among females significantly lower than among males in nearly all countries for which solid gender-disaggregated data are available. In the United States, characterized by a small gender gap, female drug use is about two thirds that of males, whereas in some other countries, including India and Indonesia, female drug use is as low as one tenth that of males, though there is a risk that female drug use may be underreported. There are some signs, however, that the gender gap may be diminishing in some highly mature illicit drug markets, particularly among young people. Nonetheless, the overrepresentation of males among drug users, which is confirmed by household surveys, workforce drug tests, treatment data, arrest statistics and other relevant information, is still a salient feature of drug use patterns.

What is the impact on society

One of the key impacts of illicit drug use on society is the negative health consequences experienced by its members. Drug use also puts a heavy financial burden on society. Expressed in monetary terms, some US$ 200 billion-250 billion (0.3-0.4 per cent of global GDP) would be needed to cover all costs related to drug treatment worldwide. In reality, the actual amounts spent on treatment for drug abuse are far lower — and less than one in five persons who needs such treatment actually receives it.

The impact of illicit drug use on a society's productivity — in monetary terms — seems to be even larger. A study in the United States suggested that productivity losses were equivalent to 0.9 per cent of GDP, and studies in several other countries showed losses equivalent to 0.3-0.4 per cent of GDP.

The costs associated with drug-related crime are also substantial. In the United Kingdom of Great Britain and Northern Ireland, a study suggested that the costs associated with drug-related crime (fraud, burglary, robbery and shoplifting) in England and Wales were equivalent to 1.6 per cent of GDP, or 90 per cent of all the economic and social costs related to drug abuse.

How have the patterns of the drug problem shifted over time

While several of the overall characteristics have remained relatively constant over the last few decades, the patterns of illicit drug production, trafficking and use have, nonetheless, shifted significantly.

The illicit market for opiates — the most problematic type of drugs — clearly declined over the last century. Licit and illicit production of opium (including in the form of poppy

straw) fell by some three quarters between 1906/07 and 2010. The decline mainly took place in the first half of the twentieth century. Global opium production levels increased again until 2000, and remained basically stable thereafter. While consumption of opiates has stabilized or declined over the past decade in Western Europe (for a long time, the key market for heroin consumption), developments in other markets have been mixed.

The global cocaine market, in contrast, has expanded since the late nineteenth century and has only recently been showing some signs of decline. Global production of cocaine increased sharply in the 1980s and the 1990s and has only stabilized over the past decade. In recent years, however, the amounts of cocaine available for consumption — after deducting seizures made along the trafficking routes — appear to have declined. Cocaine consumption in North America, the region with the largest cocaine market, has declined significantly over the past decade, though that decrease has been partially offset by rising consumption in Europe and South America.

Cannabis was and continues to be the world's most widespread illicit drug. While cannabis use is stable or declining in several developed countries, it is still increasing in many developing ones. Hydroponic cannabis cultivation, often indoors, is now common in many developed countries. The result has been a more potent drug as well as shorter supply lines and a reduced need for interregional trafficking.

Illicit manufacture and consumption of ATS continue to rise, in contrast with current overall trends for plant-based drugs. Global seizures of ATS increased some threefold over the period 1998-2010, far more than the increases for plant-based drugs. The strongest increases in demand over the past decade have been reported in countries in Asia.

The consumption of drugs is a dynamic phenomenon, with users trying different combinations of drugs, sometimes mixing of legal and illegal drugs, as well as various modes of consumption. Polydrug use, or the use of various substances either simultaneously or sequentially, is reportedly increasing in many countries. While the most frequent substance combination is that of alcohol and various illegal drugs, combinations such as "speedball", a mix of cocaine and heroin, are also common in many places. High levels of non-medical use of prescription drugs are reported in many countries. The non-medical use of opioids is especially problematic, with overdose deaths involving prescription opioids having quadrupled since 1999 in the United States.

Which factors shape the evolution of the problem

The evolution of the complex global illicit drug problem is clearly driven by a range of factors. Sociodemographic trends, such as the population's gender and age balance and the rate of urbanization, are influential. If the demographic profile of a given society changes, drug use behaviour may also change accordingly. Socioeconomic factors, such as levels of disposable income, inequality and unemployment, also play a role. Increased levels of disposable income may enable a larger number of people to buy illicit drugs, whereas high levels of inequality or unemployment may increase the propensity to use illicit drugs among those affected. A broad sociocultural category of drivers — including changes to traditional value systems and the emergence of a relatively uniform "youth culture" in many countries — also influences the evolution of the problem, though in ways that are often challenging to quantify. Analysis also shows that the availability of and perceptions of the inherent dangers of drugs are key variables in shaping drug use.

The international drug control system and its implementation have had a decisive influence on the evolution of the drug problem. A broad range of social and political events, generally unforeseeable and seemingly not connected to drug-related issues, have also fundamentally altered the drug problem that the world is faced with today. Events such as the war in Viet Nam, as well as broader and more profound transformations, such as those taking place at the end of the cold war, all impacted indirectly but significantly on the situation with regard to illicit drug use.

How is the drug problem likely to evolve in the future

One key development to monitor will be the ongoing shift away from developed to developing countries, which would mean a heavier burden for countries relatively less equipped to tackle it. Demographic trends suggest that the total number of drug users in developing countries would increase significantly, owing not only to those areas' higher projected population growth, but also their younger populations and rapid rates of urbanization. Moreover, the gender gap may start closing as developing countries are likely to experience higher levels of female drug use in the wake of disappearing sociocultural barriers and increasing gender equality.

In terms of specific substances, the prominence of heroin and cocaine in illicit drug markets may continue to decline. In contrast, there are no signs that the popularity of cannabis is going to decrease significantly. Cannabis is likely to remain the most widely used illegal substance, and the use of a broad range of licit and illicit synthetic drugs is likely to continue to increase. These forecasts hinge on the assumption that key factors will remain unchanged. This assumption may not necessarily hold, as a number of unforeseen and largely unforeseeable events and circumstances may still occur and influence the problem, as has repeatedly happened in the past. The further one looks into the future, the more unpredictable the evolution becomes.

What can be said for sure is that Governments and societies will continue to face different policy choices when tackling drug-related and crime-related problems while securing international peace and development and upholding human rights.

RECENT STATISTICS AND TREND ANALYSIS OF ILLICIT DRUG MARKETS

A. EXTENT OF ILLICIT DRUG USE AND HEALTH CONSEQUENCES

The global picture

Globally, it is estimated that in 2010 between 153 million and 300 million people aged 15-64 (3.4-6.6 per cent of the world's population in that age group) had used an illicit substance at least once in the previous year. The extent of illicit drug use has thus remained stable, but the estimated 15.5 million-38.6 million problem drug users (almost 12 per cent of illicit drug users), including those with drug dependence and drug-use disorders, remain a particular concern.

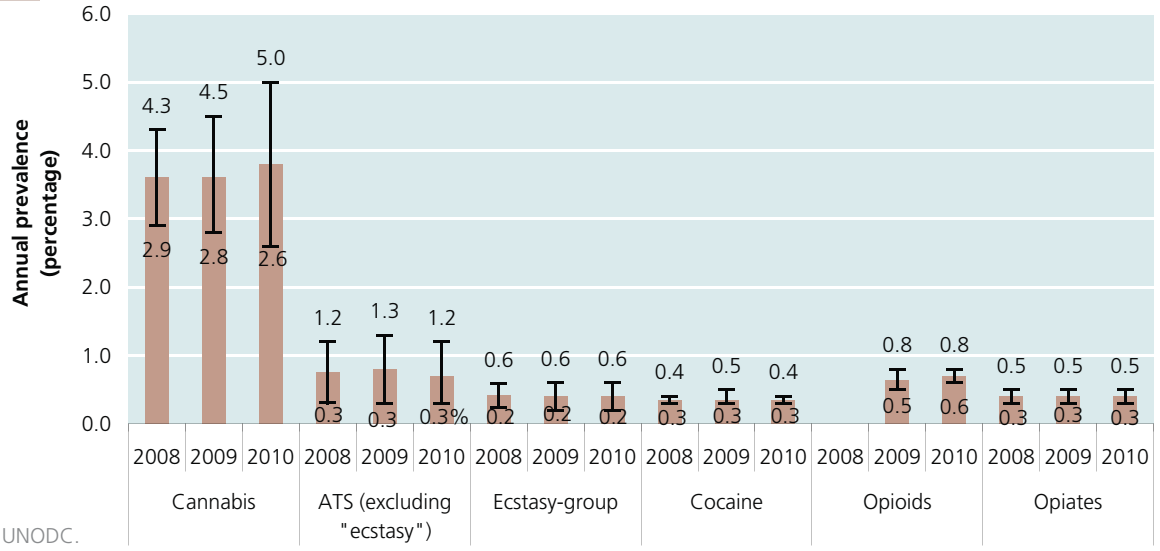
It is also estimated that there were between 99,000 and 253,000 deaths globally in 2010 as a result of illicit drug use, with drug-related deaths accounting for between 0.5 and 1.3 per cent of all-cause mortality among those aged 15-64.[1] Moreover, it was estimated that in 2008 there were 16 million injecting drug users worldwide and that 3 million (18.9 per cent) of them were living with HIV, though no new figures are available after 2008. Global prevalence of hepatitis C infection among injecting drug users in 2010 was 46.7 per cent, meaning that some 7.4 million injecting drug users worldwide are infected with hepatitis C. And some 2.3 million injecting drug users are infected with hepatitis B. Evidence is also emerging that non-injecting drug use is also associated with an increased risk of HIV infection, principally due to unprotected sex.

With estimated annual prevalence of cannabis use in 2010 ranging from 2.6 to 5 per cent of the adult population (between 119 million and 224 million estimated users aged 15-64), cannabis remains the world's most widely used illicit substance (see figure 1). There may be shifts in cannabis use between the drug's two principal forms, resin and herb, and there is even evidence of the increasing popularity of synthetic marijuana among young people in some regions, but in general annual prevalence of cannabis use remained stable in 2010.

In terms of prevalence, amphetamine-type stimulants (ATS) (excluding "ecstasy") remain second only to cannabis, with an estimated prevalence of 0.3-1.2 per cent in 2010 (between 14.3 million and 52.5 million users). Increasing reports of methamphetamine seizures in South-West Asia and in Central Asia and Transcaucasia, as well as the illicit manufacture of the substance in some areas, are also leading to speculation that its use may also be on the increase in those subregions.

Global prevalence of opioid use in 2010 is estimated at 0.6-0.8 per cent of the population aged 15-64 (between 26.4 million and 36 million opioid users), of which nearly half, or between 13 million and 21 million, use opiates, particularly heroin. Experts in Asian and African countries perceive that heroin use has increased in their regions, whereas the latest available data suggest that it is declining or stable in Europe and the use of synthetic opioids appears to be on the increase in some European countries.

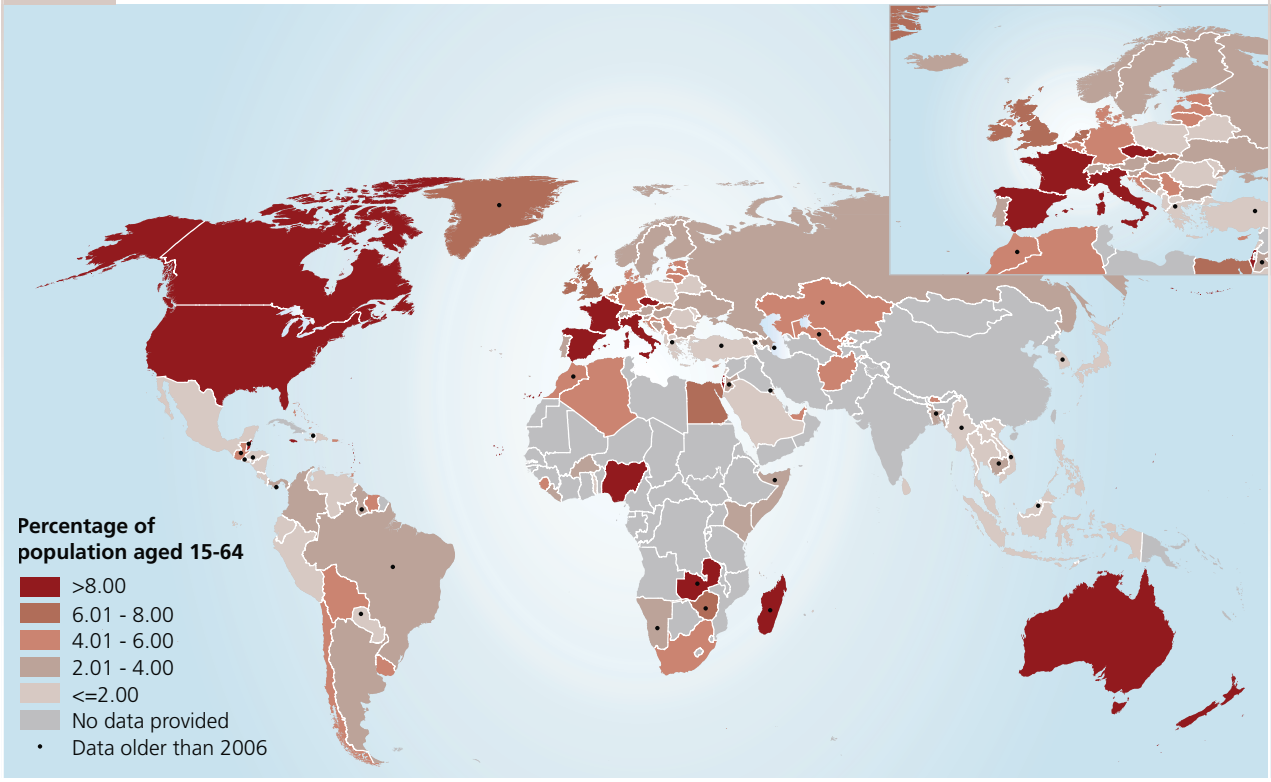
Fig. 1. Annual prevalence of illicit drug use among the population aged 15-64, 2008-2010



Source: UNODC.

1 All-cause mortality among those aged 15-64 taken as 18.74 million (United Nations, Department of Economic and Social Affairs, Population Division, *World Population Prospects:* The 2010 Revision. Available from http://esa.un.org/unpd/wpp).

Map 1. Prevalence of cannabis use in 2010 (or latest year)



Source:UNODC estimates based on annual report questionnaire data and other official sources.
Note: The boundaries and names shown and the designations used on this map do not imply official endorsement or acceptance by the United Nations. Dashed lines represent undetermined boundaries. 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 Republic of Sudan and the Republic of South Sudan has not yet been determined

Global cocaine use has remained stable at 0.3-0.4 per cent of the population aged 15-64 (between 13.2 million and 19.5 million users) but there have also been some shifts in its use, with a substantial decrease in the prevalence of cocaine use in North America and in some countries in South America and indications of increases in Oceania, Asia, Africa and some countries in South America.

Global use of "ecstasy"-group substances, estimated at 0.2-0.6 per cent of the population aged 15-64 (between 10.5 million and 28 million users), is at levels comparable to those of cocaine use. But while "ecstasy" use is on the decline in Oceania, where its prevalence remains high at 2.9 per cent — essentially reflecting the situation in Australia and New Zealand — there is evidence that there is a possible resurgence in "ecstasy" use in both Europe and the United States.

In general, illicit drug use among males greatly exceeds that among females; however, a notable exception to the rule is the non-medical use of tranquillizers and sedatives. Current trends in countries for which data are available show that non-medical use of tranquillizers and sedatives is more prevalent among females than males and, frequently, the annual prevalence among females even exceeds that of cannabis. This can be observed in adult and youth populations.

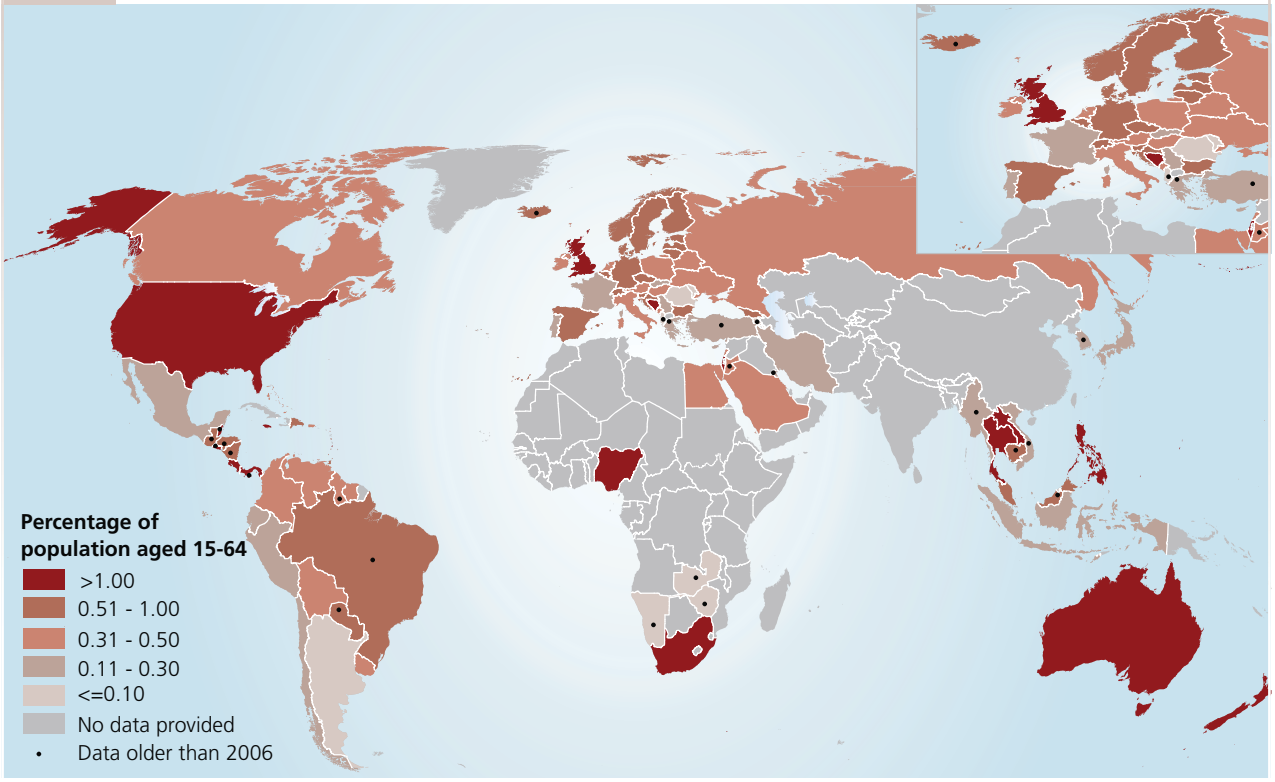
The use of new psychoactive synthetic substances that mimic the effects of controlled substances and are chemically engineered to remain outside international control continues to evolve rapidly, with new substances being identified in the market. In 2010, many countries, particularly in Europe, North America and Oceania, reported the use of such substances as an emerging trend. It is one that requires close monitoring.

Cannabis

Cannabis remains the most widely used illicit substance globally, with an estimated annual prevalence in 2010 of 2.6-5.0 per cent of the adult population (between 119 million and 224 million users aged 15-64 years). Overall, annual prevalence of cannabis use remained stable in 2010 (2.8-4.5 per cent of the adult population in 2009), the highest prevalence of cannabis use being reported in Oceania (essentially Australia and New Zealand) at 9.1-14.6 per cent, followed by North America (10.8 per cent), Western and Central Europe (7.0 per cent) and West and Central Africa (5.2-13.5 per cent). While the prevalence of cannabis use in Asia (1.0 - 3.4 per cent) remains lower than the global average, due to Asia's large population the absolute number of users in Asia, estimated between 26 million and 92 million, remains the highest worldwide.

In 2010, experts from many countries in West and Central Africa, Southern Africa, South Asia and Central Asia reported a perceived increase in cannabis use. Cannabis use has remained stable in North America (at an annual

Map 2. Prevalence of amphetamine-type stimulants (excluding "ecstasy") in 2010 (or latest year)



Source: UNODC estimates based on annual report questionnaire data and other official sources.
Note: The boundaries and names shown and the designations used on this map do not imply official endorsement or acceptance by the United Nations. Dashed lines represent undetermined boundaries. 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 Republic of Sudan and the Republic of South Sudan has not yet been determined.

prevalence of 10.8 per cent), as well as in Oceania (at an annual prevalence of 9.1-14.6 per cent), while it has actually decreased in South America (from 2.9-3 per cent in 2009 to 2.5 per cent in 2010). The latter essentially reflects revised estimates based on new data for the region.

Amphetamine-type stimulants (excluding "ecstasy")

ATS (excluding "ecstasy") have an estimated prevalence of 0.3-1.2 per cent in 2010, or between 14 million and 52.5 million estimated global users. This group of drugs remains the second most widely used globally. Oceania, North America and Central America are the regions with a high prevalence of ATS use, but experts from countries in Asia, not only in East and South-East Asia but also in Central Asia and Transcaucasia, have reported an increase in ATS use. With reports of increasing seizures of methamphetamine, it is speculated that the use of ATS is likely to increase in those regions.

Opioids

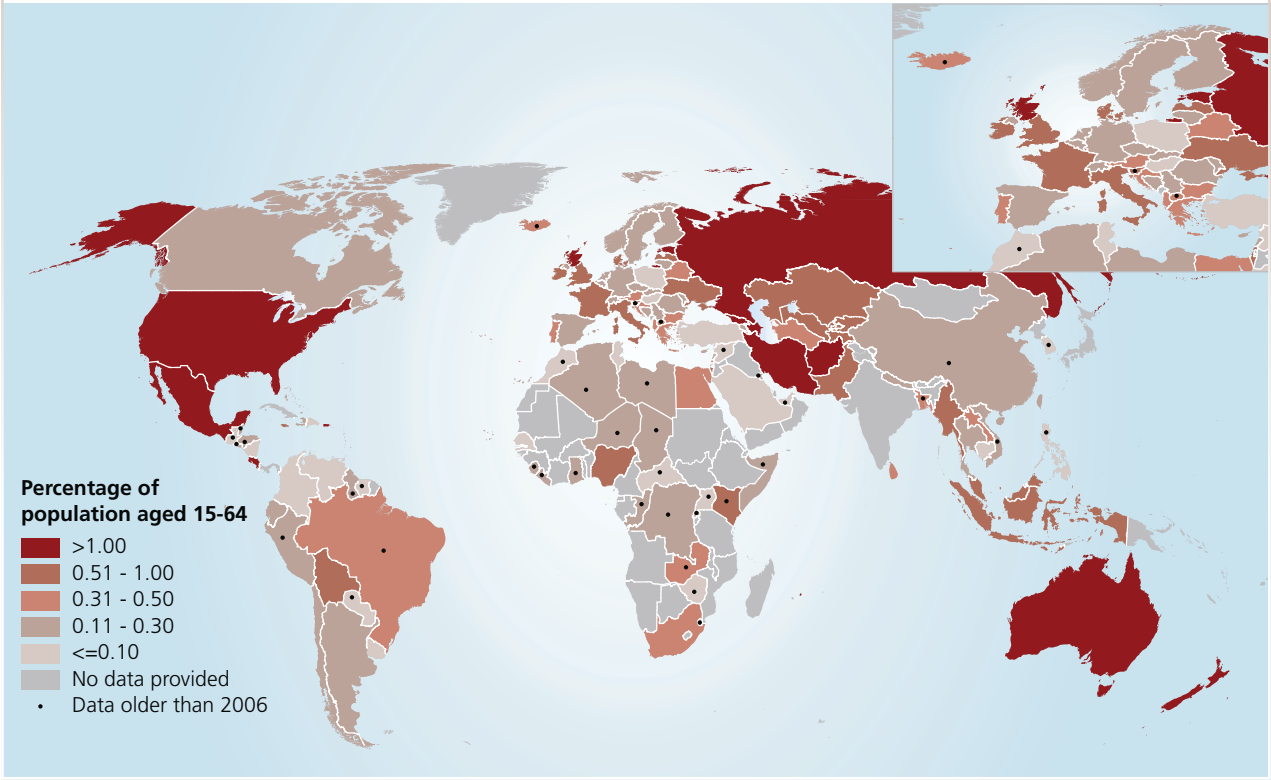
The estimated annual prevalence of opioids in 2010 was 0.6-0.8 per cent of the population aged 15-64 (between 26 million and 36 million opioid users), nearly half of whom used opiates, particularly heroin. The estimated annual prevalence of opiate use is between 0.3 and 0.5 per cent of the adult population (between 13 million and 21 million past-year users). North America (3.8-4.2 per cent), Oceania (2.3-3.4 per cent) and Eastern Europe and South-Eastern Europe (1.2 - 1.3 per cent) are the regions with a higher than global average prevalence of opioid users. It is important to note, however, that in North America and Oceania prescription opioids are used more than heroin, whereas in Eastern Europe and South-Eastern Europe, opiates (heroin and, to a lesser extent, "kompot"[2]) are the main concern (prevalence of opiate use is estimated at 0.8 per cent).

In 2010, an increase in heroin users was observed in South Asia and in East and South-East Asia in particular,[3] but experts from many African countries also reported a perceived increase in the use of heroin. In comparison with other regions, opiate use in Europe has been reported as showing a declining or stable trend, particularly in countries with substantial opiate use. Furthermore, reports from European countries such as Estonia and Finland suggest that the use of synthetic opioids, particularly fentanyl and buprenorphine, may have displaced heroin use, while in some parts of the Russian Federation reports suggest that

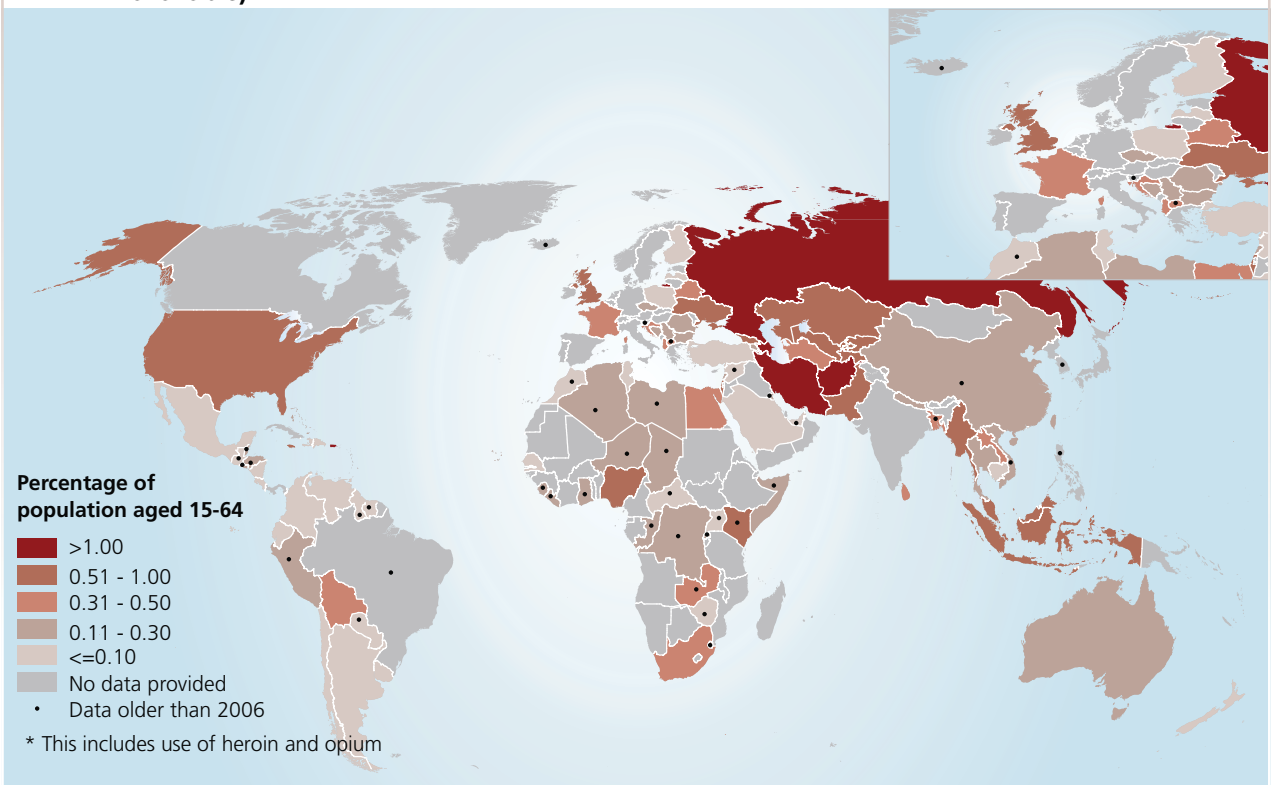
2 A preparation made from boiled poppy straw and certain acids, typicallyontaining morphine, codeine, monoacetylmorphine and diacetylmorphine (heroin), which is usually injected.

3 The observed increase is the result of revised estimates of opiate users in Asia, mainly in Armenia, Azerbaijan and Georgia in Central Asia and Transcaucasia and in Indonesia, Singapore and Sri Lanka in South Asia and South-East Asia.

Map 3. **Prevalence of the use of opioids (heroin, opium and non-medical use of synthetic opioids) in 2010 (or latest year)**

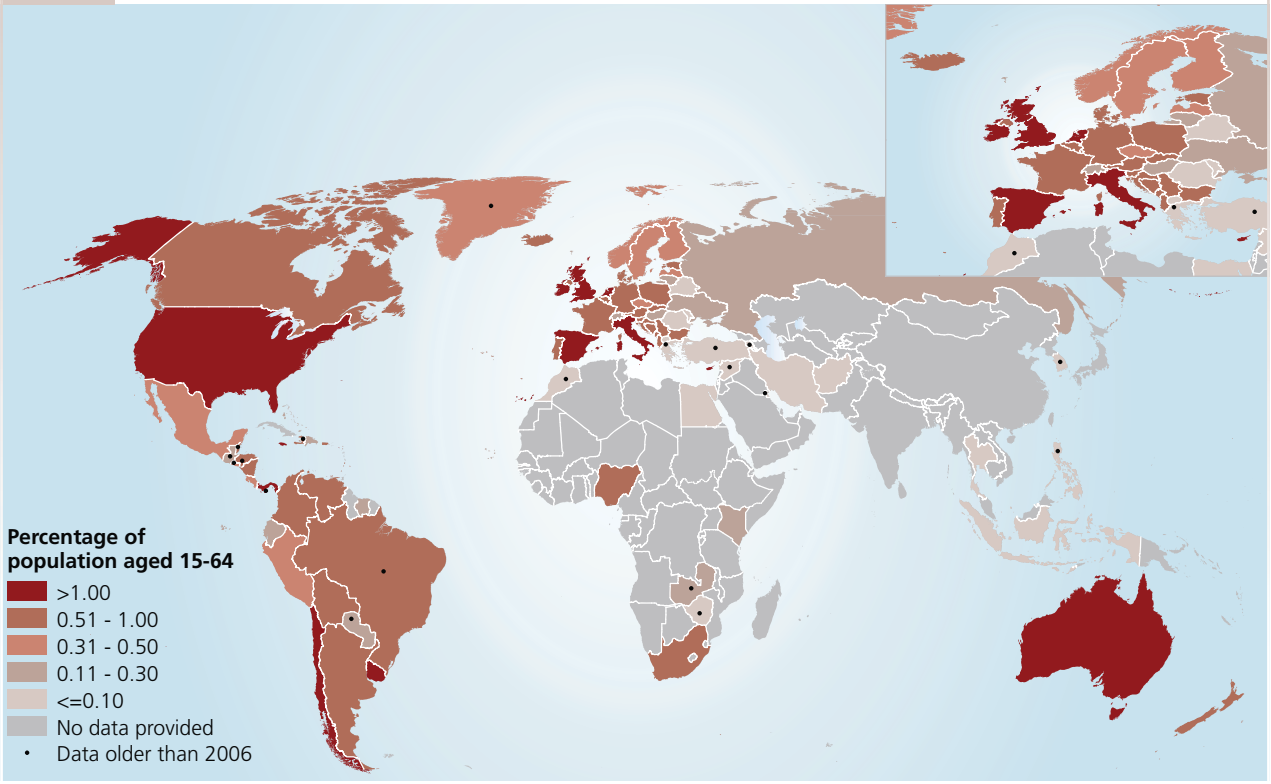


Map 4. **Prevalence of the use of opiates (heroin or opium) in 2010 (or latest years for which data are available)**



Source (map 4 and 5): UNODC estimates based on annual report questionnaire data and other official sources.
Note: The boundaries and names shown and the designations used on these maps do not imply official endorsement or acceptance by the United Nations. Dashed lines represent undetermined boundaries. 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 Republic of Sudan and the Republic of South Sudan has not yet been determined.
Note: According to the Government of Canada, data on heroin use based on the household survey is not reportable and the Government of Canada does not report an estimate based on indirect methods.

Map 5. Prevalence of cocaine use in 2010 (or latest year)



Source: UNODC estimates based on annual report questionnaire data and other official sources.
Note: The boundaries and names shown and the designations used on this map do not imply official endorsement or acceptance by the United Nations. Final boundary between the Republic of Sudan and the Republic of South Sudan has not yet been determined. Dashed lines represent undetermined boundaries. 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 Republic of Sudan and the Republic of South Sudan has not yet been determined.

a heroin shortage has led many heroin users to use, as a substitute for heroin, desomorphine (also known as "krokodil"), acetylated opium or fentanyl.[4] In terms of the harm to health that they cause, opioids, particularly heroin, are reported as the main type of drug that is injected and as a major cause of drug-related deaths.

Cocaine

In 2010, the regions with a high prevalence of cocaine use remained North America (1.6 per cent), Western and Central Europe (1.3 per cent) and Oceania (1.5-1.9 per cent) — the latter effectively reflecting its use in Australia and New Zealand. While global estimates of cocaine use have remained stable at 0.3-0.4 per cent of the population aged 15-64 (between 13 million and 19.5 million users), a substantial decrease was reported in North America and some countries in South America, with the annual prevalence of cocaine use in North America decreasing from 1.9 per cent in 2009 to 1.6 per cent in 2010. The overall average in South America decreased from 0.9 to 0.7 per cent in the same period, reflecting revised estimates in Argentina and a marked decline in Chile. There is a perceived increase in cocaine use in Brazil, but the lack of new data for that country prevents a better understanding of the impact on regional estimates. On the other hand, there was an increase in cocaine use reported in Oceania, from an estimated 1.4-1.7 per cent in 2009 to 1.5-1.9 per cent in 2010, essentially reflecting the increase in cocaine use in Australia,[5] whereas cocaine use remained stable in Western and Central Europe.

North America and Western and Central Europe remain the two main regions in terms of their high numbers of cocaine users, with nearly one quarter of global estimated cocaine users in Western and Central Europe (4.2 million past-year cocaine users) and more than one third in North America (5 million past-year cocaine users). While there are limited data available on cocaine use in Africa and parts of Asia, there are indications of increasing or emerging cocaine use in those regions. For example, anecdotal information on increasing cocaine trafficking through African coastal countries, as well as limited data on drug use from some countries, suggest an increase in cocaine use in those countries.

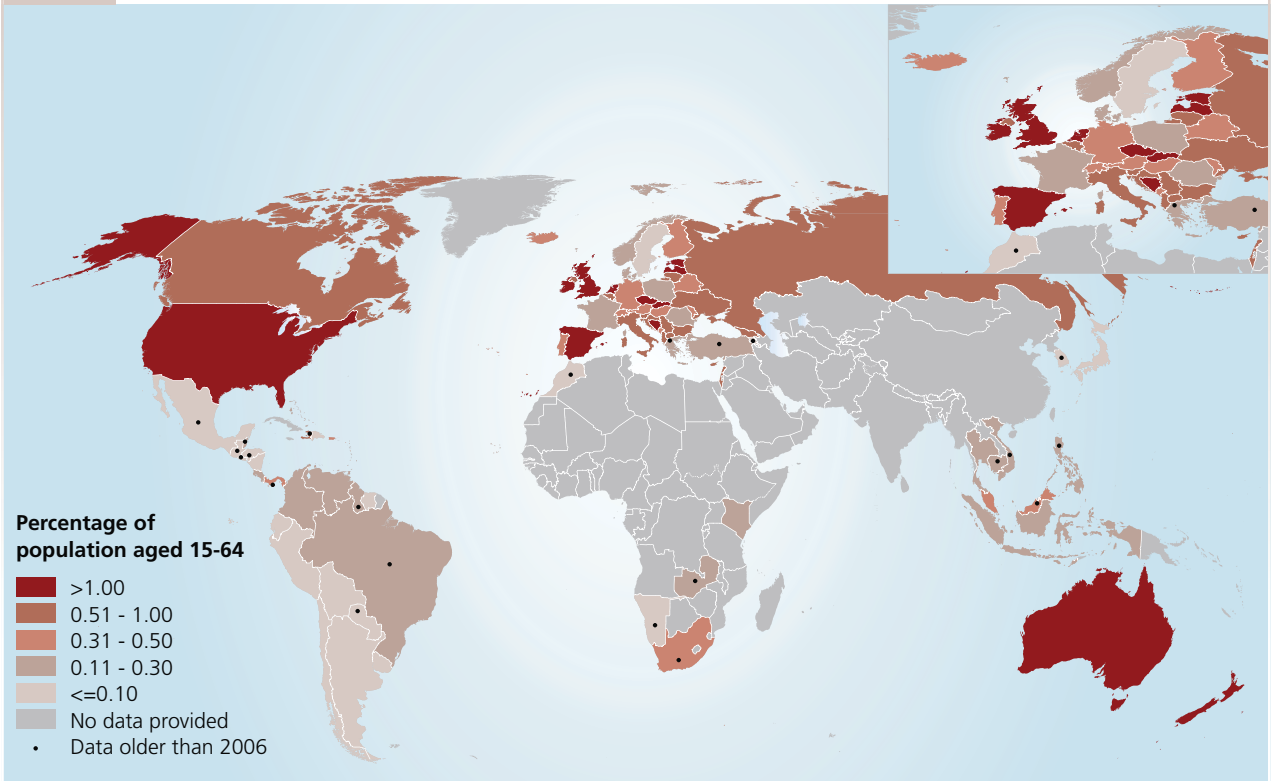
"Ecstasy"

In 2010, the use of "ecstasy"-group substances — primarily methylenedioxymethamphetamine (MDMA) and its

4 Information provided by the Russian Federation in the annual report questionnaire (2010).

5 The annual prevalence of cocaine use among persons 14 years of age and older increased from 1.6 per cent in 2007 to 2.1 per cent in 2010.

Map 6. Prevalence of "ecstasy" use in 2010 (or latest year)



Source: UNODC estimates based on annual report questionnaire data and other official sources.
Note: The boundaries and names shown and the designations used on this map do not imply official endorsement or acceptance by the United Nations. Dashed lines represent undetermined boundaries. 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 Republic of Sudan and the Republic of South Sudan has not yet been determined.

analogues — was at levels comparable to those of cocaine use. Globally, the annual prevalence of "ecstasy" use is estimated at 0.2-0.6 per cent of the population aged 15-64 (between 10.5 million and 28 million users) but higher rates were reported in Oceania (2.9 per cent), North America (0.9 per cent) and Western and Central Europe (0.8 per cent). The use of "ecstasy" is particularly high among young people. For example, in the United States, of the 2.6 million past-year "ecstasy" users in 2010, nearly 2.5 million were among those aged 14-34, while in Europe, of the estimated 2.5 million people who had used "ecstasy" in the past year, 2 million were estimated to be 15-34 years of age.[6]

While "ecstasy" use had previously been declining, it appears that it started to increase in 2010. In Europe, overall trends in "ecstasy" use have remained stable but recent reports indicate an increase in the purity of "ecstasy" available in Europe and a possible resurgence in its use. European studies suggest that patterns of "ecstasy" use are becoming increasingly divergent and show higher prevalence of "ecstasy" use among club goers in comparison with such use among the general population.[7, 8] In the United States, there are reports of a resurgence in "ecstasy" use among 12th grade students, in particular;[9] however, there is a declining trend in the use of "ecstasy" in Australia (from 3.5 per cent in 2007 to 3.0 per cent in 2010).

Non-medical use of prescription drugs

Although global figures are not available for the non-medical use of prescription drugs other than opioids, the use of such drugs, including tranquillizers and sedatives (such as the benzodiazepine family, diazepam, flunitrazepam or temazepam; methaqualone and barbiturates) is reportedly a growing health problem, with the prevalence of these substances reported to be higher than those of several controlled substances in some population groups and countries where data are available.

6 Substance Abuse and Mental Health Services Administration, *Results from the 2010 National Survey on Drug Use and Health: Summary of National Findings.*

7 Among the European countries for which data on the prevalence of "ecstasy" use in night-life settings are available, last-year reported use ranges between 10 per cent to 75 per cent (European Monitoring Centre for Drugs and Drug Addiction, *Annual Report 2011: The State of the Drugs Problem in Europe*).

8 *Amphetamines and Ecstasy: 2011 Global ATS Assessment* (United Nations publication, Sales No. E.11.XI.13).

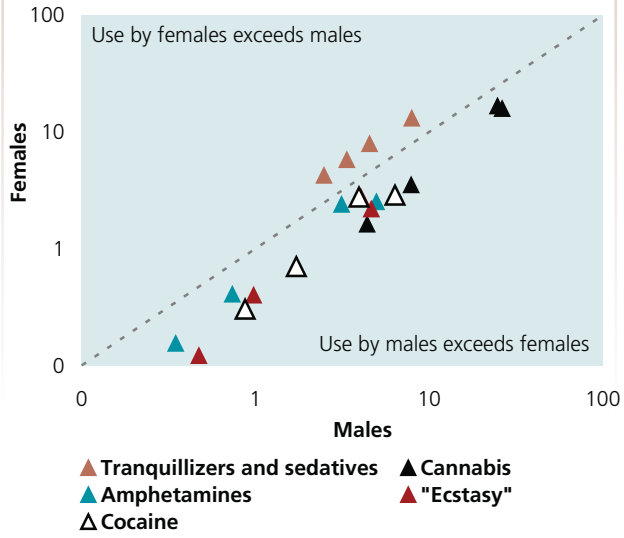
9 Lloyd D. Johnston and others, *Monitoring the Future: National Results on Adolescent Drug Use—Overview of Key Findings,* 2011 (Ann Arbor, Michigan, University of Michigan, Institute for Social Research, 2012).

In the United States, for example, lifetime, annual and monthly prevalence of the non-medical use of psychotherapeutics (principally pain relievers) for persons aged 12 and over was reported to be 20.4 per cent, 6.3 per cent and 2.7 per cent, respectively, for 2010,[10] which are higher rates than for any other drug type other than cannabis. There was also a statistically significant increase in the use of pharmaceuticals for non-medical purposes in Australia, with annual prevalence for persons aged 14 and over rising from 3.7 per cent in 2007 to 4.2 per cent in 2010.[11]

Illicit use of tranquillizers and sedatives: an alarming pattern among females

In general, illicit drug use among males greatly exceeds that among females. A notable exception to this rule, however, in countries where data are available, is the use of tranquillizers and sedatives among females (see figure 2).

Fig. 2. Lifetime, annual and past-month prevalence of drug use by gender among adults, and lifetime prevalence among young people in Europe



Source: UNODC, data from the annual report questionnaire for adult prevalence; European School Survey Project on Alcohol and Other Drugs 2007 data (weighted by population) for lifetime use by young people.

A survey on drug use in Afghanistan, conducted in 2009 by UNODC and the Ministry of Counter Narcotics in Afghanistan,[12] found that more than 10 per cent of drug users interviewed had used tranquillizers without a medical prescription at some point in their lives. Female drug users were twice as likely to have used tranquillizers than males and most of the women were daily users, but the same could be said of only half of the men who reported the use of tranquillizers.

Furthermore, according to available data covering the period 2005-2010, in 8 countries in South America and Central America and 14 countries in Europe, lifetime, annual and last-month prevalence of the use of tranquillizers and sedatives among females far exceeded that of males (see figure 3). In South America and Central America, for example, lifetime prevalence is 6.6 per cent for females and 3.8 per cent for males, while the corresponding prevalence rates in Europe were 13.0 per cent for females and 7.9 per cent for males.[13] In fact, the annual and past-month prevalence for tranquillizer and sedative use among females in all these regions had the highest prevalence among illicit drugs, exceeding even cannabis.[14]

The situation with regard to illicit drug use among young people in Europe is similar. Based on data from school surveys in Europe,[15] lifetime prevalence of the use of tranquillizers and sedatives without a doctor's prescription is much higher among females than among males (8 per cent versus 5 per cent in 2007), in contrast to all other drug types. The use of tranquillizers and sedatives among female students far exceeds that of any other illicit drug, with the exception of cannabis. Particularly high rates for lifetime prevalence are noted among young people in Poland (11 per cent among males; 24 per cent among females), Lithuania (9 per cent among males; 21 per cent among females) and France (12 per cent among males; 18 per cent among females).[16]

Elsewhere, a school survey conducted in 2009/10 in Morocco[17] found that lifetime, annual and past-month prevalence of the use of psychotropic substances without a prescription exceeded that of cannabis among females aged 15-17, while among young males cannabis, cocaine and "crack" were the most widely used drugs. Similarly, there is an evident preference for psychotropic drugs among females 15-16 years old in Algeria, which exceeds not only cannabis use but also alcohol and tobacco use.[18]

10 Substance Abuse and Mental Health Services Administration, *Results from the 2010 National Survey on Drug Use and Health: Summary of National Findings*.

11 Australian Institute of Health and Welfare, *2010 National Drug Strategy Household Survey Report*, Drug Statistics Series, No. 25 (Canberra, July 2011).

12 United Nations Office on Drugs and Crime, "Drug use in Afghanistan: 2009 survey—executive summary", June 2010.

13 Similar differences exist for annual and past-month prevalence: in South America, annual and past-month prevalence of the use of tranquillizers and sedatives is 2.6 and 1.3 per cent among females and 1.7 and 0.8 per cent among males; in Europe the corresponding prevalence rates are 5.8 and 4.2 per cent among females and 3.4 and 2.5 per cent among males.

14 Monthly prevalence of tranquillizer use among females in South America (1.3 per cent) and Europe (4.2 per cent) is greater than the corresponding annual prevalence of use of cannabis in South America (1.0 per cent) and Europe (3.5 per cent).

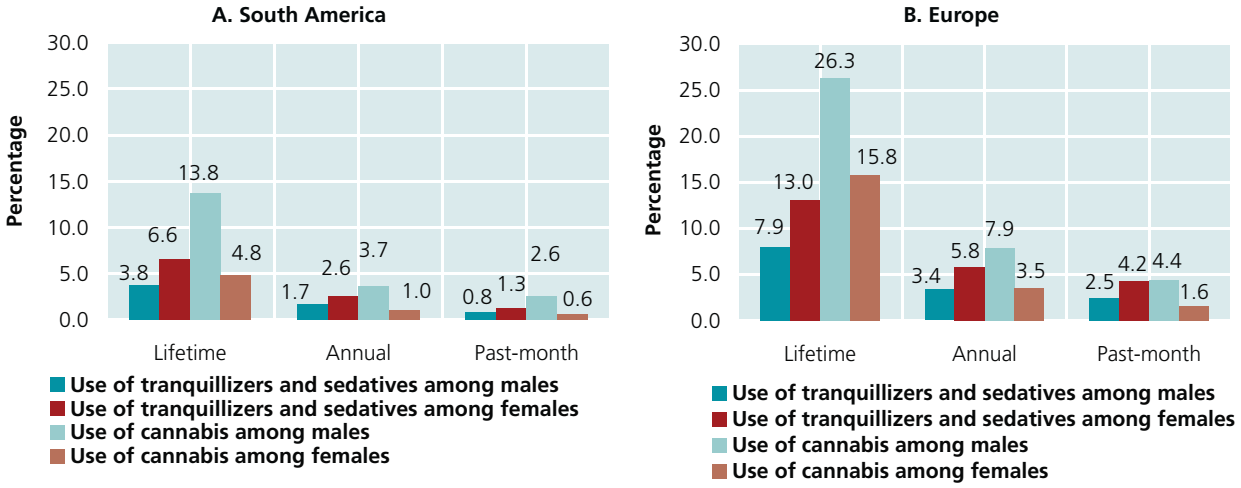
15 B. Hibell and others, *The 2007 ESPAD Report: Substance Use among Students in 35 European Countries* (Stockholm, Swedish Council for Information on Alcohol and Other Drugs, 2009).

16 Ibid.

17 Council of Europe, Pompidou Group, MedNET Network, "Drug use in Moroccan schools: MedSPAD 2009-2010 report", document PG/Med (2011) 17, June 2011.

18 First results of the Mediterranean School Survey Project on Alcohol

Fig. 3. **Regional population-weighted prevalence of the use of tranquillizers and sedatives and the use of cannabis, by gender, in South America and Europe, 2005-2010**

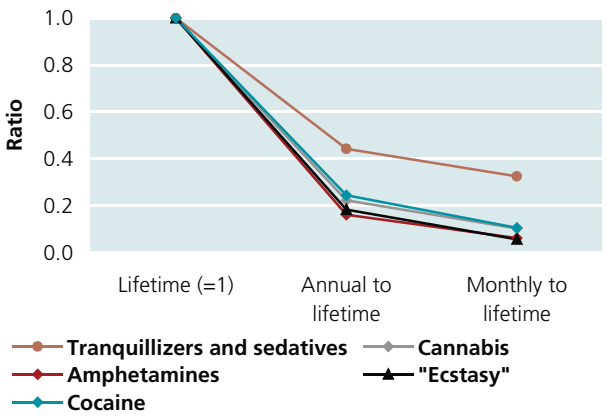


Source: UNODC, data from the annual report questionnaire.

Once started, tranquillizer use is more likely to be maintained

In general, in the normal life cycle of drug use, there is a sharp decline in lifetime, annual and past-month prevalence of illicit drug use with increasing age, indicating that most people tend to stop using drugs as adults and that relatively few people who have used an illicit substance once progress to frequent or regular (i.e. monthly) use. However, data on the non-medical use of tranquillizers and sedatives in European countries, for example, suggest that the rate of attrition for such use is much lower than that of illicit drugs, particularly among females. Indeed, more than one third of females who have tried tranquillizers and sedatives once (lifetime users) become regular (monthly) users, whereas in general less than 10 per cent of female lifetime users develop into regular (monthly) users of other drugs.

Fig. 4. **Ratio of annual and past-month prevalence to lifetime prevalence of drug use among females in Europe in 2010** (or latest year)



Source: UNODC, data from the annual report questionnaire.
Note: Based on data from 14 European countries.

New psychoactive substances

New synthetic psychoactive substances that are chemically engineered to remain outside international control are being increasingly used, identified and reported. In 2010, many countries in all regions, particularly Europe, North America and Oceania, reported the use of such substances as an emerging trend. The most notable of these substances included the methcathinone analogue 4-methyl-methcathinone (also known as mephedrone) and methylenedioxypyrovalerone (MDPV), which are often sold as bath salts or plant food and used as substitutes for controlled stimulants such as amphetamines or "ecstasy". Similarly, piperazine derivatives[19] continue to be sold as substitutes for "ecstasy", while several synthetic cannabinoids that emulate the effect of cannabis but contain products not under international control have also been detected since 2008 in herbal smoking blends sold under brand names such as Spice.

Other uncontrolled synthetic substances that are also being used to substitute or mimic the effects of controlled drugs have been reported. These substances include indanes, benzodifuranyls, narcotic analgesics (such as codeine for conversion into "krokodil" (desomorphine) in the Russian Federation), synthetic cocaine derivatives, *Salvia divinorum* (reported in Canada), ketamine (commonly reported in South-East Asia) and phencyclidine derivatives. "Krokodil" represents a crude desomorphine preparation, made from codeine using easily obtainable chemicals such as hydrochloric acid, iodine and red phosphorus. The pure compound has a potency some 10 times that of morphine; however, the process involved in making "krokodil" leads

and Other Drugs (MedSPAD) Algerian survey, December 2006.

19 These include *N*-benzylpiperazine (BZP) and 1-3-trifluoromethylphenylpiperazine.

to high concentrations of chemicals such as hydrochloric acid, iodine, phosphorous and heavy metals, which results in skin damage at the point of injection, disorders of the endocrine, nervous and muscular systems and inflammation of the liver and kidneys.

The leaves of *Salvia divinorum*, a plant native to Mexico, produce hallucinogenic effects upon ingestion or smoking due to the active constituent salvinorin A. *Salvia divinorum* products include the dried leaves, extracts/tinctures and pre-rolled "joints". "Kratom", a product derived from *Mitragyna speciosa* Korth., a South-East Asian tree, has been used for centuries to treat opioid withdrawal. "Kratom" has dose-dependent effects, producing stimulation at low doses and predominantly opioid-like effects at higher doses. Its use is most prevalent in Malaysia, Myanmar and the southern part of Thailand,[20] but online surveys conducted by the European Monitoring Centre for Drugs and Drug Addiction (EMCDDA) show that "kratom" is one of the new psychoactive products that are most widely offered on the Internet.

Health consequences of illicit drug use

Problem and injecting drug users have remained stable

UNODC estimates that the number of problem drug users[21] in 2010 was between 15.5 million and 38.6 million, or about 10-13 per cent of the global estimate of all drug users, while in 2008, according to the Reference Group to the United Nations on HIV and Injecting Drug Use, there were an estimated 16 million people who injected drugs. Both of these estimates have remained essentially stable.

Infectious diseases among injecting drug users

Injecting drugs carries a high risk of infection with bloodborne viruses such as HIV, hepatitis C and hepatitis B, and the sharing of contaminated needles and syringes is an important mode of transmission for those viruses, which pose a major public health concern, incur considerable costs to health-care services and often lead to premature death.

Of the estimated 16 million people who inject drugs, about 3 million are living with HIV. With the exception of sub-Saharan Africa, injecting drug use accounted for approximately one third of all new HIV infections reported globally in 2010.[22] The region with the highest HIV prevalence among injecting drug users is Latin America (29 per cent), followed by Eastern Europe (27 per cent) and East and South-East Asia (17 per cent), according to the Reference Group to the United Nations on HIV and Injecting Drug Use. While the use of contaminated needles and syringes has long been the major cause of HIV infections among drug users, several studies have also indicated that the administration of cocaine, "crack" cocaine and ATS by means other than injection is associated with an increased risk of HIV infections[23] as a result of unprotected sex.

UNODC also estimates that global prevalence of hepatitis C infection among injecting drug users in 2010 was 46.7 per cent, or some 7.4 million injecting drug users infected with hepatitis C worldwide (based on data extrapolated from 54 countries), while global prevalence of hepatitis B infection was estimated at 14.6 per cent, or some 2.3 million injecting drug users infected with hepatitis B (based on data extrapolated from 46 countries). Most of the information compiled by UNODC regarding viral hepatitis relates to European countries where the rate of hepatitis C infection among injecting drug users is high in comparison with the global average. However, a prevalence rate in excess of 80 per cent is noted in Estonia, Sweden and Luxembourg, while Europe also reports a high hepatitis B infection rate among injecting drug users by global standards, with particularly high rates, in excess of 70 per cent, noted in Estonia, Lithuania and the former Yugoslav Republic of Macedonia. A high reported estimate of hepatitis B and hepatitis C infections among injecting drug users in Europe is partly attributable to better coverage and monitoring of infections in Europe compared with other regions where injecting drug use is also a common practice.

Treatment demand

It is estimated that 20 per cent of problem drug users in 2010 received treatment for their drug dependence. Opioids (largely heroin) continue to be the dominant drug type accounting for treatment demand in Asia and Europe (particularly in Eastern Europe and South-Eastern Europe, where they account for almost four out of every five drug users in treatment). Opioids also contribute considerably to demand for treatment in Africa, North America and Oceania. Only in South America is demand for treatment for opioid use negligible (accounting for 1 per cent of all demand for treatment for drug dependence in the region).

Cannabis, the most widely consumed illicit drug worldwide, is considered to be the least harmful of the illicit drugs. Yet it is the dominant drug accounting for treatment demand in Africa, North America and Oceania, a major contributor to treatment demand in South America and the second most important contributor to such treatment in Europe.

20 More than 2 tons of "kratom" were seized in Malaysia in 2010. In Thailand, 28 tons of "kratom" leaves were seized in 2010, the largest total amount of "kratom" seized during the past five years.

21 Those who regularly use opiates, cocaine and amphetamines, are injecting drugs or are diagnosed with dependence or substance use disorders.

22 *UNAIDS World AIDS Day Report 2011* (Geneva, Joint United Nations Programme on HIV/AIDS, 2011).

23 G. Colfax and others, "Amphetamine-group substances and HIV", *The Lancet*, vol. 376, No. 9739 (7 August 2010).

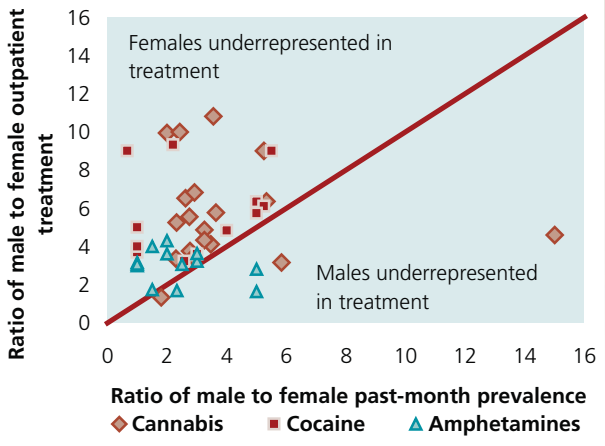
Treatment for cocaine use is largely associated with the Americas, particularly South America, where it accounts for nearly half of all treatment for illicit drug use, whereas in Asia, Eastern Europe, South-Eastern Europe and Oceania, the share of demand for treatment for drug use accounted for by cocaine use is negligible (less than 1 per cent).

Demand for treatment for the use of ATS (mostly methamphetamine), is most noticeable in Asia where such drugs are the second major contributor to treatment demand, and to a lesser extent in Oceania, Western and Central Europe and North America.

Females are underrepresented in treatment

To be equally represented in treatment, the ratio of males to females in treatment should be similar to the ratio of males to females in problem drug use. Using past-month prevalence as a proxy for problematic use,[24] gender-disaggregated data from EMCDDA on past-month prevalence and outpatient clients in treatment suggest that in most countries in Europe females could be underrepresented in treatment for the problematic use of cannabis, cocaine and amphetamines (see figure 5). There are few studies that analyse gender differences in the accessibility of treatment services; however, the ratio of males and females reported in treatment in Europe was 4:1 — higher than the ratio between male and female drug users.[25] In many developing countries, there are limited services for the treatment and care of female drug users and the stigma associated with being a female drug user can make accessibility to treatment even more difficult. In Afghanistan, for instance, 10 per cent of all estimated drug users have access to treatment services,[26] whereas only 4 per cent of female drug users and their partners have access to treatment services and interventions.

Fig. 5. Ratio of male to female past-month prevalence against outpatient treatment in Europe



Source: European Monitoring Centre for Drugs and Drug Addiction.
Note: Prevalence is based on the most recent national general population survey available since 2000 and outpatient treatment is for 2009 or the most recent year available.

Drug-related deaths

Deaths resulting from illicit drugs use, most of which are premature and preventable, are clearly the most extreme manifestation of the harm that can result from the illicit use of drugs. Definitions and methods of recording drug-related deaths vary by country but comprise some or all of the following: unintentional overdose; suicide; HIV and AIDS acquired through the sharing of contaminated drug paraphernalia; and trauma (such as motor vehicle accidents caused by driving under the influence of illicit drugs).[27]

Globally, UNODC estimates that there were between 99,000 and 253,000 deaths in 2010 as a result of illicit drug use, or between 22.0 and 55.9 deaths per million population aged 15-64 (see table 1). This is based on the reporting of numbers of drug-related deaths covering a substantial percentage of the population aged 15-64 in North America (100 per cent), Europe (100 per cent), South America (71 per cent) and Oceania (62 per cent), and to a much lesser extent in Asia (8 per cent) and Africa (less than 1 per cent). Indeed, data reported to UNODC by countries in Africa represented such a small percentage of the population that an alternative source of estimates for aggregated drug-related deaths has been used in those countries.[28] The UNODC estimate of drug-related deaths is consistent with previously published estimates prepared by the World Health Organization (WHO), the latest of which refers to 2004 when the number of drug-related deaths from illicit drug use worldwide was estimated at 245,000,[29] a total that includes AIDS-related deaths and deaths caused by hepatitis B and hepatitis C resulting from illicit drug use, whereas UNODC estimates are based on country reports that, for the most part, report only deaths caused by drug overdose and trauma related to drug abuse.

24 However, this does not reflect the frequency of use or the amounts of drugs consumed and that will no doubt have an impact on the need to seek treatment.

25 European Monitoring Centre for Drugs and Drug Addiction, "A gender perspective on drug use and responding to drug problems", Annual Report 2006: Selected Issues, No. 2 (Luxembourg, Publications Office of the European Union, 2006).

26 United Nations Office on Drugs and Crime, "Drug use in Afghanistan: 2009 survey—executive summary".

27 According to the International Statistical Classification of Diseases and Related Health Problems, tenth revision, drug-related deaths may be recorded under external causes of morbidity and mortality that may include accidents (V01-V99); differential behavioural disorders caused by use of psychoactive substances (F11, F12, F14-16, and F19). Other external causes of accidental injury (X40-X49): especially accidental poisoning by and exposure to noxious substances, intentional self-harm (X60 to X84) and intentional self poisoning by and exposure to different psychoactive substances.

28 Louisa Degenhardt and others, "Illicit drug use", in *Comparative Quantification of Health Risks: Global and Regional Burden of Disease Attributable to Selected Major Risk Factors*, vol. 1, Majid Ezaati and others, eds. (Geneva, World Health Organization, 2004).

29 World Health Organization, *Global Health Risks: Mortality and Burden of Disease Attributable to Selected Major Risks* (Geneva, 2009).

Table 1. Estimated number of drug-related deaths and rates per million population aged 15-64

Region	Number of all drug users (thousands)	Prevalence (percentage)	Number of drug-related deaths	Mortality rate per million aged 15-64
Africa	22,000-72,000	3.8-12.5	13,000-41,700	22.9-73.5
North America	45,000-46,000	14.7-15.1	44,800	147.3
South America	10,000-13,000	3.2-4.2	3,800-9,700	12.2-31.1
Asia	38,000-127,000	1.4-4.6	14,900-133,700	5.4-48.6
Europe	36,000-37,000	6.4-6.8	19,900	35.8
Oceania	3,000-5,000	12.3-20.1	3,000	123.0
Global	**153,000-300,000**	**3.4-6.6**	**99,000-253,000**	**22.0-55.9**

Source: UNODC, data from the annual report questionnaire; Inter-American Drug Abuse Control Commission; European Monitoring Centre for Drugs and Drug Addiction; Louisa Degenhardt and others, "Illicit drug use", in *Comparative Quantification of Health Risks: Global and Regional Burden of Disease Attributable to Selected Major Risk Factors,* vol. 1, Majid Ezaati and others, eds. (Geneva, World Health Organization, 2004).
Note: Data for South America include data from Central America and the Caribbean. Data for Oceania are based on data from Australia only and therefore no range is given.

The estimated number of drug-related deaths and mortality rates for 2010 reported here should be seen as a refinement of the estimates given in the previous *World Drug Report* and not necessarily as a result of changes in the number of drug-related deaths that actually occurred from the previous year. Where ranges are presented, they reflect uncertainty in the level of drug-related deaths from countries within the region where no mortality data were available. Thus, a large range is presented for Asia as only 8 per cent of its population is covered.

Drug-related deaths account for between 0.5 per cent and 1.3 per cent of all-cause mortality at the global level among persons aged 15-64,[30] but they vary considerably by region. Accounting for approximately 1 in every 20 deaths among persons aged 15-64, drug-related deaths are highest in North America and Oceania. In Asia, they account for approximately 1 in 100 deaths, in Europe 1 in 110, in Africa 1 in 150 and in South America approximately 1 in every 200 deaths. There is a higher rate of drug-related deaths in North America and Oceania because those regions have a higher number of problem drug users and better monitoring and reporting of drug-related deaths; in contrast, in Asia and Africa there is limited capacity, and the monitoring of drug-related deaths is an infrequent practice.

Regional trends in illicit drug use

Africa

Notwithstanding the fact that recent data on illicit drug use in Africa are limited, the most commonly used drug in the region continues to be cannabis, followed by ATS. Annual prevalence of cannabis use in Africa, particularly West and Central Africa, is much higher than the global average (5.2-13.5 per cent of the population aged 15-64). The estimated prevalence of the use of ATS and opioids in all African subregions remains comparable to the global average; however, cocaine use is reportedly high in West and Central Africa and Southern Africa.

Table 2. Percentage of young people currently using drugs in Liberia and Sierra Leone, based on studies with limited geographical coverage

	Cannabis	Cocaine	Heroin
Sierra Leone:			
Students	11	0.6	0.4
Street children	65	6.8	5.6
Liberia:			
Students	9	0.6	0.1

Source: Campaign for Development and Solidarity (FORUT), "Summary of baseline surveys on alcohol, drugs, cigarettes and development in Freetown" (Sierra Leone, 2011) (The school survey included 1,245 secondary school students); GOAL, "European Union substance use harm reduction programme: summary of results from main survey" (Sierra Leone, 2011) (Benjamin L. Harris and others, "Substance use behaviors of secondary school students in post-conflict Liberia: a pilot study", *International Journal of Culture and Mental Health,* 2011, pp. 1-12.)

It is speculated that increasing trafficking of cocaine through the coastal countries of West Africa is leading to an increase in cocaine use in that part of Africa.[31] A survey conducted among secondary school students and street children in Liberia and Sierra Leone shows that cocaine is being used more often than heroin (see table 2). Other substances that were used by children and youth surveyed in Sierra Leone, included benzodiazepines such as diazepam, chlorpromazine and different inhalants, while 3.7 per cent were injecting drugs.

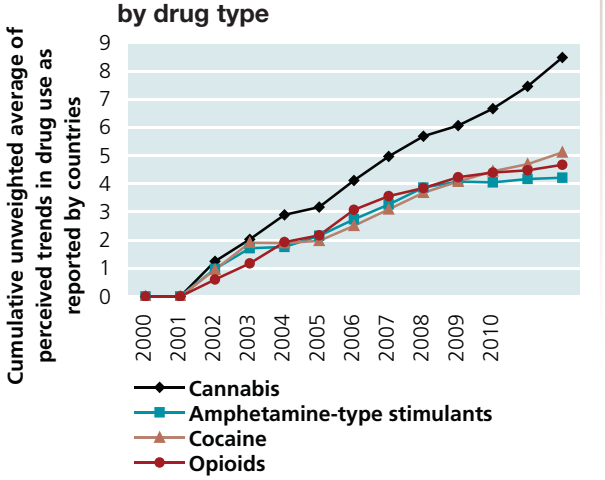
30 All-cause mortality among persons in the age group 15-64 is taken as 18.74 million. (United Nations, Department of Economic and Social Affairs, Population Division, World Population Prospects: The 2010 Revision.)

31 Given the forensic capacity in some African States to properly identify substances, it is debatable whether the actual chemical composition of the substance referred to is actually cocaine. The same applies to the other synthetic substances being reported.

In Africa, the increasing use of heroin and drug injecting is also emerging as an alarming trend, particularly in Kenya, Libya, Mauritius, Seychelles and the United Republic of Tanzania.[32,33] In sub-Saharan Africa, 1.78 million drug users (range: 534,500-3,022,500) are estimated to be injecting drug users, and an estimated 221,000 injecting drug users (range: 26,000-572,000) are living with HIV.[34]

In 2010, 7 out of 54 African States provided information to UNODC, and most of them reported an increasing trend in the use of cannabis and opioids (notably, Nigeria, Mozambique, South Africa (cannabis only) and Swaziland) but rather stable trends in the use of cocaine and ATS. Overall, experts from African States who reported to UNODC perceived a substantial increase in the use of all illicit drugs after 2005.

Fig. 6. Cumulative unweighted average of perceived trends in drug use in Africa, by drug type



Source: UNODC, data from the annual report questionnaire.

There are also indications that the use of ATS is spreading to other areas of Africa and has been reported in several countries, including Cape Verde, Egypt, Ghana, Nigeria and Kenya. Lifetime prevalence of the use of amphetamines and Mandrax (methaqualone) in secondary schools in Nairobi was reported to be 2.6 per cent, with 1.6 per cent of pupils reporting use of those drugs within the past 6 months. The use of Miraa (a local variant of khat) was also quite high among those pupils: 31.5 per cent had used it in their lifetime and 15.7 per cent had used it in the pre vious 6 months,[35] which comes close to the average for amphetamine use among young people in Europe.

32 Chris Beyrer and others, "Time to act: a call for comprehensive responses to HIV in people who use drugs", *The Lancet*, vol. 376, No. 9740 (14 August 2010), pp. 551-563.

33 Reference Group to the United Nations on HIV and Injecting Drug Use (2011 estimates).

34 Ibid.

35 Peter Koome and National Campaign against Drug Abuse Authority, "Role of school environment in alcohol and drug abuse among students: evidence from public secondary school students in Nairobi", in *Promotion of Evidence-Based Campaign: National Alcohol and Drug Abuse Research Workshop—2011 Report* (National Campaign against Drug Abuse Authority, March 2011), pp. 28-30.

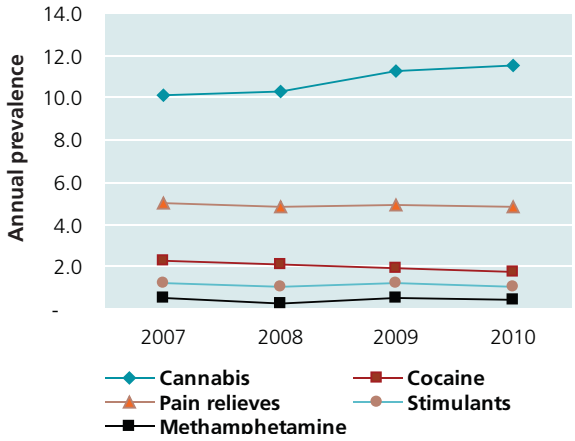
Cannabis and opioids are the two main substances contributing to demand for treatment for illicit drug use in Africa, with 64 per cent of all treatment for drug use reportedly provided for disorders related to cannabis use.

The Americas

The Americas remain major consumers of illicit drugs. Annual prevalence of the use of cannabis (6.6-6.9 per cent), opioids (2.0-2.3 per cent), cocaine (1.1-1.2 per cent), ATS (0.9-1.1 per cent) and "ecstasy"-group substances (0.5-0.6 per cent) all remain higher than the global average. In contrast to most other regions, in the Americas, prescription opioids are more commonly used than heroin.

In North America, the non-medical use of prescription drugs, especially pain relievers (narcotic analgesics) and stimulants, remains a major problem. While it is still a major cocaine market, North America recorded a decline in cocaine use, from an estimated annual prevalence of 1.9 per cent in 2009 to 1.6 per cent in 2010.

Fig. 7. Annual prevalence of illicit drug use among the population aged 12 and over in the United States, 2007-2010 (Percentage)



Source: United States of America, Department of Health and Human Services, Substance Abuse and Mental Health Services Administration, *Results from the 2010 National Survey on Drug Use and Health: Detailed Tables* (Rockville, Maryland, September 2011).

In the United States, annual prevalence of cannabis use among the general population (persons 15-64 years of age) continued to increase in 2010 (to 14.1 per cent, compared with 13.7 per cent in 2009).[36,37] Similarly, as reported in a recent school survey, there was a continued increase in the annual prevalence of cannabis use among teenagers: the combined annual prevalence of cannabis use among high school students was reported to be 25 per cent in

36 The increase in cannabis use, however, is not statistically significant.

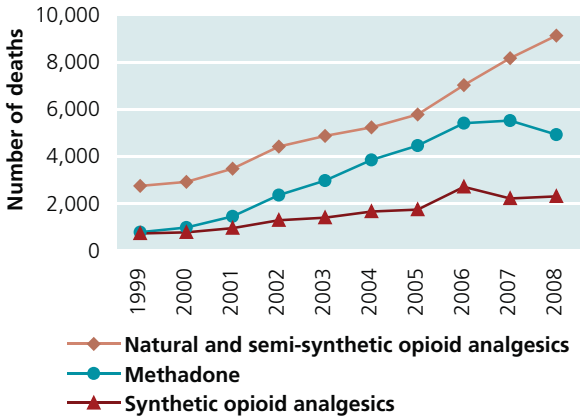
37 *World Drug Report 2011* (United Nations publication, Sales No. E.11.XI.10); Substance Abuse and Mental Health Services Administration, *Results from the 2010 National Survey on Drug Use and Health: Summary of National Findings.*

2011, compared with 24.5 per cent in 2010.[38] Also, annual prevalence of the use of synthetic marijuana among schoolchildren was measured for the first time in 2011 and reported as 11.4 per cent.[39,40]

Having been reported as increasing in 2009, "ecstasy" use among the general population was stable in 2010, but its use among young people is considered to be on the way up again. Annual prevalence of "ecstasy" use among 8th and 10th grade pupils increased significantly from 2009 to 2010 (from 1.3 to 2.4 per cent and from 3.7 per cent to 4.7 per cent, respectively) but declined in 2011 (to 1.7 per cent and 4.5 per cent, respectively), while "ecstasy" use among 12th grade students increased in 2011 (to 5.3 per cent, compared with 4.5 per cent in 2010).[41]

The estimates of past-year non-medical users of psychotherapeutic drugs, including prescription opioids, tranquillizers and stimulants, as well as cocaine, remained stable in 2010. Annual prevalence of the use of psychotherapeutic drugs among the population aged 12 and over was 6.3 per cent in 2010 (4.8 per cent for prescription opioids, 2.2 per cent for tranquillizers and 1.1 per cent for stimulants), while for cocaine use it was 1.8 per cent.[42]

Fig. 8. Opioid analgesics involved in deaths from drug poisoning in the United States, 1999-2008



Source: Margaret Warner and others, "Drug poisoning deaths in the United States, 1980-2008", *NCHS Data Brief*, No. 81, December 2011.

Drugs that showed evidence of decline among high school students in the reporting year include inhalants, cocaine and "crack", hydrocodone (a narcotic analgesic), prescription stimulants, sedatives, tranquillizers and over-the-counter cough and cold medicines used for the purpose of "getting high".[43]

In Canada, *Salvia divinorum,* a naturally occurring psychoactive plant not under international control, emerged as a substance of concern in 2009. In 2010, an estimated 1.6 per cent of Canadians aged 15 years and over had used salvia in their lifetime and 0.3 per cent reported having used it in the past year. However, its use seems to be more popular among young people, with 6.6 per cent of persons in the age group 15-24 reporting lifetime use and statistically significantly higher rates of past-year use (0.6 per cent) than reported by adults.[44] Trends in the use of most other drugs in Canada were reported as stable, while there was a further decline reported in past-year "ecstasy" use (from 0.9 per cent in 2009 to 0.7 per cent in 2010).[45]

North America reported a large number of deaths from illicit drug use in 2010: an estimated 44,800 deaths, or (conservatively estimated) one in five of the global total. The number of deaths attributed to the non-medical use of prescription painkillers in the United States has risen steadily to a level that now exceeds the combined number of deaths due to heroin use (5,100 deaths) and cocaine use (3,000 deaths).[46] As reported by the United States Centers for Disease Control and Prevention, "poisoning is the leading cause of death from injuries — higher than from motor vehicle traffic — with nearly 9 out of 10 poisoning deaths caused by drugs".[47]

South America, Central America and the Caribbean

The prevalence of cocaine use in South America, Central America and the Caribbean remains high (0.7 per cent, 0.5 per cent and 0.7 per cent, respectively). In Central America, annual prevalence of ATS use has been reported to be higher than the global average, particularly in El Salvador (3.3 per cent), Belize (1.3 per cent), Costa Rica (1.3 per cent) and Panama (1.2 per cent). The misuse of pharmaceutical preparations containing opioids, stimulants and prescription stimulants also remains of concern in Central America and South America.

38 The increase in cannabis use has been attributed to the falling perceived risk of cannabis use, which has been declining for the past five years.

39 The Drug Enforcement Administration (DEA) scheduled synthetic marijuana in March 2011 making its possession and sale no longer legal. The authors (Johnson and others, *Monitoring the Future: National Results on Adolescent Drug* Use) report that the next year's survey results should reflect any effects of scheduling by DEA.

40 Johnston and others, *Monitoring the Future: National Results on Adolescent Drug Use*.

41 Ibid.

42 United States of America, Department of Health and Human Services, Substance Abuse and Mental Health Services Administration, *Results from the 2010 National Survey on Drug Use and Health: Detailed Tables* (Rockville, Maryland, September 2011).

43 Johnston and others, *Monitoring the Future: National Results on Adolescent Drug Use*.

44 Canada, Health Canada, "Canadian Alcohol and Drug Use Monitoring Survey: summary of results for 2010" (Ottawa, 2010).

45 Information provided by Canada in the annual report questionnaire (2009, 2010); Health Canada, "Canadian Alcohol and Drug Use Monitoring Survey".

46 Margaret Warner and others, "Drug poisoning deaths in the United States, 1980-2008", *NCHS Data Brief*, No. 81, December 2011.

47 "Vital signs: overdoses of prescription opioid pain relievers-United States, 1999-2008", *Morbidity and Mortality Weekly Report*, vol. 60, No. 43 (4 November 2011), pp. 1487-1492.

Table 3. Annual prevalence of the use of stimulants among young people in selected South American countries

	Stimulant			Age group	Year of estimate
	"Ecstasy"	Cocaine	ATS		
Argentina	2.0	2.9	2.0	15-16	2009
Chile	1.6	4.9	1.9	15-16	2009
Colombia	2.8	1.7	3.2	12-17	2005
Uruguay	-	2.6	1.2	13-17	2009

Source: UNODC, data from the annual report questionnaire (2010).

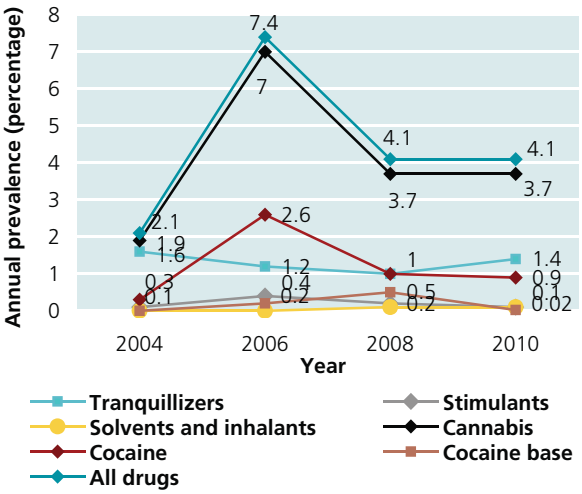
Concern over rising levels of the use of synthetic drugs such as "ecstasy" among South American youth also continues to grow, with prevalence of the use of stimulants (cocaine, amphetamine and "ecstasy") among young people reported to be high, particularly in Argentina, Chile, Colombia and Uruguay (see table 3).

Several countries in South America, such as Argentina, El Salvador, Peru and Uruguay, have also reported the use of ketamine. Lifetime prevalence of ketamine use in Argentina and Uruguay is reported to be 0.3 per cent; however, many studies of drug use among the general population in the region do not include the use of ATS.[48] According to information reported in Argentina and Chile in 2010, most drug use remained stable in Argentina, while in Chile there were declining trends in cocaine and cannabis use (see figure 9). In the Bolivarian Republic of Venezuela, data for 2011 show prevalence of cocaine use among the adult population to be 0.7 per cent, a small increase from the previous estimate of 0.6 per cent, while the prevalence of cannabis use is 1.7 per cent (an increase from the previous estimate of 0.9 per cent), opioid use is 0.03 per cent and ATS use is 0.5 per cent.[49] While there are no recent data on illicit drug use in Brazil, experts perceived an increase in cocaine use in 2010.

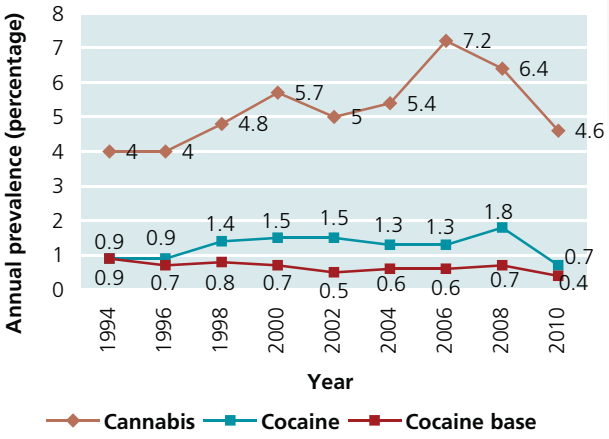
In South America, the rate of drug-related deaths is estimated to be between 12.2 and 31.1 deaths per million population aged 15-64, well below the global average. Throughout the region, cocaine continues to be ranked the most lethal drug; however, it appears that in some countries in Central America and the Caribbean, higher homicide rates are, in part, linked to organized crime and conflicts related to cocaine trafficking flows and cocaine markets.[50]

Fig. 9. Annual prevalence of drug use in Argentina and Chile

A. Argentina: annual prevalence of the use of tranquillizers, stimulants, solvents and inhalants, and cannabis, 2004-2010



B. Chile: annual prevalence of the use of cannabis, cocaine and cocaine base, 1994-2010



Source: Argentina, Secretaría de Programación para la Prevención de la Drogadicción y Lucha contra el Narcotráfico (SEDRONAR), *Tendencia en el Consumo de Sustancias Psicoactivas en Argentina 2004-2010: Población de 16 a 65 Años* (June 2011); Chile, Consejo Nacional para el Control de Estupefacientes (CONACE), *Noveno Estudio Nacional de Drogas en Población General de Chile, 2010: Principales Resultados* (2010).

Asia

Apart from cannabis, the use of opioids (especially heroin) and ATS are of primary concern in Asia. Annual prevalence of the use of opiates (heroin and opium) in Asia is comparable to the global average. While experts in most coun-

48 For instance, the 2008 subregional collaborative study on drug use among the general population reports only the use of alcohol, tobacco, cannabis, and cocaine (United Nations Office on Drugs and Crime and Inter-American Drug Abuse Control Commission (CICAD), *Elementos Orientadores para las Políticas Públicas sobre Drogas en la Subregión: Primer Estudio Comparativo sobre Consumo de Drogas y Factores Asociados en Población de 15 a 64 Años* (Lima, April 2008)).

49 Bolivarian Republic of Venezuela, Oficina Nacional Antidrogas and Observatorio Venezolano de Drogas "Estudio Nacional de Drogas en Población General 2011".

50 United Nations Office on Drugs and Crime, *2011 Global Study on Homicide: Trends, Contexts, Data* (2011).

tries in Asia consider the use of cannabis and ATS to be increasing overall, the use of opioids and "ecstasy" is perceived to be stable. In the Near and Middle East, the increased use of synthetic and prescription drugs has also been reported in a number of countries and territories. Ketamine use was perceived to have increased in 2010 in China (including Hong Kong, China), Malaysia and Viet Nam.

Experts in many countries in Central Asia and South-West Asia, such as Georgia, Kazakhstan, Tajikistan and Uzbekistan, reported increasing trends in cannabis use in the last reporting year (2009-2010), while Georgia also reported increasing ATS use. With increasing reports of manufacturing and seizures of methamphetamine in some parts of Central Asia and Transcaucasia and South-West Asia, it is speculated that the use of ATS is likely to emerge in that region. Opiates, particularly heroin, remain the primary drug of concern there, although most countries in the region have reported stable or decreasing trends in opiate use. Afghanistan, Iran (the Islamic Republic of), Pakistan and the Central Asian States continue to be the countries with opiate use higher than the global estimate.

In Nepal, according to the study *Mapping and Size Estimation of Most at Risk Population*, the number of injecting drug users has been estimated at 30,000-34,000 (nearly 0.18 per cent of the adult population). This represents an increase from the previous estimate of 28,500 injecting drug users in 2009,[51] most of whom are considered to be using synthetic opioids such as buprenorphine and propoxyphene. In another study among female drug users[52] in Nepal, apart from cannabis, benzodiazepines, heroin and dextropropoxyphene were the main substances being used.[53]

In East and South-East Asia, annual prevalence of ATS use is estimated to be 0.2-1.3 per cent of the population aged 15-64. The reported use of methamphetamine, particularly crystalline methamphetamine, is reported to be quite widespread. Crystalline methamphetamine is now the most commonly used drug in Brunei Darussalam, Japan, Philippines and the Republic of Korea. Treatment demand relating to the use of crystalline methamphetamine has also increased considerably.[54] Use of crystalline methamphetamine accounts for most of the demand for treatment for drug use in countries such as Brunei Darussalam and the Republic of Korea.

51 Nepal, National Centre for AIDS and STD Control, *Mapping and Size Estimation of Most-at-Risk Population in Nepal–2011*, vol. 2, *Injecting Drug Users* (2011).

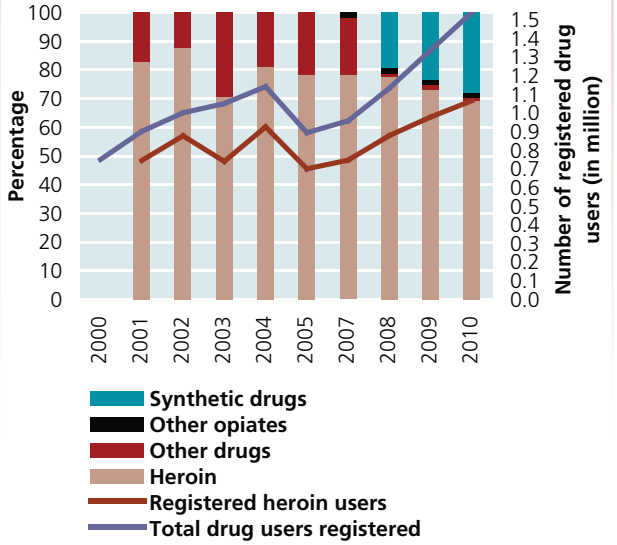
52 Although national estimates of drug use in Nepal are not available, it is estimated that about 7 per cent of all drug users are women.

53 United Nations Office on Drugs and Crime and Nepal, Ministry of Home Affairs, *Profile, Drug Use Pattern, Risk Behaviour and Selected Bio-Markers of Women Drug Users from Seven Sites in Nepal* (2011).

54 United Nations Office on Drugs and Crime, *Patterns and Trends of Amphetamine-Type Stimulants and Other Drugs: Asia and the Pacific, 2011—A Report from the Global SMART Programme* (November 2011).

In China, opioids, mainly heroin, are the primary drug of concern, followed by ATS and tranquillizers. The proportion of the total number of registered drug users who use heroin as a primary drug decreased from 83 per cent in 2001 to 69.2 per cent in 2011. However, the total number of heroin users in the registry has continued to increase, together with the total number of registered drug users: the number of registered heroin users in 2010 increased by 43 per cent compared with the figure for 2007 (from 746,000 in 2007 to over 1 million in 2010). Along with this, the proportion of synthetic drug users in China that are registered increased from 19 per cent of total drug users in the country in 2008 to 28 per cent in 2010.

Fig. 10. Trends in registered drug users and distribution of registered drug users in China, by drug type, 2000-2010



Source: China, National Narcotics Control Commission, *Annual Report on Drug Control in China* (n.p., n.d.). It should be noted that only starting from 2008 data on registered drug users could be disaggregated for synthetic drugs.

Injecting drug use is also an increasing concern in East and South-East Asia, with an estimated 3.9 million (range: 3,043,500-4,913,000) drug users injecting mostly opioids and, to a lesser extent, methamphetamine, while an estimated 661,000 (range: 313,333-1,251,500) injecting drug users are living with HIV, according to the Reference Group to the United Nations on HIV and Injecting Drug Use.

In South Asia, experts in Bhutan and Sri Lanka reported an increase in the use of cannabis and ATS and a stable trend or decrease in the use of opioids. In Bangladesh, the use of ATS has become quite widespread, especially in urban areas where methamphetamine tablets are widely available. In terms of treatment demand, opioids continued to be the primary drug for which the majority of drug users are treated in the region.

Europe

With an annual prevalence of 5.2 per cent, cannabis remains the most commonly used substance in Europe, followed by cocaine, ATS and opioids (mostly heroin). After North America, Western and Central Europe remains a major illicit market for cocaine, with annual prevalence of cocaine use among the general population at about 1.3 per cent. In most parts of Europe, there are stable or declining trends reported in the use of opioids, cannabis, cocaine and ATS; however, the rapid emergence of new synthetic drugs and the increasing interplay between legal "highs" and illicit drug markets pose a major challenge in the region. For instance, although mephedrone has been under national control in all European Union member States since 2010, it is still being sold both online as a legal "high", as well as through the same illicit supply networks used for drugs such as "ecstasy" and cocaine. Nevertheless, opioids remain the most problematic drugs, are reported to be the primary substances responsible for demand for treatment for drug use and are a major cause of drug-related deaths in Europe.

In Western and Central Europe, while overall trends in "ecstasy" use have remained stable (annual prevalence of 0.8 per cent), recent reports indicate increasing purity in the "ecstasy" available in the region and a possible resurgence in its use. Experts in numerous countries in Eastern and South-Eastern Europe have also reported an increasing trend in the use of cannabis and ATS, including "ecstasy", while the use of opioids and cocaine is reported as stable.

In 2011, a significant increase in new cases of HIV infection and increased HIV prevalence among injecting drug users was reported in Bulgaria (Sofia only), Greece and Romania, though the HIV prevalence has been low in Greece. Additionally, Lithuania and Luxembourg were the two countries that reported an increase in new cases of HIV infection among injecting drug users (in 2011 and 2010).[55]

Despite heroin being the main opioid used in Europe, there are reports that synthetic opioids such as fentanyl and buprenorphine might have displaced its use in some countries, notably in Estonia and Finland. In Western and Central Europe, in about 5 per cent of all admissions for treatment for drug abuse, opioids other than heroin were reported as the primary drug of abuse. Fentanyl accounted for 75 per cent of such admissions in Estonia, and buprenorphine was reported as the primary drug of abuse among 58 per cent of admissions in Finland.[56] Similarly, the Russian authorities have reported that, due to a heroin shortage, desomorphine and acetylated opium have been used as substitutes for heroin throughout the Russian Federation and fentanyl has been used as a substitute in some parts of the country.[57]

Amphetamine use remained at a significant level in Europe (annual prevalence estimated at 0.6 per cent in Western and Central Europe and 0.2-0.5 per cent in Eastern and South-Eastern Europe). While the use of methamphetamine had previously been restricted to the Czech Republic and Slovakia, there have been recent reports of methamphetamine being increasingly available in Finland, Latvia, Norway and Sweden, where it is thought to be replacing amphetamine.[58]

Recent data from Western and Central Europe indicates a stable or decreasing trend in cannabis use, especially among young adults, which is also mirrored in school surveys (see table 4). The decline in cannabis use may be partly influenced by the declining trends in tobacco smoking among young people. Changes in lifestyle and fashion, the replacement of cannabis with other drugs and unfavourable perceptions about cannabis use might also explain the decreasing trend in cannabis use in Europe.[59]

Although current cocaine use in Western and Central Europe is still high (estimated at 1.3 per cent of the adult population), recent surveys in the region indicate some decline in past-year use of cocaine in countries with high prevalence rates, such as Denmark, Spain and the United Kingdom (see figure 11); a decline in cocaine use among young adults (age group 15-34) is also evident in those countries (see table 5). Nevertheless, in 2009 cocaine was reported to account for 17 per cent of all demand for treat-

Table 4. Annual prevalence of cannabis use in Western and Central Europe, by age group, 2010-2011

	Age group		
	15-24	15-34	15-64
2010	16% (10 million)	12.6% (17 million)	6.8% (23 million)
2011	15.2% (9.5 million)	12.1% (16 million)	6.7% (22.5 million)

Source: European Monitoring Centre for Drugs and Drug Addiction, *Annual Report 2010: The State of the Drugs Problem in Europe* (Luxembourg, Publications Office of the European Union, 2010).

55 European Monitoring Centre for Drugs and Drug Addiction and European Centre for Disease Prevention and Control, "Joint EMCDDA and ECDC rapid risk assessment: HIV in injecting drug users in the EU/EEA, following a reported increase of cases in Greece and Romania" (2011).

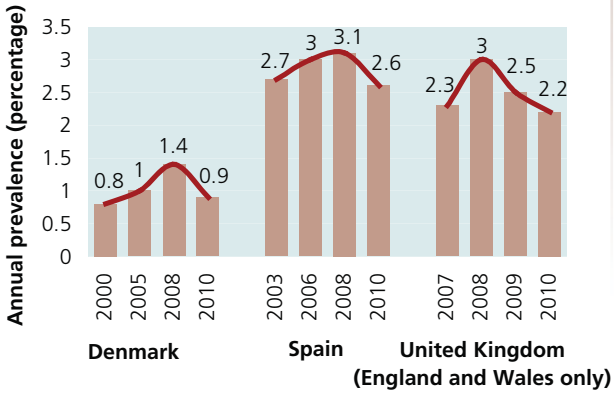
56 European Monitoring Centre for Drugs and Drug Addiction, *Annual Report 2011: The State of the Drugs Problem in Europe*.

57 Information provided by the Russian Federation in the annual report questionnaire (2010).

58 European Monitoring Centre for Drugs and Drug Addiction, *Annual Report 2011: The State of the Drugs Problem in Europe*.

59 Ibid.

Fig. 11. Recent trends in annual prevalence of cocaine use in European countries with high prevalence rates



Source: *World Drug Report* (n.d.); UNODC, data from the annual report questionnaire.

Table 5. Annual prevalence of cocaine use among young adults (age group 15-34) in Western and Central Europe, selected countries, 2010-2011

	Denmark	Spain	United Kingdom
2010	3.4%	5.5%	6.2%
2011	2.5%	4.4%	4.8%

Source: European Monitoring Centre for Drugs and Drug Addiction, *Annual Report 2010: The State of the Drugs Problem in Europe* (Luxembourg, Publications Office of the European Union, 2010).

ment for drug abuse — 23 per cent of persons entering treatment for the first time in their life — and cocaine use accounted for 900 drug-related deaths in countries in Western and Central Europe.[60]

With an annual prevalence of 0.4 per cent, opioid use in Western and Central Europe shows a stable trend, yet opioid users account for nearly half of treatment demand, and the majority of the 7,600 drug-related deaths in the region were also attributed to opioid use. Opioid users in treatment are, on average, an older cohort, with a smaller proportion among them injecting, a higher proportion reporting the use of opioids other than heroin; and they are polydrug users.

Revised data for the Russian Federation indicate annual prevalence of the use of opioids to be 2.3 per cent and the annual prevalence of heroin use: 1.4 per cent.[61] Of the 9,263 drug-related deaths reported in 2010, 6,324 were attributed to opioid use.

Oceania

The information from Oceania is primarily on the drug situation and trends in Australia and New Zealand. In Oceania, annual prevalence of the use of all drugs except heroin (cannabis use: 9.1-14.6 per cent; use of opioids: 2.3-3.4 per cent; cocaine use: 1.5-1.9 per cent; use of ATS: 1.7-2.4 per cent; and "ecstasy" use: 2.9 per cent) remain much higher than the global average (see tables 6 and 7).

In Australia, the 2010 national survey showed, an increase in the use of cocaine and cannabis (from 1.6 per cent in 2007 to 2.1 per cent in 2010 and from 9.1 per cent in 2007 to 10.3 per cent in 2010, respectively), while the use of opioids is reported to be stable (heroin use: 0.2 per cent) and the use of ATS (methamphetamine, amphetamine and "ecstasy") is reported to have decreased (methamphetamine/amphetamine use: from 2.3 per cent to 2.1 per cent in 2010; "ecstasy" use from 3.5 per cent in 2007 to 3 per cent in 2010). Cannabis remains the most prevalent drug in Australia, as well as the main substance accounting for demand for treatment for substance abuse (50 per cent), with heroin and amphetamines accounting for almost 20 per cent of treatment demand. Of the 1,790 drug-related deaths reported in 2010, nearly 40 per cent were due to opioids and approximately a quarter attributed to benzodiazepines. The use of pharmaceuticals for non-medical purposes increased from 3.7 per cent in 2007 to 4.2 per cent in 2010.

In New Zealand, a decrease in the use of "ecstasy" is reported to have been offset by the use of other substances mimicking its effects, including many piperazines, cathinone and mephedrone.[62,63] In the Pacific island States, there is only sketchy information available on the extent of illicit drug use. However, the use of kava (*Piper methysticum*) and cannabis is considered to be quite common and widespread. ATS use among secondary school students is now also reported in many Pacific islands, with lifetime prevalence of the use of methamphetamine reported to be high in the Marshall Islands (13.1 per cent) and Palau (7.1 per cent). There is also evidence of injecting methamphetamine in many Pacific island territories, and in Vanuatu, where methamphetamine is injected by 41 per cent of injecting drug users aged 15-24.[64]

60 Ibid.

61 Information provided by the Russian Federation in the annual report questionnaire (2010).

62 4-Methylethcathinone, 3-trifluoromethylphenylpiperazine and BZP.

63 Information provided by New Zealand in the annual report questionnaire (2010).

64 J. Lippe and others, "Youth risk behavior surveillance: Pacific Islands United States territories, 2007", *MMWR Surveillance Summaries*, vol. 57, No. SS12 (21 November 2008), pp. 28-56.

Table 6. Annual prevalence of the use of cannabis, opioids and opiates, by region

Region or subregion	Cannabis						Opioids						Opiates					
	Number (thousands)			Prevalence (percentage)			Number (thousands)			Prevalence (percentage)			Number (thousands)			Prevalence (percentage)		
	Best estimate	Lower	Upper	Best estimate	Lower	Upper	Best estimate	Lower	Upper	Best estimate	Lower	Upper	Best estimate	Lower	Upper	Best estimate	Lower	Upper
Africa	**44 960**	**21 840**	**57 340**	**7.8**	**3.8**	**10.0**	**2 200**	**930**	**3 840**	**0.4**	**0.2**	**0.7**	**2 110**	**880**	**3 280**	**0.4**	**0.2**	**0.6**
East Africa	5 840	2 440	9 160	4.2	1.7	6.5	570	150	1 850	0.4	0.1	1.3	540	150	1 350	0.4	0.1	1.0
North Africa	7 530	4 790	10 600	5.7	3.6	8.0	330	130	540	0.3	0.1	0.4	330	130	540	0.3	0.1	0.4
Southern Africa	4 330	3 160	7 870	5.4	3.9	9.8	330	220	350	0.4	0.3	0.4	280	190	300	0.3	0.2	0.4
West and Central Africa	27 260	11 460	29 710	12.4	5.2	13.5	970	430	1 100	0.4	0.2	0.5	950	410	1 090	0.4	0.2	0.5
Americas	**40 810**	**40 410**	**42 280**	**6.6**	**6.6**	**6.9**	**13 230**	**12 530**	**14 010**	**2.1**	**2.0**	**2.3**	**1 520**	**1 090**	**1 810**	**0.2**	**0.2**	**0.3**
Caribbean	760	460	2 050	2.8	1.7	7.6	100	60	190	0.4	0.2	0.7	80	50	160	0.3	0.2	0.6
Central America	590	570	630	2.4	2.3	2.5	120	110	150	0.5	0.4	0.6	20	20	20	0.1	0.1	0.1
North America	32 950	32 950	32 950	10.8	10.8	10.8	12 180	11 580	12 790	4.0	3.8	4.2	1 310	920	1 500	0.4	0.3	0.5
South America	6 510	6 390	6 610	2.5	2.5	2.5	840	790	880	0.3	0.3	0.3	110	100	120	0.04	0.04	0.05
Asia	**52 990**	**26 510**	**92 380**	**1.9**	**1.0**	**3.4**	**10 560**	**8 480**	**13 140**	**0.4**	**0.3**	**0.5**	**10 140**	**8 150**	**12 640**	**0.4**	**0.3**	**0.5**
Central Asia	2 050	1 800	2 130	3.9	3.5	4.1	460	450	480	0.9	0.9	0.9	420	410	440	0.8	0.8	0.8
East and South-East Asia	9 710	5 720	22 560	0.6	0.4	1.5	4 370	3 500	5 650	0.3	0.2	0.4	4 310	3 410	5 580	0.3	0.2	0.4
Near and Middle East	8 140	2 360	15 840	3.1	0.9	6.1	2 900	2 410	3 490	1.1	0.9	1.3	2 700	2 240	3 310	1.0	0.9	1.3
South Asia	33 100	15 500	50 720	3.6	1.7	5.5	2 820	2 110	3 520	0.3	0.2	0.4	2 700	2 090	3 310	0.3	0.2	0.4
Europe	**28 680**	**28 460**	**28 970**	**5.2**	**5.1**	**5.2**	**4 060**	**3 890**	**4 310**	**0.7**	**0.7**	**0.8**	**2 980**	**2 830**	**3 210**	**0.5**	**0.5**	**0.6**
Eastern and South-Eastern Europe	6 150	5 990	6 400	2.7	2.6	2.6	2 810	2 800	2 900	1.2	1.2	1.3	1 870	1 860	1 960	0.8	0.8	0.8
Western and Central Europe	22 530	22 470	s22 580	6.9	6.9	7.0	1 250	1 080	1 410	0.4	0.3	0.4	1 110	970	1 260	0.3	0.3	0.4
Oceania	**2 630**	**2 200**	**3 520**	**10.9**	**9.1**	**14.6**	**730**	**550**	**820**	**3.0**	**2.3**	**3.4**	**40**	**40**	**60**	**0.2**	**0.2**	**0.2**
Global estimate	**170 070**	**119 420**	**224 490**	**3.8**	**2.6**	**5.0**	**30 780**	**26 380**	**36 120**	**0.7**	**0.6**	**0.8**	**16 790**	**12 980**	**20 990**	**0.4**	**0.3**	**0.5**

Source: UNODC estimates based on annual report questionnaire data and other official sources.

Table 7. Annual prevalence of the use of cocaine, amphetamines and "ecstasy", by region

Region or subregion	Cocaine						ATS (excluding "ecstasy")						"Ecstasy"					
	Number (thousands)			Prevalence (percentage)			Number (thousands)			Prevalence (percentage)			Number (thousands)			Prevalence (percentage)		
	Best estimate	Lower	Upper	Best estimate	Lower	Upper	Best estimate	Lower	Upper	Best estimate	Lower	Upper	Best estimate	Lower	Upper	Best estimate	Lower	Upper
Africa	**2 780**	**950**	**4 610**	**0.5**	**0.2**	**0.8**	**4 730**	**1 190**	**8 270**	**0.8**	**0.2**	**1.4**	**1 160**	**400**	**1 930**	**0.2**	**0.1**	**0.3**
East Africa	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
North Africa	40	30	50	0.03	0.03	0.04	..	..	..	..	..	..	..	..	..	..	..	..
Southern Africa	630	270	850	0.8	0.3	1.1	590	290	790	0.7	0.4	1.0	300	190	300	0.4	0.2	0.4
West and Central Africa	1 530	560	2 330	0.7	0.3	1.1	..	..	..	..	..	..	..	..	..	..	..	..
Americas	**7 150**	**6 990**	**7 380**	**1.2**	**1.1**	**1.2**	**5 790**	**5 450**	**6 550**	**0.9**	**0.9**	**1.1**	**3 230**	**3 160**	**3 400**	**0.5**	**0.5**	**0.6**
Caribbean	180	110	330	0.7	0.4	1.2	220	30	530	0.8	0.1	1.9	80	10	240	0.3	0.1	0.9
Central America	130	130	140	0.5	0.5	0.6	330	330	330	1.3	1.3	1.3	30	20	30	0.1	0.1	0.1
North America	5 000	5 000	5 000	1.6	1.6	1.6	3 920	3 920	3 920	1.3	1.3	1.3	2 710	2 710	2 710	0.9	0.9	0.9
South America	1 840	1 760	1 910	0.7	0.7	0.7	1 310	1 170	1 770	0.5	0.4	0.7	420	420	420	0.2	0.2	0.2
Asia	**1 270**	**400**	**2 200**	**0.05**	**0.01**	**0.08**	**19 570**	**4 943**	**34 201**	**0.7**	**0.2**	**1.2**	**10 380**	**2 580**	**18 180**	**0.4**	**0.1**	**0.7**
Central Asia	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
East and South-East Asia	420	310	1 070	0.03	0.02	0.07	8 400	3 740	19 510	0.6	0.2	1.3	2 820	1 590	6 380	0.2	0.1	0.4
Near and Middle East	70	50	120	0.03	0.02	0.05	570	310	1 260	0.2	0.1	0.5	..	..	..	..	..	..
South Asia	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Europe	**4 650**	**4 490**	**4 870**	**0.8**	**0.8**	**0.9**	**2 640**	**2 350**	**2 950**	**0.5**	**0.4**	**0.5**	**3 740**	**3 650**	**3 900**	**0.7**	**0.7**	**0.7**
Eastern and South-Eastern Europe	480	320	670	0.2	0.1	0.3	780	510	1 060	0.3	0.2	0.5	1 280	1 210	1 390	0.6	0.5	0.6
Western and Central Europe	4 160	4 170	4 200	1.3	1.3	1.3	1 870	1 840	1 900	0.6	0.6	0.6	2 460	2 440	2 510	0.8	0.8	0.8
Oceania	**370**	**370**	**450**	**1.5**	**1.5**	**1.9**	**510**	**410**	**570**	**2.1**	**1.7**	**2.4**	**710**	**690**	**710**	**2.9**	**2.9**	**2.9**
Global estimate	**16 220**	**13 200**	**19 510**	**0.4**	**0.3**	**0.4**	**33 240**	**14 343**	**52 541**	**0.7**	**0.3**	**1.2**	**19 220**	**10 480**	**28 120**	**0.4**	**0.2**	**0.6**

Source: UNODC estimates based on annual report questionnaire data and other official sources.

B. ILLICIT OPIATE MARKET

Demand remains unaffected by a recovery in supply

In 2011, global potential opium production recovered after a significant decline in 2010, which was primarily attributed to a reduced opium yield caused by a disease of opium poppy plants in Afghanistan, the world's principal opium producer. The latest (2011) data on opiate production indicate a resurgence of opium and heroin production in two of the three regions in which opium poppy is cultivated — South-West Asia (primarily Afghanistan) and South-East Asia (the Lao People's Democratic Republic and Myanmar), 2011 data for the Americas (Mexico, Colombia and Guatemala) are not yet available.

Despite the 2010 shortfall in production, the consumption of opiates worldwide has remained stable at an estimated annual prevalence range of 0.3-0.5 per cent (between 12.9 million and 21 million opiate users), and the negative health consequences of opiate use in terms of drug-related deaths and HIV infection also remain undiminished.

Average wholesale and retail prices in the most regularly monitored illicit markets for opiates, Western Europe and the Americas, have also shown little change since 2009 (24 euros per gram and 52 euros per gram, respectively, for Europe in 2010). However, this does not reflect the situation seen in such major opium-producing countries as Afghanistan, Colombia and Myanmar, where, despite an increase in opium production, farm-gate prices have continued to rise. The latter implies that, despite the recent recovery of opium production, the demand for opium is continuing to increase. What exactly are the reasons for this apparent increase in demand? Is the 2010 crop failure in Afghanistan leading to some kind of shift in markets at source? And, if so, how will this impact on the major illicit markets for opiates further down the line? Those questions are discussed below.

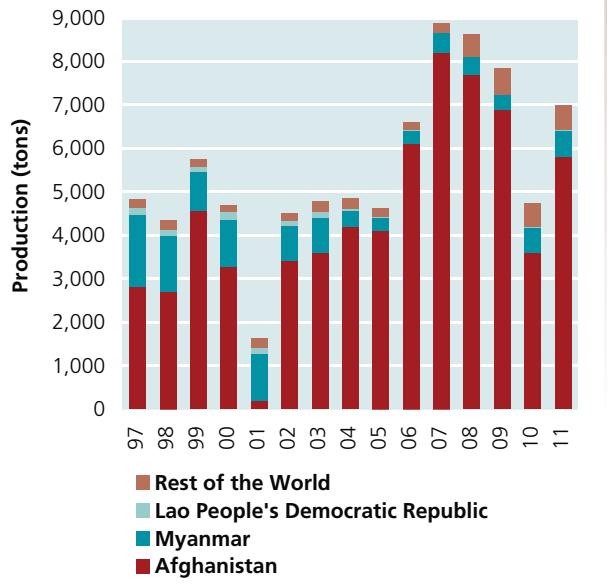
Global opium production

Estimated potential opium production increased from 4,700 tons in 2010 to 7,000 tons in 2011, reaching levels comparable to the levels of previous years. In Afghanistan itself, potential opium production fell to 3,600 tons in 2010 but resurged to 5,800 tons in 2011. A considerable increase in potential opium production was also reported in South-East Asia in this period. In Myanmar, for example, potential opium production increased from 580 tons in 2010 to 610 in 2011, while in the Lao People's Democratic Republic it increased from 18 tons in 2010 to 25 tons in 2011. A preliminary 2010 estimate for Mexico shows that, after the year-to-year increase observed since 2005, opium production decreased from 2009.

When looking at how total potential production of opium in 2011 (7,000 tons) was utilized, it is estimated that 3,400 tons were consumed or trafficked as raw opium while the rest was converted into heroin, resulting in 467 tons of potential heroin manufacture in 2011, an increase from the 384 tons estimated in 2010 (see table 8). It is estimated that, compared with previous years, a higher percentage of Afghan opium was not processed into heroin in 2011.

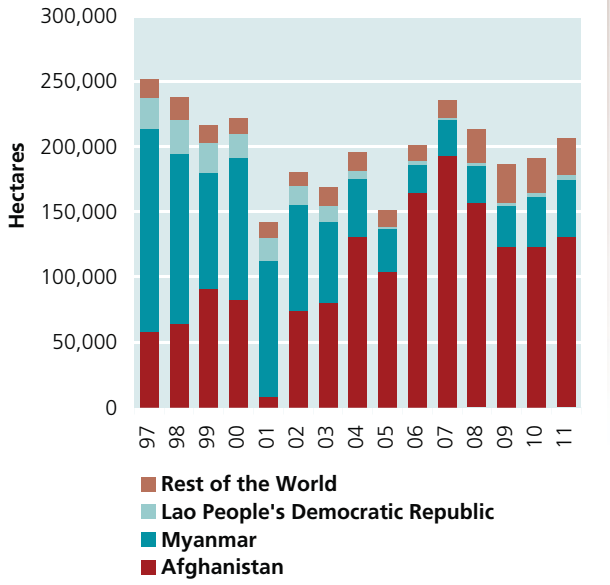
The total area under opium poppy cultivation globally also increased from 191,000 hectares (ha) in 2010 to some

Fig. 12. Global potential opium production, 1997-2011 (Tons)



Source: UNODC.
Note: The 2011 estimate for the rest of the world is provisional.

Fig. 13. Global illicit cultivation of opium poppy, 1997-2011 (Hectares)



Source: UNODC.

Table 8. Potential illicit production of opium and manufacture of heroin of unknown purity, 2004-2011 (Tons)

	2004	2005	2006	2007	2008	2009	2010	2011
Total potential opium production	4 850	4 620	6 610	8 890	8 641	7 853	4 736	6 995
Potential opium not processed into heroin	1 197	1 169	2 056	3 411	3 080	2 898	1 728	3 400
Potential opium processed into heroin	3 653	3 451	4 555	5 479	5 561	4 955	3 008	3 595
Total potential heroin manufacture	529	472	629	757	752	667	384	467

Note: The proportion of potential opium production not converted into heroin could be estimated only for Afghanistan. For the purpose of this table for all other countries it is assumed that all opium potentially produced is converted into heroin. If total potential opium production in Afghanistan in 2011 were converted into heroin, total potential heroin manufacture would be 829 tons (Afghanistan) and 948 tons (global). The 2011 estimate of "opium not processed into heroin" in Afghanistan was based exclusively on regional seizure data, in contrast to previous years, when information from key informants was also taken into consideration. The 2011 estimate is not directly comparable with previous years.

207,000 ha in 2011 (see table 10). Afghanistan remains the main country cultivating opium poppy, accounting for approximately 63 per cent of global opium poppy cultivation, while the Lao People's Democratic Republic and Myanmar in South-East Asia account for over 20 per cent, and countries in Central America and South America (mainly Mexico and Colombia) account for almost 7 per cent. Reports of opium poppy eradication also indicate the existence of smaller areas under opium poppy cultivation in many other countries and regions, with at least 13,000 ha of opium poppy cultivation estimated outside the main countries cultivating opium poppy.

For example, a considerable level of illicit opium poppy cultivation is estimated to occur in India, where the licit production of opium has taken place for decades. Eradication reports also suggest that illicit opium poppy cultivation is expanding in Guatemala, but there are no data available to estimate the exact size of the total area under cultivation.

Global opiate seizures

With a slight increase of some 7 per cent, global seizures of heroin remained rather stable in 2010 (81 tons in 2010 compared with 76 tons in 2009), though different trends were observed in different illicit markets. Heroin seizures increased in the trafficking routes that stem from the opium production areas in South-East Asia and Central and South America (Colombia, Guatemala and Mexico),

Table 9. Areas of opium poppy cultivation reported to be eradicated in selected countries, 2001-2011 (Hectares)

	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011
Afghanistan	..	21 430	a	5 103	15 300	19 047	5 480	5 351	2 316	3 810
Colombia	3 577	3 266	3 866	2 121	1 929	375	381	546	711	..
Egypt	15	34	65	45	50	98	121	89	222	..
Guatemala	..	..	..	489	720	449	536	1 345	918	1 490
India	219	494	167	12	247	8 000	624	2 420	1 022	..
Lao People's Democratic Republic	..	4 134	3 556	2 575	1 518	779	575	651	579	662
Lebanon	..	4	67	27	..	8	..	21	..	4
Mexico	19 157	20 034	15 926	21 609	16 890	11 046	13 095	14 753	15 484	..
Myanmar	7 469	638	2 820	3 907	3 970	3 598	4 820	4 087	8 268	7 058
Nepal	19	19	4	..	1	..	21	35	..	..
Pakistan	..	4 185	5 200	391	354	614	0	105	68	1 053
Peru	14	57	98	92	88	28	23	32	21	..
Thailand	989	767	122	110	153	220	285	201	278	208
Ukraine	..	..	..	..	..	..	28	..	436	..
Venezuela (Bolivarian Republic of)	0	0	87	154	0	0	0	..	..	..
Viet Nam	125	100	32	..	..	38	99	31	..	..

Source: UNODC, annual report questionnaire, Government reports, reports of regional bodies; International Narcotics Control Strategy Report.Note: Table covers only eradication reported in area units. Information on eradication reported as plant seizures can be found in the annex on seizures in the electronic version of the *World Drug Report*.

[a] Although eradication took place in 2004, it was not officially reported to UNODC.

Table 10. Global illicit cultivation of opium poppy, 1997-2011 (Hectares)

	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011
South-West Asia															
Afghanistan	58 416	63 674	90 583	82 171	7 606	74 100	80 000	131 000	104 000	165 000	193 000	157 000	123 000	123 000	131 000
Pakistan	874	950	284	260	213	622	2 500	1 500	2 438	1 545	1 701	1 909	1 779	1 721	362
Subtotal	59 290	64 624	90 867	82 431	7 819	74 722	82 500	132 500	106 438	166 545	194 701	158 909	124 779	124 721	131 362
South-East Asia															
Lao People's Democratic Republic[a]	24 082	26 837	22 543	19 052	17 255	14 000	12 000	6 600	1 800	2 500	1 500	1 600	1 900	3 000	4 100
Myanmar[a]	155 150	130 300	89 500	108 700	105 000	81 400	62 200	44 200	32 800	21 500	27 700	28 500	31 700	38 100	43 600
Thailand[b]	352	716	702	890	820	750	..	..	..	..	..	..	..	..	..
Viet Nam[b]	340	442	442	..	..	..	..	..	..	..	..	..	..	..	..
Subtotal	179 924	158 295	113 187	128 642	123 075	96 150	74 200	50 800	34 600	24 000	29 200	30 100	33 600	41 100	47 700
Latin America															
Colombia	6 584	7 350	6 500	6 500	4 300	4 153	4 026	3 950	1 950	1 023	715	394	356	341	..
Mexico[c]	4 000	5 500	3 600	1 900	4 400	2 700	4 800	3 500	3 300	5 000	6 900	15 000	19 500	14 000	..
Subtotal	10 584	12 850	10 100	8 400	8 700	6 853	8 826	7 450	5 250	6 023	7 615	15 394	19 856	14 341	*14 341*
Other regions															
Other countries[d]	2 050	2 050	2 050	2 479	2 500	2 500	3 074	5 190	5 212	4 432	4 184	8 600	7 700	10 500	*13 300*
Total	**251 848**	**237 819**	**216 204**	**221 952**	**142 094**	**180 225**	**168 600**	**195 940**	**151 500**	**201 000**	**235 700**	**213 003**	**185 935**	**190 662**	***206 703***

Table 11. Potential production of oven-dry opium, 1997-2011 (Tons)

	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011
South-West Asia															
Afghanistan	2 804	2 693	4 565	3 276	185	3 400	3 600	4 200	4 100	6 100	8 200	7 700	6 900	3 600	5 800
Pakistan	24	26	9	8	5	5	52	40	36	39	43	48	44	43	9
Subtotal	2 828	2 719	4 574	3 284	190	3 405	3 652	4 240	4 136	6 139	8 243	7 748	6 944	3 643	5 809
South-East Asia															
Lao People's Democratic Republic	147	124	124	167	134	112	120	43	14	20	9	10	11	18	25
Myanmar	1 676	1 303	895	1 087	1 097	828	810	370	312	315	460	410	330	580	610
Thailand[b]	4	8	8	6	6	9	..	..	..	..	..	..	..	..	..
Viet Nam[b]	2	2	2	..	..	..	..	..	..	..	..	..	..	..	..
Subtotal	1 829	1 437	1 029	1 260	1 237	949	930	413	326	335	469	420	341	598	635
Latin America															
Colombia	90	100	88	88	80	52	50	49	24	13	14	10	9	9	..
Mexico[c]	46	60	43	21	91	58	101	73	71	108	149	325	425	305	..
Subtotal	136	160	131	109	171	110	151	122	95	121	163	335	434	*314*	*314*
Other regions															
Other countries[d]	30	30	30	38	32	56	50	75	63	16	15	139	134	181	237
Total	**4 823**	**4 346**	**5 764**	**4 691**	**1 630**	**4 520**	**4 783**	**4 850**	**4 620**	**6 610**	**8 890**	**8 641**	**7 853**	**4 736**	**6 995**

Source: For Afghanistan: (a) 1997-2002: UNODC; (b) 2003-2011: National Illicit Crop Monitoring System supported by UNODC. For Pakistan: annual report questionnaire, Government of Pakistan, United States Department of State. For the Lao People's Democratic Republic: (a) 1997-1999: UNODC; (b) 2000-2011: National Illicit Crop Monitoring System supported by UNODC. For Myanmar: (a) 1997-2000: United States Department of State; (b) 2001-2011: National Illicit Crop Monitoring System supported by UNODC. For Colombia: (a) 1997-1999: various sources; (b) 2000-2010: Government of Colombia. Starting with 2008, production was calculated based on regional yield figures and conversion ratios from the United States Department of State/DEA. For Mexico: estimates derived from United States Government surveys.

Note: Figures in italics are preliminary.

[a] May include areas which were eradicated after the date of the area survey.

[b] Due to continuing low cultivation, figures for Viet Nam (as of 2000) and Thailand (as of 2003) were included in the category "Other".

[c] The Government of Mexico does not validate the estimates provided by the United States of America, as they are not part of its official figures and it does not have information on the methodology used to calculate them. The Government of Mexico is in the process of implementing a monitoring system in collaboration with UNODC to estimate illicit cultivation and production (2010 production: UNODC estimate).

[d] Eradication and plant seizure reports from different sources indicate that illicit opium poppy cultivation also exists in the following subregions: North Africa, Central Asia and Transcaucasia, Near and Middle East/South-West Asia, South Asia, East and South-East Asia, Eastern Europe, South-Eastern Europe, Central America and South America. Starting in 2008 a new methodology was introduced to estimate opium poppy cultivation and opium/heroin production in those countries. The estimates are higher than the previous figures but have a similar order of magnitude.

confirming an increase in the supply of heroin deriving from an increase in production in those areas in recent years. However, along the established trafficking routes for heroin manufactured from Afghan opium, leading to the Russian Federation and Western and Central Europe, a consistent decrease in heroin seizures was observed in 2010. This most probably reflects falling levels of opium production in Afghanistan after 2007 and the shortage of opium observed in Afghanistan in 2010.

The countries that seized the most heroin worldwide continued to be the Islamic Republic of Iran, with 27 tons (accounting for 33 per cent of global heroin seizures), and Turkey, with 13 tons (accounting for 16 per cent of global heroin seizures) (see figure 14). In 2010, significant quantities of heroin were also seized closer to the illicit heroin markets, most notably in China (accounting for 7 per cent of global seizures of heroin) and Pakistan, where seizures of heroin doubled to 4.2 tons in 2010. In the Islamic Republic of Iran, opposing trends were observed for heroin and morphine seizures, with heroin seizures increasing slightly from 25 tons in 2009 to 27 tons in 2010 and morphine seizures decreasing by 50 per cent during the same period; according to preliminary data for 2011, however, heroin seizures in that country have now decreased to 23 tons.

In China, seizures of heroin decreased slightly, from 5.8 tons in 2009 to 5.4 tons in 2010, but China continues to be an important market for heroin. For several years the main source of heroin in China was illicit opium poppy cultivation and heroin manufacture in South-East Asia (particularly Myanmar), but it appears that significant quantities of heroin have been smuggled into China from Afghanistan via Pakistan and possibly other intermediate countries in recent years. Nevertheless, it is believed that large amounts of heroin have continued to enter China from northern Myanmar via Yunnan Province.

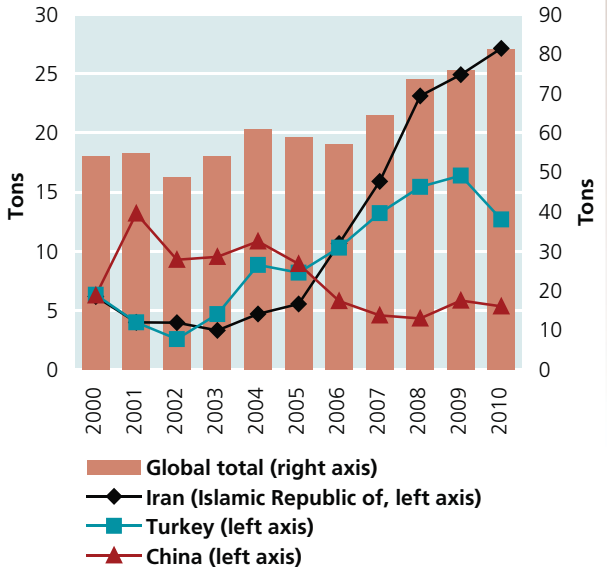
In North America, heroin seizures in the United States rose by almost one half, from 2.4 tons in 2009 to a record level of 3.5 tons in 2010. Heroin entering the United States from countries other than from Mexico originated in South America, notably Colombia. In 2010, heroin seizures reached 1.7 tons, a record level in Colombia, more than twice the level in 2009, while in Ecuador heroin seizures increased to 853 kg in 2010, almost five times the level in 2009 (177 kg). The increase in heroin seizures was less pronounced in Mexico (from 283 kg in 2009 to 374 kg in 2010). In Canada, although there had been an increase in heroin seizures from 2008 to 2009, seizures decreased considerably, from 213 kg in 2009 to 98 kg in 2010.

In Asia, seizures of opium and morphine continued to be mainly concentrated in Afghanistan and in neighbouring Iran (Islamic Republic of) and Pakistan. Iranian authorities seized 8 tons of morphine, a 50 per cent reduction in comparison with the level of the previous year. Pakistan reported an increase in morphine seizures: 6.1 tons in 2010. It is not clear if the morphine trafficked outside Afghanistan and seized in Iran (Islamic Republic of) and Pakistan was meant for further processing into heroin or was intended for an as yet unmeasured demand for morphine itself.

An apparent imbalance in global supply and demand

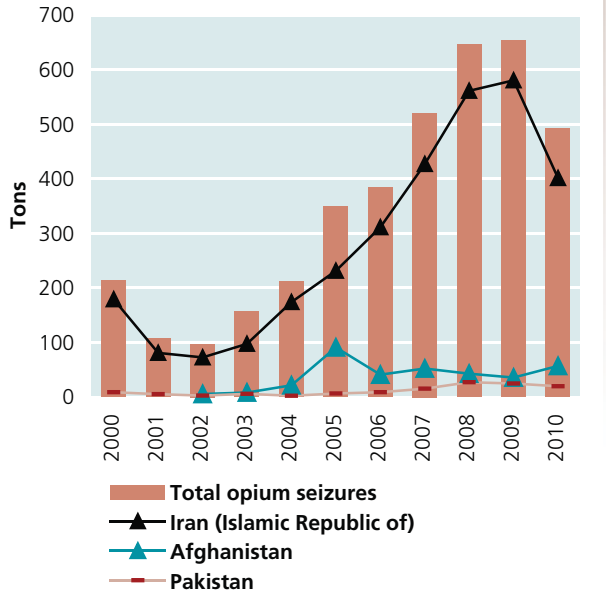
Despite an increase in opium production, farm-gate prices have continued to rise in major opium-producing coun-

Fig. 14. Heroin seizures worldwide and in selected countries, 2000-2010 (Tons)



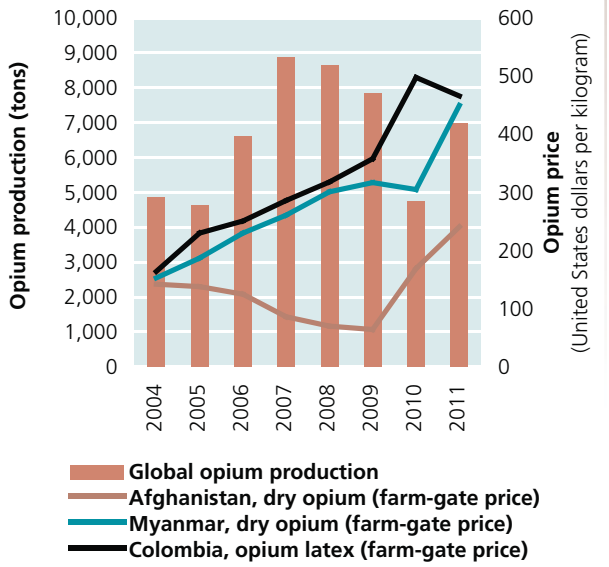
Source: Annual report questionnaire supplemented by other official sources.

Fig. 15. Global opium seizures, 2000-2010



Source: Annual report questionnaire supplemented by other official sources.

Fig. 16. Farm-gate opium prices in the main countries producing opium, 2004-2011



Source: UNODC.

tries, especially Afghanistan, Colombia and Myanmar (see figure 16), which implies an apparent steady increase in the demand for opium.

The steep rise in the price of opium observed in Afghanistan was, as mentioned earlier, a result of a decrease in opium production in 2010 caused by disease in the opium poppy. While production has returned to high levels in 2011, the price of both opium and heroin has remained high, not only in Afghanistan but also in neighbouring countries. Only in the second half of 2011 did opium and heroin prices in Afghanistan stop going up and start to decrease.

The apparent increase in opium demand at source, as witnessed in increasing farm-gate prices, is not consistent with the recent increase in the production of opium and heroin or with the stabilization of heroin use in the major illicit heroin markets. In Europe, for example, there have been stable trends in countries with substantial opiate use. Most heroin users entering treatment in Europe are, on average, an older cohort, and an increasing proportion use opioids other than heroin.[65] In North America, the steep rise in the use of synthetic opioids has also reduced the demand for heroin.

Different hypotheses can be put forward to explain this apparent contradiction. One explanation could be an underestimation of the level of heroin consumption globally, particularly in major countries in Asia, as well as in possible emerging markets in Africa. Asia and Africa account for more than 70 per cent of the estimated number of global heroin and opium users, but most of the countries in those continents lack recent and reliable estimates on heroin and opium use; thus, changes in heroin and opium use may have gone undetected. There is, however, some sporadic information suggesting an increase in heroin and opium use in some Asian countries.[66]

It is also possible that increasing prices at source may not reflect higher demand but rather an increased risk in cultivation and trafficking resulting from the intensification of law enforcement activities. Alternatively, the high demand for opium may be driven by an expansion in the market for raw opium that is not processed into heroin. This could feed increased opium consumption or, more likely, a parallel illicit market for other opiates such as morphine. For example, in 2010, Pakistan saw a large increase in morphine seizures, despite the reduced supply of opium caused by the Afghan opium poppy disease in the same year.

There is no definitive evidence to back up any one of the particular hypotheses discussed above. The apparent imbalance between increasing supply and decreasing demand may be attributable to a combination of different factors. But what remains to be seen is how, if at all, they will affect the major illicit markets in the coming years.

Opiate consumer markets one year after the opium crop failure in Afghanistan

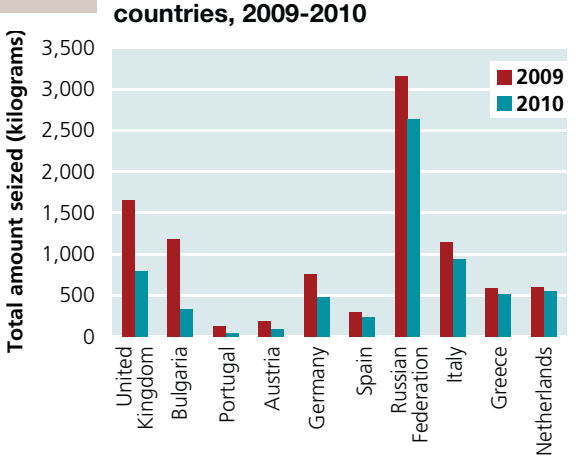
It is not known how long it takes opium produced in Afghanistan to reach the streets of consumer countries in the form of heroin, but trends in production and seizures suggest that it may take between one and two years. With information available only for 2010 and partially for 2011, it may be too early to fully understand the effect of the 2010 crop failure in Afghanistan in all illicit markets; however, two major changes could be observed after 2010: a general decrease of seizures in 2010 in most of the countries supplied by Afghan opiates and a heroin shortage in some European countries between 2010 and 2011. While these changes may not reflect a uniform and rapid response to the reduced opium harvest in 2010, it is reasonable to assume that they reflect a rapid reaction in the markets of countries closer to Afghanistan or those supplied through direct routes leading from Afghanistan.

Although large quantities of heroin continued to be trafficked along the main Balkan route (leading from Afghanistan to Western and Central Europe via South-Eastern Europe), declining heroin seizures were reported in 2010 in most countries on the route, with the exception of the Islamic Republic of Iran.

65 European Monitoring Centre for Drugs and Drug Addiction, *Annual Report 2011: The State of the Drugs Problem in Europe.*

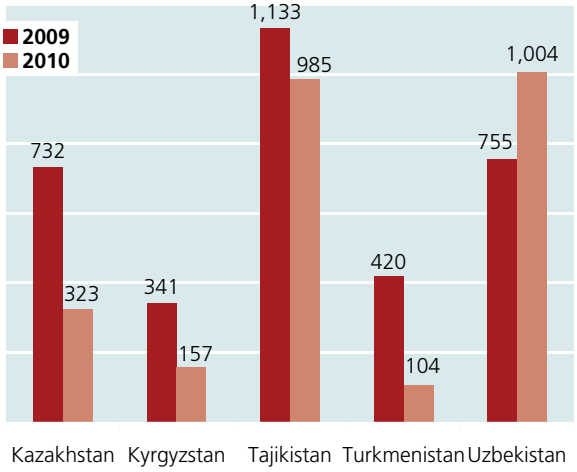
66 For example, recently revised estimates for Singapore, Sri Lanka and Indonesia show a higher level of opiate use than did previous estimates. A 10-year-period survey of the number of registered drug users in China shows an increasing trend in the number of registered heroin users, particularly in the period 2007-2010, when the number of registered heroin users increased by 43 per cent. The "Drug use in Afghanistan: 2009 survey—executive summary" also showed a large increase in the number of heroin and opium users from 2005.

Fig. 17. Heroin seizures in Europe, selected countries, 2009-2010



Source: Annual report questionnaire supplemented by other official sources. Estimates for 2009 and 2010 for the United Kingdom are based on incomplete data for some jurisdictions for the financial years 2009/2010 and 2010/11, respectively, and adjusted for the missing jurisdictions using the distribution (based on more comprehensive data) in 2006/07.

Fig. 18. Heroin seizures in Central Asia, by country, 2009-2010



Source: UNODC Regional Office for Central Asia *Drug Situation Report 2011*.

All countries except Uzbekistan reported a decline in heroin seizures in Central Asia and Transcaucasia, which remains the major transit route used for smuggling heroin from Afghanistan into the Russian Federation. In the Russian Federation itself, heroin seizures also went down, from 3.2 tons in 2009 to 2.6 tons in 2010 (see figures 17 and 18).

In 2010, opium seizures also declined globally and in the Islamic Republic of Iran, in particular, where they went down to 401 tons (from a high level of 580 tons in 2009). In China, heroin seizures showed a small decline, suggesting that China was less affected by the shortage of heroin from Afghanistan because of an increase in heroin production in Myanmar.

By the end of October 2010 and the beginning of 2011, there were definite indications of a shortage in the availability of heroin in Ireland and the United Kingdom and a similar, albeit less clear, situation in other countries in Europe. Bulgaria, Hungary, Italy, the Russian Federation, Slovakia, Slovenia and Switzerland reported some degree of shortage, whereas other countries, such as France, Germany and Sweden, reported little or no reduction in the supply of heroin.[67] The full extent of this shortage and its impact on heroin consumption, prices and purity levels may become clearer when data become available for 2011 and later.

Total seizures of heroin in the United Kingdom fell by more than half, from 1.7 tons in 2009 to 798 kg in 2010.[68]

Furthermore, the Serious Organised Crime Agency of the United Kingdom reported instances of heroin prices increasing by 50 per cent and heroin purity falling by one third.[69] According to the United Kingdom authorities, the average purity of heroin seized by police forces and analysed by the United Kingdom Forensic Science Service fell from 46 per cent in the last quarter of 2009 to 16 per cent in the first quarter of 2011. It is likely that that is a reflection of the situation on the retail market more than on the wholesale market, but a similar (albeit slightly less pronounced) decrease was also observed in the purity level of heroin seized by the United Kingdom Border Agency, which fell from 58 per cent in the third quarter of 2009 to over 30 per cent in the last quarter of 2010[70] (see figure 19). Similarly, Switzerland reported sporadic shortages of heroin in 2010, with the typical purity of heroin base falling both at the wholesale level (from 40 per cent in 2009 to 23 per cent in 2010) and at retail level (from 21 per cent in 2009 to 16 per cent in 2010).

In the United Kingdom, the adulteration of street heroin with substances such as benzodiazepines and barbiturates also resulted in a number of drug-related deaths in England and Wales. While there was a slight decrease in drug-related deaths in England and Wales during 2009 and 2010, in nearly 40 per cent of those deaths heroin and morphine were the substances involved.[71] There are also signs that

67 European Monitoring Centre for Drugs and Drug Addiction, *Annual Report 2011: The State of the Drugs Problem in Europe*.

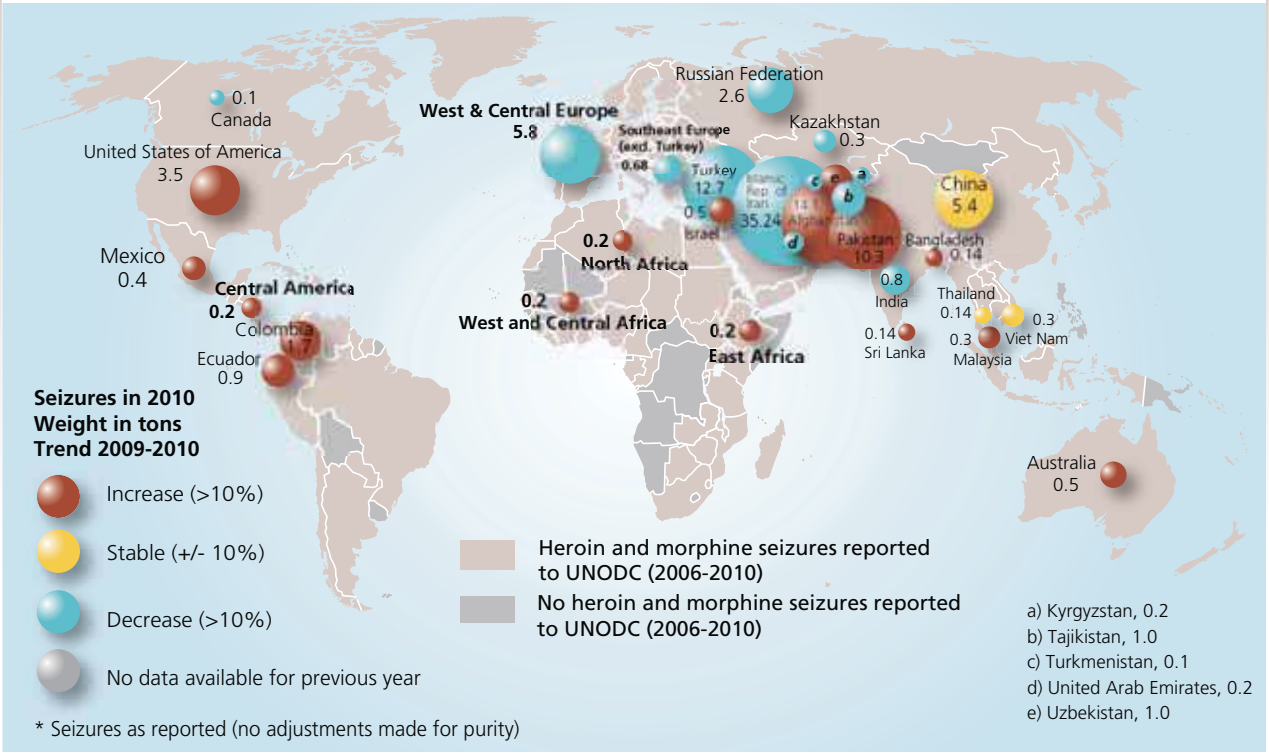
68 Estimates for 2009 and 2010 for the United Kingdom are based on incomplete data for some jurisdictions for the financial years 2009/2010 and 2010/11, respectively, and adjusted for the missing jurisdictions using the distribution (based on more comprehensive data) in 2006/07.

69 "SOCA comments on reported UK heroin shortages", Serious Organised Crime Agency news, 31 January 2011. Available from www.soca.gov.uk/news/309-soca-comments-on-reported-uk-heroin-shortages (accessed March 2012).

70 Kathryn Coleman, "Seizures of drugs in England and Wales, 2010/11", Home Office Statistical Bulletin No. 17/11 (London, Home Office November 2011).

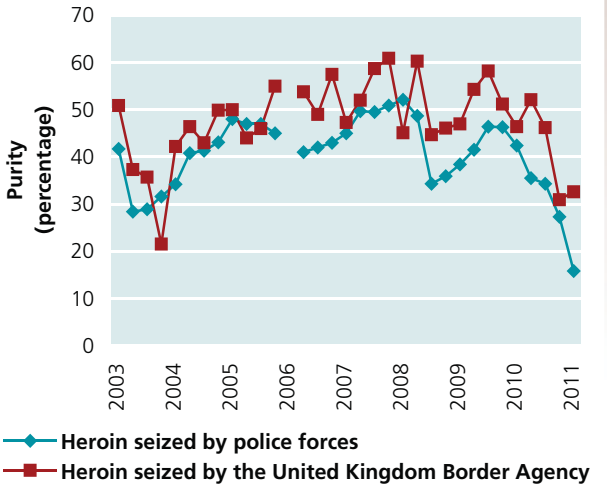
71 United Kingdom, Office for National Statistics, "Deaths related to drug poisoning in England and Wales, 2010", Statistical Bulletin, 23 August 2011.

Map 7. **Global seizures of heroin and morphine, 2010** (countries and territories reporting seizures* of more than 100 kg)



Source: UNODC annual report questionnaires data supplemented by other sources.
Note: The boundaries and names shown and the designations used on this map do not imply official endorsement or acceptance by the United Nations. Final boundary between the Republic of Sudan and the Republic of South Sudan has not yet been determined.

Fig. 19. **Purity of heroin seized in the United Kingdom (England and Wales only), by quarter, 2003-2011**



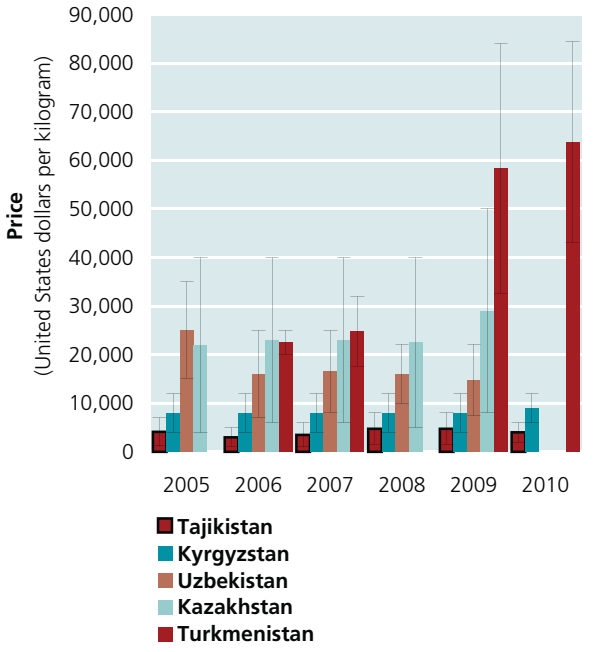
Source: United Kingdom of Great Britain and Northern Ireland Home Office.
Note: Data for the first quarter of 2006 were unavailable.

the shortage of heroin has led users to replace it with other substances. In the Russian Federation, for example, there are reports of opiate users increasingly using desomorphine, acetylated opium and, in some parts of the country, fentanyl. As a general trend, in many of the Scandinavian countries there has also been some displacement of heroin by synthetic opioids, mainly buprenorphine and fentanyl.

It is not clear to what extent the decline in seizures in 2010 and the shortage of heroin in some European countries were related to, or mirrored, the decline in production observed in Afghanistan in the same year. Changes in law enforcement activities and new trafficking routes leading to expanding markets in Asia and Africa may also have played a role in reducing the illicit supply of heroin and opium. In the case of the United Kingdom, the shortage of heroin has been attributed to increases in law enforcement activities in Turkey and the dismantling of wholesale heroin networks operating between Turkey and the United Kingdom; to some extent, however, the supply of heroin reaching the United Kingdom has also been attributed to direct trafficking from South-West Asia. This explains the fact that there has been a more rapid and sharper response to developments in Afghanistan in the illicit market in the United Kingdom than in other European countries, but the extent to which this is true for other European countries is less clear. The fall in opium and heroin production in Afghanistan probably triggered a change in the market that translated into decreased supply in established markets. Other measures or circumstances may have made the shortage more severe in some countries.

The drop in opium production in Afghanistan was partly reversed in 2011. Traffickers tend to be adept at finding alternative routes and networks in response to disruptions caused by law enforcement activities. Thus, on the one hand, the impact of such factors on the heroin supply may

Fig. 20. Wholesale heroin prices in Central Asia, by country, 2005-2010



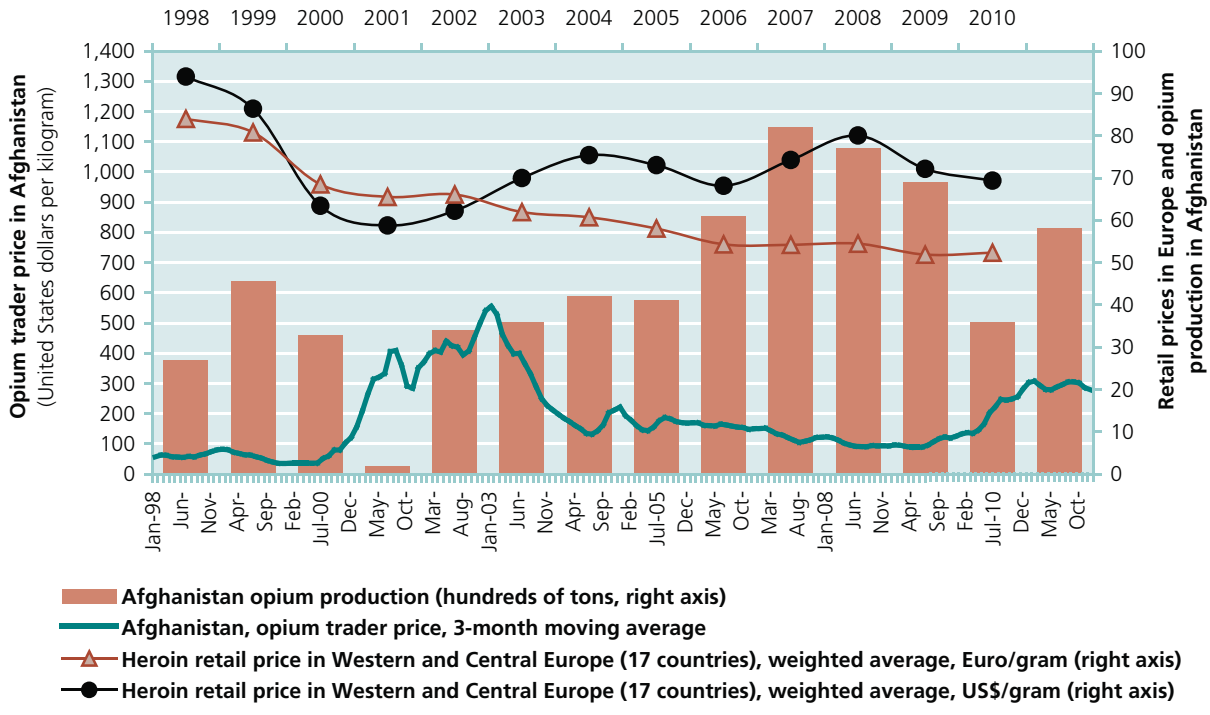
Source: UNODC Regional Office for Central Asia Drug Situation Report 2011.
Note: Data for Tajikistan, which were reported separately for low- and high-purity heroin, are aggregated into one category for the purposes of comparability.

be short-lived. On the other hand, the diversification of routes from Afghanistan to less well-established destinations in Africa and in Asia and the Pacific is likely to continue and become more prominent. Developments in 2011 may also shed light on the dynamics behind the observed shortages, whether they are sustained into 2011 or simply come to represent a "blip" in the supply of heroin reaching Europe. It will be important to observe heroin trends in Europe, Asia and Africa in the next few years in all their aspects — use, seizures, price and purity — to determine any short- or long-term impact and changes in heroin consumption and trafficking in those regions.

Price trends in countries supplied by Afghan opiates

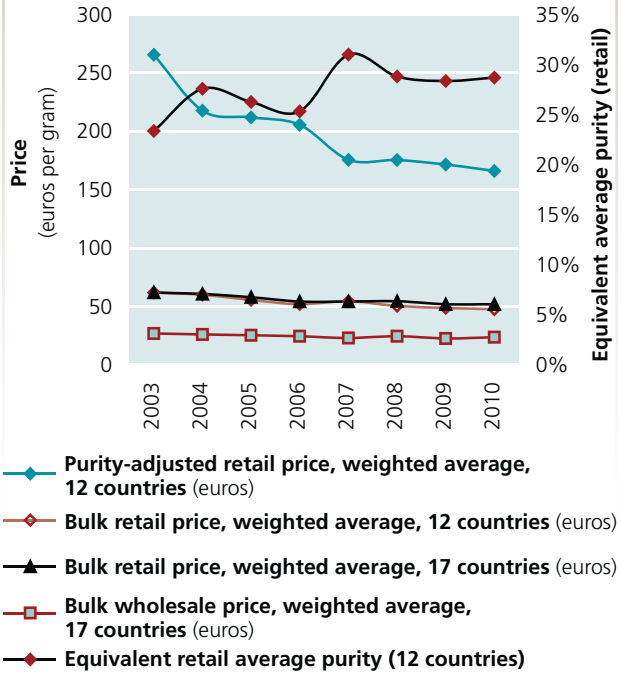
The effect of the decrease in heroin production in 2010 and the subsequent rise in opium and heroin prices at source in Afghanistan is as yet unnoticeable outside Afghanistan. In those Central Asian countries neighbouring Afghanistan, wholesale prices for opium and heroin have remained largely unaffected after the increase observed in 2009, although the most recent data available are only for 2009 and 2010 (see figure 20). The same can be said for prices and purity in Western Europe, where average wholesale and retail prices and retail purity in 2010 (24 euros per gram and 52 euros per gram, respectively) showed little change from 2009 (see figures 21 and 22).

Fig. 21. Opium prices and opium production in Afghanistan compared with retail prices of heroin in Western and Central Europe, 1998-2011



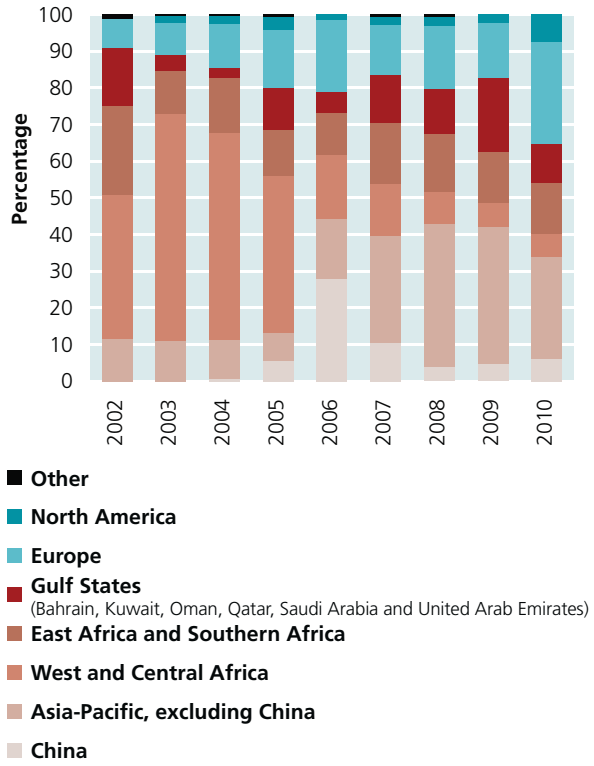
Source: Estimates based on UNODC data from the illicit crop monitoring programme and from the annual report questionnaire; data from the European Police Office.

Fig. 22. Heroin prices and purity in Europe, 2003-2010



Source: Estimates based on UNODC data from the annual report questionnaire and data from the European Police Office.

Fig. 23. Destinations of heroin consignments seized in Pakistan, by region, 2002-2010



Source: UNODC individual drug seizure database.
Note: Based only on cases involving seized heroin consignments with an intended destination known to be outside of Pakistan.

Emerging and expanding heroin markets in Africa and Asia

Data on seizures and heroin use suggest that heroin markets are expanding in some parts of Africa and Asia. An increase in heroin seizures has been reported, for example, in the coastal areas of East Africa, West and Central Africa, and North Africa, suggesting that Afghan heroin is being diverted to those areas. In 2010, heroin seizures increased most notably in Egypt (from 159 kg in 2009 to 234 kg), in Kenya (from 8.5 to 35 kg in 2010), in Nigeria (from 104 to 202 kg) and in the United Republic of Tanzania (from 7.9 to 191 kg). Mirroring the increase in seizures, there are reports of the emerging use of heroin and injecting drug use, particularly in Kenya, Mauritius, Seychelles and the United Republic of Tanzania.

Slight increases in heroin seizures have also been reported in many countries in East and South-East Asia, most notably in Indonesia, the Lao People's Democratic Republic, Malaysia, Singapore and Sri Lanka, which may point to an increase in the heroin markets in that region. Reports from various countries confirm that the smuggling of heroin from South-West Asia has made inroads into the illicit markets of Asia-Pacific alongside opiates from South-East Asia, a more established source area. Forensic profiling of heroin seized at the Australian border indicates that heroin originating in South-West Asia already accounted for a majority of the bulk weight of analysed seizures in 2010, while heroin originating in South-East Asia still accounted for the majority in terms of number of seizure cases.[72] In 2010, Australia reported seizures of 513 kg, the highest annual level of seized heroin since 2003, up from 195 kg in 2009.

Reports of individual heroin seizure cases in Pakistan suggest that of the heroin consignments with a known destination other than Pakistan, the proportion of heroin consignments intended for the Asia-Pacific region decreased from 42 per cent in 2009 to 34 per cent in 2010. The drop in 2010 was offset by an increase in heroin consignments intended for the major consumer markets of Europe and North America, notably the United Kingdom and Canada. Nevertheless, the proportion intended for the Asia-Pacific region remained significantly higher than that registered prior to 2006, which saw a marked shift in destinations from West and Central Africa to countries in the Asia-Pacific region, notably China. The proportion intended for West and Central Africa continued to decline after that; it stood at 6 per cent in 2010 (see figure 23).

72 Australian Crime Commission, *Illicit Drug Data Report 2009-10* (Canberra, June 2011).

C. COCAINE MARKET

A decline in production but no fall in global consumption

Despite uncertainty in cocaine manufacture estimates, which do not allow a precise comparison of levels of potential manufacture between the three cocaine-manufacturing countries, Bolivia (Plurinational State of), Colombia and Peru,[73] available data on cultivation, yield and trafficking indicate that global cocaine manufacture declined in 2010 from the high levels seen in the period 2005-2007. This is largely a result of a decrease in cocaine manufacture in Colombia in the five years up to and including 2010, which was partly offset by increases in both Bolivia (Plurinational State of) and Peru.

At the global level, cocaine use is generally stable, with the number of estimated annual cocaine users in 2010 ranging from 13.3 million to 19.7 million, corresponding to 0.3-0.4 per cent of the global adult population (persons aged 15-64). The negative health consequences of cocaine use therefore remain undiminished and violence related to cocaine trafficking continues to be an important contributory factor in the affected subregions, some of which are currently experiencing the highest homicide rates in the world.[74]

Table 12. Global illicit cultivation of coca bush, 2001-2010 (Hectares)

	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010
Bolivia (Plurinational State of)	19 900	21 600	23 600	27 700	25 400	27 500	28 900	30 500	30 900	31 000
Colombia										
(Area without adjustment for small fields)	144 800	102 000	86 000	80 000	86 000	78 000	99 000	81 000	68 000	57 000
(Area with adjustment for small fields)	..	..	..	..	..	..	..	..	73 000	62 000
Peru	46 200	46 700	44 200	50 300	48 200	51 400	53 700	56 100	59 900	61 200
Total[a]	**210 900**	**170 300**	**153 800**	**158 000**	**159 600**	**156 900**	**181 600**	**167 600**	**158 800**	**149 200**

Source: For Bolivia (Plurinational State of): 2001-2002: Inter-American Drug Abuse Control Commission (CICAD) and United States Department of State, International Narcotics Control Strategy Report; 2003-2010: National Illicit Crop Monitoring System supported by UNODC.
For Colombia: National Illicit Crop Monitoring System supported by UNODC.
For Peru: National Illicit Crop Monitoring System supported by UNODC.

[a] For the calculation of the total area, the series Colombia (Area without adjustment for small fields) was used as the area with adjustment was not available for all years presented.

Table 13. Potential production of sun-dried coca leaf in Bolivia (Plurinational State of) and Peru, 2005-2010 (Tons)

	2005	2006	2007	2008	2009	2010
Bolivia (Plurinational State of)						
Best estimate	28 200	33 200	36 400	39 400	40 100	40 900
Range	..	..	*34 200-38 300*	*37 300-41 800*	*37 900-42 300*	*38 600-43 100*
Peru						
Best estimate	97 000	105 100	107 800	113 300	118 000	120 500
Range	*85 400-108 600*	*91 000-119 200*	*93 200-122 000*	*97 600-127 800*	*102 400-134 200*	*103 000-136 300*

Source: For Bolivian estimates: potential production of sun-dried coca leaf available for cocaine manufacture, estimated by the national illicit crop monitoring system supported by UNODC. For the coca leaf yield, UNODC studies (for the Yungas of La Paz). The estimated amount of coca leaf produced on 12,000 ha in the Yungas of La Paz, where coca bush cultivation is authorized under national law was deducted (range: upper and lower bounds of the 95 per cent confidence interval of the estimate of coca leaf yield).
For Peruvian estimates: potential production of sun-dried coca leaf available for cocaine manufacture, estimated by the national illicit crop monitoring system supported by UNODC. A total of 9,000 tons of sun-dried coca leaf were deducted, which, according to Government sources, is the amount used for traditional purposes. Range: upper and lower bounds of the 95 per cent confidence interval of the estimate of coca leaf yield.

73 A discussion of the challenges in estimating the quantities of cocaine manufactured can be found in the *World Drug Report 2010* (United Nations publication, Sales No. E.10.XI.13), chap. 4.1.

74 See United Nations Office on Drugs and Crime, *2011 Global Study on Homicide: Trends, Contexts, Data*.

Table 14. Potential production of fresh coca leaf and coca leaf in oven-dried equivalent in Colombia, 2005-2010 (Tons)

	2005	2006	2007	2008	2009	2010
Fresh coca leaf						
Best estimate	*555 400*	*528 300*	*525 300*	*389 600*	*343 600*	305 300
Range	..	..	..	..	..	*305 300-349 600*
Coca leaf in oven-dried equivalent						
Best estimate	*164 280*	*154 130*	*154 000*	*116 900*	*103 100*	91 600
Range	..	..	..	..	..	*91 600-104 880*

Source: National illicit crop monitoring system supported by UNODC.
Note: Because of the introduction of an adjustment factor for small fields, 2010 estimates are not directly comparable with previous years. The ranges express the uncertainty associated with the estimates. The range represents the two approaches taken to calculate the productive area, with the lower limit being closer to the estimation used in previous years. The methodology used to calculate uncertainty ranges for production estimates is still under development and figures may be revised when more information becomes available.

Table 15. Potential manufacture of cocaine with a purity level of 100 per cent in Bolivia (Plurinational State of), Colombia and Peru, 2005-2010 (Tons)

	2005	2006	2007	2008	2009	2010
Bolivia						
Best estimate	80	94	*104*	*113*	..	..
Colombia						
Best estimate	680	660	630	450	410	350
Range	..	..	..	..	..	*350-400*
Peru						
Best estimate	*260*	*280*	*290*	*302*	..	..
Total	***1 020***	***1 034***	***1 024***	***865***	.. [a]	.. [a]

Source: For Bolivian estimates: calculations based on UNODC studies (for the Yungas of La Paz) and studies of the Drug Enforcement Administration (DEA) of the United States (for Chapare). For Colombian estimates: national illicit crop monitoring system supported by UNODC and DEA studies. Due to the introduction of an adjustment factor for small fields, 2010 estimates are not directly comparable with previous years. For Peruvian studies: calculations based on coca leaf to cocaine conversion ratio from DEA studies.
Note: Figures in italics are under review.
a Due to the ongoing review of conversion factors, no point estimate of the level of cocaine manufacture could be provided for 2009 and 2010. Because of the uncertainty about the level of total potential cocaine manufacture and about the comparability of the estimates between countries, the 2009 and 2010 figures were estimated as ranges (842-1,111 and 788-1,060 tons respectively).

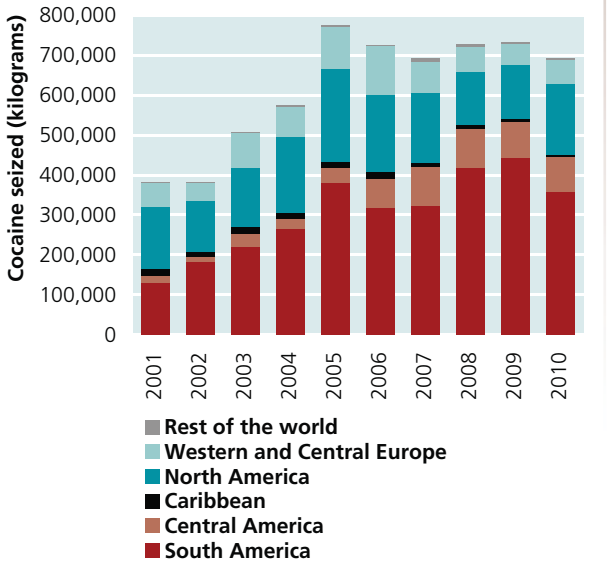
Global cocaine seizures in comparison with manufacture

With 694 tons of cocaine of unknown purity seized in 2010, compared with 732 tons in 2009, global cocaine seizures have remained relatively stable in recent years (see figure 24). Comparing trends in cocaine seizures and manufacture, it can be noted that seizures increased significantly, at a much faster pace than cocaine manufacture, between 2001 and 2005, when drug control efforts were intensified, particularly in the vicinity of cocaine-manufacturing countries such as Colombia, which was then by far the world's largest producer. During that period, South America and Central America accounted for more than two thirds of the increase in global cocaine seizures. After 2005, cocaine seizures decreased at a comparable rate to manufacture and drug control successes became increasingly difficult to achieve, as traffickers adapted their strategies and developed new methods. This could have contributed to the decrease in recent annual cocaine seizure totals, which failed to reach the peak level of 2005. While the total weight of seized cocaine remained rather stable from 2006 to 2010, the amount of pure cocaine removed from the illicit market was actually smaller because the purity of the cocaine on the market decreased. For example, the average purity of the cocaine seized in the United States fell from 85 per cent in 2006, the highest annual average in the period 2001-2010, to only 73 per cent in 2010, the lowest level in that period.[75]

Comparing absolute numbers of total cocaine seizures and manufacture could be misleading. To understand the relationship between the amount of annual seizures reported by States (694 tons cocaine of unknown purity in 2010) and the estimated level of manufacture (788-1,060 tons of cocaine of 100 per cent purity), it would be necessary to take into account several factors, and the associated cal-

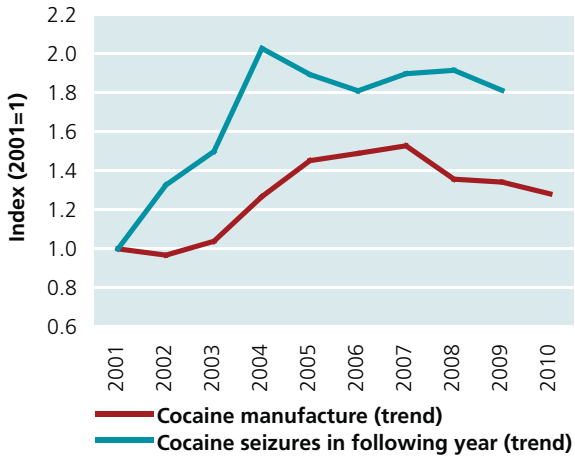
75 These results refer to cocaine originating in Colombia seized mainly by United States authorities in the United States. Cocaine of Bolivian and Peruvian origin is seized much less often in the United States. The small number of samples from these two countries analysed did not indicate a similar decrease in purity (unofficial communication from the Drug Enforcement Administration, Cocaine Signature Program, 2011).

Fig. 24. Seized cocaine of unknown purity, by region, 2001-2010



Source: Annual report questionnaire supplemented by other official sources.

Fig. 25. Global trends in potential cocaine manufacture and seizures, 2001-2010



Source: UNODC (manufacture) and ARQ supplemented by other official sources (seizures).
Note: The potential cocaine production trend was calculated using new conversion factors as described in the *World Drug Report 2011* (United Nations publication Sales No. E.11.XI.10 p. 264). A one-year time lag between production and seizure was chosen because it provides a better correlation than two years or no time lag.

culations would depend on a level of detail in seizure data that is often unavailable. Making purity adjustments for bulk seizures, which contain impurities, cutting agents and moisture, to make them directly comparable with the cocaine manufacture estimates, which refer to a theoretical purity of 100 per cent, is difficult, as in most cases the purity of seized cocaine is not known and varies significantly from one consignment to another. The total amount of seized cocaine reported by States is also likely to be an overestimation. Large-scale maritime seizures, which account for a large part of the total amount of cocaine seized, often require the collaboration of several institutions in a country or even in several countries. [76] Therefore, double counting of reported seizures of cocaine cannot be excluded.

Main consumer market trends

North America, South America and Western and Central Europe continue to be the world's largest cocaine markets. The United States experienced a decrease in the prevalence of cocaine use among adults (persons aged 15-64), from 3.0 per cent in 2006 to 2.2 per cent in 2010,[77] which can be linked to the decline of 47 per cent in cocaine manufacture in Colombia, where most of the cocaine destined for North America was manufactured during that period. But the "turf wars" between drug trafficking organizations and drug control agencies disrupting the flow of cocaine through Mexico are also factors hampering the illicit supply of cocaine to the United States.

While their decline began in 2005, cocaine seizures in the United States have followed a downward trend similar to the prevalence of cocaine itself, suggesting that falling seizures reflect a decreasing supply of cocaine reaching the United States. One reason contributing to the time lag that emerges from these similar, but unsynchronized, trends, with changes in seizure data occurring earlier than changes in prevalence data, is that seizures usually occur relatively near to the start of the trafficking cycle, whereas consumption usually takes place at its end.[78]

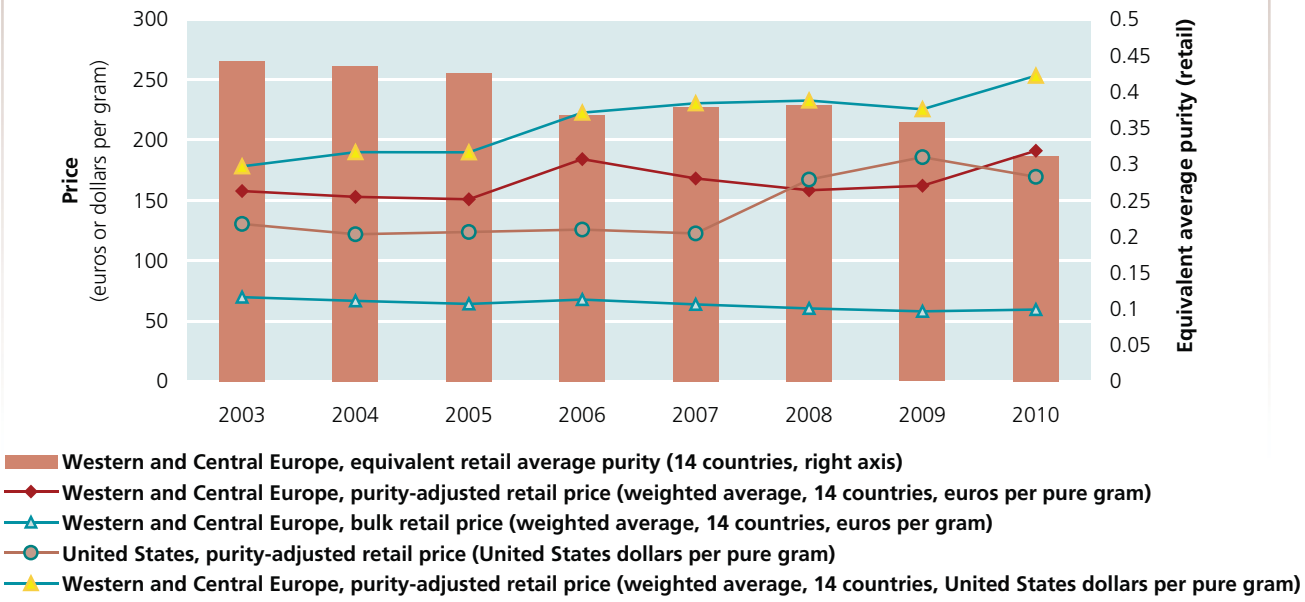
Europe, on the other hand, has not experienced a decline in cocaine supply of the same magnitude, with prevalence of cocaine use starting to stabilize in some countries in 2007, though it has declined in others. In the United States, the decrease in cocaine availability has been reflected in the increased price of cocaine in comparison with 2007 and prior years. Purity-adjusted retail prices reveal significantly more than bulk prices about the recent developments in the United States market; the purity-adjusted price in the period 2008-2010 was significantly higher than the stable levels prior to 2007, reflecting a sustained decreased availability of cocaine in the United States (see

76 For example, in Colombia, between 2002 and 2010, 41-62 per cent of annual seizures of cocaine were made at sea. In 2010, 58 per cent of all such seizures were joint operations involving more than one law enforcement agency from Colombia and/or other countries (United Nations Office on Drugs and Crime and Colombia, *Colombia: Monitoreo de Cultivos de Coca 2010* (June 2011)).

77 In some age groups, the decline was much more drastic, e.g. from 5.7 per cent in 2006 to 2.9 per cent in 2010 among 12th graders (United States, National Institute on Drug Abuse, Monitoring the Future survey, 2006-2010) or from 0.7 per cent in 2006 to 0.21 per cent in 2010 among the workforce (Quest Diagnostics, Drug Testing Index, 2010).

78 Ehleringer and others report a time lag of about two years between coca leaf production and sale to the end-user (J. R. Ehleringer and others, "14C analyses quantify time lag between coca leaf harvest and street-level seizure of cocaine", *Forensic Science International*, vol. 214, Nos. 1-3 (2012), pp. 7-12).

Fig. 26. Purity-adjusted prices in the United States and Western and Central Europe, 2003-2010



Source: Estimates based on UNODC data from the annual report questionnaire the European Police Office and data from the United States of America Office of National Drug Control Policy.

figure 26). In Europe, however, no dramatic changes in prices have been observed since 2007. On the whole, nominal prices (i.e. prices not adjusted for purity or inflation) remained at the same level in dollar terms between 2007 and 2010. In some countries, cocaine prices have even decreased, although some nominal price decreases have gone hand in hand with lower levels of purity.

The purity of cocaine in Europe may have decreased slightly since 2007. The German authorities have reported a relatively stable purity level of about 70 per cent in wholesale seizures in the past decade and an even higher level of purity at the retail level between 2008 and 2010 than in 2007.[79] Seizures by the police in the United Kingdom have indicated a rather drastic decrease in purity, from 32 per cent in the first quarter of 2008 to only 16 per cent in the second quarter of 2009, which then increased to 30 per cent in the first quarter of 2011.[80] By contrast, the purity of cocaine seizures made by the United Kingdom Border Agency, which are considered to reflect the purity of cocaine of mainly wholesale quality at the point of entry into the country, remained above 60 per cent until the last quarter of 2010.[81] The average purity-adjusted retail price (weighted average of 14 countries), however, rose slightly in 2010, with a corresponding drop in the equivalent average purity.

In contrast to North America, where prevalence of cocaine use and cocaine seizures have fallen in parallel, the stability of the prevalence of cocaine use in Western and Central Europe has not coincided with stable seizure levels, as the seizure levels have fallen by some 50 per cent since 2006. A report of the European Police Office (Europol) on maritime seizures of cocaine suggests that a change in trafficking modes could have contributed to this apparent mismatch.[82] While overall seizures have decreased, the amount of cocaine seized in containers has actually increased in countries covered by the study, such as Germany, Spain and the United Kingdom. Seizures of cocaine found on vessels (but not inside containers) have decreased over the same period, implying that traffickers are increasingly making use of containers on the European route by taking advantage of the large volume of container shipments between South America and Europe.[83] Semi-submersible boats, which are known to be used on the Pacific route, do not yet play a role in transatlantic trafficking.[84] Meanwhile, the West African route, which became more and more popular up until 2007, has since become less important.

79 Tim Pfeiffer-Gerschel and others, *2011 National Report to the EMCDDA by the Reitox National Focal Point: Germany—New Developments, Trends and In-Depth Information on Selected Issues, Drug Situation 2010/2011* (European Monitoring Centre for Drugs and Drug Addiction and Deutsche Referenzstelle für die Europäische Beobachtungsstelle für Drogen und Drogensucht, 2011), p. 198.

80 Coleman, "Seizures of drugs in England and Wales, 2010/11".

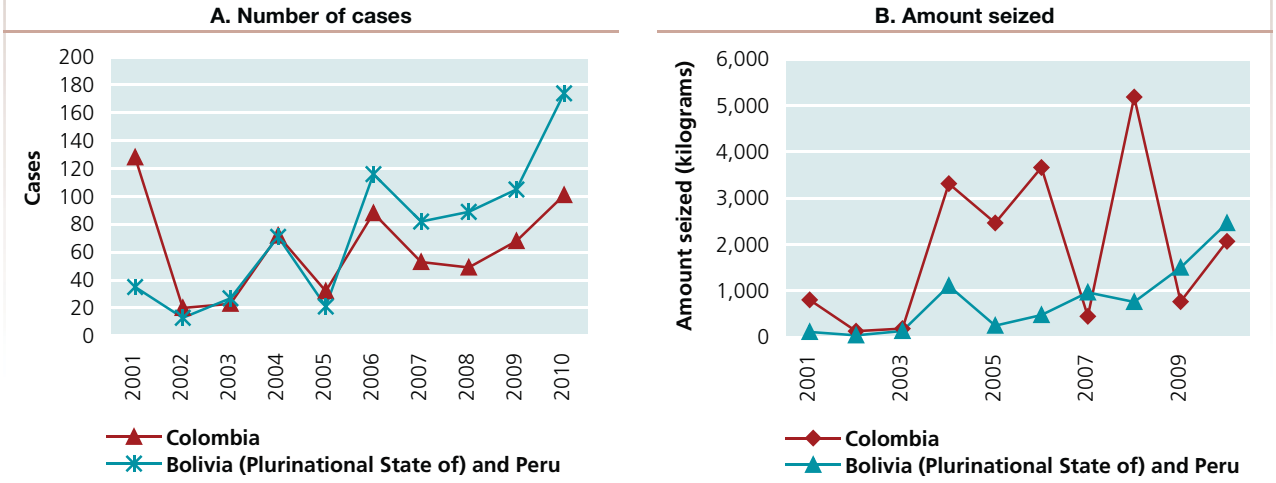
81 Ibid.

82 European Police Office, Project COLA, "Cocaine trafficking to Europe by sea" (The Hague, n.d.).

83 Germany reported its largest ever cocaine seizure in 2010: 1.3 tons of cocaine hidden in a container originating in Paraguay (Gerschel and others, *2011 National Report to the EMCDDA by the Reitox National Focal Point: Germany*, p. 191).

84 European Police Office, Project COLA, "Semisubmersibles: the imminent threat to Europe?" (The Hague, 27 September 2011).

Fig. 27. **Cases involving seizures in Europe of cocaine originating in countries cultivating coca bush, by number of cases and amount, 2001-2010**



Source: UNODC individual drug seizure database based on data from 14 European countries. The database includes cocaine seizure of 100 g or more.

The European cocaine market: a shift in supply

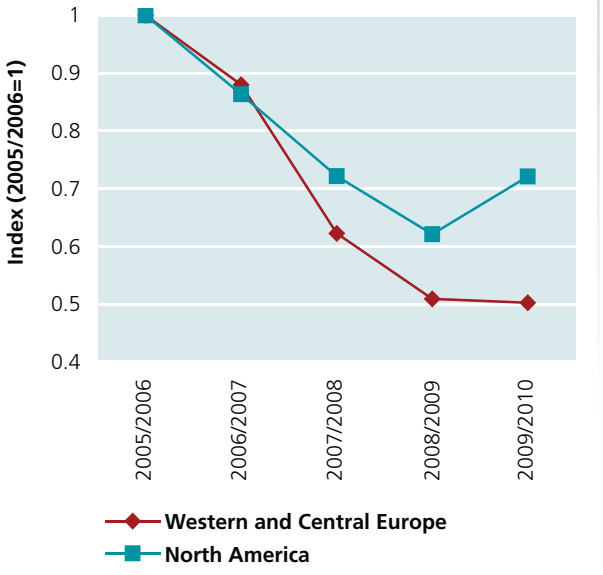
The relative stability in the price and purity of cocaine in the main European markets suggests that Europe has not experienced a cocaine shortage resulting from a decreasing supply of cocaine originating in Colombia, as observed in the United States, because this was, at least partially, compensated by an increasing supply of cocaine originating elsewhere. Indeed, there is some evidence that, while the United States market continued to be almost exclusively supplied by cocaine manufactured in Colombia,[85] starting in 2006 there was something of a shift in the European markets towards Bolivian and Peruvian cocaine.

Since 2006, for example, in individual cocaine seizures reported in European countries, Bolivia (Plurinational State of) and Peru have been mentioned more often than Colombia as countries where cocaine shipments originated. The analysis of the same datasets by seizure size also points to the growing importance of those two countries, but the trend is less obvious as the seizure peaks originating in Colombia in the period 2004-2006 and in 2008 all reflected one multi-ton seizure in each of those years.

Although this provides some evidence of the shift that may have occurred in the European market, more investigation is necessary. Above all, European seizures should be analysed through a cocaine signature programme to verify the producing country, while routes should be more carefully recorded and reported since most shipments follow complex routes and may change hands frequently, resulting in the loss of information relating to the producing country.

Growth in the European market and other expanding markets for Bolivian and Peruvian cocaine can also be registered in the increased demand for coca paste and cocaine in Bolivia (Plurinational State of) and Peru, as observed in the rising prices of those substances. Yearly average prices for coca paste and cocaine in cocaine-producing areas in Peru were higher by 28 per cent and 13 per cent, respectively, in the period 2008-2010 compared with the period 2005-2010 (see figure 29); as local demand for cocaine is reported to be rather stable, this increase is likely to be export-driven. In the Plurinational State of Bolivia, nominal prices of cocaine in producing areas also increased con-

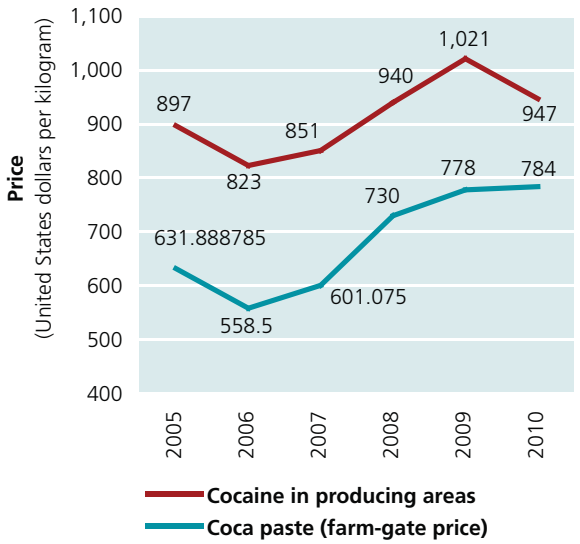
Fig. 28. **Trends in cocaine seizures in North America and Western and Central Europe** (Two-year moving averages)



Source: UNODC data from the annual report questionnaire.

85 United States, Drug Enforcement Administration, "Cocaine Signature Program report", January 2011.

Fig. 29. Yearly average wholesale prices of cocaine of unknown quality in producing areas of Peru, 2005-2010



Source: UNODC and Government of Peru, Coca Cultivation Survey reports 2005-2010.

siderably between 2005 and 2010. As cocaine manufacture in both countries increased over the same period, because of the expansion of the area under coca bush cultivation and, perhaps also because of improved cocaine extraction methods, prices of coca derivates should have decreased rather than increased. The increase could be a sign of increased, possibly export-driven, demand for cocaine by traffickers supplying the European market or other markets, such as Brazil, to compensate for a decrease in production in Colombia, which may have caused a change in trafficking patterns.

Emerging and expanding markets

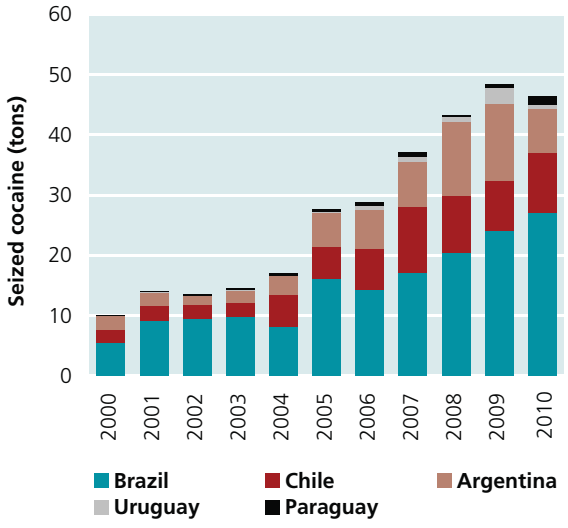
An additional factor influencing the availability of, and overall demand for, cocaine in different regions is the emergence of new cocaine markets outside the main markets, North America, Western and Central Europe, and South America. Seizure amounts in these emerging markets are typically low in absolute terms and only a fraction of seizures made in producing regions or the main markets. However, as cocaine is not one of the typical drugs consumed in regions where, for example, opiates or ATS are more common, it may not always be identified as cocaine by law enforcement authorities. Since no recent studies on prevalence are available for these emerging markets, the upward trend in cocaine seizures in such markets could highlight an emerging problem that is not yet visible in demand data.

Some data suggest that emerging and expanding markets for cocaine exist in subregions such as Eastern Europe, South-East Asia and Oceania; while those markets are still small, they have growth potential and/or risk factors that favour an increase in cocaine use. Seizure trends in subregions not known to have sizable cocaine consumer populations could indicate that the smuggling of cocaine into or through those subregions has gained in importance. For example, while seizures in Western and Central Europe practically halved between 2005/06 and 2009/10, cocaine seizures in Eastern Europe and South-Eastern Europe tripled. Increased demand could be one factor; a diversification in trafficking patterns could be another.

An even greater increase in cocaine seizures can be seen in East Africa and Oceania, where the 2009/2010 levels were about four times higher than in 2005/2006, and in East and South-East Asia. In Oceania (2.6 per cent and increasing in Australia and 0.6 per cent in New Zealand), annual prevalence of cocaine use is high compared with South-East Asian countries (Indonesia, Philippines and Thailand), where less than 0.1 per cent of the adult population use cocaine. However, for many Asian countries, including China and India, no recent information on cocaine use is available. Limited information from Africa suggests that cocaine trafficking via West Africa may be having a spillover effect on countries in that region, with cocaine use possibly emerging alongside heroin use as a major problem among drug users.

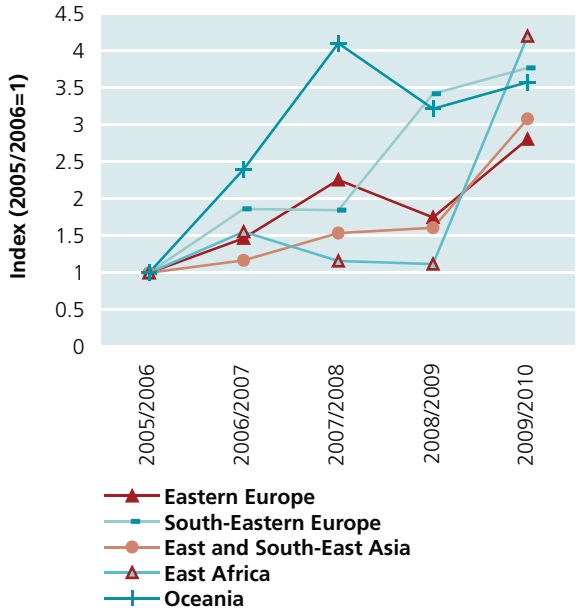
Seizure data and limited information on demand for treatment services also point to a possible increase in illicit demand for cocaine in countries with an already significant population of cocaine users. In Brazil, federal seizures have more than tripled since 2004, reaching 27 tons in 2010 (see figure 30). According to experts, Brazil also experienced some increase in cocaine use in 2010. Recent survey data for Brazil are unavailable, but the concern over the

Fig. 30. Cocaine seizures in selected South American countries, 2000-2010



Source: Annual report questionnaire supplemented by other official sources.
Note: For Argentina, available data for 2010 were not directly comparable with data for previous years, as coverage does not include seizures by federal security forces in Argentina. Hence, total seizures for 2010 (for Argentina and consequently for all five of the countries) may be higher than shown in the figure.

Fig. 31. Subregions with increasing cocaine seizures (Two-year moving averages)



Source: Annual report questionnaire supplemented by other official sources.

increase in cocaine use in Brazil is reflected in the country's national programme launched in December 2011. The increase in seizures could also reflect the role of Brazil as a country of departure for cocaine smuggled across the Atlantic Ocean.

In Argentina, cocaine seizures rose almost eightfold between 2002 and 2009.[86] Seizures in Chile peaked in 2007 and remained relatively high until 2010, and seizures more than doubled in Paraguay in 2010. However, survey data indicate that cocaine use in Argentina remained stable in 2010 in comparison with 2008, and cocaine use decreased in Chile over the same period. Nevertheless, prevalence of cocaine use remains relatively high in both of those countries.

Improving the comparability of data from countries with coca bush cultivation

The comparison and aggregation of estimates of the area under coca bush cultivation in the three countries cultivating coca bush remains challenging. Numerous efforts have been made by UNODC and the Bolivian, Colombian and Peruvian Governments and to ensure the comparability of the estimates of their respective areas under coca bush cultivation. The monitoring systems in the three countries are all based on remote-sensing technology covering the entire area under coca bush cultivation (census). They all follow standard scientific practices to maximize data quality; however, differences in the size of the monitored area, the concept used for the area under coca bush cultivation, climatic conditions, the availability of secondary information and security risks impeding access to growing areas have led the systems to use different implementation modalities, technologies and data sources.[87]

In Colombia, for example, virtually the entire country has to be covered by the survey each year as coca bush cultivation is very dynamic and is spread over a large area, shifting frequently and necessitating the use of larger but lower-resolution satellite images, such as images taken by the Landsat ETM sensor. In Bolivia (Plurinational State of) and Peru coca bush cultivation is restricted to particular growing areas that tend to be well known and relatively stable; because of the smaller area more costly images with higher resolution can be purchased (e.g. SPOT 5, Rapideye, Ikonos). The dynamics of coca bush cultivation are different in Colombia than in the other two countries. The high eradication pressure in Colombia, through airborne spraying of coca bush cultivation sites, as well as intense manual eradication activities, has led to a highly dynamic situation. Cultivation sites are frequently shifted, they change in size, they are abandoned, reactivated and abandoned again within relatively short periods. By contrast, in the other two countries eradication, which is exclusively manual, is restricted to certain growing areas, because outside those areas there are fields where coca bush cultivation may be allowed by the Government for nationally authorized markets.

While the adjustment of each monitoring system to country-specific conditions and needs has contributed to the continued production of annual estimates of coca bush cultivation, it has also put into question the comparability of those countries. The main element affecting the comparability of estimates of coca bush cultivation in the three countries is the definition of area under coca bush cultivation. While in Bolivia (Plurinational State of) and Peru the concept relates to the extent of coca bush cultivation as observed on satellite imagery taken between September of the reporting year and February of the following year, in Colombia the estimates refer to 31 December of each year. Therefore, the results from satellite imagery collected from September to February in Colombia undergo a number of adjustments in order to represent the net area under coca bush cultivation on 31 December of the reporting year, while in the other two countries no adjustments are usually made to the area interpreted in satellite images as being under such cultivation. Adjustments made to meet the reference date such as these, for example, take into account the effect of spraying and manual eradication that happened after the image was taken but before 31 December, and the adjustment of the results to a reference date improves the year-on-year comparability in a very dynamic situation.

Other adjustments applied in Colombia address issues common to all three surveys, such as data gaps on the

86 Data available for 2010 were not comparable, as coverage does not include seizures by federal security forces in Argentina.

87 See *World Drug Report 2011*, p. 100.

images due to cloud cover or technical problems related to the satellite sensor, but which are a more severe problem in Colombia due to climatic conditions and the image types used. In addition, based on evidence gathered using images with very high resolution, an adjustment is made for small coca bush cultivation sites that the image resolution is not able to identify in Colombia but which are picked up by the images used for the other two countries. These adjustments improve the comparability of the three surveys. Thus, some adjustments directed at addressing country-specific needs and conditions limit the comparability while others contribute to improving it. However, each adjustment factor also has its own uncertainty.

The effect of eradication on comparability

In Colombia, the total geographical area affected by coca bush cultivation in the course of 12 months is significantly higher than the figure calculated on the 31 December.[88] In 2010, 145,000 ha were fumigated and eradicated, including a double counting of some areas, which were covered more than once due to replanting or recovery of the coca fields. In total, 140,000 ha were affected by coca cultivation in Colombia in 2010, including fields that remained active throughout the whole year, fields that were active only part of the year because they were sprayed or eradicated, and fields that only came into existence in the course of the year. Thus, the gross area affected by coca cultivation in 2010 was over two and a half times the net area estimated for 31 December 2010 (62,000 ha).

The large difference between gross area and net area in Colombia demonstrates that a large part of the area affected by coca cultivation is subject to continued law enforcement pressure. Given the nature of the coca plant, which can be harvested a number of times in a year and can be replanted at any time of year, eradication activities may have less of an effect on the extent of coca bush cultivation in a given year but more of an impact on the productivity of coca bush fields because it is thought to reduce the annual coca leaf yield.

In Bolivia and Peru, there is no attempt to adjust the data to a particular date in the year and data on coca cultivation are estimated as interpreted through satellite images acquired from September to February. Manual eradication also plays a role in these countries, as does the abandonment or new establishment of coca fields. However, satellite imagery that is collected in the last quarter of the year only reflects the impact of eradication that happened before but not after the image date.

Data for the three countries can be compared by making use of various methods for comparison. Due to eradication pressure influencing coca monitoring in different countries, the area observed in satellite images at a certain point in time may hide very different dynamics and extents of coca cultivation.

The gross area was estimated by adding fields eradicated or fumigated before the imagery was taken and which would therefore not show as coca on the satellite images. Comparing the gross area or total area affected by coca cultivation in a year with other area concepts demonstrates the dynamics of coca cultivation differ a great deal between the three countries.

Table 16. Comparing concepts of the area under coca bush cultivation, 2010 (Hectares)

Area	Bolivia (Plurinational State of)	Colombia	Peru[a]
Area on 31 December 2010	..	62 000 (adjusted for small fields, clouds and other information gaps, date of image and spraying)	59 800–61 200
Area interpreted on satellite imagery	31 000	60 553 (adjusted for small fields, clouds and other information gaps)	61 200
Gross area affected by coca bush cultivation between 1 January and 31 December including areas that were eradicated and productive only part of the year	..	140 000	61 200–71 800

Sources: UNODC and Governments of Bolivia (Plurinational State of), Colombia and Peru, *Coca Cultivation Surveys* (2010) as well as information from spraying and eradication records provided by the Governments.

[a] There was not sufficient information available on the timing and location of eradication activities to provide a point estimate of the area on 31 December and the gross area affected by coca bush cultivation. For the calculation of the area on 31 December, the effect of eradication conducted between the satellite image date and 31 December could be estimated but not the effect of potential replanting and new plantations, which could potentially offset eradication.

88 The area affected by coca bush cultivation in this report refers to the geographical area fumigated, manually eradicated or found to have coca bush that was neither fumigated nor manually eradicated. It was assumed that all areas sprayed with herbicides were "affected" by coca bush cultivation. Independent confirmation that the totality of the fumigated area corresponds to coca bush fields is not available.

Table 17. Reported eradication of coca bush, 2005-2011 (Hectares)

Country	Eradication method used[a]	2005	2006	2007	2008	2009	2010	2011
Bolivia	Manual	6 073	5 070	6 269	5 484	6 341	8 200	10 460
Colombia	Manual	31 980	43 051	66 805	95 634	60 544	43 690	35 203
	Spraying	138 775	172 026	153 134	133 496	104 771	101 939	103 302
Ecuador	Manual	18	9	12	12	6	3	..
Peru[b]	Manual	7 605	9 153	10 188	11 102	10 091	12 239	..
Venezuela	Manual	40	0	0	0	0	..	..

Source: Governments of Bolivia (Plurinational State of), Colombia and Peru. UNODC data from the annual report questionnaire.
[a] Voluntary and forced eradication since 2006.
[b] Including voluntary and forced eradication.

D. CANNABIS MARKET

The two faces of cannabis

Cannabis is a truly global phenomenon. Reports on cultivation and seizures of cannabis and on sources of cannabis products[89] illustrate that cannabis is not only consumed in all countries in the form of cannabis herb (marijuana), it is also grown in most of them. Cannabis herb refers to the flower buds of the plant, which contain the highest concentration of the drug's main active ingredient, tetrahydrocannabinol (THC), while the other most common of its variations, cannabis resin (hashish), is produced from the compressed resin glands of the cannabis plant.

The cannabis plant can be easily cultivated both indoors and outdoors, and the relatively simple production of cannabis herb, in particular, has led to it being produced and traded almost everywhere in the world, often in local markets. In this way, much of the demand for cannabis can be covered by local production, which producers may also consider to be safer since it involves less trafficking and subsequently reduces the risk of seizure, though many countries continue to report that a significant proportion of cannabis comes from intraregional trafficking.

The more protracted processing of the cannabis plant into cannabis resin is confined to far fewer countries, most of which are located in North Africa, the Near and Middle East, and South-West Asia. There are, however, only fragmented new data available on global cannabis resin production,[90] an exception being data from the cannabis survey conducted by UNODC in Afghanistan in 2011. The localized and often small-scale nature of cannabis cultivation and production also makes it very difficult to measure the extent of global cannabis cultivation and production.

Global cannabis production

Few countries estimate the extent of cannabis cultivation and production, but the Governments of the following countries reported estimations of their areas under cultivation in 2010 (see table 18): India (552 ha); Indonesia (422 ha of harvestable areas); Morocco (47,400 ha); Sri Lanka (500 ha); Swaziland (633 ha); and Ukraine (920 ha), which also recently reported a large increase in cannabis cultivation. According to estimates made by the United States, the extent of cannabis cultivation in Mexico has decreased.[91] However, area figures for all countries are rarely accompanied by a description of the estimation methods used and are frequently identical to eradication figures. UNODC is currently preparing to assist both Mexico and Ukraine in monitoring the extent of cannabis cultivation.

Data on cannabis production may be limited but differences in the geographical distribution of cannabis herb and resin production are actually reflected in the regional markets for cannabis. Map 8 shows the relative importance of the number of cannabis resin seizure cases in comparison with the number of cannabis herb seizure cases by subregion from 2006 to 2010; the different geographical concentrations of the markets for cannabis herb and resin. In the Near and Middle East and South-West Asia, cannabis resin is by far the most prominent of the two, in North Africa and Europe, the proportion of herb and cannabis resin seizure cases, estimated at between 40 and 60 per cent, respectively, show that the two markets are similar in size, whereas the rest of the world is dominated by cannabis herb. In terms of the weight of cannabis seizures, cannabis resin was the most dominant (90 per cent) of the two products in the European market in 2010. Data for most parts of Africa are scarce but it seems that cannabis herb is also the more commonly seized of the two in that region.

89 See *World Drug Report 2010* (United Nations publication, Sales No. E.10.XI.13).

90 In the *World Drug Report 2009* (United Nations publication, Sales No. E.09.XI.12), it was estimated that the production of cannabis herb ranged from 13,300 to 66,100 tons and the production of cannabis resin from 2,200 to 9,900 tons. The calculations were based on the minimum and maximum levels from reported cultivation and production, seizures and prevalence rates. In 2011, these indicators did not show significant changes that would justify an update of the production estimates, taking into account the large minimum and maximum levels.

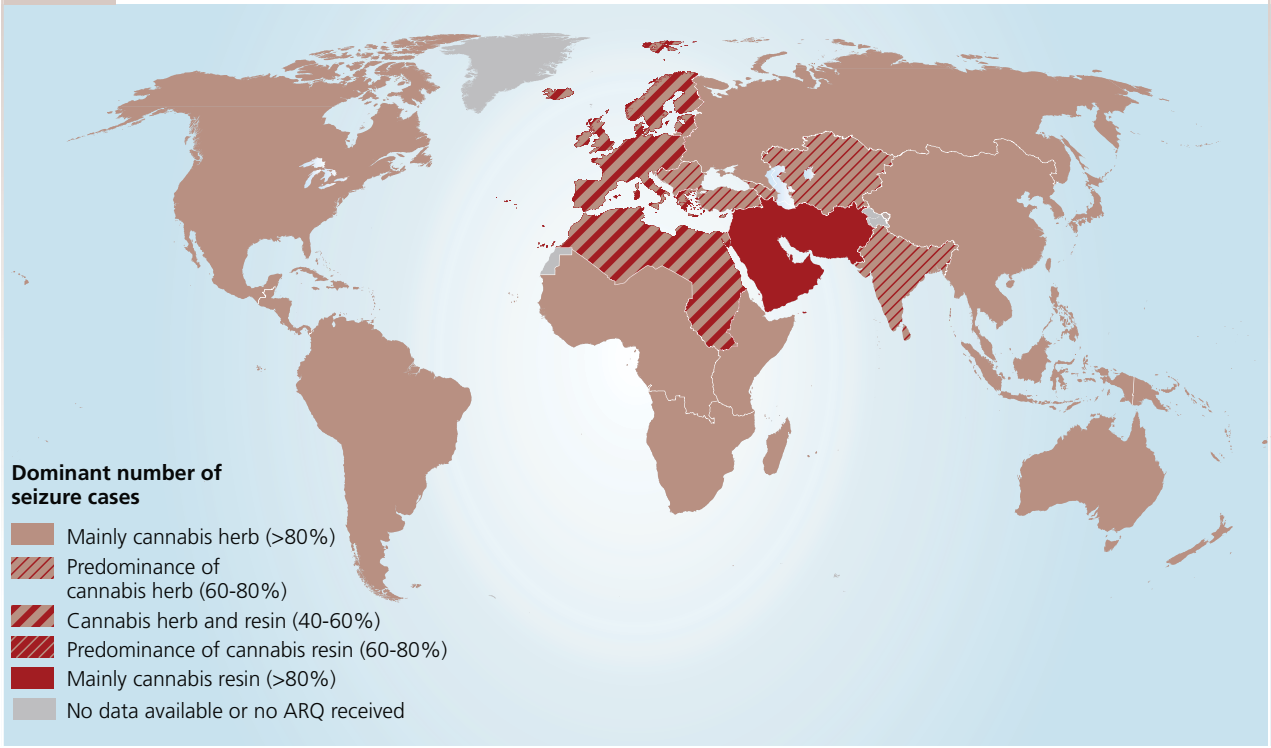
91 United States, Department of State, Bureau for International Narcotics and Law Enforcement Affairs, *International Narcotics Control Strategy Report*, vol. I, *Drug and Chemical Control* (March 2012).

Table 18. Update of information available on the extent of cannabis cultivation and production in major producing countries, 2010

Country	Area under cultivation area (hectares)	Eradication area (hectares)	Harvestable area (hectares)	Production (tons)	
				Cannabis resin	Cannabis herb
Afghanistan[a]	9 000-24 000	..	..	1 200-3 700	..
Egypt	..	129.8	..	..	..
India	552.0	552.0	..	..	..
Indonesia	600.0	178.0	422.0	..	..
Jamaica	..	447.0	..	..	..
Mexico	16 500 (INCSR 2012)[b]	18 581[c]	..	..	..
Morocco	..	9 400.0	47 500	760	38 000
Nigeria	..	593.2	..	..	..
Sri Lanka	500.0	..	..	..	..
Swaziland	632.5	632.5	..	..	..
Ukraine	920.0	920.0	..	..	..

Source: UNODC data from the annual report questionnaire (2010), if not mentioned otherwise. Only areas reporting more than 100 ha are mentioned.
[a] Information from the cannabis survey conducted by UNODC in Afghanistan in 2010 and 2011.
[b] The Government of Mexico does not validate the estimates provided by the United States, as they are not part of its official figures and it does not have information on the methodology used to calculate them. The Government of Mexico is in the process of implementing a monitoring system in collaboration with UNODC to estimate illicit cultivation and production.
[c] Information from the Government of Mexico.

Map 8. Importance of cannabis herb and resin products, by subregion, 2006-2010



Source: UNODC data from the annual report questionnaire (2006-2010).
Note: The boundaries and names shown and the designations used on this map do not imply official endorsement or acceptance by the United Nations. Dashed lines represent undetermined boundaries. 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.

Is there a shift in the supply of cannabis resin from Morocco to Afghanistan?

Production of cannabis resin in Europe is assumed to be very small, yet Europe is the world's largest market for cannabis resin and North Africa has long been its predominant supplier. The majority of North African cannabis resin consumed in Europe traditionally comes from Morocco but recent data show that the relative importance of that source country could be on the decline, whereas the relative importance of other countries, such as Afghanistan and India, is on the increase.

Figure 32 shows the main countries producing cannabis resin in terms of the number of times they were mentioned as a source country by countries in which seizures of cannabis resin took place. Such data must be treated carefully as it does not distinguish between transit countries and countries of origin, but it does suggest that there might have been a shift in the importance of the two countries most often cited for producing cannabis resin: Afghanistan and Morocco.

Data reported by the Government of Morocco point to a decrease in the production of cannabis resin in that country, with lower cannabis cultivation figures compared with the figures for the period 2003-2005, when UNODC and the Government conducted joint surveys. Seizures of cannabis in all its forms also decreased; while "kif", (a dried form of cannabis that can be processed into cannabis resin), is still seized in large quantities, seizures of "kif" fell from 223 tons in 2009 to 187 tons in 2010.

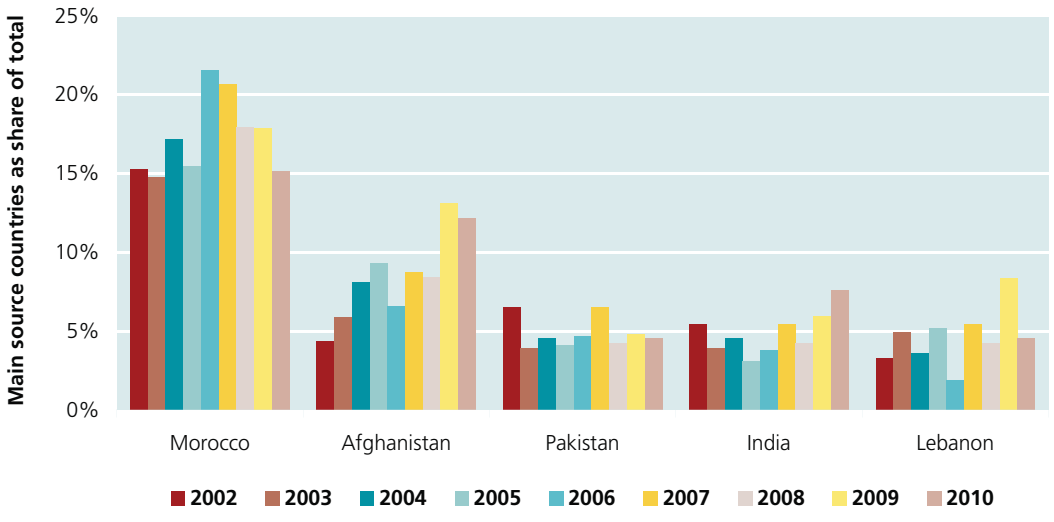
UNODC and the Government of Afghanistan jointly carried out a survey on cannabis cultivation in Afghanistan in 2009, 2010 and 2011. The extent of cannabis cultivation and production could only be estimated as ranges with a high level of uncertainty at between 9,000 and 29,000 ha in 2010, which is lower than earlier estimates from Morocco. However, the large yield of the Afghan cannabis crop (128 kg of cannabis resin per hectare, compared with about 40 kg per hectare in Morocco), which led to the production of between 1,200 and 3,700 tons of cannabis resin in 2010, makes Afghanistan a very important — if not the most important — producer of cannabis resin worldwide.

The latest results of UNODC price monitoring have shown that, as the price of cannabis largely developed in parallel with the opium price hike caused by the 2010 opium crop failure (see figure 33), cannabis continues to be an attractive cash crop in Afghanistan. The rise in the farm-gate price of cannabis in Afghanistan was, to some extent, echoed in its neighbouring countries, particularly Pakistan, where the wholesale price increased from $200 per kilogram in December 2009 to $630 per kilogram in February 2012.

Cannabis: Afghanistan's most lucrative cash crop

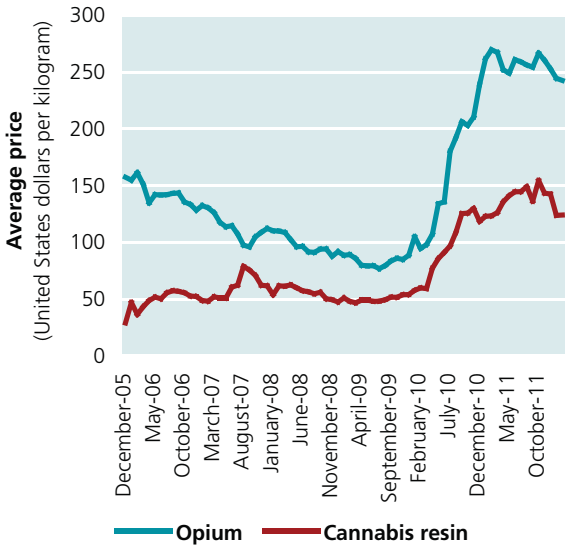
Production and price data collected for the 2010 survey of cannabis cultivation in Afghanistan showed that cannabis cultivation has become very lucrative, with revenues even surpassing those earned from the cultivation of opium poppy: the average gross income of a cannabis-growing household was about $9,000 in 2010, compared with $4,900 for a household growing opium poppy. The income of the latter increased in 2011 to $10,700. However the results of the 2011 cannabis survey are not yet available, and comparisons cannot be made for 2011.

Fig. 32. Main source countries of cannabis resin, 2002-2010



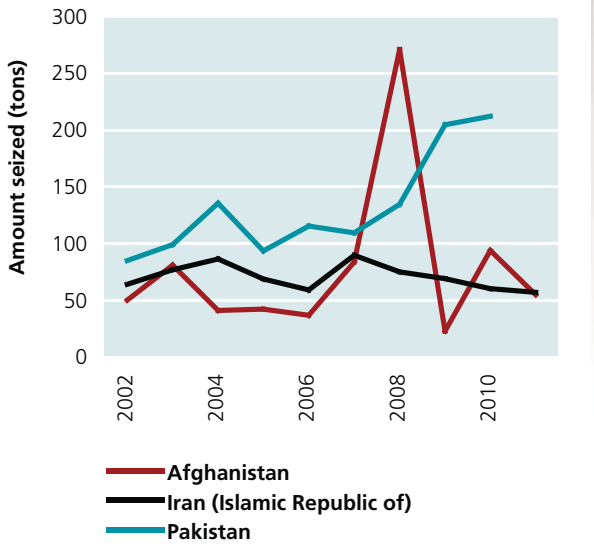
Source: UNODC data from the annual report questionnaire (2002-2010).

Fig. 33. Average farm-gate prices for opium and cannabis resin (first "garda") in Afghanistan, 2005-2011



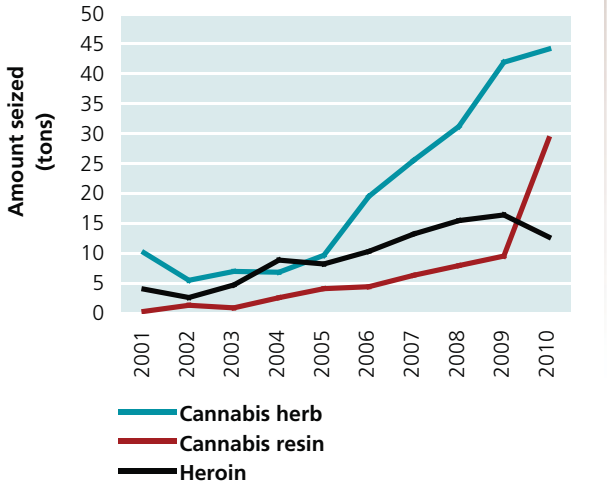
Source: UNODC and Afghanistan, Ministry of Counter-Narcotics.
Note: "Garda" is the local term used in Afghanistan for the powder obtained by threshing and sieving harvested and dried cannabis plants. This process is repeated several times, resulting in different quality levels of "garda" (first, second, third). "Garda" is further processed into hashish, which is the traded product.

Fig. 34. Cannabis resin seized in Afghanistan and its neighbouring countries, 2002-2011



Source: UNODC and Afghanistan, Ministry of Counter-Narcotics, *Afghanistan: Cannabis Survey 2010* (2011).

Fig. 35. Cannabis and heroin seized in Turkey, 2001-2010



Source: Annual report questionnaire supplemented by other official sources.

Seizure data show that an increase in seizures of cannabis resin in South-West Asia as a whole could be observed in 2010; and although seizures in Afghanistan dropped after reaching a record level in 2008 (271 tons, mainly as a result of one very large seizure), seizures in its neighbouring countries increased. In Pakistan, seizures of cannabis resin increased sharply from 2008, with 212 tons being seized in 2010, almost twice the 2007 level (see figure 34). Pakistan assessed that all of the cannabis resin seized on its territory in 2010 originated in Afghanistan, and identified Canada and Sri Lanka as being among the intended countries of destination. Seizures of cannabis resin also increased in the countries in the Middle East with the largest amount of seized cannabis resin (Egypt, Saudi Arabia and the Syrian Arab Republic).

Cannabis resin seizures in Turkey, an important transit country for opiates from Afghanistan, also showed an increasing trend, from 10 tons in 2009 to 29 tons in 2010 (see figure 35). Since heroin seizures decreased in Turkey in 2010, it seems plausible that there has been a shift from smuggling heroin to smuggling consignments of cannabis resin, which is more common, possibly destined for other European countries. However, since seizure data may simply reflect improved law enforcement efforts, it is not entirely clear whether the decrease in heroin seizures gave security forces more opportunity to seize cannabis or whether this actually reflected an increase in trafficking from, or illicit production in, Afghanistan.

The continuous increasing trend in seizures of cannabis herb in Kazakhstan, where cannabis grows wild in large areas, is also remarkable. Since 2010, Kazakhstan has developed new approaches to counteracting drug trafficking and illicit drug use, focusing on supply reduction, strengthening its southern border and treatment programmes for drug users.[92] Therefore, increased seizures may also reflect an increase in law enforcement activities and not simply increased illicit drug production and trafficking in that country.

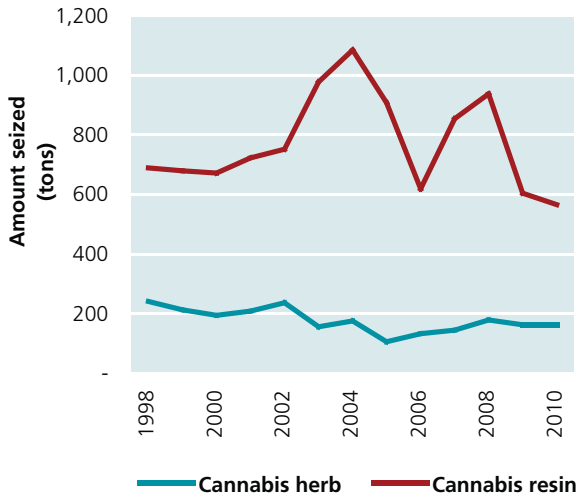
92 United States, Department of State, Bureau for International Narcotics and Law Enforcement Affairs, *International Narcotics Control Strategy Report*, vol. I, *Drug and Chemical Control* (March 2011).

Europe: a market in transition?

Europe may be the world's largest market for imported cannabis resin, but there is evidence that cannabis herb actually produced in the region itself[93] is playing an increasingly important role in the European cannabis market. As discussed above, cannabis resin consumed in Europe is traditionally from Morocco but cannabis cultivation and production in that country seem to be on the decline. From the late 1990s to the mid-2000s, cannabis resin seizures increased with a sudden drop in 2006 following a 2005 crop failure in Morocco (see figure 36), whereas cannabis herb seizures decreased in the same period. Cannabis herb seizures started increasing in 2006 and stabilized at about 170 tons per year in 2009 and 2010, whereas seizures of cannabis resin have significantly decreased since 2008, and the 2010 seizure total of 566 tons is even lower than the total in 2006.

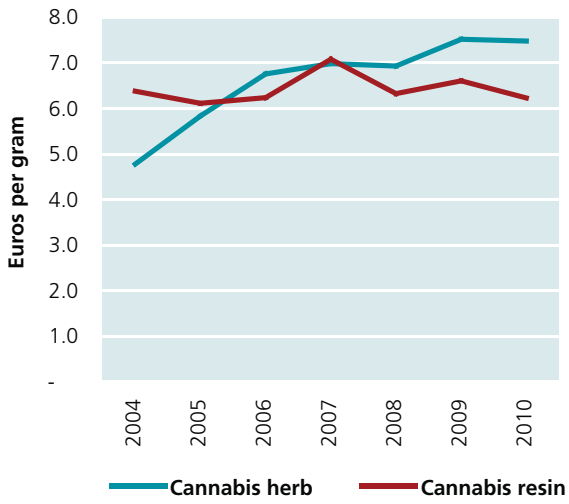
Spain, which has long been a gateway for cannabis resin from North Africa, reports that seizures fell for the second consecutive year to their lowest registered level since 1997 (384 tons). If this trend continues, it may be an indication of the increasing relative importance of cannabis herb over cannabis resin in Europe, though assessing how trends in European production of cannabis herb influence the cannabis market and the consumption of cannabis continues to be difficult. European price data show that, while the price of cannabis herb increased between 2004 and 2010, the price of cannabis resin remained stable (see figure 37), lending weight to this argument. However, the prices are adjusted for inflation but not for purity/potency, which is particularly significant in the case of cannabis herb, as the potent "sinsemilla" (a high-grade form of cannabis that is produced without seeds and that consists of the unfertilized flowers of the female plant) is reportedly more expensive than less potent forms of cannabis.

Fig. 36. Cannabis herb and cannabis resin seized in Europe, 1998-2010



Source: Annual report questionnaire supplemented by other official sources.

Fig. 37. Unweighted average of cannabis retail prices (adjusted for inflation) for European countries in the eurozone



Source: UNODC data from the annual report questionnaire (2004-2010); International Monetary Fund.

The term "import substitution" is increasingly being used in reference to increases in cannabis cultivation in Europe. In recent scientific literature[94] on cannabis markets, as well as in reports published by individual countries such as France,[95] increasing local production of cannabis is related to tougher competition in the European market for imported products such as cannabis resin.

A shift in cannabis herb production in Europe

The Netherlands continues to be one of the main European countries producing cannabis herb; however, tougher policies towards cannabis production in the past few years have been implemented there, which can be observed in the country's large number of dismantled "grow-ops", or indoor cultivation sites. In the past five years, between 5,000 and 6,000 sites have been dismantled annually,[96]

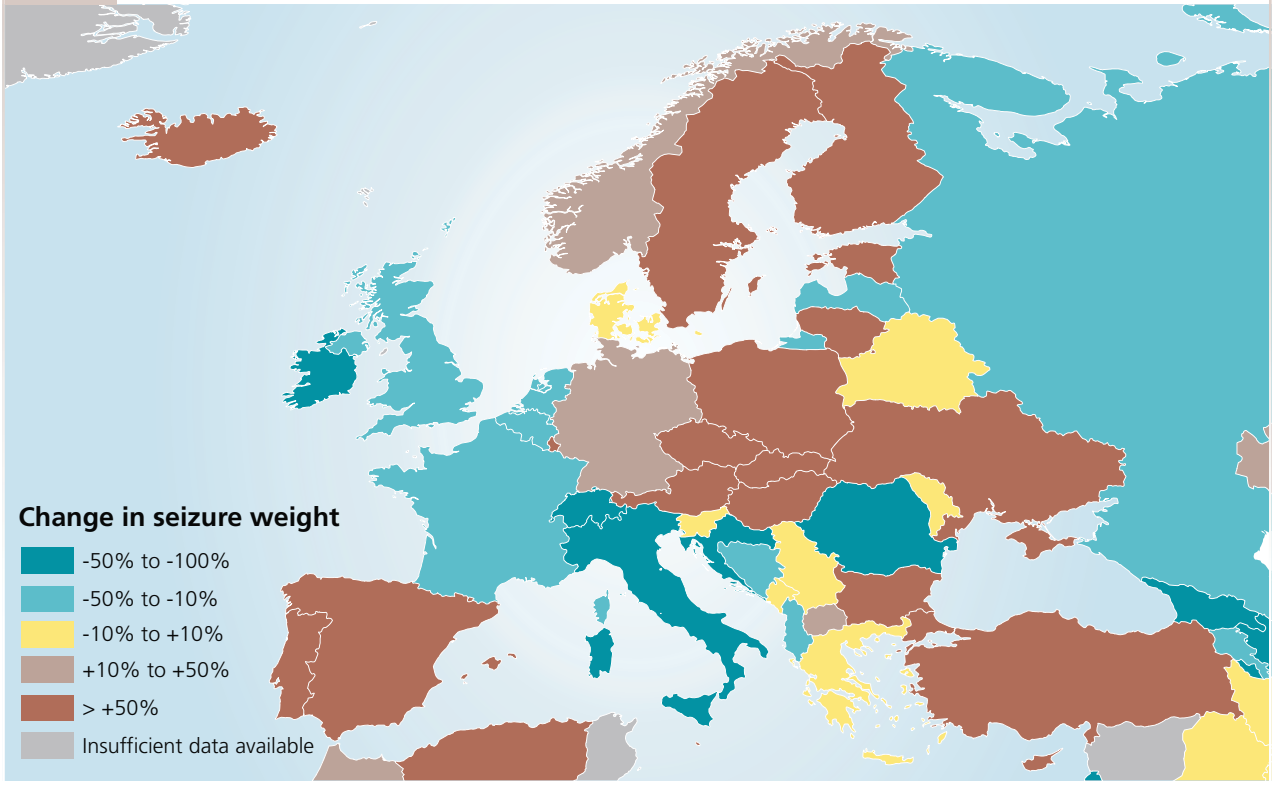
93 European Monitoring Centre for Drugs and Drug Addiction, *Annual Report 2011: The State of the Drugs Problem in Europe*. EMCDDA is to review developments in the European cannabis market in detail in a forthcoming issue of the EMCDDA Insights series.

94 A comprehensive overview is given by T. Decorte, G. R. Potter and M. Bouchard, eds., *World Wide Weed: Global Trends in Cannabis Cultivation and its Control* (Ashgate, 2011).

95 C. Ben Lakhdar and D. Weinberger, "Cannabis markets and production: the cannabis market in France—between resin imports and home grown herbal cannabis", in *2009 National Report (2008 Data) to the EMCDDA by the Reitox National Focal Point: France—New Developments, Trends and In-Depth Information on Selected Issues* (European Monitoring Centre for Drugs and Drug Addiction and Observatoire français des drogues et des toxicomanies, 2009).

96 Wouters estimates 6,000 sites after adjusting for possible errors (M. Wouters, "Controlling cannabis cultivation in the Netherlands", in *Cannabis in Europe: Dynamics in Perception, Policy and Markets*, Dirk J. Korf, ed. (Lengerich, Germany, Pabst Science Publishers, 2008).

Map 9. Change in cannabis herb seizures occurring between the periods 2001-2005 and 2006-2010



Source: Annual report questionnaire supplemented by other official sources.
Note: The boundaries and names shown and the designations used on this map do not imply official endorsement or acceptance by the United Nations. Dashed lines represent undetermined boundaries. 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.

and restrictive policies have resulted in a decline in the number of so-called "coffee shops", where cannabis is sold for personal consumption. In addition, continued actions targeting growing sites have led to a reduction in the availability of cannabis.[97]

These decreases in production in Western Europe may have triggered an increase in the production of cannabis herb in countries in Central, Eastern and Northern Europe, as well as in Portugal and Spain. Several countries (Austria, Belarus, Poland, Slovakia and Sweden) in those parts of Europe reported increases in the period 2009-2010, and others (Iceland, Lithuania, Poland and Romania) have reported the appearance of indoor cultivation sites. Ukraine has reported the appearance and eradication of large cannabis fields in its border area with the Republic of Moldova, made more seizures and also reported recent large increases in cultivation, estimating the area under illicit cannabis cultivation at 920 ha in 2010. Albania, another important country producing cannabis herb, has implemented tough law enforcement actions against cannabis growers and traffickers and reported a lower estimate of the production capacity for the region.[98]

When comparing cannabis herb seizures[99] between 2001-2005 and 2006-2010 (see map 9), a pattern appears that confirms the reported production trends mentioned above. Traditional producers of cannabis herb such as Albania, the Netherlands and the United Kingdom show decreases in herb seizures whereas increases are shown in Bulgaria and Turkey, Central Europe, the Iberian Peninsula and parts of Scandinavia.

Indoor herb production

The proliferation of indoor cultivation sites used for supplying cannabis herb for the domestic market is another noticeable trend in Europe, with most European Union member States reporting the indoor cultivation of cannabis to be on the increase.[100] This is mirrored in the existence of "grow shops" (also called "head shops"), specializing in supplying equipment for indoor cannabis cultivation; while they usually operate on a small scale, they may also be part of major production sites run by organized criminal groups.

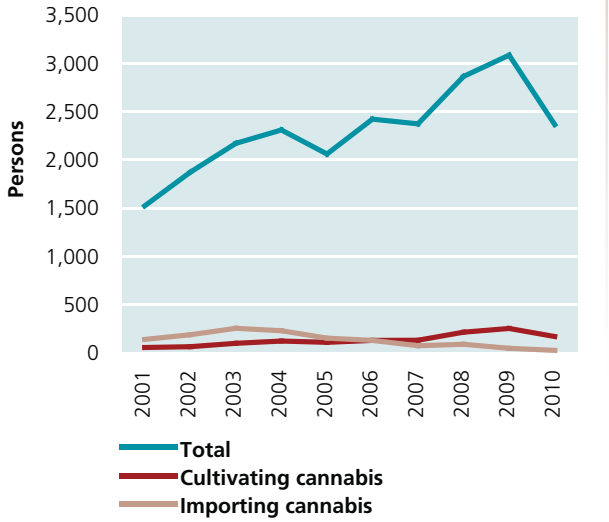
97 Ibid.

98 UNODC, data from the annual report questionnaire (2010); Bureau for International Narcotics and Law Enforcement Affairs, International Narcotics Control Strategy Report (March 2011).

99 Cannabis herb seizures refer to the total amount of retail and wholesale product seized. They do not include cannabis plants seized, for example, at production sites.

100 European Monitoring Centre for Drugs and Drug Addiction, *Annual Report 2011: The State of the Drugs Problem in Europe*.

Fig. 38. Number of persons arrested for cannabis-related crime in Japan, 2001-2010



Source: Japan Ministry of Health, Labour and Welfare.

The increased access to the know-how and equipment needed for cultivating cannabis (seeds, growing lamps, hydroponic installations etc.), both in "grow shops" and on the Internet, means that starting a cannabis production unit has become relatively easy, and that has led to the further dispersion of cannabis production. The ready availability of cannabis seeds on the Internet, which are shipped in inconspicuous packages worldwide by post and courier services, requires further attention, as it has greatly increased access to high-yielding and highly potent cannabis varieties. UNODC is currently conducting in-depth research into this market, identifying 100-200 seed banks on the Internet in 2011 (see the box on page 50).

Japan, a high-income country with limited options for outdoor cultivation, has also reported an increase in indoor cannabis cultivation as a result of the increasing availability of cannabis production paraphernalia and know-how. The number of arrests for cannabis-related crime has increased greatly since 2001 while the number of arrests for crime involving cannabis cultivation has increased, the number of persons arrested for importing cannabis has actually decreased (see figure 38), suggesting that cannabis cultivated in Japan is replacing cannabis imports.

Potency

The rise in indoor cannabis cultivation is often related to an increase in cannabis potency, which is only reflected in the data to a limited extent. In 2009, the mean THC content of cannabis in European countries ranged from 3 to 17 per cent, but it is more relevant to compare trends for different cannabis products. For example, the potency of cannabis herb remained relatively stable or decreased in 10 reporting countries but increased in the Czech Republic, Estonia, the Netherlands and Slovakia, while the potency of locally produced "nederwiet" in the Netherlands declined from a peak of 20 per cent in 2004 to 15 per cent in 2009.[101] However, there is no clear recent overall trend for THC potency in Europe.

Nor can the reported increase in domestic indoor cannabis cultivation be easily linked to changes in prevalence. Recent data for Europe indicate that cannabis use has increased in a small number of countries (Bulgaria, Estonia, Finland, Sweden),[102] while in others it has stabilized (e.g. in countries in Eastern Europe and South-Eastern Europe) or decreased (e.g. in countries in Western and Central Europe), especially among young adults (persons aged 15-34). Thus, cannabis production and use have increased in some countries whereas in others, despite a reported increase in production, there has been no increase in the prevalence of cannabis use. It is not clear whether there have been changes in the amount consumed or if imported cannabis is being replaced by locally produced cannabis. Furthermore, other factors, such as the decline in tobacco smoking among young people, changes in lifestyle and fashion or replacement by other drugs, may have influenced cannabis use. [103]

Cannabis herb: a look at main markets in the Americas

Most countries in North America and South America have registered increases in cannabis herb seizures in recent years. The most noticeable increases were in South America, where several countries reported large quantities of seized cannabis herb in 2009 and 2010. In Colombia, for example, seizures rose from 209 tons in 2009 to 255 tons in 2010; Brazil registered cannabis herb seizures of 155 tons in 2010; and in Paraguay, where extensive cultivation of cannabis has been reported, seizures reached 84 tons in 2009. Seizures in the Bolivarian Republic of Venezuela rose from 33 tons in 2009 to 39 tons in 2010. The Plurinational State of Bolivia reported the eradication of 1,069 tons of cannabis plant in 2010; that amount represents a notable long-term increase, as it is more than eight times the amount eradicated in 2006.[104]

The United States reported that the increasing level of cannabis cultivation in Mexico until 2009, in combination with high and increasing levels of such cultivation in the United States in 2010, resulted in the increased availability of cannabis herb in 2010.[105] The United States seized similar amounts of cannabis herb in 2009 and 2010, with annual totals reaching 2 049 tons in 2009 and 1 931 tons in 2010. In the same period, cannabis herb seizures in

101 Ibid.; *World Drug Report 2011*.

102 European Monitoring Centre for Drugs and Drug Addiction, *Annual Report 2011: The State of the Drugs Problem in Europe*.

103 Ibid.

104 An official breakdown of cannabis seizures in 2006 was not available.

105 Bureau for International Narcotics and Law Enforcement Affairs, *International Narcotics Control Strategy Report* (March 2011).

Cannabis seeds

UNODC is currently undertaking research, to be concluded in 2012, into cannabis seeds purchasable online. Some of the findings are presented below.

In recent years, the trade in highly potent cannabis strains has become a subject of increasing concern in the international community. The cultivation of cannabis is illegal in almost all countries but the sale of cannabis seeds, which are openly marketed online directly by producers or through resellers and shipped worldwide in stealth packages, is often legal or semi-legal and only some countries restrict it.

The cannabis seed business

The cannabis seed market has grown significantly in the past few years. To date between 100 and 200 cannabis seed brands can be found on the Internet. Those brands are produced by companies the majority of which are based in the Netherlands and Spain, but also in other European countries, Canada and the United States. However, the seeds produced by those companies are sold by a much greater number of resellers in a large number of countries.

The role of cannabis seeds in cannabis production

Cannabis can be grown not only outdoors but also in houses, garages, trucks or any other space provided that water and artificial lighting are on hand. The use of (purchased) seeds is an easy way for the home grower to start cultivating cannabis, but since cannabis plants can also be propagated by clones taken from an adult ("mother") plant, seeds are not necessary for continuing cannabis cultivation once it has commenced. Cloning is a more sophisticated procedure, mostly practised by commercial cultivators, whereas home growers may prefer using seeds, which is an easier and more reliable method.

Distribution of cannabis seeds

The cannabis seed market is dominated by a number of large companies that successfully breed popular varieties of cannabis plants. Seeds may be sold online, directly by the breeder or by specialized online stores. However, the Internet is not the only source of cannabis: seeds are also distributed through social networks or via the sale of cannabis herb, when found among the flower heads of cannabis herb used for smoking.

Cannabis varieties sold

The large number of cannabis varieties developed over the years provides the user with a wide palette of potencies and tastes to choose from, which are specified on dealers' websites and in their brochures. The varieties are the product of decades of cross-breeding the three major cannabis species,[a] *Cannabis sativa*, *Cannabis indica* and *Cannabis ruderalis*, and the resulting strains are marketed under imaginative names such as Northern Lights, Thai Tanic, Lemon Chunk and White Widow.

Several types of specially bred cannabis seeds, such as seeds of "feminized" and "auto-flowering" strains, are available. Normal cannabis seeds produce both male and female plants, but seeds of "feminized" cannabis are specially treated so that only female cannabis plants, which are in demand because of their high THC[b] content, are produced. "Auto-flowering" strains can produce more than one harvest per year when grown outdoors.

Cannabis seed vendors usually provide information on the expected yield of each variety, the flowering period (time until harvest), the expected size of the plant and — less frequently — the THC level. Specifications on websites typically promise a THC level of 15-18 per cent, but sometimes up to 25 per cent, while some breeders also specify the level of cannabidiol (CBD), another psychoactive ingredient. These strain properties (yield, time until harvest, THC content) probably reflect some of the breeding goals of seed producers.

In 2011, the price for 10 cannabis seeds ranged from 15 to 180 euros, with most prices being between 50 and 70 euros. Seeds of "feminized" cannabis are considerably more expensive than regular seeds because "feminized" seeds produce only female plants, whereas normal seeds also result in some male plants, which are not used for consumption.

[a] Whether these are species or varieties is the subject of scientific debate.

[b] Cannabis growers harvest the flowers of the female plants, which has the highest THC levels. Except for "auto-flowering" plants, cannabis starts to flower when the hours of light are reduced.

Mexico increased from 2,105 to 2,313 tons and seizures in Canada increased substantially (from 34 to 51 tons). The United States assessed that only 7 per cent of the cannabis herb seized in 2010 originated on its own territory; it also reported that a large percentage of the seized cannabis herb was of unknown origin, though Canada and Mexico are known to be source countries of cannabis herb in the United States. Canada seized 51 tons of cannabis herb and 1.9 million cannabis plants in 2010; however, the smuggling of cannabis herb from Canada into the United States appears to be decreasing and cannabis production seems to be shifting to the United States side of that country's border with Canada.[106] The Sinaloa cartel, which manages highly sophisticated transportation and distribution networks[107] is one of the most prominent organizations involved in trafficking cannabis herb in the United States.

Although estimates of the actual magnitude of cannabis production in the United States are lacking, eradication data point to continuing extensive cannabis cultivation in the country. The total number of eradicated cannabis plants continued to increase in 2010, with fewer of the eradicated plants having been cultivated outdoors (almost 10 million plants) and more cultivated indoors (almost half a million plants).[108] In the United States, cannabis is principally and increasingly cultivated on public land (national forests), particularly in California, as indicated by the large share (about 70 per cent) of cannabis seizures in that state. Most of the destroyed indoor growing sites were in Florida; however, of the eradicated cannabis plants that had been cultivated indoors, the majority were eradicated in California.

E. ILLICIT MARKET FOR AMPHETAMINE-TYPE STIMULANTS

A picture of stability

While global ATS seizures remained largely stable in 2010, the year was marked by a significant increase in methamphetamine seizures, which surpassed amphetamine seizures for the first time since 2006. Methamphetamine seizures totalled 45 tons, a 44 per cent increase over 2009 (31 tons) and more than double the amount seized in 2008 (22 tons) (see figure 39). That was mainly attributed to a significant increase in seizures in Mexico, as well as in East and South-East Asia.

By contrast, global amphetamine seizures declined by 42 per cent to 19 tons (compared with 33 tons in 2009) largely as a result of a decrease in such seizures in the Near and Middle East and South-West Asia. The downward trend in amphetamine seizures in Europe that began in 2008 continued in 2010, yet there was a significant rise in the number of amphetamine laboratories seized in Europe and, as in previous years, Europe accounted for the majority of the laboratories seized worldwide for illicitly manufacturing substances in the amphetamine group.

There are signs that the "ecstasy" market began to recover in 2010. For, example, the availability[109] and use of "ecstasy" appears to be on the increase in the United States [110] while Europol has also reported a resurgence of the drug in Europe since mid-2010. A 31 per cent increase in "ecstasy" seizures was observed in East and South-East Asia, and seizures also increased in Oceania.

In the past few years, the market for new psychoactive substances that mimic the effects of illicit stimulants such as "ecstasy" and amphetamines has evolved rapidly, while plant-based products have also emerged on the illicit ATS market. In order to avoid detection, drug trafficking organizations have continued to adapt their manufacturing strategies, and continuing change in the illicit manufacturing process of synthetic substances presents a myriad of new challenges to drug control authorities worldwide.

Increased methamphetamine seizures in North America

North America accounted for roughly half of global methamphetamine seizures in 2010, reporting 22 tons of seized methamphetamine. The biggest increase in methamphetamine seizures was reported in Mexico, where seizures doubled from 6 tons in 2009 to almost 13 tons in 2010, but methamphetamine seizures also rose significantly in the United States, from 7.5 to 8.7 tons in that period.[111] The increase in average purity, in tandem with a decline in average prices (see figure 40), indicates that the supply of methamphetamine has been increasing in every part of the United States. The illicit manufacture of methamphetamine continues on a large scale in Mexico, where large amounts of precursors of ATS have been seized.[112]

106 United States, Department of Justice, National Drug Intelligence Center, *National Drug Threat Assessment 2011* (August 2011).

107 Ibid.

108 Kathleen Maguire, ed., *Sourcebook of Criminal Justice Statistics* (United States, Department of Justice, Bureau of Justice Statistics). Available from www.albany.edu/sourcebook/index.html (accessed March 2012).

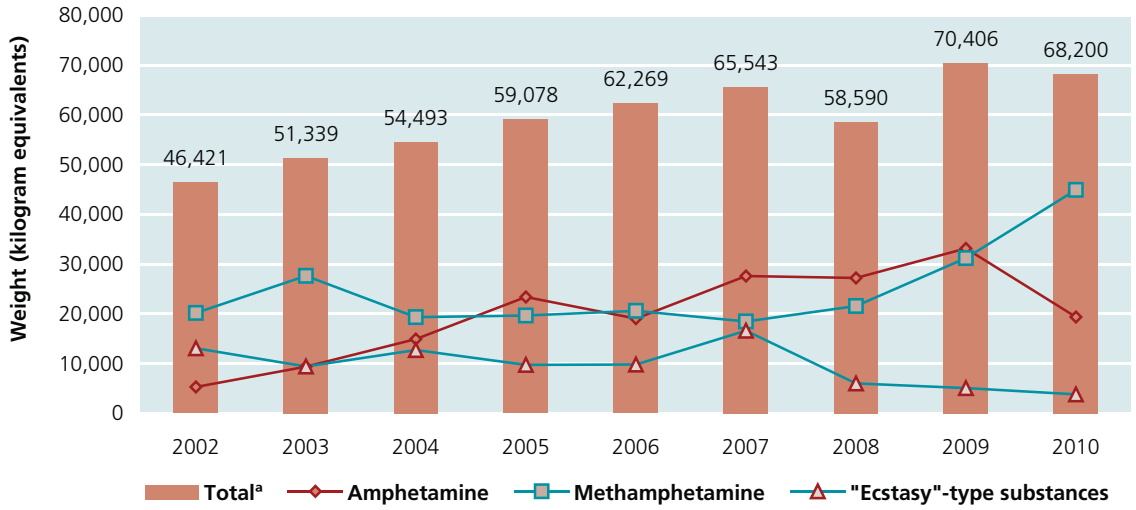
109 Particularly in the Great Lakes, New York/New Jersey, Southwest, and Pacific Organized Crime Drug Enforcement Task Forces regions (National Drug Intelligence Center, *National Drug Threat Assessment 2011*).

110 In 2010, 52.3 per cent of National Drug Threat Survey respondents indicated a moderate to high level of MDMA availability in their jurisdiction, compared with 51.5 percent in 2009 (National Drug Intelligence Center, *National Drug Threat Assessment 2011*).

111 The year refers to the United States Government's fiscal year beginning on October 1 of the previous calendar year and ending on September 30 of the year in which it is numbered.

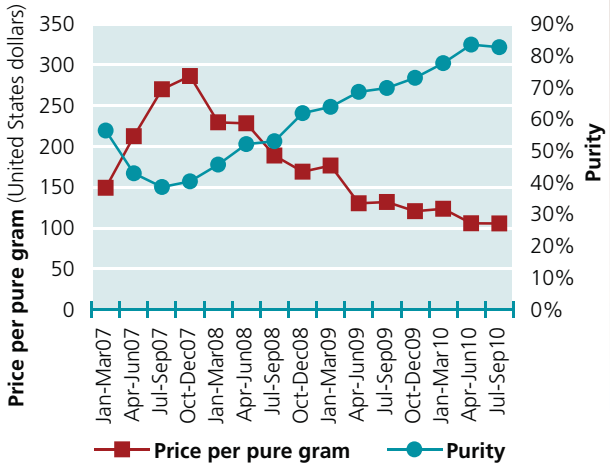
112 About 787 tons of phenylacetamide, a precursor of phenylaceticacid, which is used in the illicit manufacture of methamphetamine, were found in the 2,500 m^2 warehouse. Some 53 tons of tartaric acid, which is used in purifying d-/l-methamphetamine, were found in addition to 340,000 litres of benzyl chloride. In addition isobutyl phenylacetate and methyl phenylacetate were discovered, all of which can be broken down to phenylacetic acid (United Nations Office on Drugs and Crime, *Global SMART Update*, vol. 6, November 2011).

Fig. 39. Amphetamine-type stimulants seized worldwide, by weight, 2002-2010



Source: Annual report questionnaire supplemented by other official sources.
[a] Including seized amphetamine, "ecstasy"-type substances, methamphetamine, non-specified amphetamine-type stimulants, other stimulants and prescription stimulants. For the categories of other stimulants and prescription stimulants, seizures reported by weight or volume only are included.

Fig. 40. Mean price and purity of methamphetamine purchases by law enforcement agencies in the United States, 2007-2010



Source: United States of America, Department of Justice, National Drug Intelligence Center, *National Drug Threat Assessment 2011* (August 2011); United States, Drug Enforcement Administration, System to Retrieve Information from Drug Evidence (STRIDE) database.

The methamphetamine market expands in Europe

Although it remains a comparatively small market in global terms, the methamphetamine market in Europe is also expanding, where some countries (particularly in the north of Europe) have begun to report the increased presence of methamphetamine on their illicit markets. Indications of the increased use of methamphetamine were found in Norway, other Scandinavian countries and Germany;[113] and while methamphetamine seizures in Europe fell from 696 kg in 2009 to 576 kg in 2010, they remained higher than seizures recorded prior to 2009. Increases were also registered by the Czech Republic, Finland, France, Germany, the Netherlands, the Russian Federation and Switzerland. By far the highest seizure levels were reported in Sweden (124 kg) and Turkey (126 kg), which together accounted for almost half (43 per cent) of total methamphetamine seizures in Europe.

Despite signs of an expansion of the methamphetamine market in Europe, the number of illicit methamphetamine laboratories seized in the region has been in decline since 2008, falling from 361 in 2009 to 328 in 2010. As in previous years, the Czech Republic accounted for the vast majority (307) of the laboratories seized in Europe, while there was an increase in the number of such laboratories reported to have been seized in Austria (five facilities, compared with three in 2008 and two in 2009) and Bulgaria (two mobile laboratories in 2010, the first reported manufacture of methamphetamine there in a decade).

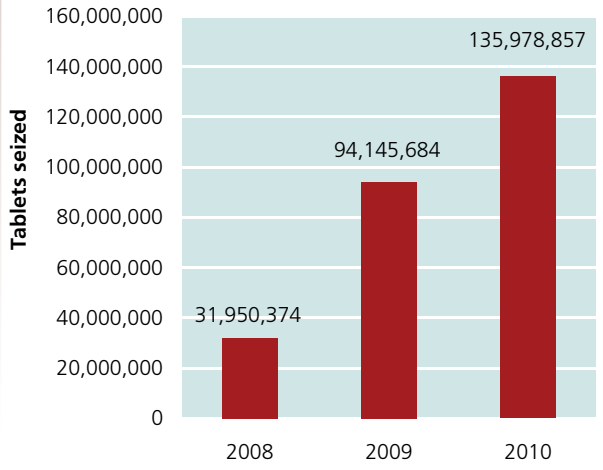
Methamphetamine seizures in South-East Asia

As in previous years, the vast majority (96 per cent) of ATS seizures made in East and South-East Asia in 2010 involved methamphetamine. Methamphetamine seizures in 2010 represented an increase of more than one quarter (28 per cent; from 16 to 20 tons) over 2009 and 74 per cent over 2008, with methamphetamine seizures in East and South-East Asia accounting for almost half of the global total in 2010.

Nearly 136 million methamphetamine tablets were seized in 2010, representing a 44 per cent increase compared with the number of tablets seized in 2009 (94 million) and a more than fourfold increase compared with the 2008 figure

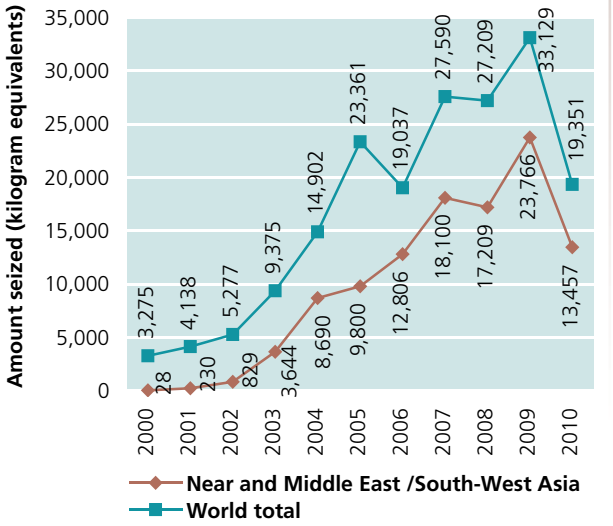
113 *Amphetamines and Ecstasy—2011 Global ATS Assessment.*

Fig. 41. Methamphetamine tablets seized in East and South-East Asia, 2008-2010



Source: Based on data collected by the Drug Abuse Information Network for Asia and the Pacific, including data for Brunei Darussalam, Cambodia, China, Indonesia, Japan, the Lao's People Democratic Republic, Malaysia, Myanmar, the Philippines, the Republic of Korea, Singapore, Thailand and Viet Nam.

Fig. 42. Amphetamine seized worldwide and in the Near and Middle East/South-West Asia, 2000-2010



Source: Annual report questionnaire supplemented by other official sources.

(32 million) (see figure 41). Most of the tablets were seized in China (58.4 million), Thailand (50.4 million) and the Lao People's Democratic Republic (24.5 million), which together accounted for 98 per cent of the regional total.[114]

Significant quantities of ATS continue to be illicitly manufactured in Myanmar in the form of methamphetamine tablets, most of which are manufactured in Shan State, in the eastern part of the country. Malaysia, where crystalline methamphetamine is predominantly used, also reported significant seizures of methamphetamine in the form of tablets (108,000) in 2010.[115]

Several countries and territories registered considerable fluctuations in methamphetamine seizures. Myanmar and the Philippines reported a significant decline; China, the Lao People's Democratic Republic and Thailand reported large increases, as did Hong Kong, China. Reports for 2011 from Cambodia show a significant increase in methamphetamine seizures, with seizures in 2011 more than tripling to some 264,000 methamphetamine tablets, compared with a total of 83,000 tablets in 2010.[116] Seizures of crystalline methamphetamine also increased, from 10 kg in 2010 to 19 kg in the first half of 2011;[117] large amounts of precursor chemicals were also seized in 2010 and almost 20 million tablets of pharmaceutical preparations containing pseudoephedrine were seized by Cambodian authorities in 2010.[118]

In contrast to the trends reported in most countries in East and South-East Asia, methamphetamine seizures in Japan have been in declining steadily since 2008. This trend continued in 2010, with the country recording methamphetamine seizures of 311 kg compared with 368 kg in 2009.

A global drop in amphetamine seizures

Global amphetamine seizures declined by 42 per cent to 19 tons in 2010 from 33 tons in 2009, largely as a result of the decrease in amphetamine seizures in the Near and Middle East and South-West Asia. These subregions, which accounted for some 70 per cent of global amphetamine seizures, recorded a sizeable decline in seizures of amphetamine (mostly Captagon[119] tablets), from almost 24 tons in 2009 to 13 tons in 2010. This represented the lowest total amount of seized amphetamine reported in the region since 2006 and the first significant decline since 2000 (see figure 42).

Amphetamine seizures in Europe continue to fall while the number of detected laboratories rises

The amount of amphetamine seized in Europe, which had been on the decline since 2008, continued its downward trend, from 8.9 tons in 2009 to 5.4 tons in 2010, the lowest seizure total for amphetamine in the region since 2002.

114 Statistics based on data reported on number of tablets and collated by the UNODC global Synthetics Monitoring: Analysis, Reporting and Trends (SMART) programme. Data submitted through the annual report questionnaires by some countries was quantified by weight.

115 Ibid.

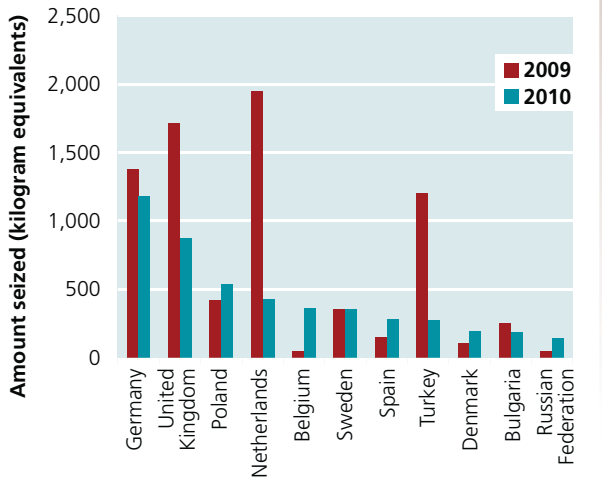
116 Information provided by Cambodia at the seventeenth Asia-Pacific Operational Drug Enforcement Conference, Tokyo, February 2012, p. 5.

117 Ibid.

118 Information provided by Cambodia at the sixteenth Asia-Pacific Operational Drug Enforcement Conference, Tokyo, February 2011, p. 2.

119 Captagon, a proprietary product containing the stimulant fenetylline, was discontinued in the 1980s. However, counterfeit versions containing primarily amphetamine continue to be available.

Fig. 43. Amphetamine seizures in selected European countries, 2009-2010



Source: Annual report questionnaire supplemented by other official sources. Estimates for 2009 and 2010 for the United Kingdom are based on incomplete data for some jurisdictions for the financial years 2009/2010 and 2010/11, respectively, and adjusted for the missing jurisdictions using the distribution (based on more comprehensive data) in 2006/07.

However, there was a 44 per cent increase in the number of amphetamine laboratories seized in Europe, with 62 seized in 2010 as opposed to 43 in 2009. As in previous years, amphetamine laboratories accounted for the majority of the laboratories seized worldwide for illicitly manufacturing substances in the amphetamine group. Estonia reported a significant increase in the number of amphetamine laboratories detected, from two laboratories in 2009 to seven in 2010.

EMCDDA reported that the use of industrial equipment may have increased the production capacity and subsequent yield in the "north-west hub" (the Netherlands and Belgium) from 5-8 kg of amphetamine per production batch to up to 30-40 kg, while the capacity of illicit manufacturing facilities in Poland is reported to have risen from about 3 kg per batch to 4-8 kg per batch.

"Ecstasy" markets show signs of recovery

Although many countries reported a continued low availability of MDMA in the "ecstasy" market in 2010 (often compensated by the increasing availability of new psychoactive substances), there are signs that the "ecstasy" market began to recover in the period 2010/2011.

The significant decline in the total amount of "ecstasy"-group substances seized in Canada between 2007 and 2009[120] was reversed in 2010, when "ecstasy" seizures increased to 529 kg from 405 kg in 2009. Destinations for "ecstasy" shipments seized in, or en route from, Canada included the United States and, to a lesser extent, Australia, Malaysia and Peru.[121]

Although overall "ecstasy" seizures declined in 2010, the availability of "ecstasy" in the United States also appears to be on the increase.[122] The prevalence of "ecstasy" use among the general population still declined marginally in 2010 (from 1.1 to 1 per cent of the population aged 12 and over);[123] in contrast, data collected from 12th grade students showed increases in the availability of "ecstasy"[124] in parallel to increases in the prevalence of "ecstasy" use in both 2010 and 2011.[125]

The quantity of "ecstasy" seized along the border between Canada and the United States increased from more than 1.9 million tablets in 2006 to more than 3.9 million tablets in 2010, the largest amount seized in half a decade and an indication of the rising importance of Canada as a source for the manufacture of "ecstasy".[126] In addition, the average load size of such seizures continued to increase.

After several years of decline, most notably in 2009, there are also signs of a recovery in the European "ecstasy" market, with Europol reporting a resurgence of the drug since mid-2010 (see figure 44). This is also reflected in an overall increase in seizures of "ecstasy"-group substances reported to UNODC, which more than doubled (from 595 kg in 2009 to 1.3 tons in 2010). This recovery seems to be largely linked to the discovery of slightly modified precursor chemicals that are not controlled at international level.

While Eastern European countries experienced a slight decrease in "ecstasy" seizures, South-Eastern Europe and Western and Central Europe registered significant increases in seizures (82 per cent and 136 per cent, respectively). Seven countries (France, Germany, the Netherlands, Poland, Spain, Turkey and the United Kingdom) account for 90 per cent of reported seizures, including particularly large increases in the Netherlands, where seizures rose almost seven-fold but are still not comparable to seizures made before 2009. The increased supply of "ecstasy" in the

120 "Ecstasy" seizures fell from 1 ton in 2007 to 715 kg in 2008 and 405 kg in 2009.

121 United Nations Office on Drugs and Crime, data from the annual report questionnaire (2010).

122 Particularly in the Great Lakes, New York/New Jersey, Southwest, and Pacific Organized Crime Drug Enforcement Task Forces regions (National Drug Intelligence Center, *National Drug Threat Assessment* 2011).

123 Substance Abuse and Mental Health Services Administration, *Results from the 2010 National Survey on Drug Use and Health: Summary of National Findings*.

124 The proportion of 12th grade students finding it very easy or fairly easy to obtain MDMA declined from a peak of 61.5 per cent in 2001 to 41.9 per cent in 2008 and 35.1 per cent in 2009 before recovering again to 36.4 per cent in 2010 and 37.1 per cent in 2011 (United States, National Institute on Drug Abuse, Monitoring the Future survey, December 2011).

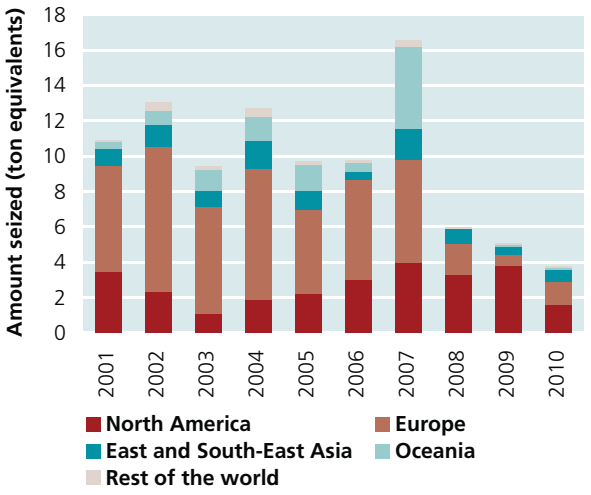
125 In line with availability, annual prevalence of MDMA use among 12th grade students fell from a peak of 9.2 per cent in 2001 to 4.3 per cent in 2009 before rising again to 4.5 per cent in 2010 and 5.3 per cent in 2011. (United States, National Institute on Drug Abuse, Monitoring the Future survey, December 2011).

126 National Drug Intelligence Center, *National Drug Threat Assessment 2011*, p. 30.

European market is confirmed by the increasing purity of "ecstasy" observed in some European countries such as the Netherlands and the United Kingdom.

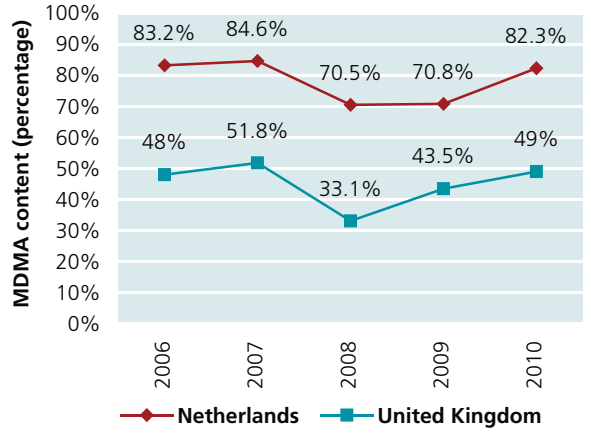
A 31 per cent increase in "ecstasy" seizures was observed in 2010 in East and South-East Asia, where China (382 kg), Malaysia (130 kg) and Indonesia (127 kg) reported significant seizures of "ecstasy"-group substances. In Oceania, seizures also continued to increase in Australia, where 112 kg of "ecstasy"-group substances were seized in 2010, compared with 54 kg in 2008 and 59 kg in 2009. In New Zealand, "ecstasy" seizures tripled to 12 kg, matching the level reported in 2004.

Fig. 44. "Ecstasy" seizures, by region, 2001-2010



Source: Annual report questionnaire supplemented by other official sources.

Fig. 45. MDMA content of tablets sold as "ecstasy" in the Netherlands and the United Kingdom (based on laboratory analysis), 2006-2010



Source: Charlotte Davies and others, eds., *United Kingdom Drug Situation: Annual Report to the European Monitoring Centre for Drugs and Drug Addiction* (EMCDDA) 2010 (United Kingdom, Department of Health, and UK Focal Point on Drugs, 2010).

A decline in the number of "ecstasy" laboratories seized in 2010

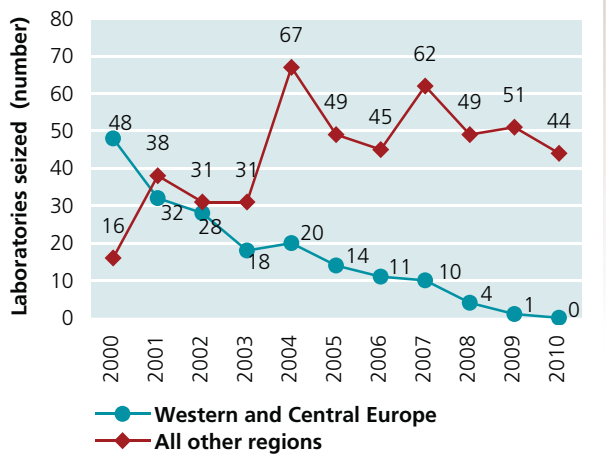
The number of "ecstasy" laboratories seized worldwide declined from 52 in 2009 to 44 laboratories in 2010. Countries reporting "ecstasy" manufacture in 2010 (by number of laboratories seized) were Australia (17), Canada (13), Indonesia (12), Malaysia (1) and Argentina (1). Despite a decline in reported "ecstasy" manufacture, it is worth noting that some countries, such as Australia and Indonesia, reported an increase in the manufacturing capability or size of laboratories. Also of note is the fact that some countries, such as Canada, New Zealand and Turkey, reported incidences of possible polydrug manufacture, in which "ecstasy" was also being manufactured in illicit methamphetamine laboratories. In Europe, despite increased seizures of the drug, no "ecstasy" laboratories were reported to UNODC as having been seized in 2010 (see figure 46). However, several "ecstasy" laboratories were discovered in 2011.

The continuing emergence of new psychoactive substances

The ATS market has always been characterized by a large variety of substances and, in recent years, the market for new psychoactive substances has evolved rapidly. Unprecedented numbers and varieties of new psychoactive substances, often sold as "bath salts", "legal highs" or "plant food", are appearing on the market. These psychoactive substances, which include piperazines such as BZP or *m*-chlorophenylpiperazine (*m*CPP), as well as analogues of methcathinone such as 4-methylmethcathinone (4-MMC, known as mephedrone) or MDPV, mimic the effects of stimulants such as "ecstasy" and amphetamines.

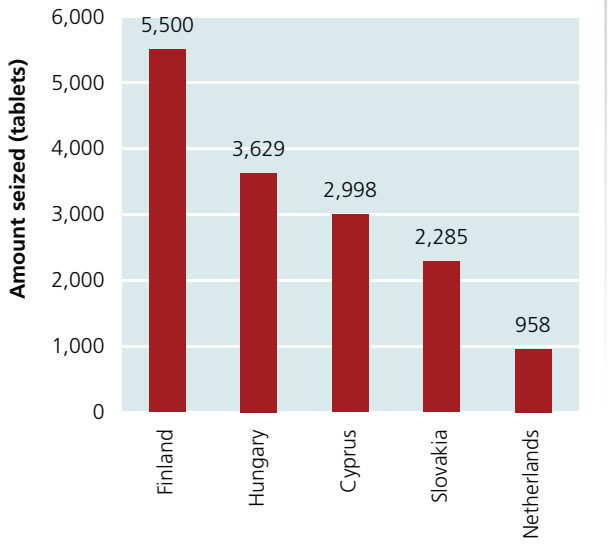
Mephedrone is accounting for an increasingly significant share of illicit drug markets in some European countries. Hungary, for example, reported that mephedrone was the

Fig. 46. Number of seized "ecstasy"-group laboratories, by region, 2000-2010



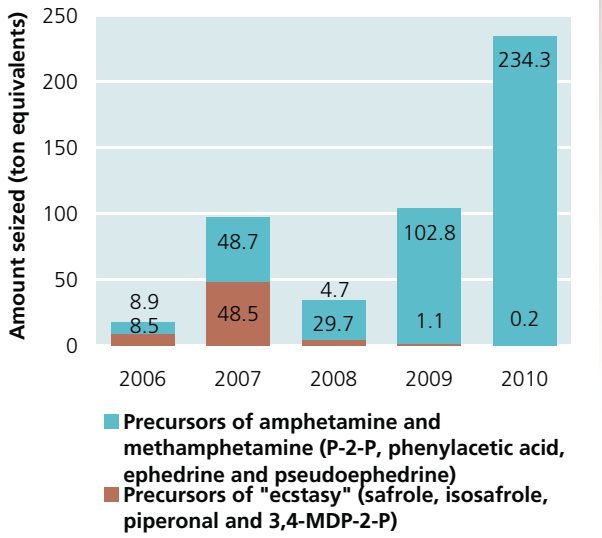
Source: UNODC, Database for Estimates and Long-term Trend Analysis.

Fig. 47. Seizures of *m*CPP tablets reported in selected European countries, 2010



Source: Annual report questionnaire.
Note: Finland also reported the seizure of 56 kg of mCPP.

Fig. 48. Global seizures of precursors of amphetamine-type stimulants, 2006-2010



Source: UNODC calculations based on International Narcotics Control Board data.

most frequently seized synthetic substance in 2010;[127] and in the United Kingdom a recent government report showed that 286 of the 3,564 drug seizures made in Northern Ireland in the period 2010-2011 were mephedrone seizures, which was considerably more than the number of seizures for amphetamines (128 seizures) and "ecstasy" (150 seizures), and only slightly fewer than the number of seizures of cocaine (304 seizures).[128]

The synthetic cathinone MDPV has also become more widespread in illicit ATS markets around the world, notably in the United States. However, as the substance is not under international control, seizures are not routinely reported to UNODC via the annual report questionnaire.

The use of piperazines has been reported in various regions, including Asia,[129,130] Europe and Oceania. BZP has been identified as a threat in the Philippines; and in Viet Nam, seizures of *m*CPP have been reported, and the use of 1-(3-trifluoromethylphenyl)piperazine and BZP is also reportedly widespread. In Europe, several countries (Cyprus, Finland, Hungary, the Netherlands and Slovakia) reported seizures of *m*CPP tablets in 2010 (see figure 47), and Cyprus also reported seizures of BZP.

127 Information provided by Hungary in the annual report questionnaire (2010).

128 Charlotte Davies and others, eds., *United Kingdom Drug Situation: Annual Report to the European Monitoring Centre for Drugs and Drug Addiction (EMCDDA) 2010* (United Kingdom, Department of Health, and United Kingdom Focal Point on Drugs, 2010).

129 Information provided by Viet Nam at the seventeenth Asia-Pacific Operational Drug Enforcement Conference, Tokyo, February 2012, p. 3.

130 Global SMART Drug Control Brief, Viet Nam (March 2011); country report by Viet Nam, Standing Office on Drugs and Crime, presented at the Thirty-fourth Meeting of Heads of National Drug Law Enforcement Agencies, Asia and the Pacific, Bangkok, 30 November-3 December 2010, p. 2.

Increasing flexibility in ATS manufacture

Drug trafficking organizations have always shown an extraordinary degree of flexibility in adapting their manufacturing strategies to avoid detection. Some of these strategies include the use of substitute chemicals, the extraction of precursors from pharmaceutical preparations and, most recently, the masking of precursors and development of alternative methods of synthesis. The continued change in the illicit manufacturing process of synthetic substances presents a myriad of new challenges to drug control authorities worldwide.

Ephedrine and pseudoephedrine have traditionally been the main precursors used in the illicit manufacture of methamphetamine but control over the substances, both in bulk form and in the form of pharmaceutical preparations, has increased considerably in recent years, particularly in North America. As a result, traffickers have resorted to manufacturing methamphetamine using the substitute chemical 1-phenyl-2-propanone (P-2-P) and its precursors, including phenylacetic acid and phenyl acetate esters.[131] Global seizures of precursors reflect the increasing importance of P-2-P and phenylacetic acid in illicit ATS manufacture (see figure 48).

Pseudoephedrine extracted from pharmaceutical preparations continues to be used as a precursor in the illicit manufacture of ATS. Large quantities of pseudoephedrine preparations intended for this purpose have been seized in

131 The product obtained from the use of phenylacetic acid or P-2-P is a less potent racemic mixture, *d*- and *l*-methamphetamine. Laboratory operators compensate for the loss in potency of this product by higher purity levels or by adding an additional purification step to obtain the traditional *d*-methamphetamine.

Asia (particularly in Myanmar and Thailand) and Oceania (in Australia and New Zealand). Similarly, the extraction of ephedrine and pseudoephedrine from ephedra plant material was reported in New Zealand[132] and Kyrgyzstan. In the case of "ecstasy" manufacture, the extraction of safrole from camphor oil was noted in Australia in 2010.

The masking of a precursor to avoid detection and/or controls, followed by facile recovery to the original material prior to use in illicit ATS manufacture, presents a growing challenge to law enforcement authorities. For example, P-2-P, which exists as a liquid, has been seized in several countries in Europe in the form of a white powder (the non-scheduled bisulfite adduct) that can be converted into liquid form with relative ease. In 2010, the European market also saw the emergence of the non-controlled glycidate derivative of 3,4-methylenedioxyphenyl-2-propanone (3,4-MDP-2-P), the precursor used in the illicit manufacture of MDMA. Such masked precursors have little known legitimate use and share the common feature of being easy to convert to the related ATS precursor.

New methods for illicitly manufacturing synthetic drugs continue to be developed. The "quick" or "volcano" method for manufacturing methamphetamine, discovered in the United States in 2010, seems capable of reducing the length of the entire synthesis to less than 10 minutes.[133] The so-called "one-pot method" of manufacturing methamphetamine has also increased in popularity in comparison to previous years when the "red phosphorous" and/or "anhydrous ammonia" manufacturing methods were predominant.[134] An alternate method for manufacturing amphetamine involving the use of the non-controlled substances benzaldehyde[135] and nitroethane[136] as precursors[137] was also detected in a clandestine laboratory in Hungary in 2009.

132 A clandestine methamphetamine laboratory dismantled in July 2010 revealed that the offender had been extracting ephedrine/pseudoephedrine from ephedra plant material and from pharmaceutical preparations (information provided by New Zealand in the annual report questionnaire).

133 Annual report questionnaire replies submitted by the United States for 2010.

134 United States authorities attribute the popularity of the "one pot method" to the simplicity of the process and ease of acquiring "recipes" and/or videos containing step-by-step instructions via the Internet. Readily available ingredients are combined in a plastic two-litre bottle; no heat is required, and processing is completed in approximately 30 minutes (information provided by the United States in the annual report questionnaire).

135 Benzaldehyde is a colourless liquid aldehyde with a characteristic almond odour used chiefly as a precursor for other organic compounds, ranging from pharmaceuticals to plastic additives. It is formed by partial oxidation of benzyl alcohol and readily oxidized to benzoic acid and is converted to additional products by hydrocyanic acid or sodium bisulfite.

136 Nitroethane is a chemical used mainly as an industrial solvent, fuel additive and propellant in the manufacture of pharmaceutical products and in artificial nail removers. It is a colourless oily liquid with an unpleasant odour.

137 *Amphetamines and Ecstasy: 2011 Global ATS Assessment.*

Emerging markets and trafficking routes

West Africa

There is growing evidence to suggest that criminal organizations involved in trafficking in ATS are exploiting West Africa in a similar way to the one used by cocaine traffickers, by looking to avoid effective law enforcement in order to smuggle ATS, mostly methamphetamine, to other parts of the world (primarily East Asia) by courier. Seizures started to increase in West Africa in 2008, with methamphetamine being smuggled into countries in East Asia, predominantly Japan and the Republic of Korea. Seizures continued to be reported throughout 2009 and 2010.

Near and Middle East

Increasing annual legitimate requirements for precursor chemicals of ATS such as ephedrine and pseudoephedrine in the Near and Middle East could indicate the diversion of those chemicals for use in illicit drug manufacture. The countries reporting very high requirements for the precursors include the Islamic Republic of Iran (55 tons), the Syrian Arab Republic (50 tons) and Pakistan (48 tons). Pakistan currently has the world's fourth highest legitimate requirements for ephedrine (22 tons), behind China, the United States and the Republic of Korea. Seizures of ephedrine were reported in 2010 and 2011 in Iran (Islamic Republic of) and Pakistan.[138]

In contrast to the decline in amphetamine seizures in many countries in the region, the amphetamine market may be expanding in Iraq, as 2010 saw record seizures of almost 1.6 tons of amphetamine in the form of Captagon tablets.[139] Seizures of methamphetamine in the region also suggest that this market is emerging and expanding in Iran (Islamic Republic of) (where reported seizures of methamphetamine continued to be high, amounting to almost 1.4 tons in 2010), Israel (a record-high methamphetamine seizure in 2010) and Jordan (its first seizure being reported in 2010).[140]

138 *Precursors and Chemicals Frequently Used in the Illicit Manufacture of Narcotic Drugs and Psychotropic Substances: Report of the International Narcotics Control Board for 2011 on the Implementation of Article 12 of the United Nations Convention against Illicit Traffic in Narcotic Drugs and Psychotropic Substances of 1988* (United Nations publication, Sales No. E.12.XI.4), p. 70.

139 Country report of Iraq presented to the Subcommission on Illicit Drug Traffic and Related Matters in the Near and Middle East, at its forty-sixth session held in Vienna from 19 to 22 December 2011.

140 Country report of Jordan presented to the Subcommission on Illicit Drug Traffic and Related Matters in the Near and Middle East at its forty-sixth session, held in Vienna from 19 to 22 December 2011.

2 THE CONTEMPORARY DRUG PROBLEM: CHARACTERISTICS, PATTERNS AND DRIVING FACTORS

The use of psychoactive substances is not a new phenomenon. They have been consumed throughout history, in different forms. Yet the contemporary drug problem, characterized by a concentration of illicit drug use among youth, notably young males living in urban settings, and an expanding number of psychoactive substances, appears to have taken a distinctive shape over the past half century.

Rapid socio-economic changes in recent history have created the environment in which the drug problem as we know it has taken shape and started to exhibit the characteristics mentioned above. Over the past decade, established illicit drug markets in the industrialized countries have shown signs of stabilization, while the growth of illicit drug use has continued to accompany socio-economic transitions in developing countries.

Chapter II presents and discusses the contemporary drug problem and explains how it has been shaped by the fundamental and enduring factors that define its nature, as well as by shorter-term developments that have contributed to modifying its patterns over time. This distinction will help, in turn, to inform a discussion of what constitute the risk factors and predictable drivers of the illicit drug economy and what remains largely unforeseeable.

A. WHAT ARE THE FUNDAMENTAL CHARACTERISTICS OF THE CONTEMPORARY ILLICIT DRUG PROBLEM

The main dimensions of the contemporary drug problem

Prevalence, age distribution, gender gap and market value

The world population has reached 7 billion people. Of these, the United Nations Office on Drugs and Crime estimates[1] that about 230 million[2] use an illegal drug at least once a year. This represents about 1 in 20 persons between the ages of 15 and 64. In the same age group, approximately 1 in 40 people use drugs more regularly, at least once a month, and fewer than 1 in 160, that is, about 27 million people,[3] use drugs in a manner that exposes them to very severe health problems.

The large majority of illicit drug users consume cannabis. Some 170 million people consumed the substance at least once a year in the recent period. This is equivalent to some 3.8 per cent of the world's adult population.[4] Far behind cannabis, the second most commonly used group of illicit substances are the amphetamine-type stimulants (ATS), with some 33 million adults who used amphetamines, including methamphetamine, amphetamine and methcathinone, and about 20 million who used substances sold as "ecstasy" (MDMA). Cocaine and opiates were used by some 16 million and 17 million people respectively. Most of the opiate users, about 12 to 13 million, consumed heroin. Even if one adds to opiates synthetic opioids (many of which are prescription drugs not under international control), the rate of annual opioid use for non-medical purposes remained below 0.8 per cent of the adult population.[5]

The region with the world's largest illicit drug market is North America, though no region is spared. Concentrations in terms of drug production can be found in Africa and the Americas for cannabis (although cannabis is produced in almost all countries), Asia for opiates, South America for cocaine and Europe, Asia and North America for synthetic drugs. In terms of cannabis use, the highest levels have been reported in Oceania, North America and Africa. Cocaine use is highest in North and South America and Western Europe and, in recent years, Oceania. Relatively high levels of opiate use are found primarily in the Near and Middle East, Central Asia, Europe and North America, and for ATS use in Oceania, East and South-East Asia, North America and Europe.

Today, illicit drug use is largely a youth phenomenon in most countries. Prevalence rates gradually increase through the teens and peak among persons aged 18-25. Then the rates gradually decline to negligible levels for people aged 65 and above. When it comes to people receiving treatment for illicit drug use, the typical age is the late 20s-early 30s, whereas for drug-related deaths the average age is often the mid-30s.

Another key characteristic of illicit drug use throughout the world is that more males than females[6] consume such drugs,[7] though some studies indicate that women show a

1 The subsequent estimates are based on the findings contained in the *World Drug Report 2011* (United Nations publication, Sales No. E.11.XI.10). Many countries are still not in a position to conduct regular scientific household surveys. The estimates must thus be interpreted with caution. In order to reflect the uncertainty around these figures, ranges are presented in several parts of this report, either in the text or as footnotes.

2 Range: 153-300 million in 2010/11.

3 Range: 15.5-38.6 million.

4 Range: 2.6-5.0 per cent.

5 UNODC estimates.

6 L. Degenhardt and W. Hall, "Extent of illicit drug use and dependence, and their contribution to the global burden of disease", *The Lancet*, vol. 379, No. 9810 (7 January 2012), pp. 55-70.

7 There is an ongoing debate regarding the extent of hidden drug use

relatively high level of licit substance misuse. In the United States of America, 18.2 per cent of males and 12.5 per cent of females aged 12 and above had used an illicit drug at least once in 2010, which means that the proportion of female drug use was almost a third smaller than that of male drug use. For the potentially more problematic category of illicit drug use over the past month (often referred to as "current drug use"), the difference was more pronounced, as current drug use among females in the United States was some 40 per cent lower than such drug use among males.[8]

Most other developed countries have larger gender gaps with regard to illicit drug use. In most of Europe, including France, Germany and the United Kingdom of Great Britain and Northern Ireland (England and Wales only), female drug use is half, or less, than that of males. Calculating female versus male annual cannabis use in the European Union and Norway, based on surveys conducted between 2004 and 2010, gives a cannabis use level of 4.4 per cent for females versus 9.1 per cent for males among the population aged 15-64. In the 28 countries analysed, relatively small gender gaps were only reported in three countries: Italy, with females accounting for 67 per cent of male cannabis use in 2008, Bulgaria (69 per cent in 2008) and Norway (90 per cent in 2010).[9]

In most developing countries, the gender gaps are even more pronounced. Surveys conducted in Brazil in 2005[10] and Argentina in 2010, for instance, showed prevalence rates of female drug use that were some two thirds lower than the corresponding male rates among the general population. In Indonesia, female drug use was equivalent to just 11 per cent of male drug use in 2010[11] and, similarly, 13 per cent in the Philippines in 2008.[12] A rapid assessment in India in 2000[13] as well as national assessments in Pakistan in 2000[14] and 2006,[15] found that females accounted for less than 10 per cent of the drug users who were identified and interviewed.

School surveys, on the other hand, show far smaller gender gaps. This may suggest that women more readily give up illicit drug use than men. Women also tend to be more risk-averse and thus use smaller amounts of drugs than males, which may make it easier for women to stop using drugs. The school surveys conducted in 35 European countries in 2007 by the European School Survey Project on Alcohol and Other Drugs found that among 15 and 16-year-old students 23 per cent of the male and 17 per cent of the female students had tried drugs at least once (lifetime prevalence). This means that the female prevalence rate was 74 per cent of the male rate at that age.[16] Comparable data from school surveys in the United States showed that the gap among high school students of the same age group (10th grade students) was even smaller, with female lifetime prevalence rates equivalent to 92 per cent of the male rates in 2007.[17]

The economic dimension of the international markets for opiates and cocaine is relatively well-studied. UNODC estimates suggest that the total retail market for cocaine amounts to some $85 billion[18] and the opiate market amounts to some $68 billion (figures for 2009).[19] The overall value of the illicit drug market was estimated at about $320 billion for the year 2003, equivalent to 0.9 per cent of global GDP.[20] The 2003 estimates suggested that the largest markets — in value terms, calculated on the basis of retail sales — were North America (44 per cent of the total) and Europe (33 per cent), followed by Asia, Oceania, Africa and South America. Though no new breakdown has been established since, partial data suggest that the proportions may have declined for North America and increased for the other regions.

and addiction among females. Stigma and lack of services as well as specific behavioural characteristics tend to make female drug use less visible and may also affect reporting by women on their drug use habits in household surveys. Nonetheless, overall illicit drug use and addiction among females worldwide are still far less widespread than among males. Household surveys, drug tests among the workforce (based on urine and hair analyses), treatment data, emergency department visits, arrest statistics and mortality statistics all show the same pattern: illicit drug use is much more common among males than among females.

8 L. Degenhardt and W. Hall, "Extent of illicit drug use and dependence, and their contribution to the global burden of disease", *The Lancet*, vol. 379, No. 9810 (7 January 2012), pp. 55-70.

9 European Monitoring Centre for Drugs and Drug Addiction, *Statistical Bulletin 2011* (Lisbon, August 2011). Available from www.emcdda.europa.eu/stats11.

10 F. I. Bastos, N. Bertoni and M. A. Hacker, "Drug and alcohol use: main findings of a national survey, Brazil 2005", *Revista de Saúde Pública,* vol. 42, Suppl. 1 (2008), pp. 109-117.

11 United Nations Office on Drugs and Crime, data from the annual report questionnaire.

12 Philippines, Dangerous Drugs Board, *Study on the Current Nature and Extent of Drug Abuse in the Philippines* (Manila, 2008).

13 United Nations Office on Drugs and Crime, *The Extent, Pattern and Trends of Drug Abuse in India: National Survey* (2004).

14 United Nations Office for Drug Control and Crime Prevention and Pakistan, Anti-Narcotics Force, *Drug Abuse in Pakistan: Results from the Year 2000 National Assessment* (Vienna, 2002).

15 United Nations Office on Drugs and Crime and Pakistan, Ministry of Narcotics Control, *Problem Drug Use in Pakistan: Results from the Year 2006 National Assessment* (Tashkent, 2007); see also United Nations Office on Drugs and Crime, *Female Drug Use in Pakistan: Mapping Estimates, Ethnographic Results and Behavioural Assessment* (Islamabad, 2010).

16 B. Hibell and others, *The 2007 ESPAD Report: Substance Use among Students in 35 European Countries* (Stockholm, Swedish Council for Information on Alcohol and other Drugs, 2009).

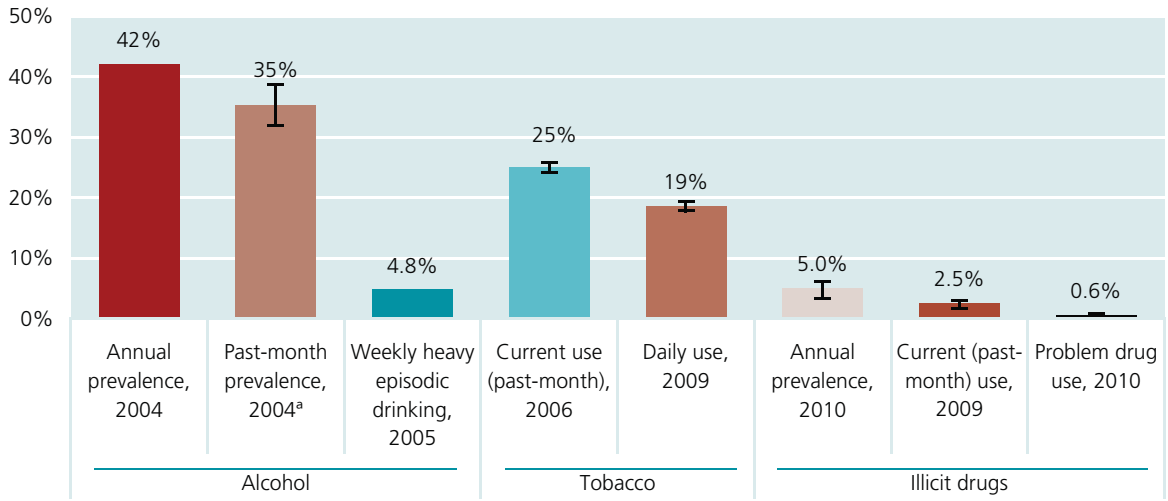
17 L. D. Johnston and others, *Monitoring the Future: National Survey Results on Drug Use, 1975-2007, vol. I, Secondary School Students 2007*, National Institutes of Health publication No. 08-6418A (Bethesda, Maryland, National Institute on Drug Abuse, September 2008).

18 *World Drug Report 2011*.

19 *The Global Afghan Opium Trade: A Threat Assessment, 2011* (United Nations publication, Sales No. E.11.XI.11).

20 *World Drug Report 2005*, vol. 1, Analysis (United Nations publication, Sales No. E.05.XI.10).

Fig. 1. Use of licit versus illicit psychoactive substances among youth and the adult population (Percentage)



Source: Estimates for illicit drugs based on UNODC data from the annual report questionnaire; alcohol statistics: World Health Organization, *Global Status Report on Alcohol and Health* (Geneva, 2011); and *Global Health Risks: Mortality and Burden of Disease Attributable to Selected Major Risks* (Geneva 2009); tobacco statistics: World Health Organization, *World Health Statistics 2010* (Geneva 2010).
[a]Tentative estimate.

Prevalence rates compared

A comparison with consumption rates for legal psychoactive substances suggests that the introduction of international controls has contributed to maintaining lower consumption rates for illicit drugs. Global estimates show that current tobacco use (25 per cent of the population aged 15 and above) is 10 times more widespread than current illegal drug use (see figure 1). Alcohol, which is legal in most countries, has an annual prevalence rate of 42 per cent, which is eight times larger than that of illicit drug use. Heavy episodic weekly drinking is eight times more prevalent than problem drug use.

Annual prevalence of alcohol use is clearly above the global average in Europe (69 per cent), the Americas (58 per cent) and in the WHO Western Pacific region (56 per cent). It is below average in areas where alcohol use is prohibited[21] or where it is considered inappropriate for religious reasons. Based on WHO regional groupings, below average rates of alcohol use are found in the Eastern Mediterranean (3.5 per cent), in South-East Asia, which includes India (11 per cent) and, to a lesser extent, in Africa (29 per cent). Average per capita consumption figures reflect this pattern, the highest totals being reported in Europe and the Americas.[22]

Use of tobacco is clearly above average in Eastern Europe, East and South-East Asia and, to a lesser extent, in South Asia, the Southern Cone countries of South America, the Maghreb countries and Western and Central Europe. Below average rates are found in sub-Saharan Africa, Oceania and North America.[23] While tobacco use seems to have continued to increase in developing countries, it has been declining in the developed countries, notably in North America and Oceania. In the United States, for example, current tobacco use fell from a peak of 42 per cent of adults in 1965 to 19 per cent in 2011.[24]

The use of illicit drugs, alcohol and tobacco constitutes a significant health risk. A WHO study in 2002 suggested that deaths related to drug use affected some 200,000 persons per year. As a result, 11.2 million life-years were lost ("disability-adjusted life-years") due to of the use of opiates, cocaine and amphetamines. The absolute numbers of both deaths and life-years lost are far larger for users of legal substances.[25] Expressing the life-years lost as a proportion of the number of users changes the picture dramatically, however, as there are far fewer illegal drug users: on average 19 life-years per 100 users were lost for users of illicit drugs (opiates, cocaine and amphetamines), in contrast to 5 years per 100 users of tobacco and 2 years per 100 users of alcohol. This clearly indicates that the use of opiates, cocaine and amphetamines is more problematic than the use of legal substances.

Subsequent studies have confirmed that the relative health risks linked to illicit drug use are significantly higher than those linked to alcohol use. A 2008 WHO study found that some 40.5 million people worldwide suffered a mod-

21 Such as Afghanistan, Brunei Darussalam, India (Gujarat), the Islamic Republic of Iran, Kuwait, Libya, Saudi Arabia, the Sudan, the United Arab Emirates (Sharjah) and Yemen.

22 World Health Organization, *Global Status Report on Alcohol and Health* (Geneva, 2011).

23 World Health Organization, *WHO Report on the Global Tobacco Epidemic: Implementing Smoke-free Environments* (Geneva, 2009).

24 Centers for Disease Control and Prevention, National Health Interview Survey, 2011 and previous years. Available from www.cdc.gov/nchs/nhis.htm.

25 World Health Organization, *The World Health Report 2002: Reducing Risks, Promoting Healthy Life* (Geneva, 2002).

Table 1. Deaths and disability-adjusted life-years attributable to the use of illicit drugs, alcohol and tobacco

	Illicit drugs	Alcohol	Tobacco	Total
Deaths related to substance abuse (millions)	0.245	2.3	5.1	7.6
Global deaths (percentage)	0.4	3.6	8.7	12.6
Lost disability-adjusted life-years (millions)	13.2	69.4	56.9	139.5
Global lost disability-adjusted life-years (percentage)	0.9	4.4	3.7	9.0

Source: World Health Organization, *Global Health Risks: Mortality and Burden of Disease Attributable to Selected Major Risks* (Geneva, 2009).

erate or severe disability due to alcohol dependence,[26] compared with some 11.8 million for the far lower number of illicit drug users (one ninth).[27]

If the health risk calculation is based on disability-adjusted life-years, illicit drugs were responsible for 13.2 million such years, or one tenth of all life-years lost due to substance abuse (see table 1). The higher proportion of drugs in life-years lost compared with deaths reflects the fact that drug users tend to die at a younger age than users of alcohol and, in particular, users of tobacco.

The application of public health policy and its regulatory approach to drugs

The State's role in safeguarding public health has steadily increased over time, including through a regulatory approach that entails the implementation of an elaborate system of authorizations and quality controls. The control of psychoactive substances developed in that framework.

While the use of psychoactive substances has existed for several thousand years in many parts of the world, it is a relatively new public health concern. Opium and cannabis, for example, have long been used in Asia and, later, in Africa and Europe; the same is true for coca leaf in the Andean subregion and khat in the countries in the area of the Gulf of Aden. Moreover, a number of hallucinogenic plants have also long been consumed by humans. Traditional drug use was limited largely to special religious and social events, as well as some medical use. This changed in the nineteenth century, when opium became a big business. Opium dens became popular throughout East and South-East Asia and large-scale drug addiction developed as a result.

China tried to ban opium imports in 1839, but came into open conflict with the traders and in 1858 had to give in to their demands for free trade in opium. As a result of this de facto legalization, opium use continued to rise unabated. According to some estimates, about a quarter of the adult male population in China used opium at the beginning of the twentieth century.[28] It soon became apparent that attempts to control drugs exclusively at the national level would be insufficient.

Cocaine use started to rise rapidly in the 1890s and the first decade of the twentieth century in the United States, causing serious problems in several cities and leading various states to put controls in place. Those state-level efforts largely failed, however, as drugs were brought in from neighbouring states instead. That prompted a long battle to move drug control from the state to the federal level. Similarly, attempts by Egypt to ban all hashish imports in the first part of the twentieth century failed as long as traders could purchase hashish legally in other countries and smuggle it into the country.

That led to calls for a multilateral drug control system. The first conference of the International Opium Commission, held in Shanghai, China, in 1909, was followed by the adoption of the International Opium Convention, signed at The Hague on 23 January 1912,[29] three drug control conventions adopted under the auspices of the League of Nations in the inter-war period and finally the three United Nations drug control conventions adopted in 1961, 1971 and 1988. The three United Nations conventions are still the bedrock of today's international drug control system, enjoying near-universal adherence.

Public health is a key dimension of the United Nations drug control system. This is illustrated by the paragraph of the preamble to the first United Nations convention related to drugs, the Single Convention on Narcotic Drugs of 1961 as amended by the 1972 Protocol,[30] which reads "*Concerned* with the health and welfare of mankind". Under that Convention, WHO plays a key role in conducting medical, scientific and public health evaluations of psychoactive substances in order to make recommendations regarding their potential international control. The 1961 Convention as amended by the 1972 Protocol establishes that drug production and use are to be limited to medical and scientific purposes (article 4, subparagraph (c)) and requires parties to give special attention to and

26 Defined as the WHO global burden of disease (GBD) disability classes III and above.

27 World Health Organization, *The Global Burden of Disease: 2004 Update* (Geneva, 2008).

28 *Report of the International Opium Commission, Shanghai, China, February 1 to February 26, 1909, vol. II, Reports of the Delegations* (Shanghai, North-China Daily News and Herald Limited, 1909).

29 League of Nations, *Treaty Series*, vol. VIII, No. 222.

30 United Nations, *Treaty Series*, vol. 976, No. 14152.

take all practicable measures to prevent the abuse of drugs and to pursue the early identification, treatment, education, aftercare, rehabilitation and social reintegration of drug abusers (article 38, paragraph 1). The Convention on Psychotropic Substances of 1971,[31] which expanded the range of substances under international control, maintained the same health focus.

The third United Nations drug control convention, the United Nations Convention against Illicit Traffic in Narcotic Drugs and Psychotropic Substances of 1988,[32] requires States parties to establish as criminal offences the production, manufacture, sale, importation and exportation of drugs. Moreover, unlike the first two United Nations conventions, the 1988 Convention also requires parties to establish as criminal offences the possession and purchase or cultivation of drugs for personal consumption, with the rationale that demand also fuels trafficking (article 3).

At the same time, the 1988 Convention — like the 1961 Convention as amended by the 1972 Protocol — kept the door open for alternative interpretations with regard to sanctions for illicit drug use. For example, article 3, paragraph 2, makes drug control subject to constitutional principles and basic concepts of the legal system of each party, which provides some leeway for national variations in terms of implementation. Secondly, article 3, subparagraph 4 (c), states:

> "Notwithstanding the preceding subparagraphs, in appropriate cases of a minor nature, the Parties may provide, as alternatives to conviction or punishment, measures such as education, rehabilitation or social reintegration, as well as, when the offender is a drug abuser, treatment and aftercare."

This means that countries may apply a range of alternatives to criminal sanctions in dealing with illicit drug use and still be in line with the international drug control system.

In the Political Declaration adopted by the General Assembly at its twentieth special session,[33] Member States recognized that demand reduction was an indispensable pillar in global drug control efforts. In the Declaration on the Guiding Principles of Drug Demand Reduction,[34] which also emanated from the twentieth special session, it was set forth that demand reduction policies should aim at preventing the use of drugs and at reducing the adverse consequences of drug abuse. In addition to prevention, which had been part of the system from its very beginning, reduction of the adverse consequences of drug abuse became an integral part of the international drug control system. Member States made this even more explicit in the Political Declaration and Plan of Action on International Cooperation towards an Integrated and Balanced Strategy to Counter the World Drug Problem,[35] adopted in 2009 during the high-level segment of the fifty-second session of the Commission on Narcotic Drugs and by the General Assembly in its resolution 64/182, in which Member States undertook to strengthen their efforts aimed at reducing the adverse consequences of drug abuse for individuals and society as a whole.

The unfolding of today's drug problem in changing societies

The expansion of today's illicit drug problem started with youth in North America in the 1960s, spread to Western Europe and, eventually, to the rest of the world. Illicit drug use was then part of a broad counter-culture, a youth protest movement against the establishment, notably politicians, the military and the war in Viet Nam. A significant number of drug users regarded themselves as progressive citizens who rejected materialism, consumerism and conformist behaviour. This movement was composed mainly of young people, and cannabis use grew alongside it. Though cannabis use in the United States had been linked to the jazz era of the 1920s,[36] in the 1960s it spread to far larger sections of the population. Moreover, drug use in North America and Western Europe was increasingly seen as a way to explore altered states of consciousness. The use of hallucinogenic drugs such as lysergic acid diethylamide (LSD) became more widespread in the 1960s, often linked to psychedelic music. The late 1960s also saw the emergence of heroin use in North America, notably among young American soldiers in Viet Nam. Soon afterwards, widespread heroin use also appeared in Europe.

After the end of the war in Viet Nam and the social reforms introduced in the 1970s in many countries, this broad youth protest movement largely faded away and with it the "ideological" basis for illicit drug use. Nonetheless, illicit drug use continued to grow in many parts of the world and it continued to be associated with certain aspects of youth culture.

While cocaine use has existed in the United States since the late nineteenth century, the market was relatively small until the 1960s, when it started to expand. Until the late 1970s, cocaine was considered a relatively benign substance, used mainly by the upper class. The image of cocaine changed, however, following the invention of "crack", a cheaper form of cocaine, in the early 1980s. A subculture developed around the marketing and use of "crack", which became associated with gang-related crime, violent crime and prostitution.

Illicit drug use is also associated with nightlife, where young people are generally overrepresented. In the 1970s

31 Ibid., vol. 1019, No. 14956.

32 Ibid., vol. 1582, No. 27627.

33 General Assembly resolution S-20/2, annex.

34 General Assembly resolution S-20/3, annex.

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

36 See, for example, H. Shapiro, *Waiting for the Man: The Story of Drugs and Popular Music* (London, Helter Skelter Publishing, 1999).

and 1980s, discos were popular, whereas in the late 1980s "rave" parties became more commonplace. Surveys among attendees have repeatedly shown very high prevalence rates for the illicit use of drugs, notably "ecstasy", but also amphetamines, cannabis and cocaine. Youth in all sections of society are affected.

Though most drug-related youth cultures started in North America, one well-known exception is the Jamaican Rastafarian movement. The Rasta culture, chiefly associated with reggae music and the use of cannabis, spread from Jamaica to many other countries in the 1980s. While there are still small communities of Rastafarians in a number of countries, it is nowadays a marginal phenomenon.

Drugs, in particular stimulants, have a history of being used to enhance performance in the workplace. This also takes place in today's competitive, individualistic societies, where some workers may feel pressured to use drugs to increase their output. The lack of data makes it difficult to establish any trend for such use, however.

In addition, a number of vulnerable groups have become increasingly affected by illicit drug use. In that context, drug use may be linked to such factors as poverty, instability, exposure to violence, difficult job conditions, work overload, post-traumatic stress disorders, neglect and abuse, and household dysfunction.

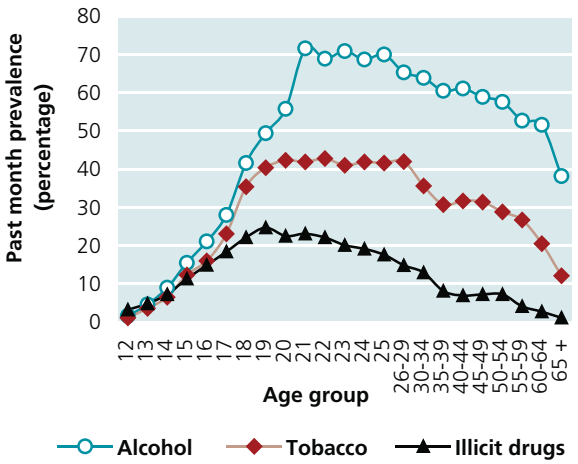
An age group containment effect?

Society and authorities are legitimately concerned about the impact of illicit drug use on young people, as it can affect their future and that of society. But why is illicit drug use found essentially among young people? The concentration of drug use among youth, a fundamental characteristic of the contemporary drug problem, may actually be less the result of a higher propensity among young people to take drugs than the effect of the lower propensity of adults to transgress laws and social norms. Comparisons of age distribution patterns of use for legal recreational psychoactive substances seem to support the hypothesis that the drug control system acts as a powerful brake against the extension of illicit drug use from adolescence to maturity.

The use of psychoactive substances is more homogeneously distributed across age groups for legal substances than for illegal drugs. While the initiation of use of all substances typically occurs during the teens or early years of adulthood, the use of legal substances such as tobacco and alcohol continues in much larger proportions with age in the same population groups, while the use of illegal drugs declines far more significantly.

In most countries, the use of psychoactive substances increases during adolescence and then falls again. Data for the United States, for example, suggest that the peak for illicit drug use is reached at about age 18-20, while the peak in alcohol and tobacco use occurs a few years later

Fig. 2. Age distribution prevalence of past-month use of alcohol, tobacco and illicit drugs in the United States, 2010



Source: United States, Department of Health and Human Services, Substance Abuse and Mental Health Services Administration *Results from the 2010 National Survey on Drug Use and Health: Detailed Tables* (Rockville, Maryland, September 2011).

(between the ages of 20 and 25). Thereafter, consumption declines (see figure 2).

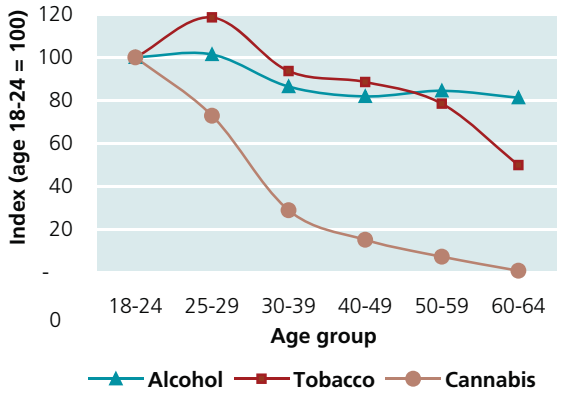
Taking use of such substances among persons aged 18-25 as a baseline, data confirm that the subsequent declines are far more pronounced for the use of illegal drugs than for the use of legal substances. Among persons in the so-called Woodstock generation, that is, persons who were aged 18-25 in 1969 and who are now largely in the age group 60-64, illicit drug use is now 87 per cent lower than among the current population aged 18-25. The corresponding rate for tobacco use is 50 per cent lower and for alcohol use 16 per cent lower.

Similarly, data for Germany (2009) show that alcohol use is some 19 per cent lower among those aged 60-64 compared with those aged 18-24, whereas tobacco use is some 50 per cent lower (see figure 3). The age differences are again more pronounced for the use of illicit drugs. Cocaine use is 95 per cent lower, cannabis use almost 99 per cent lower and heroin, LSD and ATS use almost 100 per cent lower in the older age cohort.[37]

Given the significant changes in psychoactive substance use over time, this analysis is a credible indication — though not proof — of an age containment effect of the drug control system at work. The hypothesis of a stronger age containment effect for illegal drugs than for legal substances finds support in a comparison of prevalence rates for past-month and lifetime use in each age cohort. The smaller the proportion, the more people were able to cease using sub-

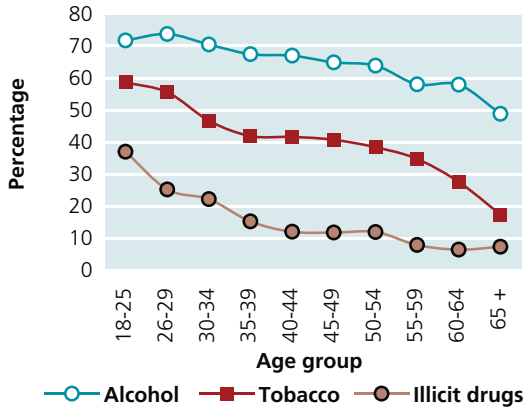
37 A. Pabst and others, "Substanzkonsum und substanzbezogene Störungen: Ergebnisse des Epidemiologischen Suchtsurveys 2009" (Substance use and substance use disorders: results of the 2009 Epidemiological Survey of Substance Abuse), *Sucht – Zeitschrift für Wissenschaft und Praxis*, vol. 56, No. 5 (2010), pp. 327-336.

Fig. 3. Prevalence of alcohol, tobacco and cannabis use in Germany, by age group,[a] 2009 (Index: age 18-24=100)



Source: Based on data from A. Pabst and others, "Substanzkonsum und substanzbezogene Störungen: Ergebnisse des Epidemiologischen Suchtsurveys 2009", *Sucht – Zeitschrift für Wissenschaft und Praxis*, vol. 56, No. 5 (2010).
[a]Data for prevalence of alcohol and tobacco use based on past-month use; data for prevalence of cannabis use based on annual use.

Fig. 4. Lifetime users of alcohol, tobacco and illicit drugs in the United States who continued using those psychoactive substances in the past months, 2010 (Percentage)

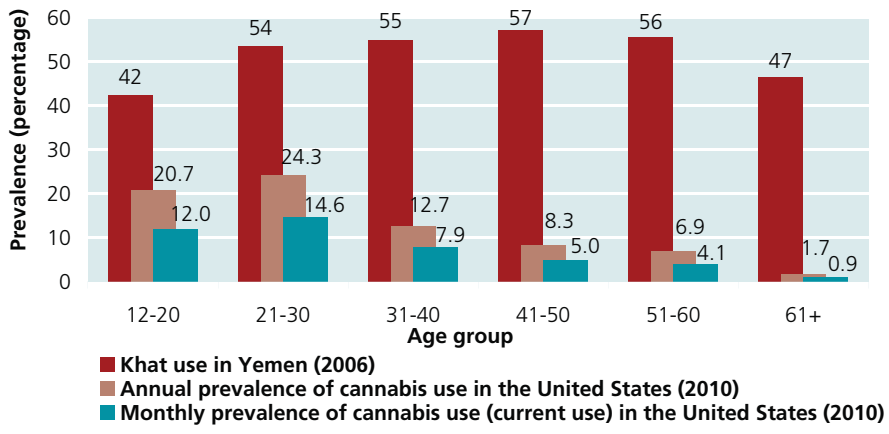


Source: United States, Department of Health and Human Services, Substance Abuse and Mental Health Services Administration, *Results from the 2010 National Survey on Drug Use and Health: Detailed Tables* (Rockville, Maryland, September 2011).

stances. Despite some of the substances being more addictive, data from the United States show that, in each age group, more illicit drug users had given up their habit than users of legal substances (see figure 4). Thus only 7 per cent of the lifetime illicit drug users aged 60-64 were still using drugs in 2010, while 28 per cent of lifetime smokers in that group were smoking cigarettes and 58 per cent of the lifetime alcohol consumers were still drinking.

The hypothesis of a stronger age containment effect for illegal drugs than for legal substances also finds empirical support in cases where currently controlled substances have been de facto legal, such as opium in nineteenth-century China, or where psychoactive substances other than tobacco or alcohol are still legal, such as khat in Yemen and some countries of East Africa. A World Bank study undertaken in Yemen in 2006 revealed that on average 72 per cent of males and 33 per cent of females reported having chewed khat in 2006.[38] The age distribution showed the overall highest levels of khat use among persons aged 41-50 (about 57 per cent), whereas for those aged 61 and above it was some 47 per cent. This was only 13 per cent lower than among the age group 21-30. Comparing the same two age groups in the United States, cannabis use was 93 per cent lower in the older age cohort (see figure 5).

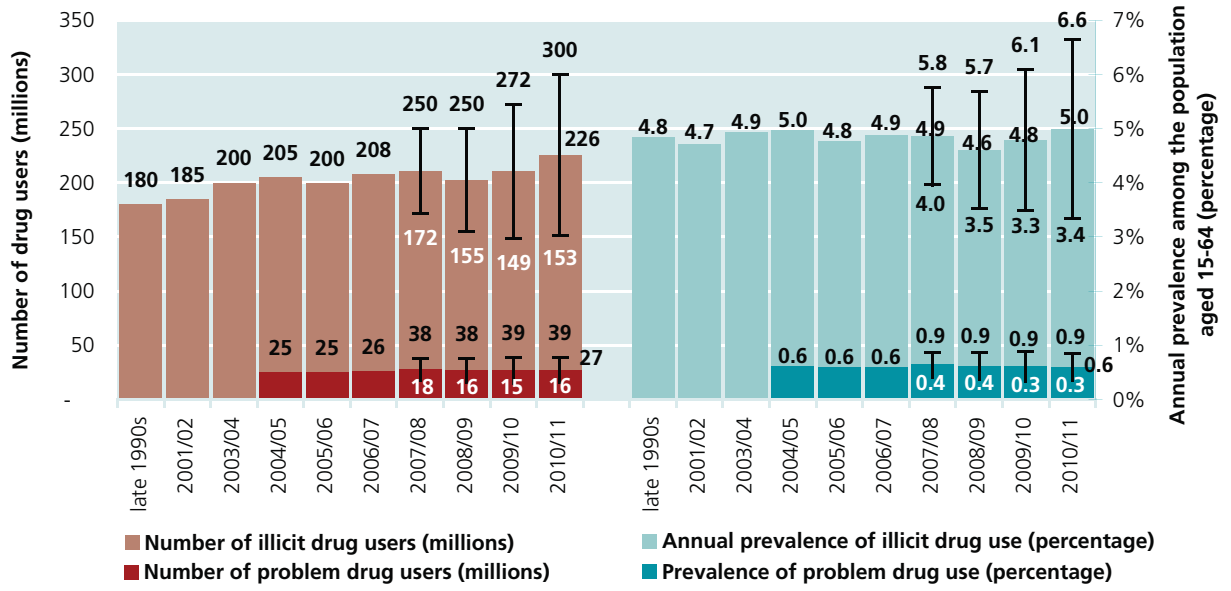
Fig. 5. Age distribution of khat users in Yemen[a] and cannabis users in the United States



Source: World Bank, "Yemen towards qat demand reduction", report No. 39738-YE (June 2007); United States, Department of Health and Human Services, Substance Abuse and Mental Health Services Administration, *Results from the 2010 National Survey on Drug Use and Health: Detailed Tables* (Rockville, Maryland, September 2011).
[a]Some 72 per cent of men and 32.6 per cent of women used khat in Yemen in 2006. Most was current khat use: less than 2 per cent of men and less than 5 per cent of women used khat less than once a month. Some 42 per cent of men chewed khat every day and some 12 per cent chewed it 3-4 days per week. Some 13 per cent of women chewed it every day, some 7 per cent 3-4 times per week and 4 per cent reported chewing it 1-2 days per week.

38 World Bank, "Yemen toward qat demand reduction", report No. 39738-YE (June 2007).

Fig. 6. Illicit drug use at the global level, late 1990s-2010/11



Source: Estimates based on UNODC annual report questionnaire data.

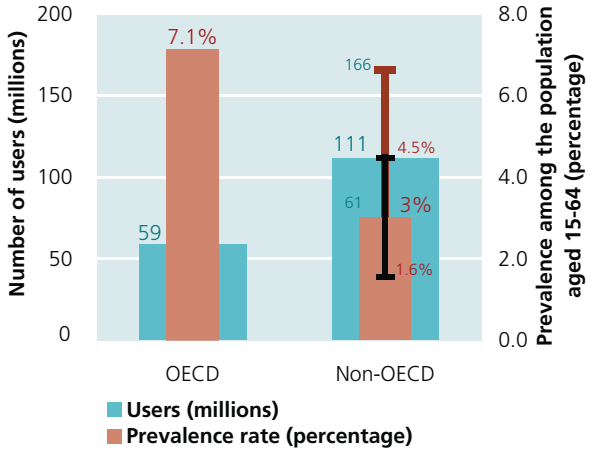
The geographical spread of the contemporary drug problem

While illicit drug use has increased at the global level since the 1960s, it has stabilized in recent years (see figure 6). The prevalence rates have remained largely stable over the past decade, at close to 5 per cent of those aged 15-64. In geographical terms, however, drug use continues to spread.

Although the paucity of data prevents a detailed analysis, it seems that countries with economies in transition and developing countries have become increasingly affected by illicit drug use, as they have experienced a range of socio-economic changes. In absolute numbers, there are almost twice as many illicit drug users in countries not members of the Organisation for Economic Co-operation and Development (OECD) as in OECD countries (see figure 7). The larger population in developing countries is one reason, but the shift in drug use towards developing countries is also reflected in annual reports sent by Governments to UNODC. While the reported trends in illicit drug use have been moving towards stabilization in the OECD countries in recent years, other countries tend to perceive it as increasing (see figure 8). The traditional distinction between drug-producing countries in the poorer South and consuming countries in the more affluent North is thus becoming increasingly blurred.

As with many other social phenomena, globalization has been accelerating the diffusion and a certain homogenization of the contemporary drug problem. Thus cocaine use has been declining in North America, where rates were particularly high, while increasing over the past decade in South America, Western Europe and Africa, where they used to be much lower. Heroin abuse, which used to be particularly high in Western Europe, has shown signs of

Fig. 7. Number of cannabis users and prevalence of cannabis use in OECD and non-OECD countries, 2010



Source: Estimates based on UNODC annual report questionnaire data.

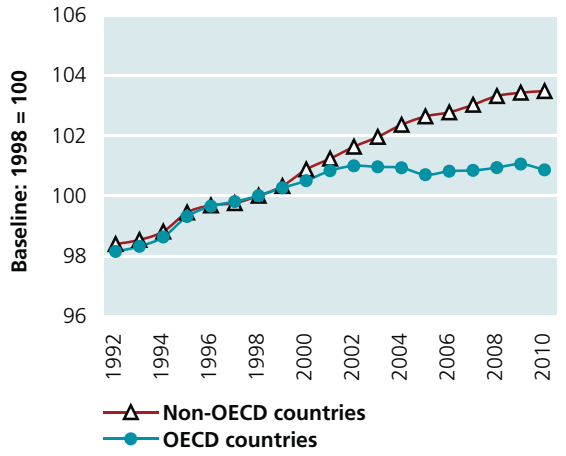
stabilization or decline in recent years there, while it continues to increase in some transit countries. "Ecstasy" use was originally confined to North America and Western Europe, but has been spreading to many other parts of the world, including Oceania, South-East Asia, South America, the Caribbean and Central America.

The black market economy for illegal drugs

The development of the black market economy for illegal drugs

After the ratification of the Hague Convention of 1912 in the wake of the peace treaties signed after the First World-

Fig. 8. Perceived trends in illicit drug use as reported by Member States, 1992-2010



Source: UNODC annual report questionnaire data.
Note: Average of all reported drug trends in illicit drug use (cannabis, opioids, cocaine, amphetamine-type stimulants, tranquillizers and sedatives, hallucinogens, solvents and inhalants) weighted by the population aged 15-64.
Note: Transformation ratios applied for trends over the reported year in prevalence: large decline = -2; some decline = 1; stable = 0; some increase = 1; strong increase = 2. If all countries had reported "some increase", the trend in a specific year would have shown an increase of 1; if all countries had reported "no great change", the trend curve would have remained at the same level.

War — peace treaties included a provision according to which their signatories automatically ratified the Hague Convention — global drug production and misuse declined markedly over the next few decades.[39] At the same time, several countries reported signs of budding black markets for illegal drugs.

The problem was most acute in the United States: organized criminal groups became involved in smuggling heroin from China and Turkey into that country. American organized criminal groups also had international linkages. For example, Italian criminal groups based in the United States were closely involved in drug trafficking, as were Jewish groups with links to others operating both domestically and abroad.[40] Moreover, the 1930s witnessed the origins of the "French Connection", a scheme by which opium was purchased in Turkey, processed into heroin in laboratories operated by Corsicans in Marseilles, France, and smuggled into the United States. At its peak in the late 1960s and early 1970s, the French Connection supplied the bulk of the heroin used in the United States.

Concerned about the increase in drug trafficking activities, States responded by passing the Convention of 1936 for the Suppression of the Illicit Traffic in Dangerous Drugs.[41]

As a result of the difficult political situation in the late 1930s and the outbreak of the Second World War, a limited number of States signed and ratified the Convention, rendering it largely insignificant. More than 50 years passed until drug trafficking was comprehensively addressed in the Convention against Illicit Traffic in Narcotic Drugs and Psychotropic Substances of 1988.

A core objective of the 1988 Convention was to disrupt the large drug cartels that had emerged in the 1980s. It included provisions encouraging improved international cooperation, criminalization of drug trafficking, extradition of drug traffickers, mutual legal assistance, controlled deliveries, cooperation against illicit traffic by sea, control of precursors of illicit drugs, and a call for countries to fight money-laundering. A few years later, the world's largest drug cartels were dismantled in Colombia.

The dismantling of the large cocaine cartels led to profound changes on the illicit drug market. A large number of smaller drug trafficking groups emerged, which led to intensified competition. Drug prices — cocaine prices in particular — fell markedly. Prevention and treatment efforts in the United States seem to have prevented cocaine use from increasing, despite the lower prices.

Profits from illicit drugs declined. Expressed in constant 2009 United States dollars, the value of the world's cocaine sales fell by nearly one half from 1995 to 2009, from $165 billion to $85 billion (range: $75-100 billion).[42] For all illicit drugs, total retail sales were estimated at $320 billion in 2003. UNODC estimates that in 2009 drugs represented about one fifth of global criminal proceeds.

In relative terms, however, the illicit drug markets are much more prominent in some countries. UNODC estimates suggest that the value of Afghan traders' opiate-related sales was equivalent to slightly more than 60 per cent of the country's GDP in 2004.[43] While this proportion decreased to 16 per cent in 2011,[44] this figure is still very significant. While drug-related sales generate the highest proceeds in developed countries, when assessed against their larger economies, those proceeds typically range from only 0.3 to 0.7 per cent of GDP.[45]

The "nuts and bolts" of the illicit drug economy

Like other sectors of activity in which goods or services are traded for a profit, the illicit drug economy is governed essentially by the law of supply and demand, although

39 United Nations Office on Drugs and Crime, *A Century of International Drug Control* (2009). Available from www.unodc.org/documents/data-and-analysis/Studies/100_Years_of_Drug_Control.pdf.

40 Observatoire géopolitique des drogues, *Atlas mondial des drogues* (Paris, Presses Universitaires de France, 1996).

41 League of Nations, *Treaty Series*, vol. CXCVIII, No. 4648.

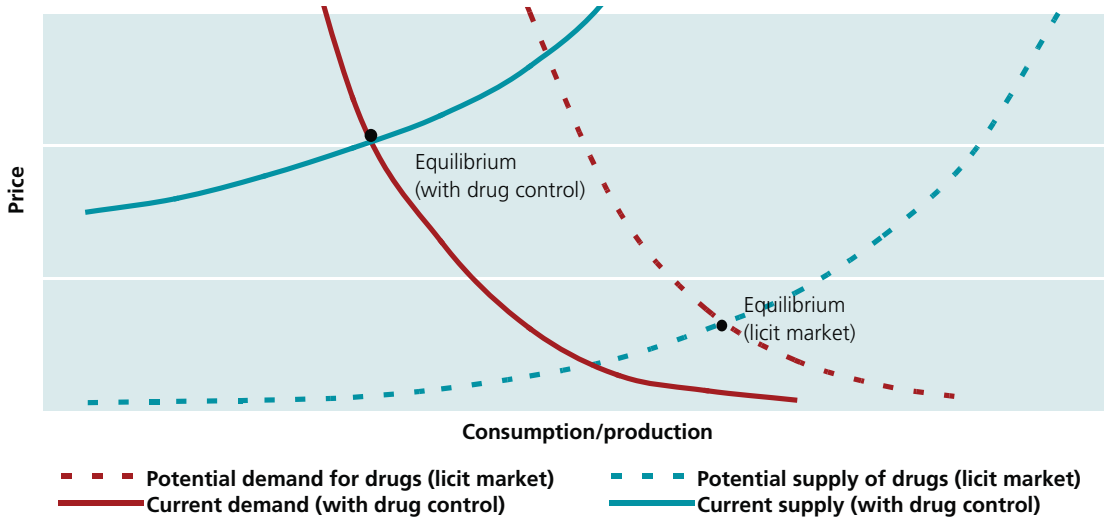
42 *World Drug Report 2011*, p. 31.

43 United Nations Office on Drugs and Crime and Afghanistan, Counter Narcotics Directorate, *Afghanistan: Opium Survey 2004* (November 2004).

44 United Nations Office on Drugs and Crime and Afghanistan, Ministry of Counter-Narcotics, *Afghanistan: Opium Survey 2011* (December 2011).

45 United Nations Office on Drugs and Crime, *Estimating Illicit Financial Flows Resulting from Drug Trafficking and Other Transnational Organized Crimes: Research Report* (Vienna, October 2011).

Fig. 9. Schematic presentation of the impact of drug control on drug production and consumption



Source: UNODC.

addiction and interdiction greatly influence the interaction of supply of, and demand for, illicit drugs.

Currently, one out of eight people who use illicit drugs will develop drug dependency.[46] The behaviour of dependent users influences the demand curve by making it less price-elastic. Contrary to normal consumer behaviour, where price heavily influences demand (higher prices lead to lower consumption), in the short term, persons who are dependent on illicit drugs are usually not deterred by price increases. In the longer term, however, overall consumption will eventually decline if prices rise markedly as dependent users face increasing difficulties to finance their habit. Conversely, dependent users may increase their consumption once prices fall. Recreational users tend to react to price signals faster, in a way that is more similar to the consumption of legal products. While the group of recreational (non-dependent) users is far larger in number, it accounts for a small proportion of total sales.[47]

The drug control system has an impact on both supply and demand (see figure 9). Making production and trafficking illegal tends to shift the supply curve to the left, which means that fewer producers and traffickers will be prepared to run the risks associated with supplying the drugs, at any given market price. The severity of the shift depends not only on the promulgation of a law, but also on its implementation. In parallel, drug control also tends to shift the demand curve to the left, which means a reduction in overall drug consumption. Fewer people will be inclined to use drugs if that means breaking the law and facing possible sanctions, at any given drug price. Leftward shifts on the demand side can also be achieved, or augmented, through demand reduction policies based on prevention and treatment of drug use. In parallel, law enforcement can also encourage illicit drug users to enter and remain in treatment. Similarly, on the supply side, socioeconomic measures can amplify the effect of drug control.

One key effect of the drug control system, notably of supply control interventions, is the increase and maintenance of high prices above the equilibrium that would have been reached in a legal market. Thus cocaine and heroin retail for many times their weight in gold, while their potential legal price may be similar to that of coffee.[48] This reduces, first of all, the initiation of drug use. Secondly, many empirical studies show that problem drug users respond to increases in purity-adjusted prices by reducing consumption levels. In addition, supply shocks generated by means of supply control interventions have been shown to produce substantial and sometimes long-term reductions in drug availability, purity, use and harm in consumer countries.[49]

The globalization of the illicit drug economy?

Black markets do not respect borders, so in an era characterized by globalization the development of a global drug economy might be expected. Indeed, similar trends are found in many countries. Illicit drug use tends to be higher in urban centres than in rural areas. More men than women tend to take drugs, and in many countries there is

46 There are some 27 million "problem" drug users out of some 210 million annual drug users (see *World Drug Report 2011*).

47 W. Rhodes and others, *What America's Users Spend on Illegal Drugs 1988-2000* (United States, Executive Office of the President, Office of National Drug Control Policy, December 2001).

48 R. J. MacCoun and P. Reuter, *Drug War Heresies: Learning from Other Vices, Times, and Places* (Cambridge, Cambridge University Press, 2001).

49 J. Strang and others, "Drug policy and the public good: evidence for effective interventions", *The Lancet*, vol. 379, No. 9810 (7 January 2012), pp. 71-83.

a similar relationship between social stratification and drug use, with high prevalence of drug use among poorer sections of society, lower prevalence among the middle classes and higher prevalence among the upper classes. Drug use also tends to be affected by similar fashions and trends, often stemming from a relatively uniform youth culture. Finally, drug traffickers operate in almost all countries worldwide.

In spite of these shared characteristics, there are still major differences. Drug type preferences still differ significantly across the world. For some drugs, production, trafficking and consumption are largely localized phenomena, while for others regional patterns can be identified. A single, unified global drug economy cannot yet be said to exist.

The markets for cannabis, the world's most commonly produced and consumed illicit drug, are largely decentralized. Production, trafficking, consumption and price trends differ significantly from country to country. With the advent of hydroponic cannabis cultivation in greenhouses in many developed countries, the trend towards decentralization has become more marked in recent years. An exception in this regard is the production of cannabis resin, or hashish, of which significant amounts are produced in two countries (Morocco and Afghanistan), while demand is concentrated mainly in Western Europe and the Near and Middle East/South-West Asia. Hashish is, however, less prominent than cannabis herb, or marijuana, which is cultivated and consumed much more widely.

The production of ATS is also largely decentralized. While exports do take place, they are mostly intraregional. Interregional trafficking in amphetamine and methamphetamine is less common. The situation is slightly different when it comes to "ecstasy", however. Production of "ecstasy" used to be centralized in Western Europe, notably in the Netherlands (the biggest producer) and Belgium. In recent years, its production has started to spread, including to North America and several European and South-East Asian countries. The illegal trade in precursors of ATS, in contrast, is far more unified. Most of the precursor chemicals used in illicit drug manufacture nowadays come from suppliers in South Asia and South-East Asia.

For opiates, there are currently three main interregional markets. The first, and largest, representing almost 90 per cent of global illicit opiate supply over the past five years, is that of opiates produced in South-West Asia, mainly Afghanistan. Those opiates are smuggled mostly within the region and into Europe (including the Russian Federation), which consumes the bulk of the world's heroin, with additional small flows to Africa, China and Australia. The second comprises South-East Asian opiates — originating mainly in Myanmar — which are smuggled within the region, as well as into China and Oceania. Finally, some opiates are produced in Latin America. Most of those drugs are smuggled northward, in particular into the United States. Trends in production, trafficking, prices and consumption frequently differ in those three illicit markets, which suggests that they are not highly interconnected, but rather operate in parallel.

The cocaine market is currently the most globalized of the illicit drug markets. Cocaine production is concentrated in the Andean subregion, and the main illicit markets for cocaine are North America, Western Europe, South America and, to a lesser extent, Oceania. The distribution of cocaine consumption between those regions has changed over the past decade, as declines in its use in North America have been offset by increases elsewhere.

Impact on society and state

Impact on health

The key impact of illicit drug use on society is the negative health consequences experienced by members of society. Drug use can have a serious health impact, even for casual users. Cocaine can induce a stroke; amphetamines can induce lethal arrhythmias or hyperthermia upon first exposure. The use of cannabis may seriously impair the user's driving capacity. Chronic cannabis use can lead to drug dependency as well as a number of behavioural and psychiatric conditions, including internalizing disorders such as anxiety or depression. Indirect impacts include increased prevalence of infectious diseases among drug users as well as cardiovascular dysfunctions, lung diseases, kidney function impairments and endocrine dysfunctions.

Drug control tends to reduce the number of users, and thus the overall negative health impact on society. For the remaining user population, potential negative side effects of the existence of a black market may include a higher risk of obtaining low-quality drugs as traffickers attempt to increase their profits by "cutting" the substances with diluents to make more doses. In some countries, the fear of evoking a criminal justice system response and of harsh enforcement measures may deter drug users from seeking treatment or other medical attention.

Drug-related deaths — whether by overdose, drug-induced accident, suicide or medical conditions associated with or exacerbated by illicit drugs — represent the most severe health consequence of drug use. Some 0.2 million people die from drug use every year.[50] Approximately half of those cases involve fatal overdoses. Moreover, drug-related deaths often affect young people. In Europe, for example, the mean age for deaths stemming from overdose is the mid-30s.[51]

50 The latest UNODC estimate of drug-related deaths is 172,000. The latest WHO estimate is 245,000. World Health Organization, *Global Health Risks: Mortality and Burden of Disease Attributable to Selected Major Risks* (Geneva, 2009).

51 European Monitoring Centre for Drugs and Drug Addiction, *Annual Report 2010: The State of the Drugs Problem in Europe* (Luxembourg, Publications Office of the European Union, 2010).

Drug use, notably injecting drug use, is also a significant vector for spreading HIV and hepatitis B and C. Of the estimated 16 million injecting drug users worldwide,[52] UNODC estimates that almost one in five is HIV-positive. Approximately the same proportion are infected with hepatitis B, whereas some 8 million — about half of all injecting drug users — are infected with hepatitis C. These viruses can cause or exacerbate a range of symptoms and ailments, with a potentially fatal outcome.

UNODC estimates suggest that about 12 per cent of illicit drug users — the cohort of people who report having used an illicit drug at least once in the past year — develop drug dependency and become "problem" drug users.[53] This proportion varies greatly between different drugs. Data from the 2010 United States household survey on drug use and health, for instance, suggest that 15 per cent of cocaine users can be considered to be substance-dependent.[54] This proportion rises to 26 per cent for methamphetamine and to more than 50 per cent for heroin. For cannabis, the proportion is 10 per cent.[55]

Drug-dependent persons require treatment, which may place a financial burden on the individuals and their families, or on society at large. In 2009, some 4.5 million people worldwide were receiving treatment for problems related to illicit drug use; among these, about 1 million were Europeans (excluding Belarusians, Moldovans, Russians and Ukrainians).[56] In the United States, 2 million people received such treatment in 2002. In the same year, the health-related costs of illicit drug use in that country were estimated at $15.8 billion, equivalent to 0.15 per cent of GDP.[57] Assuming that the health costs develop proportionally to the number of persons in treatment and that health cost increases are in line with nominal GDP growth, annual drug-related health costs in the United States may have increased to some $24 billion by 2010. Somewhat lower expenditure levels have been reported from other Western countries.[58]

While in 2010 some 7.9 million people in the United States alone needed treatment for problems related to illicit drug use, only 2.2 million received it.[59] At the global level, the ratio is less than one in five, according to UNODC estimates.[60] Expressed in monetary terms, at current prevalence rates (number of users), some $200 billion-250 billion (0.3-0.4 per cent of global GDP) would have been needed to cover global costs related to treatment for illicit drug use in 2010.

Impact on productivity

Although many studies suggest that the impact of illicit drug use on a society's productivity — in purely monetary terms — may be far more significant than the health impact, it is less commonly discussed. Productivity may decline owing to a large number of factors, including absenteeism, workplace accidents and conflicts at the workplace, to name just a few.

A 2011 study estimated productivity losses in the United States at $120 billion (0.9 per cent of GDP) for the year 2007. This is significantly higher than the health-related costs of illicit drug use discussed above and would be equivalent to 62 per cent of all drug-related costs (calculated using a cost-of-illness approach). Reduced labour participation and incarcerations were the main causes.[61] A similar study undertaken in Canada in 2002 suggested that productivity losses due to illicit drug use amounted to 4.7 billion Canadian dollars (0.4 per cent of GDP).[62] Moreover, in Australia, a study found that the cost of such productivity losses amounted to 2.1 billion Australian dollars for the financial year 2004/05 (0.3 per cent of GDP).[63] These costs are four and eight times higher than the health-related costs, respectively.

In contrast to health costs, productivity loss calculations try to value the loss of potential resources. Productivity losses represent work that was never performed, but could reasonably be expected to have been performed without the impact of illicit drug use. Productivity losses can be thought of as a loss of potential income and thus of GDP brought about by a reduction in the supply and/or effectiveness of the labour force.

52 Range: 11.0-21.2 million (see B. Mathers and others, "Global epidemiology of injecting drug use and HIV among people who inject drugs: a systematic review", *The Lancet,* vol. 372, No. 9651 (15 November 2008), pp. 1733-1745.

53 *World Drug Report 2011.*

54 American Psychiatric Association, *Diagnostic and Statistical Manual of Mental Disorders: DSM-IV*, 4th ed. (Washington, D.C., 1994).

55 United States of America, Department of Health and Human Services, Substance Abuse and Mental Health Services Administration, *Results from the 2010 National Survey on Drug Use and Health: Detailed Tables* (Rockville, Maryland, September 2011).

56 European Monitoring Centre for Drugs and Drug Addiction, "Cost and financing of drug treatment services in Europe: an exploratory study" (Luxembourg, Publications Office of the European Union, 2011).

57 United States, Executive Office of the President, Office of National Drug Control Policy, *The Economic Costs of Drug Abuse in the United States: 1992-2002* (Washington, D.C., December 2004).

58 J. Rehm and others, *The Costs of Substance Abuse in Canada 2002* (Ottawa, Canadian Centre on Substance Abuse, 2006); L. Gordon and others, "The economic and social costs of Class A drug use in England and Wales, 2003/04", in *Measuring Different Aspects of Problem Drug Use: Methodological Developments*, N. Singleton, R. Murray and L. Tinsley, eds., Home Office Online Report 16/06 (London, Home Office, 2006); European Monitoring Centre for Drugs and Drug Addiction, "Cost and financing of drug treatment services in Europe"; D. J. Collins and H. M. Lapsley, *The Costs of Tobacco, Alcohol and Illicit Drug Abuse to Australian Society in 2004/05*, Monograph Series No. 64 (Canberra, 2008).

59 Substance Abuse and Mental Health Services Administration, *Results from the 2010 National Survey on Drug Use and Health: Detailed Tables.*

60 The precise figure for 2009 was 18 per cent. See *World Drug Report 2011.*

61 United States, Department of Justice, National Drug Intelligence Center, *The Economic Impact of Illicit Drug Use on American Society* (Johnstown, Pennsylvania, April 2011).

62 Rehm and others, *The Costs of Substance Abuse in Canada* 2002.

63 Collins and Lapsley, *The Costs of Tobacco, Alcohol and Illicit Drug Abuse to Australian Society.*

Valuations of the loss of a drug user from productive activities is typically based on the expected value of the productivity of the person who illicitly uses drugs. In the labour market, this may equal their expected earnings. Non-market or household productivity is also valued; it is equal to the cost of hiring someone to perform the services that the drug user is unable to perform because of sickness, disability or death.

One key challenge for research in this area is to calculate the "value of life" of a drug user. Two of the main approaches used in the literature are the human capital approach and the demographic approach.

The United States and Canadian studies cited above use the human capital approach, in which premature deaths — a significant component of productivity losses — are valuated as the expected lifetime productivity of the deceased persons. This means that the expected salaries, including fringe benefits, of drug users until the normal retirement age are summed up, then discounted at a predetermined rate (real interest rate of 3 per cent in the United States example). Individuals who die earlier in their (potentially) productive life are given a higher value in these calculations than those closer to the age of retirement. On average, the United States estimates resulted in a potential productivity loss of slightly more than $1 million for each drug-related death.

The Australian study uses the demographic approach, which compares the actual population size and structure to the size and structure of a hypothetical alternative population free of drug use. The actual and hypothetical outputs are then compared in order to estimate the productivity losses.

The key difference between these approaches is that the human capital approach calculates present and future income flows that will no longer accrue owing to drug-related deaths in the current year. The demographic approach calculates the income flows that would have accrued in the absence of drug-related deaths in the current and previous years.

Impact on crime

Illicit drug use is also closely linked to crime, in various ways. Drug users often resort to acquisitive crime to finance their habit. Additionally, many criminals are under the influence of illicit drugs, which reduce inhibitions, when committing crime. Illicit drug use is frequently associated with behavioural problems, which, depending on the substance and the amounts used, may include or result in aggression or violence. That said, drug users may have been affected by conduct disorders and anti-social personality disorders prior to their drug use, which makes them susceptible to involvement in crime and drug abuse.

As a result, criminals in general tend to show far higher levels of drug use than the rest of the population. Urine tests made in 10 major cities in the United States in 2010 revealed that, on average, about 70 per cent of the arrested males had used an illicit drug[64] in comparison to a rate of current drug use among the general male population of 11.2 per cent.[65] Similar results were found in Australia, where one study, based on information collected from 10 sites throughout the country, found that 65 per cent of all detainees, including drug offenders, tested positive for illicit drugs in 2008.[66] In the United Kingdom, results in the same range were found for England and Wales as well.[67]

The costs of drug-related crime can be substantial. In the United Kingdom, a study of the economic and social costs of illicit drug use suggested that the cost of drug-related crime (mainly fraud, burglary, robbery and shoplifting) in England and Wales totalled some £13.9 billion in 2003/04, equivalent to 90 per cent of all social and economic costs related to drug abuse.[68]

Similarly, a study undertaken in Austria estimated the costs of crime related to illicit drug use (mainly fraud, robbery, burglary, car theft, other theft and extortion) at €2.6 billion for the year 2002, which is equivalent to 80 per cent of the total social costs caused by drug use. The costs to the general public of these drug-related crimes were found to be more than eight times larger than the benefits drug users obtained by selling the stolen goods.[69]

Crime and drugs are also linked through drug trafficking. While traffickers generally avoid attracting attention from law enforcement authorities, at times competition between different trafficking groups can generate violence, often including homicide, as the different groups fight to defend or increase their illicit market shares. Moreover, criminal groups with access to large drug profits also often use them for corruption, which may with time lead to significant erosion of the State's authority as drug criminals buy themselves impunity.

64 United States, Executive Office of the President, Office of National Drug Control Policy, *ADAM II: 2010 Annual Report—Arrestee Drug Abuse Monitoring Program II* (Washington, D.C., May 2011).

65 "Past-month prevalence among males aged 12 and above in 2010", in United States, Department of Health and Human Services, Substance Abuse and Mental Health Services Administration, *Results from the 2010 National Survey on Drug Use and Health: Detailed Tables* (Rockville, Maryland, September 2011).

66 A. Gaffney and others, *Drug Use Monitoring in Australia: 2008 Annual Report on Drug Use among Police Detainees*, Monitoring Report No. 9 (Canberra, Australian Institute for Criminology, February 2010).

67 T. Bennet and K. Holloway, "Drug use and offending: summary results of the first two years of the NEW-ADAM programme", Home Office Findings No. 179 (London, Research, Development and Statistics Directorate, 2004); J. Hoare and D. Moon, eds., *Drug Misuse Declared: Findings from the 2009/10 British Crime Survey—England and Wales*, Home Office Statistical Bulletin No. 13/10 (London, Home Office, July 2010).

68 Gordon and others, "The economic and social costs of Class A drug use in England and Wales, 2003/04", in *Measuring Different Aspects of Problem Drug Use: Methodological Developments*, N. Singleton, R. Murray and L. Tinsley, eds., Home Office Online Report 16/06 (London, Home Office, 2006).

69 W. Hauptmann and E. Hübner, *Soziale Kosten des Drogenmissbrauchs: Für 2002 dargestellt am Beispiel Österreichs*, Neue Juristische Monographien No. 51 (Vienna, Neuer Wissenschaftlicher Verlag, 2008).

B. HOW HAVE THE PATTERNS OF THE DRUG PROBLEM SHIFTED OVER TIME

Evolution of the largest illicit drug market: cannabis

Cannabis has been the world's most widely produced, trafficked and consumed illicit drug for decades. Cannabis is consumed by some 75 per cent of illicit drug users — some 170 million people (range: 119-225 million in 2010). Cannabis — in particular cannabis herb — is consumed and grown in practically every country and the overall amounts produced are far larger than the total production of other illicit drugs.

Cultivation is widely dispersed and relatively little is known about the extent of cannabis production. UNODC estimates range from 13,300 to 66,100 tons for the year 2008[70] and subsequent years. For the mid-1990s, the best estimate of cannabis production was some 30,000 tons (range: 10,000-300,000 tons).[71]

The regionalization of cannabis markets

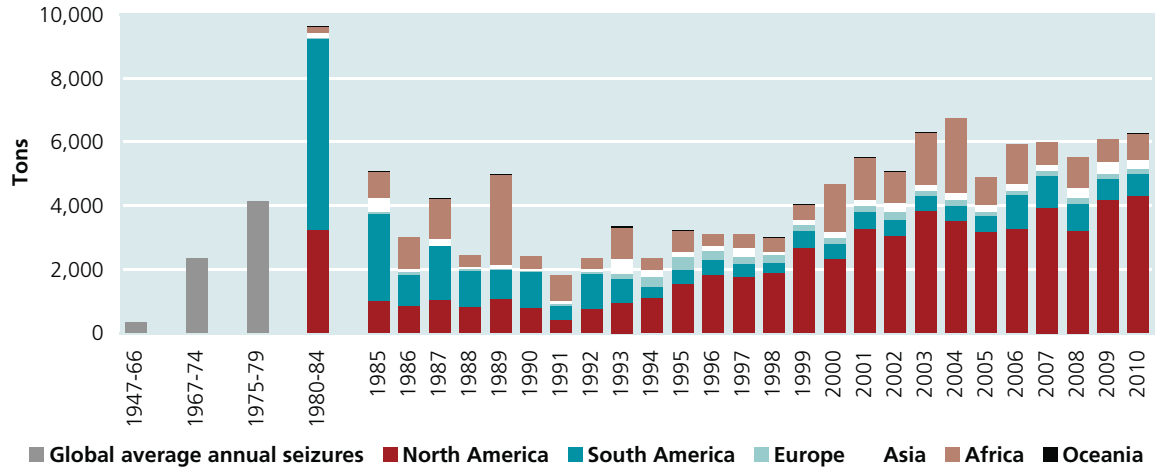
Over the past few decades, the cannabis markets have become more regionalized. This can be seen, for instance, in the production of and trafficking in cannabis herb. While in the 1970s significant quantities were imported into the United States from South America, notably from Colombia, most of the cannabis consumed nowadays in North America is produced there. Similar trends have been observed in Europe. Rising domestic production of cannabis herb in a number of major consumer countries has reduced the need to import it, and interregional trafficking in this drug is now limited. Cannabis resin — the less prominent of the two main cannabis products — is exceptional as it continues to be imported mainly into Europe.

The regionalization can also be seen in the distinct regional consumption preferences. In the Americas, Oceania, South-East Asia, Southern Africa and West Africa, cannabis is consumed mainly in the form of cannabis herb (marijuana). In contrast, in the Near and Middle East, North Africa and Western and Central Europe, cannabis is also used — primarily or in addition to the herbal product — in the form of cannabis resin (hashish).

While the overall trends in cannabis production, trafficking and consumption show strong increases since the 1960s, regional trends may differ significantly. One indicator that illustrates those differences is cannabis seizures (see figure 10). Until the late 1980s, most of the world's cannabis herb seizures used to be made in South America, including Central America and the Caribbean, reflecting the large-scale cannabis production in that area. As production moved closer to the consumer markets of North America, this changed. From the early 1990s, seizures became more frequent in North America, notably in Mexico and the United States. By 2010, cannabis herb seizures in North America accounted for some 70 per cent of the world total, whereas South America only accounted for some 10 per cent (as did Africa). The regional shares for Asia, Europe and Oceania were small.

Given the dominant role of North America in the global cannabis market, it is not surprising that cannabis herb seizures made globally and in North America show similar

Fig. 10. Global cannabis herb seizures, 1947-2010

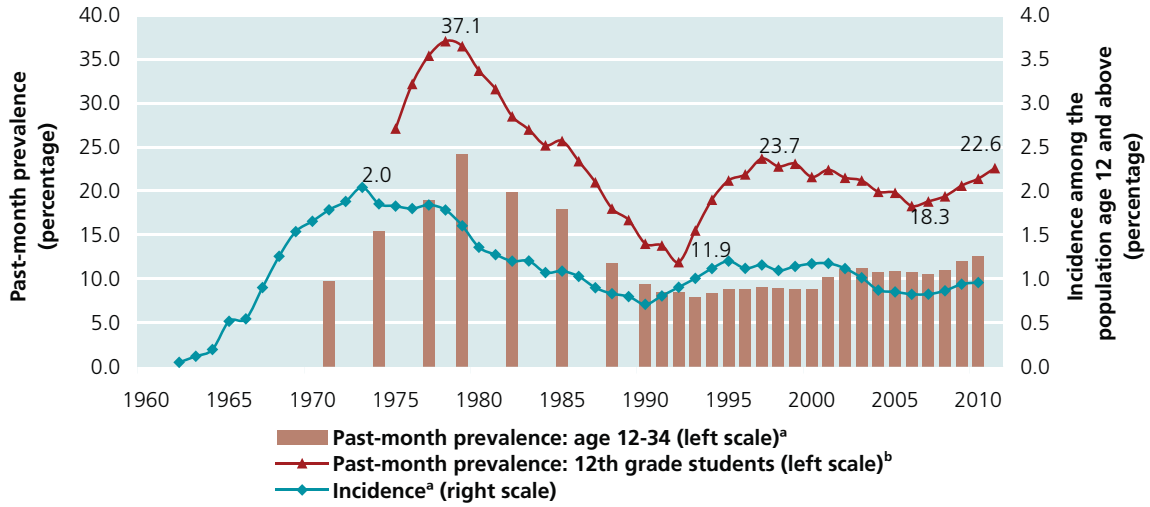


Source: UNODC.

70 *World Drug Report 2009* (United Nations publication, Sales No. E.09.XI.12).

71 "Cannabis as an illicit narcotic crop: a review of the global situation of cannabis consumption, trafficking and production", *Bulletin on Narcotics*, vol. XLIX, Nos. 1 and 2 (1997), and vol. L, Nos. 1 and 2 (1998) (United Nations publication), pp. 45-84.

Fig. 11. Incidence and past-month prevalence of cannabis use in the United States,1962-2011



Source: United States, Department of Health and Human Services, Substance Abuse and Mental Health Services Administration, *Results from the 2010 National Survey on Drug Use and Health: Detailed Tables* (Rockville, Maryland, September 2011); United States, National Institute on Drug Abuse, *Monitoring the Future Survey*, 2010.
[a]Household survey.
[b]High school survey.

patterns. The same is true for consumption, as the global trend closely follows that of the United States, the country with the world's largest cannabis market.

Cannabis use in the United States has fluctuated over the past 50 years (see figure 11). The 1960s and 1970s saw sizeable increases, followed by steep declines in the 1980s. Cannabis use increased again in the 1990s along with domestic production in the United States. During the first decade of the new millennium, the overall trend was stable, although initial declines were followed by increases between 2006 and 2011, a period during which the medical use and legal status of cannabis were debated extensively. Despite these recent increases, past-month prevalence of cannabis use among persons aged 12-34, as well as annual prevalence among persons aged 12 and over in the United States, is still some 50 per cent lower than the 1979 peak.

Different trends have been reported for Oceania, which for years has been the region with the world's highest cannabis prevalence — 9.1-14.6 per cent in 2010. This is far higher than the global average of 2.6-5.0 per cent.[72] Australia is the country with the region's largest market for cannabis. Cannabis use in Australia increased from the 1960s to the late 1990s before falling strongly between 1998 and 2007. It appears that prevention campaigns and press attention to problems related to the use of cannabis with a high THC content, as well as police efforts,[73] contributed to that decline. Despite some recent increases, in 2010, cannabis prevalence remained 42 per cent below the 1998 level.

Cannabis consumption in Europe showed an upward trend between the 1960s and the first decade of the new millennium before stabilizing in recent years (2003-2010) in the European Union or even falling in some major markets (see figure 12). In the United Kingdom, for instance, data for England and Wales showed increases until 2002/03, followed by significant decreases until 2010/11. Declines were also noted in France, Germany, Italy and, to a lesser extent, Spain.

In contrast, in several European Union countries with smaller cannabis markets, cannabis use has continued to increase, offsetting declines seen elsewhere. Prevalence rates of cannabis use in the European Union as a whole has thus been stable in recent years (about 6.7 per cent among persons aged 15-64 in 2010).[74]

European consumers use both cannabis herb and cannabis resin. The total amount of cannabis resin seized in Europe continues to be substantially higher than the total amount of cannabis herb seized in Europe, though at the global level cannabis resin seizures amounted to just about one quarter of cannabis herb seizures over the period 1990-2009.

The evolution of cannabis products

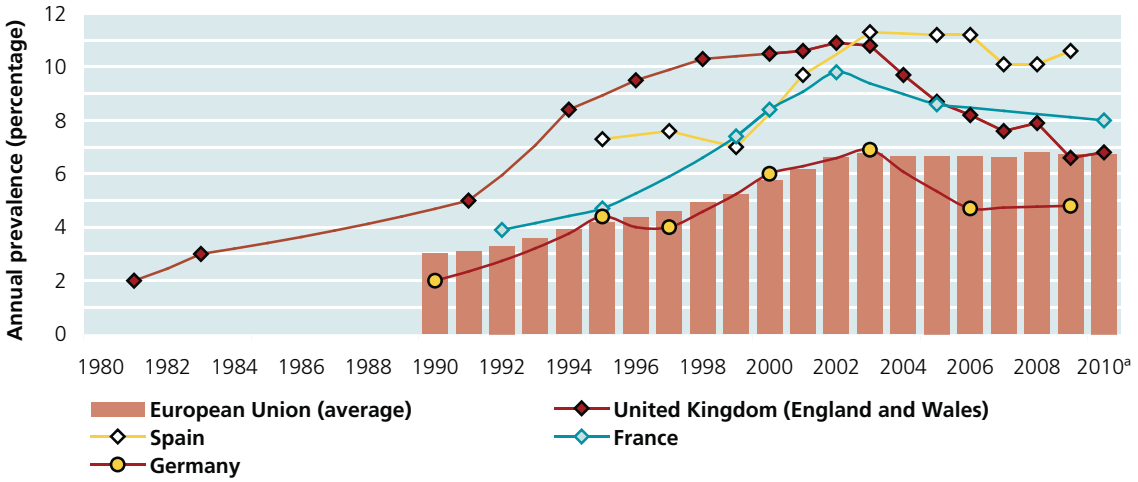
Cannabis herb and resin have remained the two main forms of illicitly used cannabis. Traditionally, cannabis resin had far higher levels of THC than cannabis herb. Hashish (with a traditional THC content of 2-10 per cent)

72 UNODC estimates.

73 Police sanctions shifted away from cumbersome arrest procedures towards fines and warnings, which freed up time for more systematic enforcement.

74 The far lower figures reported for Italy for 2010 were not included in the calculations of the European Union average as the Italian 2010 survey results were not directly comparable to those of previous years. Including the latest Italian figures would have yielded an overall cannabis prevalence rate for the European Union of 5.7 per cent.

Fig. 12. Annual prevalence of cannabis use among youth and adults in the European Union and selected European Union Member States, 1981-2010



Source: UNODC estimates based on United Kingdom, Home Office, *British Crime Survey 2010/11* and previous years; UNODC, annual report questionnaire data; European Monitoring Centre for Drugs and Drug Addiction, *Statistical Bulletin 2011*.
[a]Preliminary data.

was therefore often considered more problematic than marijuana (with a traditional THC content of 0.5-5 per cent).[75]

High potency products, such as cannabis oil (with a THC content of some 10-30 per cent)[76] and hash oil (with a THC content that could reach 40 per cent or more)[77] emerged in the 1970s, but their use remained limited. In 2009, only some 0.05 per cent of the cannabis products seized worldwide was in the form of liquid cannabis.

Over the past two decades, there have been striking increases in the cultivation of cannabis varieties with a high THC content in most countries in North America, Western Europe and Oceania. This has been achieved through plant breeding and/or hydroponic cultivation. The cannabis produced in the main OECD countries now tends to have higher THC levels than imported cannabis. For example, both sinsemilla-type cannabis herb,[78] with a typical THC content of about 13 per cent in the United States, and "Dutch weed" ("nederwiet", also known as "skunk",[79] with average THC levels of 15-19 per cent,)[80] tend to have significantly higher levels of THC than cannabis resin (typically about 8 per cent in Europe in 2009).[81]

Analyses of the THC content of samples of cannabis seized by federal authorities in the United States show that the average THC content has more than doubled since the 1980s (see figure 13). This mainly reflects a growing proportion of sinsemilla-type cannabis with a high THC content. The average cannabis potency of sinsemilla seized by federal authorities was 8 per cent in 1985, compared with 12.9 per cent in 2009.[82]

This means that, in the Western countries, cannabis herb may no longer be less problematic than cannabis resin. Moreover, for the large cannabis markets, cannabis imports have become far less significant, while hydroponic cultivation of cannabis for local or regional markets has increased. The traditional divide between cannabis-producing and cannabis-consuming countries and regions has thus become less relevant.

In recent years, a number of synthetic cannabinoids that are not yet under international control have emerged in several large cannabis markets.[83] Those substances mimic the effects of cannabis and have been included in various herbal mixtures sold under the brand name Spice, sometimes marketed as "legal alternatives" to cannabis. A large and complex variety of synthetic cannabinoids have been used in these attempts at circumventing existing regula-

75 United Nations, *Recommended Methods for the Detection and Assay of Heroin, Cannabinoids, Cocaine, Amphetamine, Methamphetamine and Ring-Substituted Amphetamine Derivatives in Biological Specimens: Manual for Use by National Laboratories* (ST/NAR/27).

76 Ibid.

77 *Bulletin on Narcotics*, vol. XXXII, No. 4 (1980) (United Nations publication).

78 Sinsemilla-type cannabis is created by removing the male plants from the fields, leaving the unfertilized female plants to mature. Much of the sinsemilla-type cannabis is still grown outdoors, but indoor cultivation seems to be on the increase.

79 A hybrid cannabis plant cultivated in the Netherlands that is a cross between Cannabis sativa and Cannabis indica and that may have a THC-content of more than 20 per cent, depending on the varieties used.

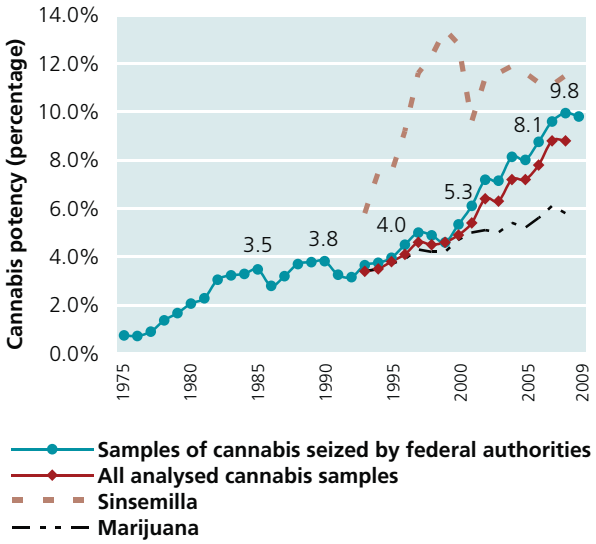
80 THC-monitor, mentioned in *The Netherlands Drug Situation 2010: Report to the EMCDDA by the Reitox National Focal Point* (Netherlands Institute of Mental Health and Addiction (Trimbos Instituut), December 2010).

81 "Potency of cannabis products at retail level, 2009", in *Statistical Bulletin 2011* (Lisbon, European Monitoring Centre for Drugs and Drug Addiction, September 2011).

82 United States, Executive Office of the President, Office of National Drug Control Policy, *National Drug Control Strategy: Data Supplement 2011* (Washington, D.C., 2011).

83 See *World Drug Report 2011*.

Fig. 13. Cannabis potency in the United States, 1975-2009



Source: United States, Executive Office of the President, Office of National Drug Control Policy, *National Drug Control Strategy: Data Supplement 2011* (Washington, D.C., 2011); Mehmedic, Z et al, 'Potency trends of 9-THC and Other Cannabinoids in Confiscated Cannabis Preparations from 1993 to 2008', *Journal of Forensic Sciences*, September 2010, Vol. 55, No 5, pp 1209-1217; UNODC *World Drug Report, 2011* (United Nations publication, Sales No. E.11.XI.10).

tions. While some of the substances have been placed under control in some jurisdictions, new synthetic cannabinoids are rapidly emerging, which creates special challenges for drug control efforts.

Shifts in the transnational opiate and cocaine markets

Though other drugs, in particular ATS, have started to have significant negative effects over the past few decades, opiates and cocaine continue to be responsible for the bulk of drug-related problems worldwide. This is reflected in, for example, the fact that they have figured prominently with regard to treatment demand, drug-related deaths and violence, and the financing of illegal armed activities. Major changes have taken place, however, in the illicit markets for opiates and cocaine over the past few decades.

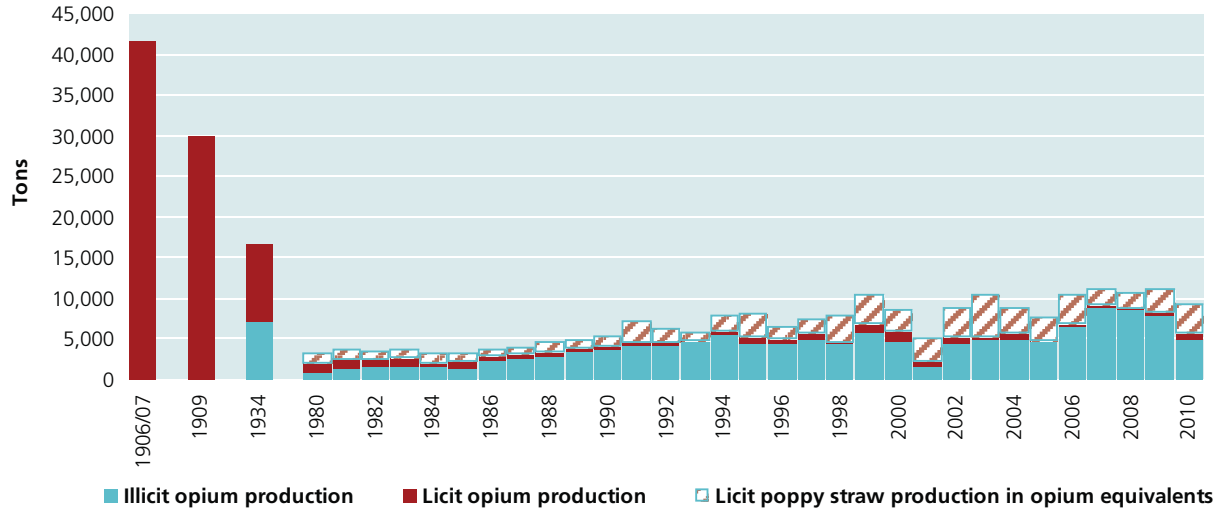
Production: concentration and displacement

In contrast to the production of cannabis, which takes place in countries throughout the world, the production of opium (the raw material for morphine and heroin) and coca leaf (the raw material for cocaine) has shifted over time and is nowadays concentrated in a few countries.

Opium

A century ago, large-scale opium production took place, inter alia, in China, India, Persia, Indochina and the Ottoman Empire. Today, illicit opium production is concentrated in Afghanistan and Myanmar, which together account for more than 90 per cent of the world total. Illicit opium production is substantially lower today than it was at the beginning of the twentieth century and in the 1930s. This holds true even when the licit production of opium

Fig. 14. Global opium production, 1906-2010



Source: *Report of the International Opium Commission, Shanghai, China, February 1 to February 26, 1909, vol. II, Reports of the Delegations* (Shanghai, North-China Daily News and Herald Limited, 1909); *Narcotic Drugs: Estimated World Requirements for 2012—Statistics for 2010* (and previous years) (United Nations publication, Sales No. T.11.XI.2) (An International Narcotics Control Board technical report); United Nations Office on Drugs and Crime, *A Century of International Drug Control* (2009); *World Drug Report 2011* (United Nations publication, Sales No. E.11.XI.10); *World Drug Report 2008* (United Nations publication, Sales No. E.08.XI.11 and corrigendum).
Note: The transformation of poppy straw into opium equivalents is only tentative. A transformation ratio of 6.9 kg of opium for 100 kg of poppy straw was applied, derived from average morphine output from poppy straw of 0.73 per cent at the global level (2006-2010) and an average morphine output from opium of 10.56 per cent at the global level (2006-2010). Annual specific results were applied for data over the 2006-2010 period.

and the licit production of poppy straw (both used for the manufacture of medicinal morphine) are added.

During the first half of the twentieth century, global illicit opium production declined sharply. That was largely due to decreasing production in India and, later, in China. Following the cessation of opium production in mainland China in the early 1950s, production shifted to South-East Asian countries, including Thailand, Burma (now Myanmar) and Laos (today's Lao People's Democratic Republic). There was also some opium production in Iran, but that was halted after the Iranian revolution in 1979.

Myanmar remained the world's largest illicit opium producer until the early 1990s, when it was overtaken by Afghanistan. Opium production there had continued to expand following the withdrawal of Soviet troops in 1989. Afghanistan has remained the world's top illicit opium producer since then, as Myanmar's opium production declined steeply over the period 1996-2006, before starting to rise again thereafter. Opium production in the Lao People's Democratic Republic followed a similar pattern, though at a far lower level. Over the period 2005-2010 Afghanistan accounted, on average, for 88 per cent of global opium production and Myanmar for 6 per cent.

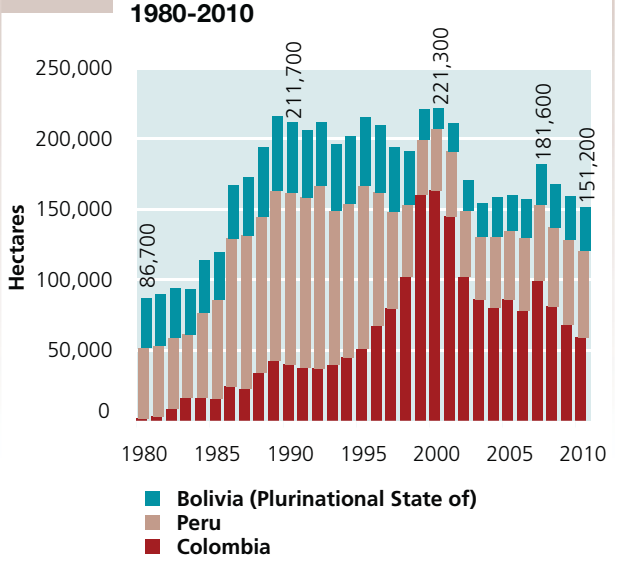
Other significant opium production areas have emerged in Latin America, notably in Mexico (starting in the mid-1970s) and Colombia (in the 1990s). Recent years have seen declining opium production in Colombia, while in Mexico such production appears to have increased in spite of extensive illicit crop eradication efforts by the Mexican authorities.

Coca leaf/cocaine

While coca leaf today is produced almost exclusively in the Andean countries, this was not always so. In the period between the First World War and the Second World War, significant coca leaf production took place on Java[84] (part of today's Indonesia) and today's Taiwan Province of China, in addition to the Andean countries.[85] After the Second World War, coca leaf production outside the Andean countries was eliminated and global coca leaf production remained relatively modest over the next few decades, until the 1970s (see figure 15).

Coca leaf production increased considerably in the 1980s, when it was concentrated mainly in Peru, followed by Bolivia. That changed during the mid-1990s, and the two key producing countries were Colombia and Peru. Coca bush cultivation — and thus coca leaf production — declined, in particular in Peru, in the late 1990s, whereas coca leaf production in Colombia increased markedly. The total area under coca bush cultivation thus stabilized, at a high level, in the 1990s.

Fig. 15. Total area under coca bush cultivation, 1980-2010



Source: Data from the UNODC international crop monitoring programme; UNODC *World Drug Report 2011* (United Nations publication, Sales No. E.11.XI.10).

In the 2000s, the area under coca bush cultivation declined by almost a third. Massive eradication programmes undertaken by the authorities in Colombia over the past few decades have offset the increases reported in the Plurinational State of Bolivia and Peru. In 2010, Colombia and Peru each accounted for some 40 per cent of the total area under coca bush cultivation worldwide, and the Plurinational State of Bolivia accounted for the remaining 20 per cent.

Like the area under coca bush cultivation, cocaine production increased substantially in the 1980s. In contrast to the area under coca bush cultivation, however, cocaine production continued to grow over the next 20 years, though at a slower pace. Improved yields and laboratory efficiency meant that decreases in coca bush cultivation did not translate into lower cocaine production. Significant increases in seizures largely offset the growth in cocaine production, however, and an actual decline in cocaine output was noted between 2007 and 2010.

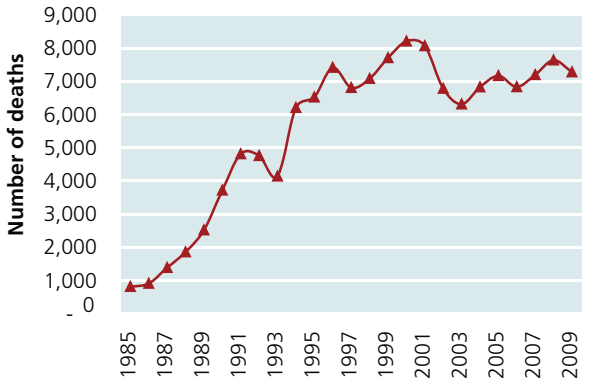
Consumption: from old to new markets

There have been significant shifts in both heroin and cocaine consumption patterns over the past few decades. While consumption has either stabilized (heroin) or declined (cocaine) in the regions with the largest illicit markets (Europe for heroin, North America for cocaine), consumption has increased in several other parts of the world. That is particularly true for some of the countries used as transit areas by drug traffickers. For cocaine, demand has partially shifted from North America (in particular the United States) to Western Europe.

84 P. Gootenberg, "The Dutch colonial coca boom, 1905-1930", in *The Rise and Demise of Coca and Cocaine: As Licit Global "Commodity Chains"*, 1860-1960, P. Gootenberg (Stony Brook, New York, Stony Brook University, October 2001).

85 P. Gootenberg, ed., *Cocaine: Global Histories* (London, Routledge, 1999).

Fig. 16. Drug-induced deaths in the European Union, 1985-2009



Source: European Monitoring Centre for Drugs and Drug Addiction, *Statistical Bulletin 2011*.

Heroin

Following increases in the 1980s and 1990s, heroin consumption has remained generally stable in the main consumer markets over the past decade. It has, however, increased significantly in Afghanistan and a number of countries of transit for heroin.

One indicator of the stabilization of heroin consumption in Europe is the number of drug-induced deaths ("overdose deaths"), as those deaths are predominantly linked to heroin use (see figure 16).[86] Drug-induced deaths rose strongly in the 1980s and the 1990s, and then declined slightly in the 2000s. Improved treatment and measures aimed at reducing the negative consequences of drug abuse may explain some of the recent decline,[87] although it would not have been possible without an overall stabilization of heroin use.

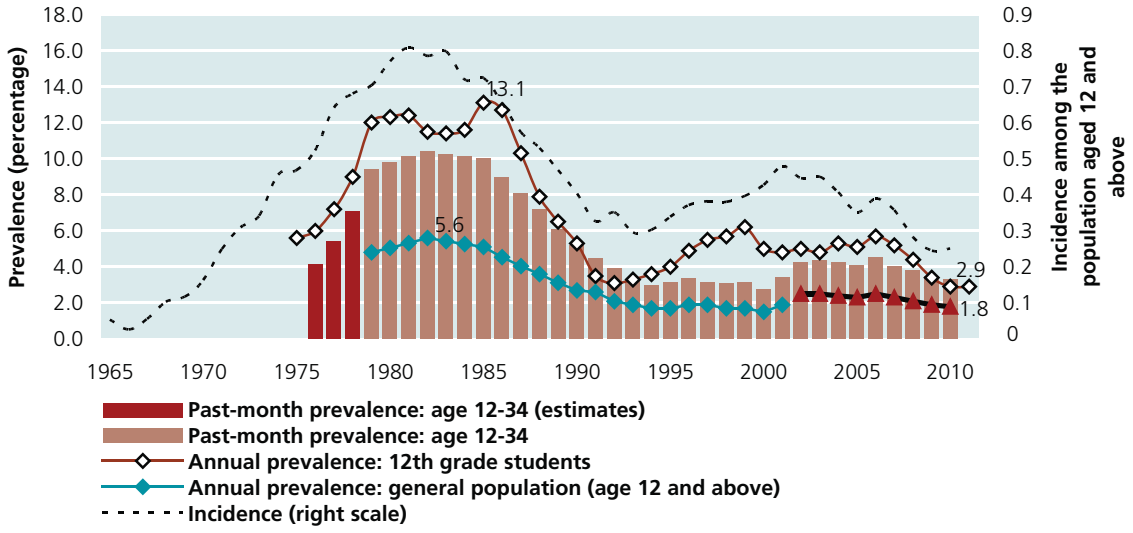
Different trends have been observed in Oceania. Heroin use in Australia increased strongly in the 1990s but declined by some 75 per cent in 2001, following a "heroin drought" brought on by coordinated Australian and South-East Asian law enforcement operations targeting major heroin trafficking groups. Even when the supply of heroin normalized, prevalence of heroin use among the adult population remained at the low level of 2001 — 0.2 per cent — for the rest of the decade.

The emergence of large-scale heroin trafficking via the Islamic Republic of Iran and Pakistan has also entailed significant increases in heroin consumption in those countries. Prevalence of opiate use, including the smoking of opium, in Pakistan is similar to that in Western Europe, while in the Islamic Republic of Iran it exceeds that of Western Europe by a factor of four or five.

Cocaine

Data for the United States, the country with the world's largest cocaine market, show marked increases in cocaine use in the 1960s and the 1970s, decreases in the 1980s, new increases in the 1990s and declines in the new millennium, notably after 2006. Those trends have been reflected in the incidence and prevalence of cocaine use found in household surveys and school surveys (see figure 17). Irrespective of the shorter-term fluctuations, there have been significant overall declines over the past three decades. Annual prevalence of cocaine use among the gen-

Fig. 17. Incidence and prevalence of cocaine use in the United States, 1965-2011

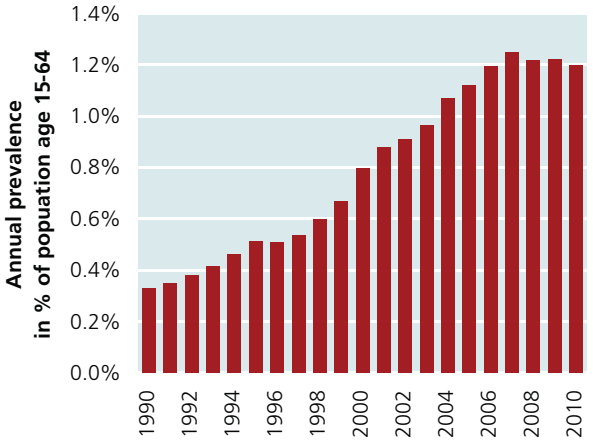


Source: United States, Department of Health and Human Services, Substance Abuse and Mental Health Services Administration, National Survey on Drug Use and Health, 2010 (and previous years); United States, National Institute on Drug Abuse, *Monitoring the Future survey*, 2011.

86 According to data from EMCDDA, heroin was involved in 80 per cent or more of the reported overdose cases in 17 European Union countries.

87 Strang and others, "Drug policy and the public good: evidence for effective interventions".

Fig. 18. Annual prevalence of cocaine use in the European Union, 1990-2010



Source: Estimates based on UNODC annual report questionnaire data; European Monitoring Centre for Drugs and Drug Addiction, *Statistical Bulletin 2011* (and previous years).

eral population fell by more than two thirds between the peak in 1982 and 2010. Among students in their final year of high school (17-18 years old), where prevalence of cocaine use is significantly higher than among the general population, it declined by 78 per cent between the peak in 1985 and 2011.

Following the significant decline in cocaine use in the United States and the expansion of cocaine production since the 1980s, new illicit markets for cocaine were found, mainly in Western Europe, but also in South America.

Illicit cocaine use in Western and Central Europe has tripled since 1990, although there have been signs of stabilization at a higher level in recent years (see figure 18). This more stable trend reflects declines in the main cocaine markets in Europe — the United Kingdom, Spain and Italy (in decreasing order),[88] which have offset increases in several smaller markets. The overall annual cocaine prevalence among persons in the age group 15-64 in the European Union (1.2 per cent) is still only about half of the figure in the United States (2.2 per cent in 2010).

Cocaine use also increased in South America, notably in Brazil and other countries that are part of the Southern Cone, from the mid-1990s to about 2005. Since 2006, the overall trend has been less clear.

88 Data for Italy showed a decline in the cocaine prevalence rate from 2.1 per cent in 2008 to 0.9 per cent in 2010; data for Spain showed a decline from 3.1 per cent in 2007 to 2.7 per cent in 2009; and data for the United Kingdom (England and Wales) showed a decline from 3 per cent in 2008/09 to 2.1 per cent in 2010/11. (For Italy, given methodological changes, a very low response rate (12 per cent) and marked declines in the lifetime prevalence rates (which is impossible unless a large number of cocaine users had died or left Italy between 2008 and 2010), the most recent data were not included in the calculation of the European averages.)

The evolution of trafficking routes

The trafficking routes for heroin and cocaine have evolved over time, largely in response to interdiction efforts, competition among actors and shifts in demand.

Heroin

While some shipments of heroin from the Golden Triangle of South-East Asia to Europe were made during the 1970s and early 1980s, the prominent Balkan route was established in the 1980s and is still used today. The Balkan route starts with the shipment of Afghan opiates through Pakistan and the Islamic Republic of Iran into Turkey. The drugs are then shipped onwards through the Balkans and into Western Europe, where they are distributed and consumed. While much of the heroin processing used to be carried out in Turkey, over the past decade this appears to have stopped as heroin is now produced mainly in Afghanistan and some of its neighbouring countries.

As a result of instability in the Balkans in the 1990s, the main Balkan route temporarily shifted from the western Balkan countries towards the eastern ones. During the late 1990s, trafficking via Albania to Italy also became more prominent. Once stability had been restored, the western Balkan trafficking routes were reactivated. In Western Europe, the Netherlands evolved as an important redistribution centre for heroin.

After the collapse of the Soviet Union and the subsequent establishment of a number of new States, large-scale smuggling of heroin from Afghanistan into Central Asia and the Russian Federation developed. With time, that area became a major illicit market for opiates, with a larger number of opiate users than Western Europe.

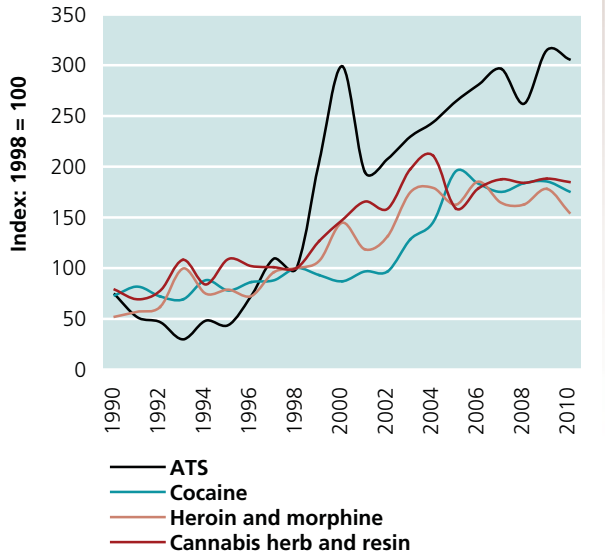
Heroin produced in South-East Asia used to be intended for illicit markets in North America, Oceania and Europe. Nowadays, the heroin produced in South-East Asia is consumed mostly in China, though the total production has declined significantly and, in recent years, has been insufficient to satisfy the illicit demand in that country. Therefore, heroin from Afghanistan is now also smuggled into China; it usually is transported through Pakistan to China, either directly or via South-East Asia.

The heroin available on the North American market used to be largely from South-East Asia as well, though South-East Asia's share of that market has been gradually declining since the mid-1990s. Latin American countries — notably Colombia and Mexico — have emerged as the primary sources of heroin, in particular on the illicit market in the United States.

Cocaine

In the 1970s and early 1980s, the cocaine from the Andean subregion was smuggled into North America primarily using air shipments from Colombia to Florida and other destinations along the eastern coast of the United States. As a result of increased law enforcement efforts, traffickers

Fig. 19. Seizures of amphetamine-type stimulants compared with seizures of major plant-based drugs, 1990-2010[a] (Index: 1998 = 100)



Source: UNODC, annual report questionnaire data.
[a]Seizures reported as of 8 February 2012.

changed their preferred smuggling method in the 1980s and 1990s to shipping the cocaine by boat via the Caribbean. In the twenty-first century, this changed again, as boats and, more recently, semi-submarines carrying cocaine started leaving the Pacific coast of Colombia for Mexico; from Mexico, the drugs were then transported by road into the United States to final destinations across the country. More recently, shipments to countries in Central America, for subsequent onward delivery to Mexico and the United States, increased.

In the past, cocaine for the European market used to be shipped directly from Colombia to Spain or, to a lesser extent, the Netherlands. During the first decade of the new millennium, however, such direct shipments declined. Cocaine was often transported to the Bolivarian Republic of Venezuela and onwards to various countries in the Caribbean, from where it was then transported to Europe, often by air. Some cocaine was also trafficked from Ecuador and Peru, as well as from Brazil.

Bolivia (Plurinational State of) and Peru have become important sources of cocaine for the illicit markets in Brazil and the Southern Cone countries of South America. Some of the cocaine shipped to Brazil is subsequently smuggled into Africa (mostly Western and Southern Africa), with Europe as its final destination. Because of linguistic affinities with Brazil and some African countries, Portugal emerged as a significant trans-shipment area for cocaine, notably during the period 2004-2007. The West African route appears to have become less active in recent years, however.

Finally, there has been a clear increase in cocaine trafficking via some of the Balkan countries in recent years. It seems that drug traffickers from the Balkans, some based in South America, are trying to obtain shipments of cocaine for distribution to illicit markets in Western Europe, after purchasing the drug from Nigerian groups operating in Brasil.

The emergence and growth of the illicit markets for ATS

The strongest growth in the illicit drug markets in recent years has been in the illicit markets for ATS (methamphetamine, amphetamine and "ecstasy"), as reflected in seizure data (see figure 19). While seizures of heroin and morphine rose by less than half, cocaine by some 65 per cent and cannabis by 100 per cent between 1998 and 2010, seizures of ATS nearly tripled over that period, though that may be partly attributable to increased awareness among law enforcement agencies.

The increase in the use of ATS

The increases in seizures of ATS were primarily a reflection of increased demand and thus of growing trafficking. For the past few decades, far more countries have been reporting perceived increases in use than declines. Over the period 2002-2010, for example, 44 per cent of the reporting countries signalled an increase in ATS use, whereas 42 per cent reported a stable situation and 14 per cent saw a decline.[89]

While in the 1990s significant increases in ATS use were reported in Europe and North America, in recent years the strongest increases have been reported in countries in East and South-East Asia and the Near and Middle East. In the Near and Middle East, notably on the Arabian Peninsula, illicit demand for drugs has been mainly for tablets containing amphetamine (and caffeine) referred to as Captagon, a brand name once used for a pharmaceutical preparation containing fenetylline.[90]

ATS use in several of the developed countries, in contrast, is now showing signs of stabilizing or even declining. In the United Kingdom, for example, illicit use of amphetamines (that is, ATS excluding "ecstasy") fell from a peak of 3.2 per cent of the population aged 16-59 in 1996 to 1.0 per cent in 2010/11 in England and Wales.[91] In Australia, use of amphetamines (mostly methamphetamine) fell from a peak of 3.7 per cent of the population aged 14 and older in 1998 to 2.1 per cent in 2010.[92]

89 UNODC, data from the annual report questionnaire.

90 Fenetylline is transformed by the body into the active stimulants amphetamine and theophylline.

91 J. Hoare and D. Moon, eds., *Drug Misuse Declared: Findings from the 2009/10 British Crime Survey—England and Wales*, Home Office Statistical Bulletin No. 13/10 (London, Home Office, July 2010).

92 Australian Institute of Health and Welfare, *2010 National Drug Strategy Household Survey Report*, Drug Statistics Series No. 25 (Canberra, July 2011).

Dispersion of manufacture of ATS and regionalization of the illicit markets for ATS

The illicit manufacture of ATS used to be heavily concentrated, but has gradually become more dispersed. At the same time, much of the ATS currently being produced is for use within a region, rather than for local or worldwide use, though limited interregional trafficking in ATS also takes place.

In North America, the illicit manufacture of methamphetamine, which used to be concentrated in the western states of the United States, gradually moved eastwards, as well as northwards into Canada. Recently, illicit methamphetamine manufacture has been increasing in Mexico.

In Europe, illicit manufacture of ATS (mostly amphetamine and "ecstasy") used to be largely concentrated in the Netherlands, and to a lesser extent Belgium and Poland, but is nowadays found in many European countries, including Bulgaria, countries of the western Balkans, the Baltic countries and Germany. Nonetheless the Netherlands, Belgium and Poland continue to play prominent roles.

In East Asia, illicit manufacture of ATS was concentrated in Japan in the 1940s and 1950s, but subsequently moved to the Republic of Korea, Taiwan Province of China and Thailand. Nowadays, ATS manufacture is concentrated mainly in China, Myanmar and the Philippines. One trend that has emerged during the past few years is the expansion of illicit ATS manufacture in countries such as Cambodia, Indonesia and Malaysia, which had hitherto been primarily used as transit countries for ATS. The South-East Asian methamphetamine market has recently also been supplied by illicit manufacture taking place on the territory of the Islamic Republic of Iran.[93]

In Oceania, most of the ATS (primarily amphetamine and "ecstasy") have been of European origin; over the past two decades, however, significant illicit manufacture of ATS, mostly methamphetamine, has been taking place in Australia and New Zealand. Improvements in domestic supply control there, however, seem to have brought back the need for ATS imports and the preferred source region is now South-East Asia.

While ATS used to be imported into the countries of Southern Africa, nowadays ATS (mainly methamphetamine and methcathinone) are produced locally, in South Africa. For many years, ATS (mainly in the form of methamphetamine) have been illicitly manufactured and consumed in Egypt as Maxiton Forte — the brand name for a discontinued pharmaceutical preparation containing dexamfetamine. Recently, illicit methamphetamine manufacture has also been emerging in West African countries, notably Nigeria; the methamphetamine produced in those countries is mainly for illicit markets in South-East Asia.

93 United Nations Office on Drugs and Crime, *Patterns and Trends of Amphetamine-Type Stimulants and Other Drugs: Asia and the Pacific, 2011—A Report from the Global SMART Programme* (November 2011); UNODC, *Global SMART Update 2012*, vol. 7, March 2012.

The evolution of products

ATS markets are very dynamic, not only in terms of their geographical spread and changing production and trafficking patterns, but also in terms of the evolution of products. Methamphetamine was first synthesized and consumed in Japan in the late nineteenth century, with manufacture and consumption later spreading to North America, East and South-East Asia and Europe. Amphetamine, on the other hand, has long been illicitly manufactured and consumed in Europe. Some illicit manufacture of methcathinone also existed in the Russian Federation and the United States.

"Ecstasy" appeared on the illicit markets later, in North America in the early 1980s and in Western Europe in the late 1980s. For several years, various other "ecstasy"-type substances (such as methylenedioxyamphetamine (MDA) and N-ethyl-tenamfetamine (MDE)) were more widespread as they were not controlled. Once the main "ecstasy-type" substances were all brought under national and international control, MDMA — the original "ecstasy" — largely replaced them.

During the second half of the 2000s, the decline in the availability of the main precursor of "ecstasy" 3,4-MDP-2-P (also known as piperonyl methyl ketone (PMK)) led to a shortage of MDMA. Producers identified a number of strategies to cope with this, of which the first was to reduce the MDMA content in "ecstasy" tablets and use various other substances to compensate. Those substances included methamphetamine, as well as ketamine, a substance not under international control that is used in veterinary medicine. In some instances, methamphetamine and ketamine tablets have also been sold as "ecstasy", as have tablets containing piperazines, another group of substances that are not internationally controlled. As many countries have placed piperazines under national control, however, the attractiveness of those substances appears to have declined in those countries, and producers are reverting to MDMA. Recent trends indicate that the market for "ecstasy" is recovering, but without the re-emergence of 3,4-MDP-2-P as main precursor. Instead, laboratory operators have started using substitute chemicals to manufacture MDMA.

In recent years, new psychoactive substances often marketed as "bath salts" and "plant food" have emerged in several ATS markets around the world. These are psychoactive substances not under international control and include 4-MMC, known as "mephedrone", which is used widely in Europe, as well as MDPV, which is more common in the United States. Both substances are structurally related to cathinone, which is internationally controlled. The fact that these substances were not illegal in most countries until recently made their use more wide-

spread. In the United Kingdom, for example, the latest drug use survey conducted in England and Wales found mephedrone to be the third most widely consumed illicit drug among adults (after cannabis and cocaine), second only to cannabis among persons aged 16-24.[94]

Emerging patterns of illicit drug use

Illicit drug use is not a static phenomenon. As seen above, drug users may change to new substances. But they may also use different drug combinations or various consumption modes and/or use licit substances, including prescription drugs, for non-medical purposes. Such drug consumption patterns are widespread in many countries.

Polydrug use

One salient and geographically widespread feature of drug use behaviour in recent years has been the increase in polydrug use. While polydrug use was considered exceptional a few decades ago, it is now almost the norm in many countries. Users may still have a preferred drug, but at the same time they are often capable of switching to other drugs if need be. "Ecstasy" users, for example, have adapted by consuming fake "ecstasy" tablets which may contain methamphetamine, ketamine or piperazines instead of MDMA, and opiate users often consume synthetic opioids or benzodiazepines when faced with heroin shortages. Moreover, many recreational drug users have started to use drugs in a more targeted manner than in the past. To reduce the need for sleep and increase endurance, users consume various stimulants and "ecstasy", and use cannabis or even heroin to "come down" and sleep. In order to experience the familiar "kick" of illicit drugs, heroin users taking part in methadone maintenance treatment may use "crack" cocaine. While sequential use of various drugs is most common, some drugs are also taken in combination with others. The most frequent combination is that of alcohol and various illicit drugs, although "speedball", a mix of heroin and cocaine, is also common in some parts of the world.

One major concern with regard to polydrug use is that it tends to enhance both the intended effects and the side effects of drugs and compound the impact of those drugs on the body. This can have serious health consequences: mixtures of heroin and the synthetic opioid fentanyl, for example, may lead to respiratory arrest and death. Some polydrug use may also facilitate the consumption of even more drugs. For example, persons who consume cocaine or ATS to combat the drowsiness that often accompanies heroin use may consume larger doses and thus increase the risk of an overdose.

National surveys on the extent of polydrug use are still rare. One method of generating a rough estimate of the problem is to add up the number of users of individual drugs (those responding "yes" to the question "Have you used a *specified* illicit drug (cannabis, cocaine, "ecstasy" etc.) over the past 12 months?") and compare the total with the overall number of drug users ("have you used *any* illicit drug over the past 12 months?"). For a diverse group of 15 countries,[95] the total number of users of five drugs (cannabis, amphetamines, "ecstasy", cocaine and opiates) exceeded the overall number of illicit drug users by, on average, about 20 per cent, based on UNODC calculations. For countries with highly diversified illicit drug markets, such as the United Kingdom and the United States, the figure was greater than 40 per cent. Adding other drug categories, such as hallucinogens, tranquillizers and sedatives, yields a figure of some 60 per cent for the United States,[96] which shows that polydrug use is very common there.

Undertaking the same exercise for Australia reveals even more common polydrug use in that country, as the aggregate number of users of individual drugs exceeds the total number of drug users by some 100 per cent. One study showed that clear majorities of users of all other drugs also consumed cannabis, but — exceptionally — the majority of cannabis users (61 per cent) did not use any other illicit drug. About half of Australian cocaine and "ecstasy" users reported also using the other drug.[97]

Non-medical use of prescription drugs

Several countries have reported increases in the non-medical use of prescription drugs in recent years. "Non-medical use" includes use by the person the drug was prescribed for but not in the prescribed manner or dosage, as well as use by another person. Diversion takes place using various means, such as prescriptions acquired through corruption, fake prescriptions, illegal sales by pharmacies, misuse within families, illegal patient-to-patient sales and counterfeit medication, sometimes bought via the Internet.

In some countries, including Australia and the United States, the non-medical use of pharmaceutical drugs is more prevalent than that of any illegal drug except cannabis.[98] While many prescription drugs may be misused, the most commonly misused drugs belong to one of the following three categories (listed in order of magnitude): opioids, central nervous system depressants and stimulants.

94 Hoare and Moon, *Drug Misuse Declared: Findings from the 2009/10 British Crime Survey.*

95 Argentina, Australia, Bolivia (Plurinational State of), Brazil, Canada, Chile, Germany, Indonesia, Italy, Mexico, Peru, the Philippines, Spain, the United Kingdom and the United States (UNODC, data from the annual report questionnaire and national drug survey reports).

96 Substance Abuse and Mental Health Services Administration, *Results from the 2010 National Survey on Drug Use and Health: Detailed Tables.*

97 Australian Institute of Health and Welfare, *2010 National Drug Strategy Household Survey Report.*

98 According to national drug use surveys, in the United States 6.3 per cent of the population aged 12 and above engaged in non-medical use of prescription drugs in 2010, whereas in Australia the figure was 4.2 per cent of the population aged 14 and above.

Opioids

The main medical use for opioids is pain relief, and it is for this purpose that most opioids (such as morphine) are prescribed. Opioids may also be prescribed to persons undergoing treatment for heroin dependence. They are the most commonly misused prescription drugs and non-medical use is a concern for most countries, though the substances involved may differ significantly between regions and countries.

The non-medical use of any psychotherapeutic drug may have major negative health implications. In addition to the risk of dependency, the misuse of opioid pain killers, in particular, has led to large numbers of deaths. Overdose deaths involving prescription opioids in the United States — a country for which there are reliable data — have quadrupled since 1999 and now clearly outnumber deaths involving heroin and cocaine combined (see figure 20).[99]

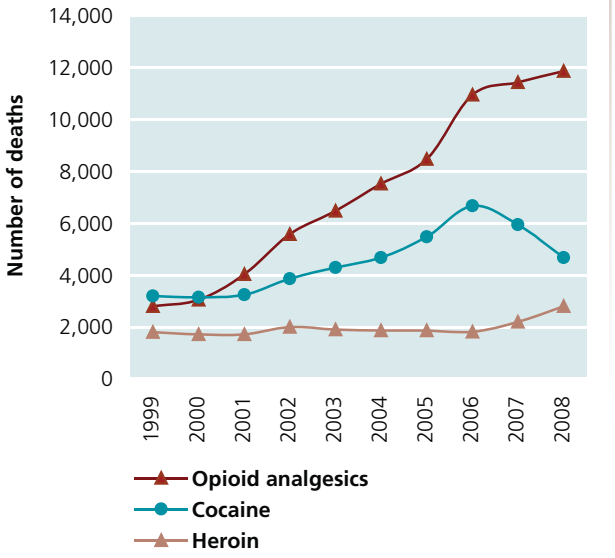
Global licit production of many opioids, including morphine, codeine, thebaine, hydrocodone, oxycodone and methadone, has increased dramatically over the past two decades. For example, global manufacture of oxycodone, a commonly misused opioid marketed as OxyContin in the United States, increased from 2 tons in 1990 to more than 135 tons in 2009 (see figure 21), more than two thirds of which was manufactured in the United States.[100] While there may have been good medical reasons for the expansion of production of those substances, it also increases the risk of their subsequent overprescription and/or their diversion into illicit channels.

As for most other drug behaviour, countries and regions differ significantly with regard to specific opioid preferences. The misuse of buprenorphine, for example, which in Europe and some other countries is used as a substitution drug for heroin, is widespread in some countries in South Asia and in the Caucasus. In Nigeria, pentazocine seems to be far more prevalent than heroin. In some countries, especially in Asia, cough syrups containing codeine are frequently misused.

Central nervous system depressants

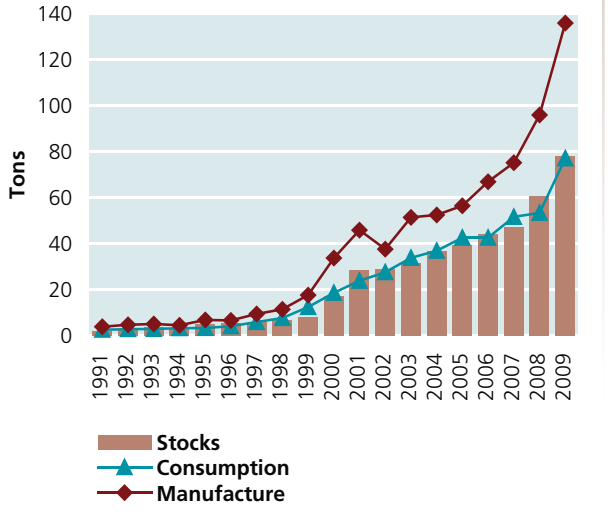
Central nervous system depressants are usually prescribed as sedatives or anxiolytics (for the treatment of anxiety disorders). Benzodiazepines are currently the main substances of concern in this class of drugs, having largely replaced barbiturates (both are used as anxiolytics and sedative-hypnotics) because barbiturates carry a higher risk of lethal overdose. These drugs have a high rate of representation in drug-related deaths (second only to opioids) and they are misused in many countries. The countries that report the highest per capita consumption of benzodiazepines — regardless of whether for sedative, anxiolytic or anti-epileptic purposes — are (in order of magnitude) Belgium, Uruguay, Portugal and Serbia.[101] Some of the commonly misused benzodiazepines are flunitrazepam (marketed as Rohypnol,[102] used as a sedative) and diazepam (marketed as Valium, used as an anxiolytic).

Fig. 20. Overdose deaths by major type of drug in the United States, 1999-2008



Source: National Institute on Drug Abuse, "Prescription drug abuse", Topics in Brief (December 2011).

Fig. 21. Global manufacture, consumption and stocks of oxycodone, 1991-2009



Source: *Narcotic Drugs: Estimated World Requirements for 2011—Statistics for 2009* (United Nations publication, Sales No. T.11.XI.2).

99 United States, National Institute on Drug Abuse, "Prescription drug abuse", Topics in Brief (December 2011). Available from www.nida.nih.gov/tib/prescription.html.

100 *Narcotic Drugs: Estimated World Requirements for 2011—Statistics for 2009* (United Nations publication, Sales No. T.11.XI.2). (An International Narcotics Control Board technical report.)

101 *Psychotropic Substances: Statistics for 2009—Assessments of Annual Medical and Scientific Requirements for Substances in Schedules II, III and VI of the Convention on Psychotropic Substances of 1971* (United Nations publication, Sales No. T.11.XI.3). (An International Narcotics Control Board technical report.)

102 Also referred to as a "date rape" drug.

Stimulants

The third class of frequently misused prescription drugs is stimulants. The medical use of stimulants has decreased in recent years, though they are still prescribed for the treatment of attention deficit disorder and narcolepsy. In addition to the risk of dependency, non-medical use of stimulants may lead to heartbeat irregularities, elevated body temperature or even cardiovascular failure and seizures. A number of drug use surveys have indicated that prescription stimulants are frequently misused in the Americas. The use of prescription drugs well above the global average over the period 2007-2009 was reported by the following countries (listed in order of magnitude): the United States, Argentina, Brazil, Mexico and Chile.[103] In South America, in particular, stimulant use is often linked to weight loss efforts. The problem is not confined to that region, however, as countries in all major regions have reported relatively high levels of consumption of stimulants.

Some countries have seen dramatic increases in the availability of prescription stimulants. In the United States, for example, the number of prescriptions for these drugs increased from 5 million in 1991 to nearly 45 million in 2010.[104] This is linked, inter alia, to increased prescription of methylphenidate (marketed as Ritalin), a drug used to treat attention deficit disorder. Consumption of methylphenidate is much higher in the United States than at the global level, though global consumption of that substance has increased significantly over the past decade.[105]

Injecting drug use in new areas

From a public health point of view, injection is the most problematic form of illicit drug administration. This method places users at a higher risk of fatal overdoses because the rapid onset of effects makes it difficult to gauge how much to use. Overdoses also require immediate medical attention, which may not always be available. Additionally, injecting drug use carries a high risk of contracting infectious diseases, in particular if injecting equipment is shared.

The prevalence of drug injection depends on the region and country, as well as on which illicit drug is being used. Heroin and methamphetamine are the most commonly injected illicit drugs. There is no injection of cannabis, and "ecstasy" injection is uncommon. With a few exceptions, cocaine is also rarely injected. Cocaine hydrochloride (cocaine in powder form) is usually snorted, whereas "crack" cocaine is usually smoked.

Over the past decade, injecting drug use appears to have remained relatively stable. Most countries report that a high proportion of heroin users inject the drug, although the prevalence of injection of any illicit drug differs substantially between countries. In the country with the world's largest illicit drug market, the United States, almost half of heroin users, 13.5 per cent of methamphetamine users and 2.5 per cent of cocaine users report injecting their drug of choice.[106] Similar proportions are found in the United Kingdom, another country with a mature and diversified illicit drug market, as well as in many other European countries. Some countries, such as Argentina, Malaysia, the Netherlands and Spain, report low levels of injecting drug use, though it is most common among heroin users in those countries. On the other end of the scale, Belarus, France and New Zealand report high levels of injecting drug use, in particular among heroin users. Some countries report injecting drug use as being limited largely to heroin users; examples include China, Kyrgyzstan, Lebanon, Myanmar and the Russian Federation.

In some countries, the injection of ATS, especially methamphetamine, is more common. Countries that report the injection of ATS to be more common than the injection of heroin include Indonesia, Sweden and Togo, with low overall levels of injecting drug use, and the Czech Republic, Japan and Slovakia, with higher levels.

Only four countries report that more than 20 per cent of their cocaine users inject the drug: France, Guatemala, Mexico and New Zealand. All these countries also report injecting drug use to be widespread among heroin users.

New actors, changing methods and threats

Bringing the drugs from producers to consumers requires a certain level of organization. The modus operandi of those involved in drug trafficking has evolved over time, in line with market and technological developments. In the past, drug trafficking may have personally enriched the key actors involved; in recent years, however, significant profits from the illicit drug trade have in some cases been used to fund illegal armed activities.

The rise and fall of drug trafficking organizations

Patterns of illicit drug use are highly dynamic and, as they evolve, the operations of drug trafficking organizations tend to change in response. There have been major changes related to drug trafficking over the past few decades. The nature of those changes depends on the drugs and illicit markets involved, though one enduring characteristic of many drug trafficking organizations is a shared language and/or nationality among its participants.

103 *Psychotropic Substances: Statistics for 2009—Assessments of Annual Medical and Scientific Requirements for Substances in Schedules II, III and VI of the Convention on Psychotropic Substances of 1971* (United Nations publication, Sales No. T.11.XI.3). (An International Narcotics Control Board technical report.)

104 National Institute on Drug Abuse, "Prescription drug abuse".

105 *Psychotropic Substances: Statistics for 2009—Assessments of Annual Medical and Scientific Requirements for Substances in Schedules II, III and VI of the Convention on Psychotropic Substances of 1971* (United Nations publication, Sales No. T.11.XI.3). (An International Narcotics Control Board technical report.)

106 UNODC, data from the annual report questionnaire.

The smuggling of heroin into and within the United States was dominated by Italian organized criminal groups after the Second World War. Those groups purchased heroin and had it transported into the United States via Turkey and France. Later, major Chinese groups, known as "triads", brought heroin via the territory of present-day Hong Kong, China, until Latin American heroin started to be trafficked into the United States in the mid-1990s, mainly by Colombian and Mexican groups. As heroin production in Colombia has declined in recent years, more of the heroin appears to be coming from Mexico.

The smuggling of cocaine into the United States was dominated by two Colombian drug cartels, the Medellin and Cali cartels, until the early 1990s. Those organizations controlled the entire supply chain. They proved to be the last of their kind, though, as they were dismantled by the mid-1990s. A large number of smaller Colombian *cartelitos* (small cartels) then emerged and changed the operation of the supply chain by selling cocaine to Mexican groups, as well as to customers in the emerging cocaine markets in Europe. The Mexican groups controlled the trafficking from Mexico into the United States. The shipment methods have changed, too: while originally most of the cocaine shipments went directly from Colombia to the United States by air, nowadays the shipments are mainly sent by boat or semi-submarine to the Central American/Mexican corridor and then overland into the United States.

For the past two decades, heroin has been trafficked into Western Europe mainly along the Balkan route by Turkish groups and groups from various Balkan countries. The heroin used to be manufactured in Turkey using opium and morphine from Afghanistan. In recent years, however, most of the opiates are imported in the form of heroin. From the late 1990s to about 2004, ethnic Albanian organized criminal groups played a very significant role in that illicit trade, but their role has subsequently become less prominent, while criminal groups from the other countries in the Balkans continue to be involved in such trade. Recently, a number of criminal groups with roots in the former Yugoslav Republic of Macedonia have emerged in several Western European cities as organizers of heroin trafficking.

Cocaine trafficking into Western Europe has for years been organized by Colombian criminal groups. In addition, a number of criminal groups from Caribbean countries, including the Dominican Republic and Jamaica, have been involved. Since 2005, various West African criminal groups, often led by Nigerians, have become deeply involved in the cocaine market in many Western European countries. Nigerian groups have also become active in exporting cocaine from Brazil, notably Sao Paulo, to destinations in Africa and Europe. Most of those groups are not organized hierarchically but operate as independent units in loose networks.

Heroin trafficking into the Russian Federation has for long been organized mainly by various criminal groups whose members are ethnic Tajiks. These groups traffic heroin from Tajikistan into other Central Asian countries and the Russian Federation. While Tajik criminal groups are heavily involved in smuggling heroin out of Tajikistan and into the Russian Federation, they hardly ever appear in arrests made in other Central Asian countries.

The smuggling of methamphetamine into the profitable Japanese market was, and continues to be, largely dominated by the Yakuza, the traditional Japanese organized criminal syndicates. While the sources of the methamphetamine have changed over the years, the traffickers have not. Almost half of all persons arrested in Japan for trafficking methamphetamine are Yakuza members. After the Second World War, methamphetamine was domestically produced; then, in 1951, it was banned. Methamphetamine production then moved to nearby areas, such as the Republic of Korea and Taiwan Province of China, before shifting again to mainland China and the Philippines. Recently, Iranian organized criminal groups became involved in the illicit methamphetamine trade, and branches of the Yakuza in Istanbul, Turkey, have begun smuggling into Japan methamphetamine illicitly manufactured on the territory of the Islamic Republic of Iran.[107] In addition, Nigerian groups have started to produce methamphetamine in Nigeria and export it to East and South-East Asia.

The convergence of threats and their evolution

As noted above, drug trafficking has long had close links with transnational organized crime. For decades, a large proportion of the income of transnational organized criminal groups has been derived from drug trafficking. Estimates suggest that drug trafficking generates between a fifth and a quarter of all income derived from organized crime, and almost half of the income from transnational organized crime.[108]

In contrast, the links between drug trafficking and the activities of illegal armed groups and, in some cases, terrorism appear to have developed later. Some well-known examples of this include the links between various rebel armies and production of and trafficking in opium and ATS in and out of the Shan State of Myanmar, the links between coca trafficking and the Shining Path in Peru in the 1990s, the use of income from the illicit drug trade to finance the Revolutionary Armed Forces of Colombia (FARC) in Colombia in the 2000s and the use by the Kurdistan Workers' Party (PKK) of income from the heroin trade to finance illegal armed activities in Turkey. Moreover, many of the militias involved in the instabilities in Yugoslavia in the 1990s used drug trafficking — notably heroin trafficking along the Balkan route — to finance

107 United Nations Office on Drugs and Crime, *Patterns and Trends of Amphetamine-Type Stimulants and Other Drugs*; Global SMART Update.

108 United Nations Office on Drugs and Crime, *Estimating Illicit Financial Flows Resulting from Drug Trafficking.*

their involvement, and the Taliban in Afghanistan and Pakistan have been drawing some of their income from the opium and heroin trade. Profits from cannabis and cocaine trafficking have allegedly been used by Al-Qaida in the Islamic Maghreb, and the Irish Republican Army (IRA) was also allegedly involved in international drug trafficking. In Sri Lanka, the Tamil Tigers were said to have derived some of their income from heroin trafficking prior to being dismantled in 2009, while in Lebanon Hizbullah has also been accused of involvement in drug trafficking.

The above list could be much longer. Not all the allegations are necessarily well founded, however, and solid evidence to establish the existence and to assess the importance of these links is not always readily available. It should also be noted that individual members' proven involvement in illicit drug-related activities does not necessarily mean that the group as such has been involved. Nonetheless, there is no doubt that there are links between drug trafficking and the operations of criminal, insurgent and terrorist organizations worldwide.

The far-reaching threats emerging from drug trafficking and organized crime were recognized internationally more than 20 years ago, in the United Nations Convention against Illicit Traffic in Narcotic Drugs and Psychotropic Substances of 1988, in which it was noted that illicit trafficking enabled transnational criminal organizations to penetrate, contaminate and corrupt the structure of government, legitimate commercial and financial business and society at all levels. Those concerns were echoed and expanded upon by Member States in 1998 and 2009 in the Political Declaration adopted by the General Assembly at its twentieth special session and the Political Declaration and Plan of Action adopted by the Commission on Narcotic Drugs during the high-level segment of its fifty-second session, in 2009. The links between drug trafficking, organized crime and, in some cases, terrorism have been also addressed by the Security Council in a number of its resolutions.

These links prompted several countries to step up their efforts against drug trafficking. In several cases where the authorities targeted illicit drug production and drug trafficking, the insurgency problem was also diminished. Two examples are the Shining Path in Peru in the 1990s and the FARC in Colombia in the 2000s. Efforts to reduce illicit drug production and trafficking helped to reduce the income of the illegal armed groups and thus their capacity to fight.

The role of new technologies

Over the past few decades, increasingly sophisticated mobile telephones and Internet-connected computers have become available to a growing share of the world population. The use of the Internet has increased rapidly, with the number of people with Internet access skyrocketing from 2.6 million in 1990 to 2 billion in 2010. Similarly, the proportion of the population with Internet access rose from 0.05 per cent in 1990 to 30.5 per cent in 2010 and to as much as 76.5 per cent among the high-income OECD countries that are heavily affected by drug use.[109]

The Internet has had a major impact on the illicit drug business. For traffickers, it is now far easier to understand the price levels in various markets, obtain precursor chemicals and hide drug-related profits. Illicit drug users have started to use the Internet as a means of exchanging information about the use of various illicit drugs and on the best opportunities to acquire more potent drugs cheaply. Moreover, new drugs not yet under international control (such as those sold under the brand name Spice) have been successfully marketed via the Internet.

The Internet has also opened new avenues for drug control interventions. It is a crucial vector for spreading information about the risks associated with illicit drug use. Moreover, the Internet also provides authorities with an additional means to monitor the illicit drug market and the criminals' planning and operations. It is also now easier for law enforcement authorities to cooperate closely across borders. That said, drug traffickers seem to have become more cautious — and sophisticated — in their Internet usage. Rich in cash, they have the means to employ top computer experts to ensure that their communications are encrypted, locations untraceable and stored files destroyed in case computers are seized. The speed of technological development as well as criminals' rapid adaptation of the available technology to their needs presents major challenges to most countries' regulatory bodies. Additionally, the absence of international Internet regulations makes it difficult to impede criminals who operate internationally.

Another key technological development over the past few years has been the rapid spread of mobile telephony. The share of the world population with a mobile phone subscription rose from 0.2 per cent in 1990 to 78.6 per cent in 2010. The growth averaged 36 per cent per year over the period 1990-2010. While in the developed countries the number of mobile phone subscriptions often exceeds the total population figure, even the least developed countries have substantial rates of mobile telephone penetration (33.5 mobile phones per 100 inhabitants). For Afghanistan, for example, the rate is 37.8.[110]

The mobile telephone, in particular its short message service (SMS) function as well as anonymous prepaid subscriber identity module (SIM) cards, has revolutionized the illicit drug business at all levels. SMS messages are difficult for law enforcement authorities to monitor and trace, and the widespread use of cheap anonymous SIM cards makes tracing even more cumbersome. Moreover, the

109 World Bank, "Internet users", World Development Indicators database. Available from http://data.worldbank.org/indicator/IT.NET.USER.P2 (accessed January 2012).

110 World Bank, "Mobile cellular subscriptions", World Development Indicators database. Available from http://data.worldbank.org/indicator/IT.CEL.SETS.P2 (accessed January 2012).

mobile phone may act as a drug trafficker's customer registry, and for some traffickers their main assets are the numbers stored on the telephone.

The rapid growth in international trade has also facilitated drug trafficking, as the large volumes of licit goods that are transported worldwide make it difficult for authorities to detect illicit drug shipments. Global merchandise exports rose in nominal terms by 440 per cent over the period 1990-2010.[111] Taking inflation into account, this is equivalent to a 5 per cent yearly increase in terms of volume. Much of the traded merchandise is shipped in containers. The total annual capacity of container shipments is about 1,100 million tons; global illicit drug production would amount to less than 0.005 per cent of this (though not all drugs are transported by container). The likelihood of detecting illicit drugs by random container checks is thus extremely low.

Another major development over the past few decades has been the increase in air traffic. The number of aircraft departures rose by more than 80 per cent between 1990 and 2009, or 3.2 per cent per year.[112] Combined with declining airfares, these increases have acted as an incentive to drug trafficking groups to take advantage of the larger volume of air traffic, either by employing large numbers of persons to act as "mules" (transporting illicit drugs across borders inside their bodies) or by concealing drugs inside air freight or postal parcels. The overall number of passengers transported by aircraft rose by 4 per cent per year over the period 1990-2010 and the amount of freight transported rose by 4.6 per cent per year.

C. WHICH FACTORS SHAPE THE EVOLUTION OF THE PROBLEM

What are the key observable drivers of long-term trends?

The illicit drug economy continues to evolve. Understanding why and how is a complex undertaking, as there is a wide range of potential factors to consider and uncertainties as regards the manner in which they interact and the effects of those interactions. Moreover, many of the factors involved and their effects are difficult to measure or quantify with any confidence, which makes solid analysis difficult. Nonetheless, a brief review, on the one hand, of what can reasonably be considered to be risk factors and predictable drivers of the illegal drug economy and, on the other, of what remains largely unforeseeable, can help take stock of the challenge that designing proactive drug policy represents and draw some cautious conclusions.

Sociodemographic drivers

Under the current drug control system, illicit drug use is more common among certain groups and in certain environments. Statistically, a young man in a city has the highest risk of using illicit drugs and an old woman in the countryside has the lowest risk. While it may not be universally valid, this pattern can be seen in many countries.

As explained earlier in this chapter, young people generally use more drugs than older people, even if the gap is narrowing in some places. In the United Kingdom, for instance, annual prevalence of illicit drug use among those aged 20-24 is almost 12 times higher than among those aged 55-59.[113] In the United States, annual prevalence is 7 times higher among people in the age group 18-25 than among people 50 and above,[114] but it was 16 times higher in 1995.[115]

Data also show that more males than females use drugs. Even in mature illicit drug markets in countries with a high degree of gender equality, such as the United States, past-month prevalence of illicit drug use among females (6.8 per cent in 2010) is some 40 per cent lower than among males (11.2 per cent).[116] Nonetheless, the gender gap also declined over the past three decades. In 1979, past-month prevalence of illicit drug use among females in the United States (9.4 per cent of the population aged 12 and above) was 51 per cent lower than the corresponding rate among males (19.2 per cent).[117]

Another major sociodemographic driving factor for illicit drug use is agglomeration density, or level of urbanization. Apart from the particular situation in some of the main drug-producing countries, generally, more illicit drug use takes place in urban settings than in rural settings.

In the United States, for instance, illicit drug use affected 7.9 per cent of the population aged 12 and above in rural communities in 2010. Drug use was twice as high (16.2 per cent) in large metropolitan areas with a population of more than 1 million. In the United Kingdom, the British Crime Survey revealed that in 2010/11, prevalence of the

111 World Trade Organization, "International trade and tariff data", Statistics Database. Available from www.wto.org/english/res_e/statis_e/statis_e.htm (accessed January 2012).

112 World Bank, "Air transport, registered carrier departures worldwide", World Development Indicators database. Available from http://data.worldbank.org/indicator/IS.AIR.DPRT/countries (accessed January 2012).

113 K. Smith and J. Flatley, eds., *Drug Misuse Declared: Findings from the 2010/11 British Crime Survey—England and Wales*, Home Office Statistical Bulletin No. 12/11 (London, Home Office, July 2011).

114 Substance Abuse and Mental Health Services Administration, *Results from the 2010 National Survey on Drug Use and Health: Detailed Tables.*

115 J. Gfroerer, *Preliminary Estimates from the 1995 National Household Survey on Drug Abuse*, Advance Report No. 18 (Rockville, Maryland, Substance Abuse and Mental Health Services Administration, Office of Applied Studies, 1996).

116 Substance Abuse and Mental Health Services Administration, *Results from the 2010 National Survey on Drug Use and Health: Detailed Tables.*

117 United States, Department of Health and Human Services, Substance Abuse and Mental Health Services Administration, Office of Applied Studies, *Preliminary Results from the 1996 National Household Survey on Drug Abuse*, OAS Series No. H-13, DHHS Publication No. (SMA) 97-3149 (Rockville, Maryland, 1997).

use of so-called "class A" drugs — heroin, methadone, cocaine, methamphetamine, "ecstasy", LSD and "magic mushrooms" (listed in order of their potential to cause harm) — was significantly higher in urban areas of England and Wales than in rural areas (3.2 per cent versus 1.8 per cent), with a particularly large difference for "ecstasy". In Germany, communities with fewer than 20,000 inhabitants had 2.7 drug-related offences (identified by the police) per 1,000 households in 2010, while urban areas with more than half a million inhabitants had, on average, 6.6.[118]

Sociocultural drivers

Several sociocultural factors have also greatly influenced the evolution of the illicit drug problem. These include the changing societal value systems and an increasingly prominent youth culture, though some of these phenomena are difficult to measure and quantify.

The most significant sociocultural driving factor for the evolution of the drug problem appears to have been the popularization of a youth culture. In many developing countries, this has taken place alongside an orientation towards a Western way of life, which may, for some, include the temptation to use illicit drugs.

Moreover, in many societies, there is a trend towards decreasing social control, often in parallel with high urbanization and migration rates. This may lead to cultural changes, the weakening of traditionally strong family ties and a declining importance of traditional value systems. In some cases, subcultural values that are more vulnerable to transgression, crime, violence and illicit drug use may emerge as a replacement.

Most of the currently predominant religions denounce illicit drug use and intoxication. Some surveys have shown that individuals for whom religion plays an important role in their daily life are less prone to taking drugs.[119] In the United States, for example, high school students who attended religious services frequently were more likely to abstain from illicit drug use than their less religious counterparts.[120] There may be secular explanations for this phenomenon, however, one of which is linked to the role of peer group pressure. Individuals who share a religious faith often form groups of like-minded people. As illicit drug use, in general, is not a feature of such groups, individual group members may, to a certain degree, be "protected" from it.

Other sociocultural factors that contribute to shaping the evolution of the drug problem are related to conditions among vulnerable groups, such as children and adolescents, inducing early onset of behavioural and psychological problems, as well as mental health disorders. Such factors are often connected to the exposure of children and adolescents to neglect, abuse, household dysfunction, violence and instability. These conditions can have effects not only on the functioning but also on the morphology of the brain, resulting in significant changes in the reward system, the motivational system, the emotional memory and the decision-making drive. Most of these factors tend to undermine the mental health of children and adolescents and, at the same time, to increase the likelihood of substance abuse.

Socioeconomic drivers

Over the past few decades, the availability of disposable income, notably among the younger generation in developed countries, has increased significantly, thus facilitating the growth of drug consumption. Levels of illicit drug use are generally higher in developed countries, where disposable income is high. This effect can sometimes be seen within regions, subregions or even countries. In North America, drug use is higher in Canada and the United States, where disposable income is higher than in Mexico. In South America, drug use is higher in the Southern Cone countries, which have higher levels of disposable income than the rest of the continent. Within the largest South American country, Brazil, drug use is more widespread in the relatively more affluent south than in the rest of the country. Similarly, in Europe, overall drug use is higher in Western Europe, where disposable income is higher than in Eastern or South-Eastern Europe.

Disposable income, in isolation, does not explain all differences. In Afghanistan, disposable income levels are low, whereas illicit drug use is high. Moreover, drug use in most of the Nordic countries is relatively low compared with the rest of Western Europe, despite their high levels of disposable income. Similarly, although the disposable income is high in Japan and Singapore, the spread of illicit drug use is limited there.

118 Germany Bundeskriminalamt (Federal Criminal Police Office), "Rauschgiftkriminalität: Bundeslagebild 2010—Tabellenanhang" (Wiesbaden, 2011); Statistisches Bundesamt (Federal Statistical Office), "Bevölkerung und Erwerbstätigkeit" (Population and employment) (Wiesbaden, 2011).

119 B. H. Bry, P. McKeon and R. J. Pandina, "Extent of drug use as a function of number of risk factors", *Journal of Abnormal Psychology,* vol. 91, No. 4 (1982), pp. 273-279; M. D. Newcomb and others, "Substance abuse and psychosocial risk factors among teenagers: associations with sex, age, ethnicity, and type of school", *American Journal of Drug and Alcohol Abuse*, vol. 13, No. 4 (1987), pp. 413-433; E. Maddahian, M. D. Newcomb and P. M. Bentler, "Risk factors for substance use: ethnic differences among adolescents", *Journal of Substance Abuse,* vol. 1, No. 1 (1988), pp. 11-23; J. D. Hawkins, R. F. Catalano and J. Y. Miller, "Risk and protective factors for alcohol and other drug problems in adolescence and early adulthood: implications for prevention", *Psychological Bulletin*, vol. 112, No. 1 (1992), pp. 64-105.

120 J. M. Wallace Jr. and others, "Race/ethnicity, religiosity and adolescent alcohol, cigarette and marijuana use", *Social Work in Public Health,* vol. 23, Nos. 2 and 3 (2007), pp. 193-213; J. M. Wallace Jr. and others, "Religion, race and abstinence from drug use among American adolescents", Monitoring the Future Occasional Paper 58 (Ann Arbor, Michigan, University of Michigan, 2003).

Another relevant socio-economic factor is the level of social inequality within a given society. While this is not necessarily a driving factor, it appears to contribute to or enable the development of a drug problem. Societies characterized by high income inequality tend to be more prone to crime, including drug trafficking, and a high level of drug trafficking is a risk factor for increased consumption. In extremely unequal societies, some members of marginalized groups may view involvement in 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. The social barriers against acquisitive crime also tend to be lower in societies with high income inequalities.

Inequality can be measured as the extent to which the distribution of income among individuals within an economy deviates from a totally equal distribution. It is frequently measured by the Gini index, in which a coefficient of 0 signals absolute equality (everyone earns the same), while 100 indicates total inequality (one person earns everything). The analysis of existing Gini coefficients, as published by the World Bank, shows a global average of 42.[121] Countries with the lowest income inequality (Gini coefficient of less than 30) tend to have relatively low levels of drug problems. Conversely, a number of countries with high levels of inequality (Gini coefficients exceeding 50) face relatively higher levels of drug problems as well, mostly as transit or production locations.

Unemployment appears to be another key socio-economic driver of drug trafficking and illicit drug use. Among young males, in particular, unemployment increases the likelihood of participation in the illicit drug trade and illicit drug use. Given the high unemployment rates in many countries, in particular among youth, entry into the workforce is often a major challenge. Consumption of illicit drugs may limit an individual's chances of entering (or remaining in) the workforce, while frustration caused by failure to find adequate employment sometimes favours drug consumption, thus creating a vicious circle.[122]

Surveys across the world have repeatedly shown illicit drug use to be far more widespread among unemployed people than among the general population. In a number of countries, including France, the United Kingdom and the United States, the rates among those unemployed were about twice as high as among the working population. In the Philippines, a national household survey conducted in 2008 found that more than a third of the current[123] drug users were unemployed,[124] while the overall unemployment rate was 7.3 per cent. This suggests that current drug users were far more likely to be unemployed than the general population.

Unemployment is even more significant when it comes to people requiring treatment for illicit drug use. A study conducted throughout the European Union in the early 2000s revealed that 47.4 per cent of those receiving treatment were officially unemployed and a further 9.6 per cent were "economically inactive". In comparison, the general unemployment rate at that time (in 2001) was 8.2 per cent.[125] Similarly, a study conducted by UNODC in Central Asia (Kazakhstan, Kyrgyzstan, Tajikistan and Uzbekistan), covering the period 2003-2005,[126] revealed that close to 60 per cent of persons entering treatment for illicit drug use were unemployed, whereas the average unemployment rate in those four countries over the same period was less than 9 per cent.

Several countries also report that unemployed persons are more likely to be involved in drug trafficking than those in formal employment. In Poland, for instance, 30 per cent of the people arrested for drug trafficking were unemployed in 2009, compared with a general unemployment rate of 8.2 per cent that year. In Italy, 38 per cent of arrested drug traffickers were unemployed in 2009, whereas the unemployment rate was 7.8 per cent. Similarly, in Argentina, 54 per cent of all arrested drug traffickers with known employment status were unemployed in 2009. The unemployment rate was 8.6 per cent in that country.[127]

While the unemployment rates among illicit drug users and drug traffickers are significantly higher than among the general population, it is less clear whether changes in a country's unemployment rates result in parallel changes in the number of drug users. There seems to be no strong correlation between changes in unemployment rates and the prevalence of illicit drug use over time. The longest time-series data available are for the United States. For the period 1979-2010, those data show a slightly positive, though statistically significant, correlation between unemployment and annual prevalence of illicit drug use among the general population (R=0.5).

Another key finding, seen in most studies, is that people from disadvantaged backgrounds are more likely to use illicit drugs.[128] Data for the United States, for instance, show that prevalence of illicit drug use among people with

121 World Bank, "Gini index", World Development Indicators database. Available from http://data.worldbank.org/indicator/SI.POV.GINI (accessed 30 March 2012).

122 United Nations International Drug Control Programme, *Economic and Social Consequences of Drug Abuse and Illicit Trafficking*, UNDCP Technical Series No. 6 (Vienna, 1998).

123 "Current drug users" were defined in that survey as those who admitted that they were still using "dangerous" drugs up to the time the survey was conducted.

124 Dangerous Drugs Board, *Study on the Current Nature and Extent of Drug Abuse in the Philippines*.

125 European Monitoring Centre for Drugs and Drug Addiction, *Annual Report 2003: The State of the Drugs Problem in the European Union and Norway* (Luxembourg, Office for Official Publications of the European Communities, 2003), p. 67.

126 United Nations Office on Drugs and Crime, "Drug abuse in Central Asia: trends in treatment demand 2003-2005" (Tashkent, October 2006).

127 UNODC, data from the annual report questionnaire.

128 Degenhardt and Hall, "Extent of illicit drug use and dependence".

low incomes is far higher than among people in higher income groups (21 per cent annual prevalence of illicit drug use among people from households with an income of less than $20,000 in 2010, compared with 12.4 per cent for those in households with an income of more than $75,000).[129] In addition, a number of countries experience an inverted J-curve phenomenon, that is, illicit drug use is highest among the poorest sections of society, low among the middle class, before increasing again among the richest. In the United Kingdom, for example, annual prevalence in 2010/11 was 12.9 per cent among persons in England and Wales earning less than £10,000 per year; 6.7 per cent among those earning between £30,000 and £40,000; and 7.7 per cent among those earning more than £50,000.[130]

The drug control system

While the various sociocultural, sociodemographic and socio-economic factors discussed above clearly have a significant impact on the development of the various facets of the drug problem, there is another key factor: drug control policy. The fundamental features of the current drug control system have remained stable over time. These include the principles of restricting the use of drugs to medical and scientific purposes, supply reduction, demand reduction and the need for a balanced approach — applying measures at both the supply and the demand sides — to tackle the problem.

Drug control is applied to increase the risks for producers, traffickers and users of illicit drugs. Far higher drug prices and/or the risk of a law enforcement response tend to lower illicit drug use (compared with a hypothetical situation in which such measures were not in place). Similarly, higher risks for illicit drug producers and traffickers limit their readiness to participate in the market. Without the risk of eradication, for instance, more farmers may be expected to grow illicit crops.

There are a number of examples that demonstrate the impact of drug control interventions during specific periods in various countries:

- Opium production and consumption were widespread in China during the last decades of the nineteenth century, the inter-war period and the Second World War. Stringent drug control measures implemented during the 1950s led to a drastic decline of the problem. Ever since, China has had a relatively small drug problem and prevalence of opiate use among the adult population is currently about 0.25 per cent.
- In the 1970s, Iran used to be among the large opium-producing countries worldwide. Following the Iranian revolution in 1979, however, opium production basically ceased, and opium was largely replaced by opiates produced in neighbouring Afghanistan.
- Thailand was a significant opium producer in the early 1960s, with most of the cultivation concentrated in the country's northern areas. Following concerted alternative development efforts in those areas, opium production in Thailand declined, and is now marginal.
- Java, one of the main islands of present-day Indonesia, had one of the largest areas under coca bush cultivation in the inter-war period. Intervention by the United States after the Second World War stopped this production and cocaine has since remained a negligible problem in Indonesia.
- After the Second World War, Japan had large stocks of methamphetamine, which gradually leaked into the market and caused a methamphetamine epidemic. Curtailing the leaks, stopping local production and introducing control measures for precursor chemicals in the early 1950s reduced Japan's methamphetamine problem for several decades.
- In the early 2000s, Australian law enforcement authorities, in close cooperation with their South-East Asian counterparts, managed to dismantle some key heroin trafficking networks. As a result, Australia experienced a heroin shortage, causing a steep increase in purity-adjusted heroin prices. The increase prompted a large number of heroin users to leave the market, by giving up illicit drug use, entering treatment or shifting to other drugs. Heroin consumption declined by some 75 per cent.[131] Although the heroin supply was eventually re-established, consumption has remained at the lower level.
- Colombia saw a massive decline in coca leaf production (and thus also cocaine production) as the area under coca bush cultivation declined by 65 per cent between 2000 and 2010, following the implementation of Plan Colombia and large-scale eradication efforts.[132] In the wake of the declining coca leaf production, financial flows to the illegal armed groups and their activities also declined.

Most of the above-mentioned results were achieved largely through supply-side measures. There are also a number of primarily demand-side successes, however, that are perhaps less well-known:

- Illicit drug use has been declining sharply in the United States since the early 1980s, among the general population as well as among youth. Annual prevalence of the

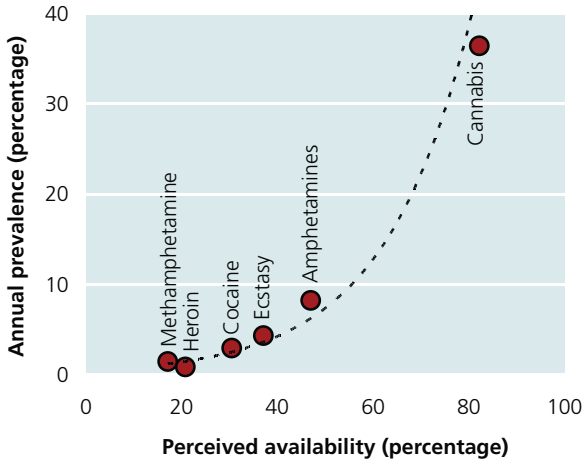
129 United States, Department of Health and Human Services, Substance Abuse and Mental Health Services Administration, "Analyzing Data Online". Available from www.icpsr.umich.edu/icpsrweb/SAMHDA/sdatools/resources (accessed 30 March 2012).

130 Hoare and Moon, *Drug Misuse Declared: Findings from the 2009/10 British Crime Survey.*

131 Australian Institute of Health and Welfare, *2010 National Drug Strategy Household Survey Report.*

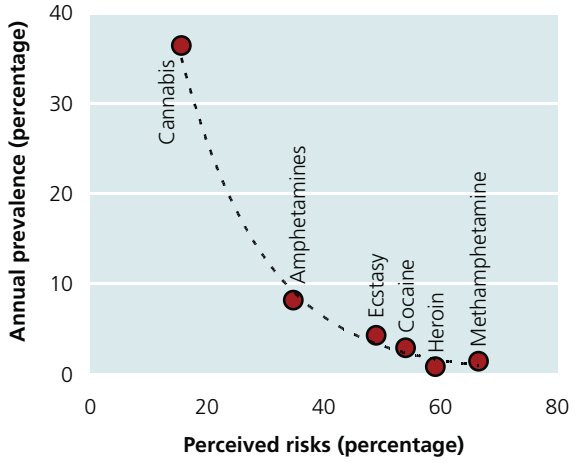
132 *World Drug Report 2011.*

Fig. 22. Annual prevalence and availability of drugs as perceived by 12th grade students in the United States, 2011[a]



Source: National Institute on Drug Abuse, *Monitoring the Future survey*, 2011.
[a]Percentage of 12th grade students saying that it would be "fairly easy" or "very easy" to obtain the respective drug.

Fig. 23. Annual prevalence and perceived risks of drugs as reported by 12th grade students in the United States, 2011[a]



Source: National Institute on Drug Abuse, *Monitoring the Future survey*, 2011.
[a]Percentage of 12th grade students saying that using a specific drug "once or twice" would be a "great risk".

use of all illicit drugs fell by some 25 per cent among 12th grade students between 1980 and 2011 and cocaine use fell by 76 per cent over the same period.[133] Most of these reductions appear to have been related to decreasing demand rather than falling supply. The recent massive declines in cocaine use (2006-2010), however, appear to have been supply-driven.

- Western European countries, alongside Australia, Canada and New Zealand, were among the first to introduce a broad range of measures aimed at reducing the adverse consequences of drug abuse. Significant declines in HIV infections among injecting drug users were subsequently recorded[134] and the heroin market declined. Moreover, drug-related deaths stabilized and, in some places, declined.

Formal theories

In addition to the factors mentioned above, others have been proposed in theories aimed at explaining the evolution of the various aspects of the drug problem. These include the availability of illicit drugs and perceptions of risk from using such drugs, the analysis of drug use as epidemics and the importance of social control to prevent illicit drug production.

Drug availability and risk perceptions

Among the key parameters that define illicit drug use are the availability of drugs and the perception of risk created by the use of the drugs. The tendency is that the higher the availability of drugs, the higher the consumption. In parallel, the higher the risks associated with drug use, the lower the consumption.

Data for the United States show these correlations clearly (see figure 22). Among 12th grade students, there is a very strong positive correlation between the perceived availability of major drugs and the annual prevalence of drug use. Cannabis is the substance most readily available and it also has the highest prevalence rate. In contrast, other drugs, notably methamphetamine and heroin, are far less readily available and also register lower prevalence rates.

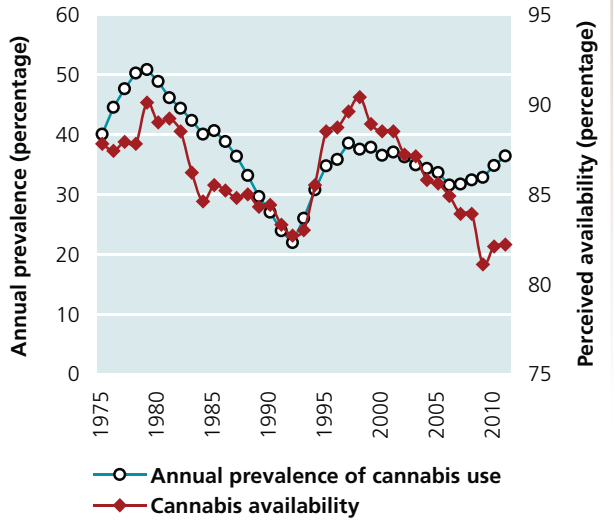
The data also show a very strong negative correlation between perceived risks and annual prevalence for key illicit drugs; that is, the higher the risks associated with the use of a specific drug, the less likely it is that that drug is consumed (see figure 23). The risks are perceived to be highest for the use of methamphetamine and heroin and lowest for cannabis use, and the prevalence rates are highest for cannabis use and lowest for the use of heroin and methamphetamine.

The same United States data also show that the prevalence rates over time are a function of availability and perceived risk. An analysis over the period 1975-2011 for cannabis shows a relatively strong positive correlation between perceived availability and annual prevalence (R=0.65) (see

133 L. D. Johnston and others, "Marijuana use continues to rise among U.S. teens, while alcohol use hits historic lows", Ann Arbor, Michigan, University of Michigan News Service, 14 December 2011. Available from http://monitoringthefuture.org/data/11data.html#2011data-drugs.

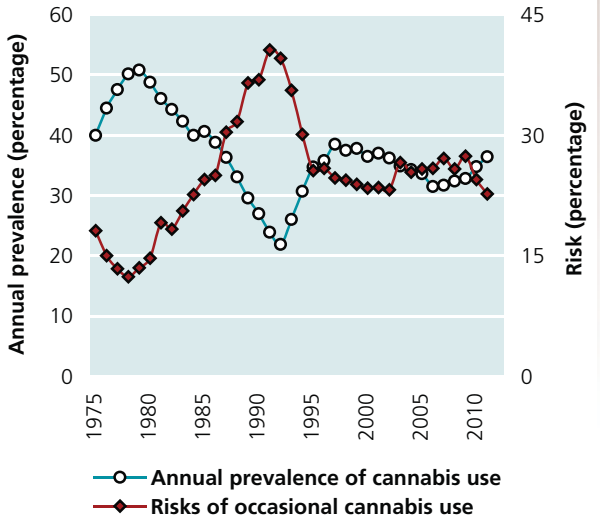
134 European Centre for the Epidemiological Monitoring of HIV/AIDS, "HIV/AIDS surveillance in Europe", Mid-Year Report 2007 No. 76 (Saint-Maurice, France, French Institute for Public Health Surveillance, 2007); European Centre for Disease Prevention and Control and WHO Regional Office for Europe, *HIV/AIDS Surveillance in Europe 2010* (Stockholm, 2011); Joint United Nations Programme on HIV/AIDS, *Global Report: UNAIDS Report on the Global AIDS Epidemic 2010* (2010); Joint United Nations Programme on HIV/AIDS, AIDSinfo Country fact sheets. Available from www.unaids.org/en/dataanalysis/tools/aidsinfo/countryfactsheets/.

Fig. 24. Cannabis use and perceived availability among 12th grade students in the United States, 1975-2011[a]



Source: National Institute on Drug Abuse, *Monitoring the Future survey*, 2011.
[a]Percentage of 12th grade students saying that it would be "fairly easy" or "very easy" to obtain cannabis.

Fig. 25. Cannabis use and perceived risks among 12th grade students in the United States, 1975-2011[a]



Source: National Institute on Drug Abuse, *Monitoring the Future survey*, 2011.
[a]Percentage of 12th grade students saying that "smoking marijuana occasionally" would be a "great risk".

figure 24). That is, during most of those years, cannabis use increased or declined in line with perceived availability.

The correlation over time is even stronger (R=0.94) when it comes to annual prevalence of cannabis use ("using cannabis occasionally") and perceived risk. The higher the perceived risks, the lower the prevalence of cannabis use, and vice versa.

Combining "availability" and "risk" for the period 1975-2011[135] gives an extremely good fit, which suggests that 90 per cent of the actual changes in the annual prevalence rates during that period can be explained by changes in perceived risk and availability (see figure 25).

Drug epidemics

In some cases, drug consumption may develop into drug use epidemics, which acquire a momentum of their own and defy control measures. While drug use may, for long, increase only slightly, at a certain moment it will start to increase exponentially, before reaching a plateau and eventually declining. Several well-known instances of rapid drug use increases have been fruitfully analysed as epidemics comprised of separate stages with different characteristics.[136]

In the first stage of an epidemic, initiation of drug use takes on a contagious character, although, of course, there is no pathogen that spreads it. Most people obtain their first dose of illicit drugs from a friend, family member or romantic partner. A small base of existing users may thus recruit a significant number of new ones from their immediate environment. Friendship networks can become effective vehicles for spreading drug use, as can neighbourhoods, schools or prisons, where it is easy for drug users to establish social relationships (and pass on their drug habit). Eventually some drug users will become dependent and may face problems to finance their habit. They may thus get involved in drug trafficking and develop an interest in expanding the market. In this way, consumption may spread exponentially, much faster than any underlying socio-economic or demographic changes that may be occurring simultaneously.

This is not to say that everyone who comes into contact with illicit drug users is likely to try using drugs. Some people are more susceptible than others, for a variety of reasons. Moreover, the group of individuals susceptible to drug use may be subdivided into "stayers", individuals who are considered not to be at risk of infection, and the "movers", who are at risk.[137] This means that out of a large group of people who may interact with current drug users, only a few proceed to problem drug use.

Following this phase of rapid expansion of the drug user base, initiation eventually peaks, and then starts to decline. There are two main explanations for this. The one that is most closely aligned to models of pathogenic epidemics relates the surge in consumption to the spread of the drug

135 Combining availability and risks as inputs (X-values) for prevalence (Y-values) as output in a multiple linear regression model gives a multiple R of 0.95 and thus an R-square of 0.90.

136 See, for example, J. P. Caulkins, "Models pertaining to how drug policy should vary over the course of a drug epidemic", in *Substance Use: Individual Behaviour, Social Interactions, Markets and Politics*, B. Lindgren and M. Grossman, eds., Advances in Health Economics and Health Services Research, vol. 16 (Amsterdam, Elsevier, 2005), pp. 397-429.

137 C. Rossi, "A mover-stayer type model for epidemics of problematic drug use", *Bulletin on Narcotics*, vol. LIII, Nos. 1 and 2 (2001) (United Nations publication, Sales No. E.02.XI.6), pp. 39-64.

in question through a finite pool of susceptible individuals with no previous exposure to that particular drug. Once that pool is drained, initiation will naturally come to a halt.[138] The other explanation emphasizes the importance of a drug's image. Over time, some illicit drug users progress to heavy drug use and possibly dependence. The hardships faced by this group sour the drug's reputation and hamper initiation among susceptible individuals.[139] These explanations are not mutually exclusive.

While drug control interventions during the phase of exponential growth may reduce growth rates (and accelerate the reaching of a plateau), they are generally not able to reduce illicit drug use. This may create the impression that the interventions have failed and that new approaches are called for. It is difficult to claim an increase of "just" 100 per cent as a success (though, without interventions, drug use levels would have tripled or quadrupled). The challenge is to accurately model drug epidemics in order to enable policymakers to measure the reductions. Analyses of the cocaine epidemic that affected the United States in the 1970s and early 1980s suggest that law enforcement and prevention would have been the most appropriate responses in the early phases, while in the later phase the emphasis should have been on treatment. The ability of law enforcement to suppress drug use in entrenched illicit drug markets tends to be more limited. Nonetheless, law enforcement still has a role to play in mature drug markets, notably by promoting abstinence among offenders under supervision and in increasing participation and retention in treatment.[140]

Applying epidemic models to the current global situation with respect to illicit drug use, it may be posited that South-East Asia is in the midst of an epidemic initiation phase with regard to the use of ATS, notably methamphetamine. There are also signs that illicit drug use is increasing in several African countries, although the currently available data — in particular from Africa — are often insufficient for reliable analysis. In contrast, with regard to cocaine, North America appears to have passed the plateau and levels of cocaine use are declining.

Social capital

"Social capital" is a sociological concept that refers to the value of social cohesion, social relations and the role of cooperation to achieve collective or economic results. Just as physical or human capital can increase productivity, social contacts — which form the basis of social capital — also affect productivity. Indications of the existence of social capital in a society include civic participation, trust in government and acceptance of the rule of law (or alternative generally accepted value systems).[141] Social capital builds on shared norms or values that promote social cooperation. Conversely, the lack of social capital may make a society vulnerable to exploitation by organized criminal groups.

Once trust in government and a strong civil society are created or restored and the rule of law becomes generally accepted, it is likely that the prominence of the illicit drug sector will decline. For countries more severely affected by the drug industry, this means that economic development and related benefits alone are not sufficient to deter such involvement.

Unforeseeable factors changing the patterns of the drug problem

In addition to the largely foreseeable factors discussed above, a set of additional factors, mainly beyond the capabilities of ordinary forecasts, help shape the drug problem. Such events have, at least in the past, proved to be highly significant.

Events

Many events seemingly unrelated to the drug problem have had an unintended but extensive impact on drug-related situations. One example is the eastward expansion of the British Empire in the eighteenth century, which led to large-scale opium production in British India and subsequent export of that opium to China. This only stopped more than a century later.

Another prominent example of such an event is the war in Viet Nam in the 1960s. The war prompted a strong anti-war movement that contributed to the spread of the use of illicit drugs (notably marijuana) as a means of rebelling against the establishment. While the protest movement eventually disappeared with the end of the war in 1975, illicit drug use had become entrenched.

The profound political and economic transformations that followed the end of the cold war in many of the former East bloc countries also entailed rapid increases in illicit drug consumption where there used to be very little. Criminals "integrated" those countries into the world's illicit drug networks and developed new drug trafficking routes. For opiates, the routes led — and indeed still lead — from Afghanistan via the various Central Asian countries to the Russian Federation and beyond. At the same time, synthetic drugs, produced in Western Europe, made their way eastwards.

A major change for Africa, notably the countries in Southern Africa, was the abolition of apartheid in South Africa in 1994. The subsequent end to decades of international

138 See, for example, C. Rossi and G. Schinaia, "The mover-stayer model for the HIV/AIDS epidemic in action", *Interfaces,* vol. 28, No. 3 (1998), pp. 127-143.

139 This "negative advertisement" theory has been most prominently advanced by David Musto (see D. F. Musto, *The American Disease: Origins of Narcotic Control* (New Haven, Connecticut, Yale University Press, 1973)).

140 Strang and others, "Drug policy and the public good: evidence for effective interventions".

141 F. E. Thoumi, "What creates comparative advantage for drug production? Lessons from Colombia", *Policy,* vol. 23, No. 1 (Autumn 2007).

isolation also increased South Africa's exposure to transnational drug trafficking, which led in turn to increased domestic illicit drug use. Traffickers also took advantage of the country's good infrastructure and South Africa emerged as a transit hub for cocaine shipments from South America destined for Europe, as well as for heroin shipments from Afghanistan and Pakistan destined for Europe.

The Al-Qaida attacks of 11 September 2001 also changed the world drug situation. The subsequent armed intervention against the Taliban regime in Afghanistan, which had supported Al-Qaida, de facto ended the opium ban that had been proclaimed in July 2000 (and drastically reduced opium production in 2001). Large-scale opium production re-emerged in Afghanistan, promoted by the ousted Taliban, who started again to tax the opium trade. In parallel, international attention somewhat shifted away from drug control towards the fight against terrorism in the region.

Fashion and trends

As with many other mainly recreational products, some of the changes in the choice of illicit drugs and modes of consumption have been influenced by largely unpredictable fashion-type evolutions. LSD and other hallucinogenic substances, for instance, were broadly popular in the 1960s and part of a much wider psychedelic culture. While the use of hallucinogenic substances has not disappeared, it is now much less widespread.

Recreational cocaine use was considered trendy in North America in the 1970s. With the emergence of "crack" cocaine in the 1980s, however, the image of cocaine changed there. Cocaine use was no longer considered relatively benign, but as something that might have severe consequences for one's family and community. That change in perception is likely to have contributed to the strong decline in cocaine use witnessed in North America since the mid-1980s.

Methaqualone, a sedative-hypnotic drug and central nervous system depressant, used to be popular in the United States in the 1970s and over the next few decades in South Africa, where it is known as Mandrax. While the use of Mandrax is still relatively widespread in South Africa, the opening of the country's borders after the 1994 democratic transition meant that new fashions and trends also reached that country. Subsequently, Mandrax became less popular.

The use of "ecstasy" has been linked, starting in the late 1980s, to dance events, notably rave parties. The increasing popularity of such events also led to a rise in "ecstasy" use. The popularity of such parties appears to have peaked, and there have also been some indications of declining "ecstasy" use over the past few years.

The popularity of heroin has declined in several Western European countries over the past decade as the image of the drug has changed. It is no longer seen as fashionable, but as the drug of an ageing population of users who are ill and need medical attention. Despite the revival of Afghanistan's heroin production and record harvests until 2007, heroin consumption among the younger generation has not increased in Western Europe in recent years.

Unintended effects of drug control interventions

The implementation of a drug control system appears to have had the desirable long-term effect of containing the expansion of the drug problem and of limiting the spread of illicit drug use and addiction. At the same time, a number of unintended consequences have appeared.

The development of black markets and the opportunities they create for organized crime have been among the unintended side effects. Black markets are not specific to controlled psychoactive substances, of course, as they affect a broad range of regulated or prohibited goods and services.

Effective drug control measures seem to have given rise to another main category of unintended consequences in illicit drug markets. These are various replacement or displacement effects, sometimes generically referred to as the "balloon effect". There are several examples of such effects at work:

- When opium production was halted in the Islamic Republic of Iran in 1979, it first shifted to Pakistan and then to Afghanistan. Opium production in Thailand declined from the 1960s onwards, but it increased in Burma (later Myanmar) until the early 1990s (before falling after 1996). Declining ATS manufacture in Thailand in the 2000s prompted rises in neighbouring Myanmar.
- Declining coca leaf production in Bolivia and Peru in the 1990s occurred in parallel with rising coca leaf production in Colombia; similarly, declining coca leaf production in Colombia in the 2000s was accompanied by increases in Bolivia and Peru.
- Another case of displacement concerns so-called new psychoactive substances, some of which appeared in the wake of precursor control efforts in many countries. For example, effective control of 3,4-MDP-2-P in Europe led to decline in "ecstasy" production and the emergence of new psychoactive substances such as mephedrone.

The net results of such displacement effects vary, but from a global perspective they always reduce the intended impact of interventions.

Balloon effects do not only occur on the supply side, however. In the United Kingdom, for instance, policy interventions appear to have contributed to massive declines in the illicit use of amphetamines. The annual prevalence of amphetamine use fell by two thirds between 1996 and 2010/11 in England and Wales. While the decline was offset in part by strong increases in the use of cocaine, there

was still a net decline of some 20 per cent in the use of stimulants there.[142] In Australia, the heroin drought of 2001 reduced prevalence of heroin use from 0.8 per cent to 0.2 per cent in 2001. Heroin use remained low until 2010. The misuse of synthetic opioids, however, rose, from previously low levels.[143] While there was a net reduction in the overall use of those substances, some heroin users may have shifted to using other opioids.

Outlook: the likely, the possible and the unknown

Based on the previous discussion, what can be said about identifiable threats and risks and the possible evolution of the drug problem in the coming years? While some developments are likely to materialize, others seem possible, based on current knowledge. Finally, the past has taught us that there are a large number of unforeseeable events and factors that can have a profound and unpredictable impact on the drug problem.

The likely

The best forecasts — those most likely to materialize and have a direct bearing on illicit drug use — can be derived from demographic projections. At the end of October 2011, the world population reached 7 billion, having increased by some 77 million persons annually since 2005. Given the ongoing declines in fertility rates, the global population growth is expected to slow considerably over the next decades. Nonetheless, the world population is expected to increase to 9.3 billion by 2050 and to 10.1 billion by 2100.[144]

The increasing number of people is also likely to bring with it an increase in the absolute number of illicit drug users. While prevalence of illicit drug use remained relatively constant over the past decade, the overall number of drug users increased, in line with population increases. Assuming that the drug control system will not change fundamentally and that the overall annual prevalence of illicit drug use will remain stable at about 5 per cent of the population aged 15-64, there may be some 65 million additional drug users by 2050 as compared to 2009/10, or 74 million more by 2100. This would bring the total number of annual drug users close to 300 million persons by the end of the present century.[145]

Basic demographic figures also provide some indications of the likely geographical distribution of the future drug users. The population in the developing countries is projected to rise from 5.7 billion in 2011 to 8 billion by 2050 and 8.8 billion in 2100. In contrast, the population in the more developed regions[146] is expected to increase minimally, from 1.24 billion in 2011 to 1.34 billion in 2100. This suggests that most of the increase in drug users over the next 90 years will occur in developing countries.

Illicit drug use is likely to continue to be linked primarily to young people as it is probable that youth culture will continue to play a key role in shaping drug use behaviour. The importance of youth culture may increase further as the importance of traditional family ties and value systems declines. Developing countries may be particularly affected.

The world's population is now getting older, a trend that can be seen in both developed and developing countries. The average age in the more developed regions reached 39.9 years in 2011, and it will continue to be significantly higher than in the less developed regions (27.2 years in 2011, forecast to rise to 36.8 by 2050). In the context of illicit drug use, the ageing population may explain at least in part the stabilization of drug use in several developed countries in recent years.

Another demographic pattern, discussed in detail earlier, is the pronounced gender differences in drug use behaviour, with men consuming far more drugs than women. Given the larger gender gap in developing countries, there may be a greater risk of further increases in female drug use in such countries as sociocultural barriers gradually disappear with more societies experiencing modernization and increasing gender equality.

This trend may also be exacerbated by increasing urbanization, given this phenomenon's link to illicit drug use. The population in urban areas in the more developed regions is projected to rise moderately, from 0.9 billion in 2011 to 1.1 billion in 2050. In comparison, the urban population in the less developed regions is expected to more than double, from 2.6 billion in 2011 to 5.3 billion in 2050.

The factors discussed so far suggest that developing countries are at a high risk of experiencing increased illicit drug use over the next few decades. Africa, in particular, may be faced with growing numbers of drug users in the near future. The population aged 15-59 is forecast to grow by 2.1 per cent per year in Africa over the period 2011-2050, which is far more than in any other region. Given the previously discussed link between disposable income and drug use and assuming that disposable income will be rising in Africa, there is a risk of increasing drug use there.

142 Hoare and Moon, *Drug Misuse Declared: Findings from the 2009/10 British Crime Survey.*

143 Australian Institute of Health and Welfare, *2010 National Drug Strategy Household Survey Report.*

144 United Nations, *World Population Prospects* (medium variant) (World *Population Prospects: The 2010 Revision, vol. I, Comprehensive Tables* (ST/ESA/SER.A/313)).

145 Demographic projections from the Population Division of the Department of Economic and Social Affairs of the Secretariat (*World Population Prospects: The 2010 Revision, vol. I, Comprehensive Tables* (ST/ESA/SER.A/313)).

146 According to the Department of Economic and Social Affairs, the "more developed regions" comprise all regions of Europe plus Australia/New Zealand, Japan and North America. "Less developed regions" comprise all regions of Africa, Asia (excluding Japan) and Latin America and the Caribbean, as well as Melanesia, Micronesia and Polynesia. Countries or areas in the more developed regions are designated "developed countries", countries or areas in the less developed regions are designated "developing countries".

The likely net impact on global drug use prevalence is less clearly identifiable. While population growth, urbanization and reduced gender gaps in drug use may lead to a higher consumption level overall, the ageing of the global population should help reduce it. The net effect is likely to be a relatively stable overall prevalence rate but a larger number of drug users as a result of the growing population.

Assuming no fundamental changes to the drug control system or the manner in which it is implemented, its effects can be assumed to remain similar in the future. This would imply an overall containment of the problem, and in particular a containment to young people. This scenario also suggests that drug control efforts will continue to face the existence of black markets for drugs for the decades to come. The question of whether, globally, the value of black markets for drugs will grow or decline is open. More consumers could mean more illicit drug revenues, although there are also factors pulling in the opposite direction. Illicit drug markets are expected to increase primarily in developing countries where drug prices are low, while the market may be stable, or even decline, in developed countries. The average price of drugs is thus likely to decline. The total size of the black market for illicit drugs should not increase significantly. As a proportion of global GDP it is likely to fall to 0.5 per cent or even less.

The possible

While it is quite likely that overall annual prevalence of illicit drug use will remain stable (at about 5 per cent of the population aged 15-64), it is very unlikely that the relative importance of the various drugs will remain unchanged. Current supply and demand factors suggest that the prominence of the two main problem drugs at the international level, heroin and cocaine, could decline.

The bulk of both opium poppy and coca bush is currently cultivated in limited areas in a few countries. Efforts engaged by the Governments concerned, with support from the international community, should eventually lead to a sustainable elimination of large-scale illicit cultivation in those areas, something that several countries such as Thailand, have achieved before. Links between drug production and the activities of illegal armed groups, as well as the violence and insecurity associated with transnational trafficking in cocaine and heroin in some places, have created additional incentives to solve the problem. History has also shown Governments that a closely coordinated approach at the international level is required to prevent the balloon effect.

On the demand side, there has been a stabilization or even reduction of heroin use in the large Western European market. The heroin-using population is ageing and the drug's image has turned negative there. Moreover, treatment, including substitution treatment using other opioids, has been reducing the size of the heroin market, and these trends are likely to continue. Heroin use has continued to rise in the main producer country, however, as well as in a number of transit or relatively new destination countries, and these tendencies are not likely to end quickly. Nevertheless, if more countries continue to create or expand treatment programmes, including substitution treatment programmes, there is a chance that the pull effect of global demand for heroin will decline, helping supply-side efforts and reducing the risk of cultivation displacement. The use of diverted prescription opioids has also increased in many countries in recent years, however.[147]

In contrast to heroin, there is still no substitution treatment for cocaine. Nonetheless, there have been massive declines in cocaine use in the United States, the world's largest illicit cocaine market. While the decline witnessed since 2006 seems to have been largely supply-driven, data suggest that most of the long-term decline over the past three decades has been demand-driven.[148] North America may be seeing the end of a cocaine epidemic. In Europe, cocaine use increased strongly until 2006/07. Since then, a peak appears to have been reached in Europe, as well as in several South American countries, where illicit demand for cocaine may have started to decline. The danger of an ongoing expansion of cocaine use in Africa, Asia and Oceania remains, though those illicit markets are still relatively small. Even high growth rates do not translate into a large number of new cocaine users, at least for the time being.

Ongoing research on the development of so-called "cocaine vaccines" are showing interesting preliminary results. Such vaccines could help fight cocaine dependency. However, it will still be years, if not decades, before they are ready for use.

Prospects for the other major illicit drug markets are less promising. There are currently no indications that cannabis production and use are going to diminish. While remote sensing can assist in identifying and eventually eradicating large-scale cannabis cultivation sites, this may be offset by the ongoing trend towards indoor cultivation of high-potency cannabis. Following years of increase, cannabis consumption appears to have levelled off in several countries. While the prevalence rate at the global level is not likely to change significantly from today's level (close to 4 per cent of the population aged 15-64), the total number of cannabis users is still likely to increase.

The strongest consumption growth rates for the decades to come may be expected for synthetic drugs, notably ATS and diverted prescription drugs, as well as a large number of synthetic substances that are not yet under international control. Information about the production of synthetic drugs is now widely available and is likely to continue to spread even further. As a result, much of the illicit manufacture of synthetic drugs now takes place close to consumers, which tends to make it more difficult for law enforcement to identify and disrupt the drug traffickers.

147 Strang and others, "Drug policy and the public good: evidence for effective interventions".

148 See *World Drug Report 2011*.

Though precursor controls have helped limit access to key chemicals, clandestine drug manufacturers have developed alternative methods of production using slightly modified chemicals that are not yet controlled.

The unknown

The forecasts made so far have relied on a *ceteris paribus* (all other things being equal) clause. History has shown, however, that unforeseen events can play a bigger role in shaping the drug problem than many of the other factors. It is safe to assume that unpredictable developments will occur in the decades to come.

Political evolutions are hard to predict. What is known, however, is that societies moving from authoritarian control to a more liberal system have generally faced a rise in illicit drug use. New democratic governments thus need to take into account an increased risk of illicit drug use, in particular in urban areas.

Overall, public opinion on drug policy has remained relatively constant over time. For example, an opinion poll conducted throughout the European Union among young people between the ages of 15 and 24 in 2011 revealed that only 13 per cent were in favour of making drugs legal. More than 90 per cent wanted to ban heroin, cocaine and "ecstasy". Even for cannabis, 59 per cent were in favour of a ban and only 5 per cent wanted it to be made available without restrictions.[149] Opinion polls in the United States generally show similar results[150] and a proposal to legalize cannabis in California was rejected by referendum at the end of 2010.

In the unlikely event of a fundamentally changed drug control system, however, what could be the repercussions? According to one in-depth review of the literature, legalizing drugs would likely lead to increased consumption.[151] The effects are thought to be most pronounced for cocaine or heroin, though an increase could also be expected for cannabis[152] and other drugs.

From a market perspective, one key driver of the likely consumption increases is the lower price level of illicit drugs once control is removed. For licit psychoactive substances, price elasticities cluster around -0.4 for cigarettes and -0.7 for alcoholic beverages.[153] Calculations of the price elasticity for opium in the first part of the twentieth century (until the 1930s) have ranged from 0.6[154] to -1.0.[155] For cannabis, the elasticity has been estimated in the range of -0.4[156] to -1.5,[157] and those of more expensive illicit drugs are probably even larger. Calculations and analyses from the 1990s[158] suggest that the price elasticity for cocaine may range from -0.7 to -2.0, which means that a 10 per cent decline in the price of cocaine would result, ceteris paribus, in consumption increases ranging from 7 to 20 per cent. As heroin and cocaine prices in the developed countries are far above the otherwise normal market prices, owing to prohibition, massive price cuts would, again *ceteris paribus,* result in massive consumption increases. Previous research has suggested that cocaine was sold at eight times the potential licit price in the United States.[159] In 2010, cocaine was sold in Colombia at about $2,400 per kilogram. When it reached the United States, the wholesale price rose to approximately $33,300,[160] whereas the retail price is some $120,000 per kilogram.[161] In comparison, a package delivery service could deliver a kilogram of a legal product for some $50.[162] The cost of transport alone cannot explain this massive increase, which leaves plenty of scope for price reductions — and potential consumption increases — were cocaine to be legalized. The idea of offsetting falling prices with taxes would not necessarily solve the problem, as the incentives for smuggling activities would remain. The price effect would probably be weaker for cannabis. The availability of cannabis is already very high in most countries and price declines would probably be less significant than

149 Gallup Organization, *Youth Attitudes on Drugs: Analytical Report,* Flash Eurobarometer series No. 330 (Luxembourg, European Commission, July 2011).

150 Regarding the preferred status of cannabis, 9 out of 10 opinion polls conducted nationwide in the United States in 2010 and 2011 on this topic found a majority against legalization. On average, some 43 per cent of those interviewed favoured legalization of cannabis versus some 52 per cent who opposed it. (Based on opinion polls conducted in the United States by CBC, CBS, Gallup, AP/CNBC, Newsweek, ABC News/Washington Post, CNN and Pew Research.)

151 MacCoun and Reuter, *Drug War Heresies, Learning from Other Vices, Times, and Places*.

152 According to the authors, depenalization (decriminalization) of cannabis use would not necessarily lead to increased use.

153 W. G. Manning and others, *The Costs of Poor Health Habits* (Cambridge, Massachusetts, Harvard University Press, 1991).

154 A. de Landgraaf, "Price elasticity of hard drugs: practical assignment for advanced methods for applied economic reasoning". Available from www.alextreme.org/docs/paper-amaer.pdf.

155 J. C. van Ours, "The price elasticity of hard drugs: the case of opium in the Dutch East Indies, 1923-1938", *Journal of Political Economy,* vol. 103, No. 2 (1995), pp. 261-279.

156 R. J. Pacula, *Examining the impact of Marijuana Legalization on Marjiuana Consumption: Insights from the Economic Literature*, Santa Monica, CA; RAND, 2010.

157 M. H. Moore, "Supply reduction and drug law enforcement", in *Drugs and Crime*, M. Tonry and J. Q. Wilson, eds., Crime and Justice: A Review of Research, vol. 13 (Chicago, Illinois, University of Chicago Press, 1990), pp. 109-158; G. S. Becker, M. Grossmann and K. M. Murphy, "Rational addiction and the effect of price on consumption", in Choice over Time, G. Loewenstein and J. Elster, eds. (New York, Russell Sage Foundation, 1992), pp. 361-370.

158 J. P. Caulkins, "Estimating the elasticities and cross elasticities of demand for cocaine and heroin", Heinz School of Public Policy and Management Working Paper 95-13 (Pittsburgh, Pennsylvania, Carnegie Mellon University, 1995); M. Grossman, F. J. Chaloupka and C. C. Brown, *The Demand for Cocaine by Young Adults: A Rational Addiction Approach*, NBER Working Paper No. 5713 (Cambridge, Massachusetts, National Bureau of Economic Research, 1996); H. Saffer and F. Chaloupka, "The demand for illicit drugs", NBER Working Paper No. 5238 (Cambridge, Massachusetts, National Bureau of Economic Research, 1995).

159 Moore, "Supply reduction and drug law enforcement".

160 Range: $11,500-55,000. UNODC, data from the annual report questionnaire.

161 Or $120 per gram (range: $8-300).

162 T. Babor and others, *Drug Policy and the Public Good* (Oxford, Oxford University Press, 2010).

in the case of cocaine or heroin. Price declines in developed countries would be, however, still substantial. Estimates for the United States suggest that wholesale prices for sinsemilla type cannabis could fall by 80-90 per cent, as compared to the current price level.[163] Most predictions suggest that cannabis use would increase in the wake of legalization.

As discussed in this chapter, price is far from being the only factor influencing drug consumption. Laws, norms, values and perceptions also have strong effects that are easy to detect but hard to measure.

D. CONCLUSION

Drugs have been consumed throughout history, but the contemporary drug problem, which started to unfold in the 1960s, is characterized by both an expansion and a relative concentration of illicit drug use among young males living in urban settings. The drug control system has not averted the problem, but seems to have contained it to much lower levels of use than those society has experienced with more readily available legal psychoactive substances.

Data also suggest that the relative concentration of illicit drug use among youth may not be the result of a higher propensity of people to use psychoactive substances in their younger years, but of their lower propensity to transgress laws and social norms as they get older. The use of legal substances tends, indeed, to be far more homogenously distributed across age groups than the use of illegal substances. In other words, young people start using legal and illegal psychoactive substances more or less at the same time, but tend to continue using legal products and to stop using illegal ones as they get older. In this view, illegality appears to have largely kept the adult population away from illicit drug use.

Another significant characteristic of illicit drug use is the disproportionate representation of males among the user population. Prevalence of illicit drug use among females is only about two thirds of the prevalence among males in the United States and about half in Europe. In some developing countries, including Argentina and Brazil, illicit drug use among females is about one third as high as among males, while in other countries, such as India, Indonesia, Pakistan and the Philippines, it is only a tenth.

With notable exceptions, illicit drug use has tended, so far, to affect Western countries more than the rest of the world, but the pattern is shifting. While prevalence of drug use is stabilizing or even declining in some respects in Western countries, it is rising in others.

163 J. P. Caulkins, J. P. Kilmer, B. MacCoun, R. J. Pacula, R. L. and P. Reuter, (2012) Design considerations for legalizing cannabis: lessons inspired by analysis of California's Proposition 19. *Addiction*, 107: 865-871. doi: 10.1111/j.1360-0443.20111.03561.x

The first and most worrisome impact of illicit drug use is on health. UNODC estimates that about 12 per cent of annual users develop dependency and become problem drug users, of whom there are currently fewer than 30 million. Injecting drug use, in particular, is also a significant vector for spreading HIV and hepatitis B and C. Additionally, according to WHO, close to 250,000 people die every year from overdoses and drug-related illnesses. In comparison, alcohol claims some 2.3 million lives per year and tobacco some 5.1 million.

Drug-dependent persons require treatment. In 2009, some 4.5 million people worldwide were receiving treatment for problems related to illicit drug use, though the need is much higher. Providing treatment to all who need it would be costly; rough estimates show that treating all drug-dependent persons worldwide would cost some $200 billion-250 billion.

Research shows that illicit drug use also has an important impact on society's productivity. Productivity losses generally occur through the incapacitation of individuals or by confinement in residential treatment programmes, hospitals or prisons. The costs arising from productivity losses due to drug use may be 4-8 times higher than the health-related costs.

Illicit drug use is also closely linked to crime, in various ways. For example, drug users often resort to acquisitive crime to finance their drug habits, thus incurring substantial costs for society. Moreover, many criminals are under the influence of illicit drugs when they commit crime. Criminals, in general, tend to show far higher levels of drug use than the rest of the population. Crime and drugs are also linked through drug trafficking. Competition between different trafficking groups can generate violence. In some cases, the profits generated from involvement in the illicit drug trade have also been used to finance the activities of illegal armed groups.

Within the overall characteristics summarized above, the patterns of drug trafficking and illicit drug use have shifted significantly over the past decades. Cannabis was and continues to be the world's most widely produced, trafficked and consumed drug. Hydroponic cultivation of cannabis plants, which results in more potent cannabis, is now common in many developed countries. While cannabis use is stabilizing or declining in several large developed countries, it is growing in many developing ones.

Global production of cocaine increased strongly in the 1980s and the 1990s but stabilized over the past decade, and the amounts available on the illicit market appear to have declined. Significant declines in cocaine consumption in North America have been offset in part by rising consumption levels in Europe and South America, though recent data for South America also show a decline in several countries of the Southern Cone.

Illicit opium and heroin production are now mainly concentrated in Afghanistan. Heroin consumption in Western

Europe, for long the key illicit market for heroin, has been stabilizing or declining over the past decade. The same is true for heroin consumption in parts of South-East Asia and for Oceania, where illicit drug use declined strongly after 2001 and remained at the lower levels thereafter. South-West Asia and Eastern Europe, in contrast, have experienced rising levels of drug use over the past few decades. In recent years, heroin consumption also appears to have been increasing in Africa.

While the situation with regard to plant-based drugs in general appear to be showing signs of stabilization, following many years of increases in the 1980s and the 1990s, the illicit production and use of ATS continue to rise. Global seizures of ATS increased some threefold over the period 1998-2010, while increases in the seizures of plant-based drugs were less than twofold.

The evolution of the contemporary drug problem has been influenced by a range of drivers. Some relate to demographic trends, such as gender, population age and levels of urbanization, whereas others are socioeconomic, such as levels of disposable income, inequality and unemployment. A third broad category includes sociocultural factors, such as value systems, religion and youth culture. Children and adolescents who suffer from neglect, abuse, household dysfunction, exposure to violence and instability are at particular risk of substance abuse.

The drug control system and the way it has been implemented have also profoundly shaped the evolution of the drug problem. Moreover, a range of events, largely unforeseeable and without an explicit link to drug issues, have also fundamentally altered the shape of the drug problem that the world is faced with today.

Assuming that annual prevalence of illicit drug use (about 5 per cent of the population aged 15-64) will not change significantly over the next few decades, demographics suggest that the total number of drug users could, in line with the growth of the world population, increase by a quarter before 2050. Most of these increases are likely to take place in currently developing countries. Though some ageing of the drug-using population may be expected, overall drug use is likely to continue to be linked primarily to youth. In parallel, the larger gender gap of drug use in developing countries may lead to future increases in female drug use as sociocultural barriers disappear and gender equality improves. As drug use is also linked to urbanization and the urban population in developing countries is expected to double between 2011 and 2050 while remaining largely stable in the developed countries, a much more marked growth in the number of illicit drug users can be expected in the developing countries. This suggests that a relative shift of the burden of the global drug problem from the developed countries to the currently developing countries will continue over the coming decades.

The prominence of heroin and cocaine in illicit drug markets may decline over the next few decades. In contrast, there are currently no signs that the popularity of cannabis is going to fall, overall, and it is most likely going to remain the most widely used illegal substance. The use of synthetic drugs, notably ATS, diverted prescription drugs and large numbers of synthetic substances not under international control is likely to continue to increase worldwide. All these forecasts rely on a ceteris paribus clause. History has shown, however, that the evolution of the drug problem has been significantly influenced by unforeseen circumstances and factors. The further into the future one looks, the more unpredictable that evolution becomes. States and societies will most likely continue to face difficult policy choices when tackling issues related to illicit drugs and crime while securing international peace and development and upholding human rights.

ANNEX

Regional groupings

This report uses a number of regional and subregional designations. These are not official designations. They 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: Angola, Benin, Burkina Faso, Cameroon, Cape 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.
- Near and Middle East/South-West Asia: Afghanistan, Bahrain, Iran (Islamic Republic of), Iraq, Israel, Jordan, Kuwait, Lebanon, Oman, Pakistan, Qatar, Saudi Arabia, Syrian Arab Republic, United Arab Emirates and Yemen. The Near and Middle East refers to a subregion that includes Bahrain, Israel, Jordan, Kuwait, Lebanon, Oman, Qatar, Saudi Arabia, the Syrian Arab Republic, the 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 comprised of synthetic stimulants from the group of substances called amphetamines, which includes amphetamine, methamphetamine, methcathinone and the "ecstasy"-group substances (methylenedioxymethamphetamine (MDMA) and its analogues)

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 a given age

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

cocaine (base and salts) — coca paste, cocaine base and cocaine hydrochloride referred to in the aggregate

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

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

opioids — a generic term applied to alkaloids from opium poppy, their synthetic analogues, 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 as drug-dependent based on clinical criteria contained in the International Classification of Diseases (tenth revision) of the World Health Organization and the Diagnostic and Statistical Manual of Mental Disorders (fourth edition) of the American Psychiatric Association, or any similar criteria or definition that may be used

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Illicit drug markets have global dimensions and require coordinated responses on a comparable scale. In this context, the *World Drug Report* aims to improve understanding of the illicit drug problem and contribute to more international cooperation for countering it. This year's edition begins with an overview of recent trends and the current situation in terms of production, trafficking and consumption and the consequences of illicit drug use in terms of treatment, drug-related diseases and drug-related deaths. The second chapter presents a long-term perspective: it looks at the main characteristics of the contemporary drug problem, the ways it has changed over the last few decades, the driving factors that shaped this evolution, and the directions it is likely to take in the future.

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