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).

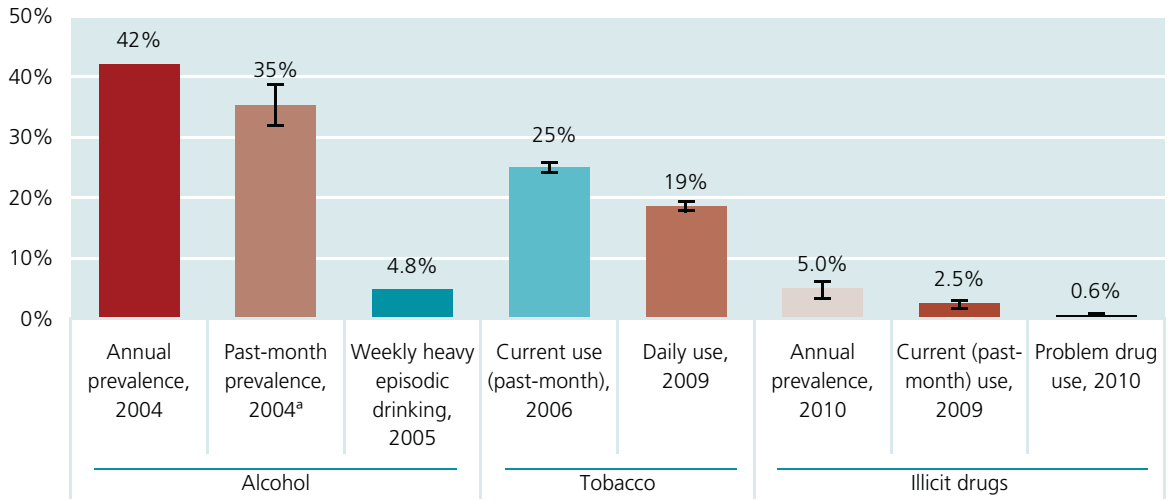
17 L. D. Johnston and others, *Monitoring the Future: National Survey Results on Drug Use, 1975-2007, vol. I, Secondary School Students 2007*, National Institutes of Health publication No. 08-6418A (Bethesda, Maryland, National Institute on Drug Abuse, September 2008).

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.

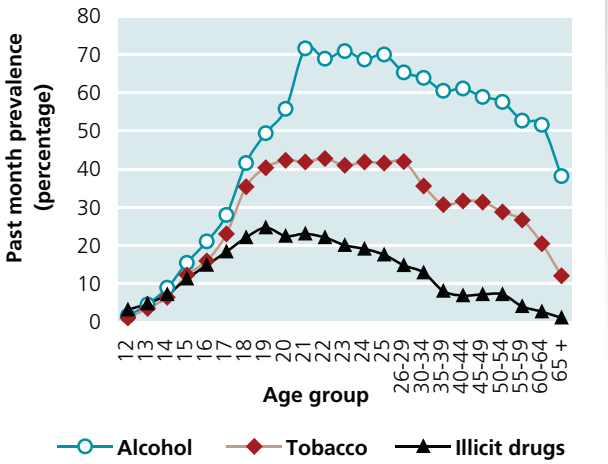
An age group containment effect?

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).

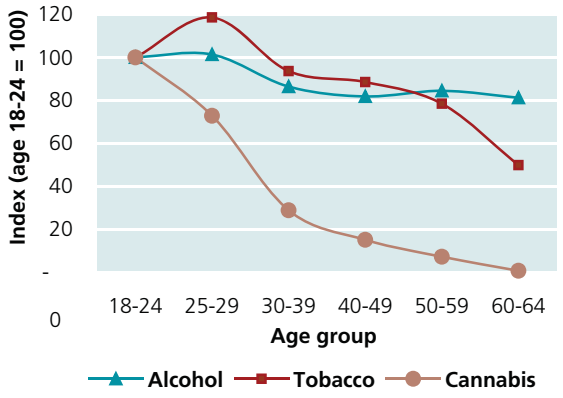
Taking use of such substances among persons aged 18-25 as a baseline, data confirm that the subsequent declines are far more pronounced for the use of illegal drugs than for the use of legal substances. Among persons in the so-called Woodstock generation, that is, persons who were aged 18-25 in 1969 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-

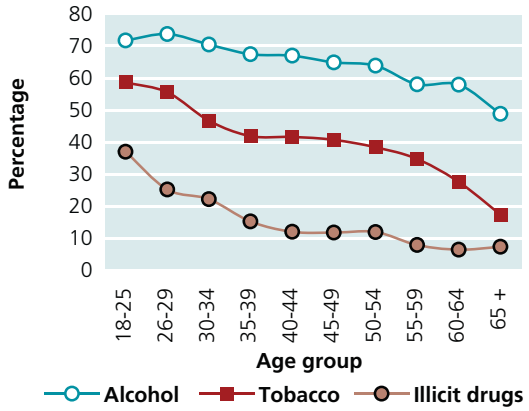
37 A. Pabst and others, "Substanzkonsum und substanzbezogene Störungen: Ergebnisse des Epidemiologischen Suchtsurveys 2009" (Substance use and substance use disorders: results of the 2009 Epidemiological Survey of Substance Abuse), *Sucht – Zeitschrift für Wissenschaft und Praxis*, vol. 56, No. 5 (2010),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

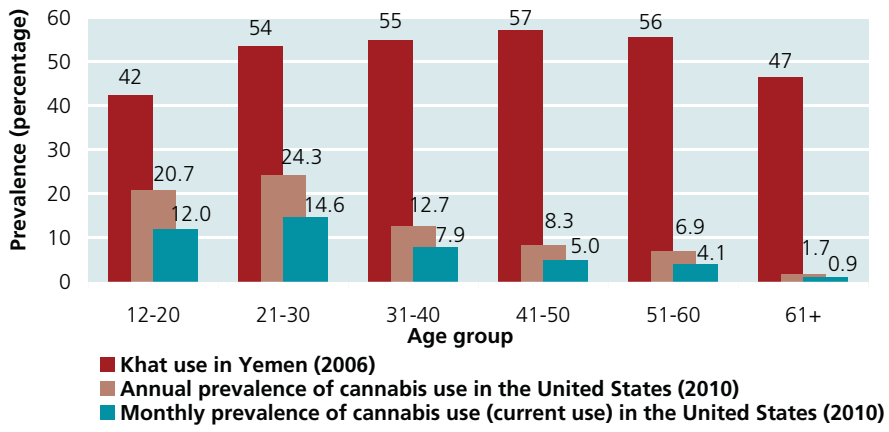


Source: United States, Department of Health and Human Services, Substance Abuse and Mental Health Services Administration, *Results from the 2010 National Survey on Drug Use and Health: Detailed Tables* (Rockville, Maryland, September 2011).

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).

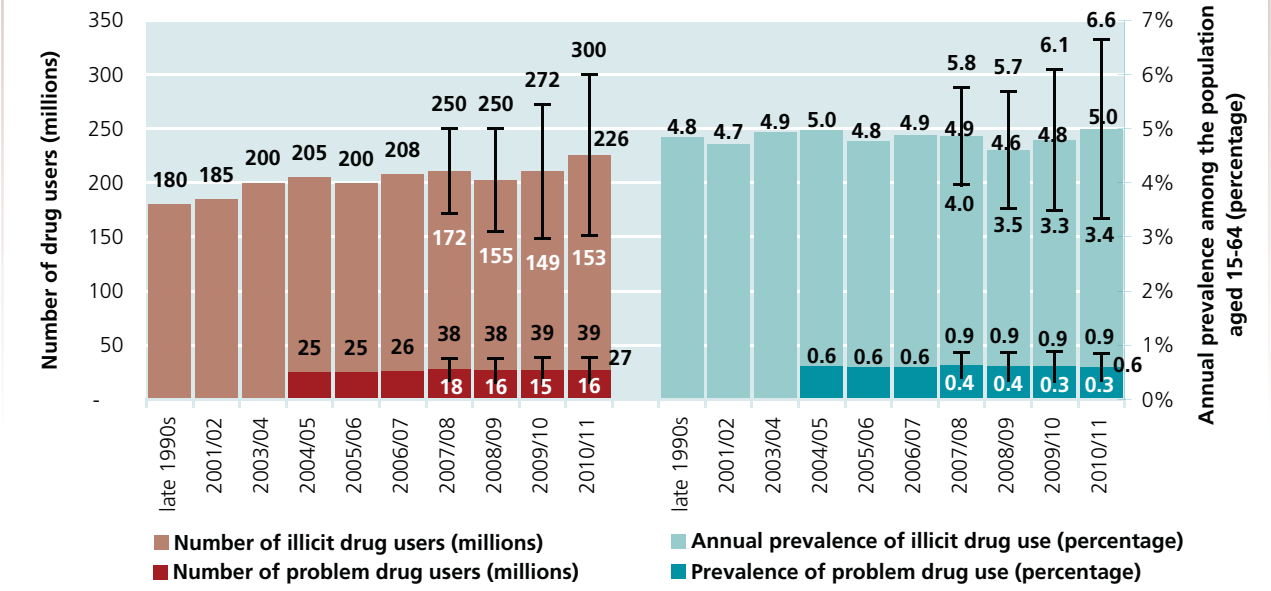
Fig. 5. Age distribution of khat users in Yemen[a] and cannabis users in the United States



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.

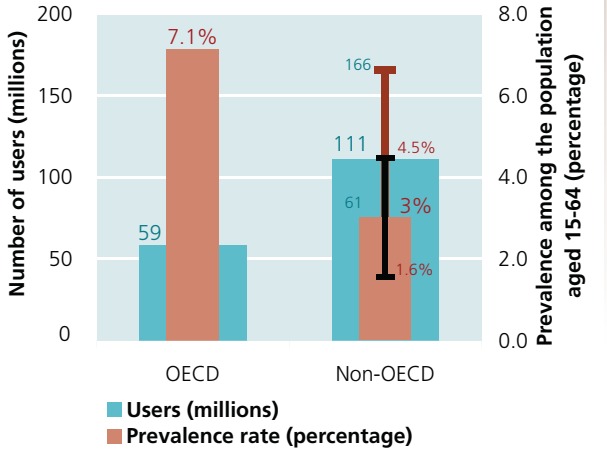
The geographical spread of the contemporary drug problem

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.

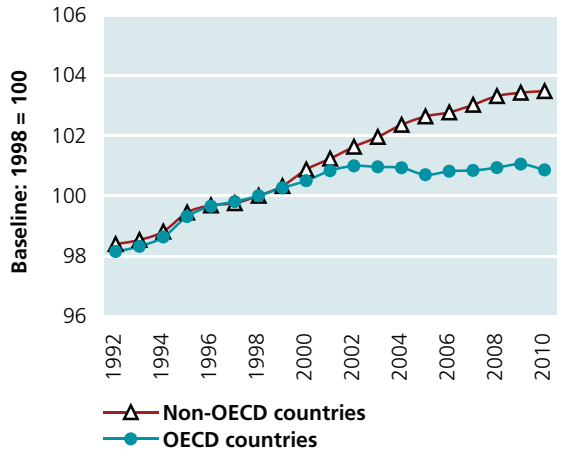
stabilization or decline in recent years there, while it continues to increase in some transit countries. "Ecstasy" use was originally confined to North America and Western Europe, but has been spreading to many other parts of the world, including Oceania, South-East Asia, South America, the Caribbean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

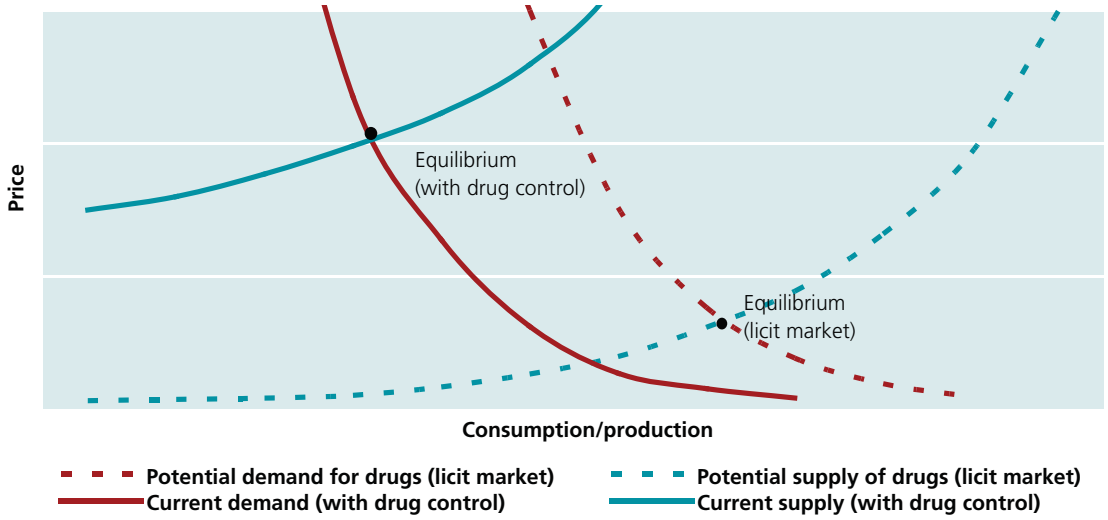
42 *World Drug Report 2011*, p. 31.

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

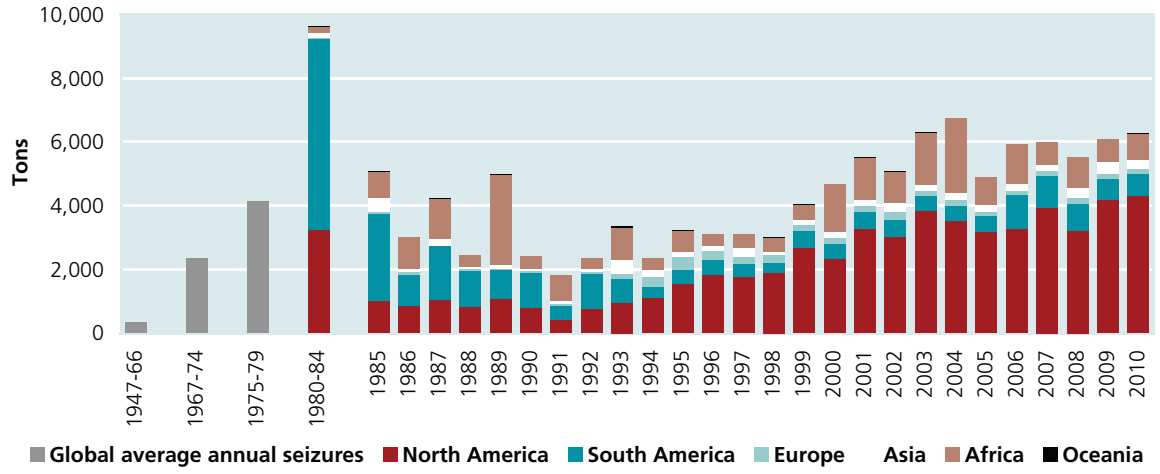
Over the past few decades, the cannabis markets have become more regionalized. This can be seen, for instance, in the production of and trafficking in cannabis herb. While in the 1970s significant quantities were imported into the United States from South America, notably from Colombia, most of the cannabis 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

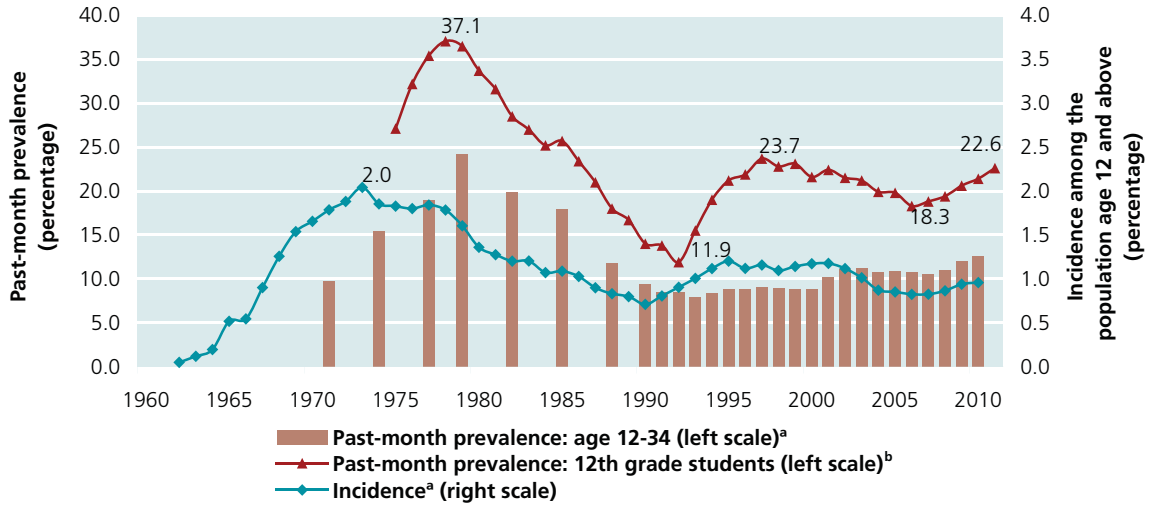


Source: UNODC.

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

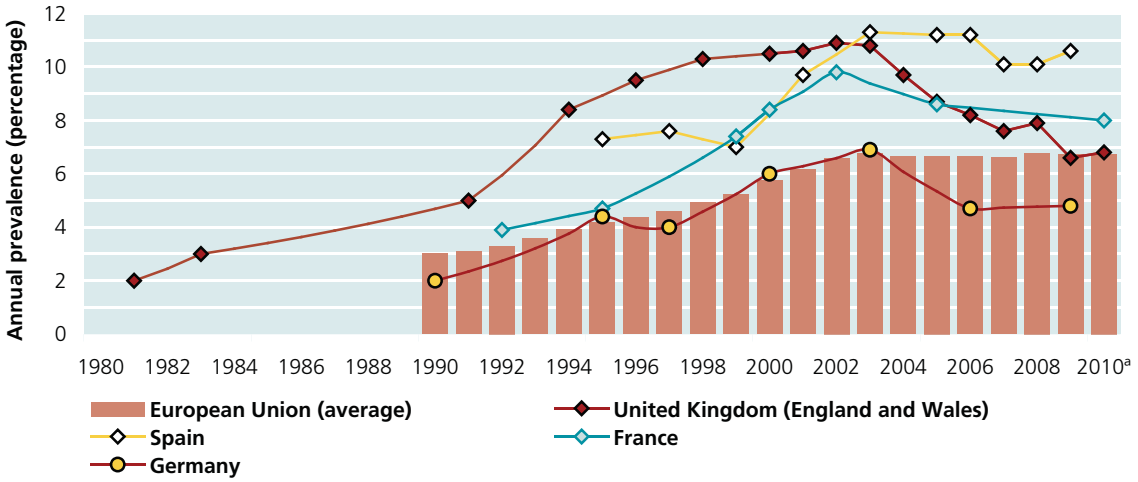
Cannabis herb and resin have remained the two main forms of illicitly used cannabis. Traditionally, cannabis resin had far higher levels of THC than cannabis herb. Hashish (with a traditional THC content of 2-10 per cent)

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.

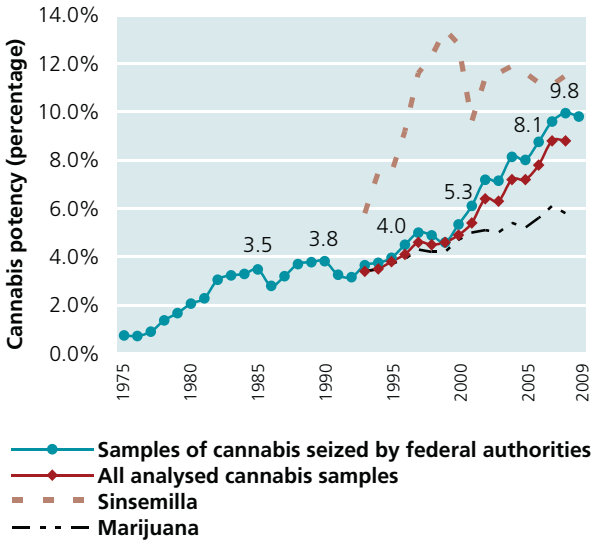
80 THC-monitor, mentioned in *The Netherlands Drug Situation 2010: Report to the EMCDDA by the Reitox National Focal Point* (Netherlands Institute of Mental Health and Addiction (Trimbos Instituut), December 2010).

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.

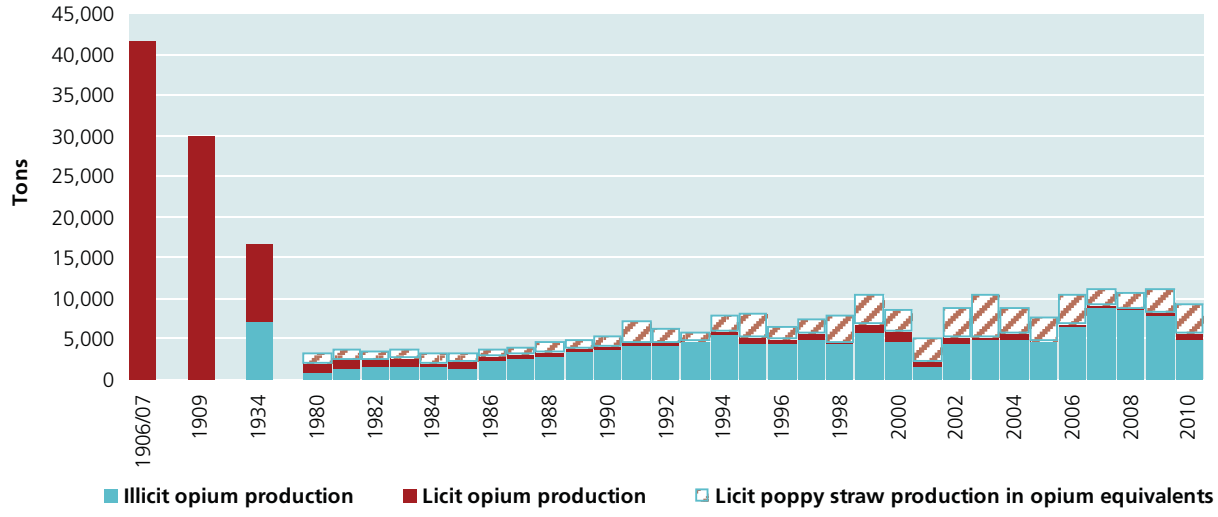
Production: concentration and displacement

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.

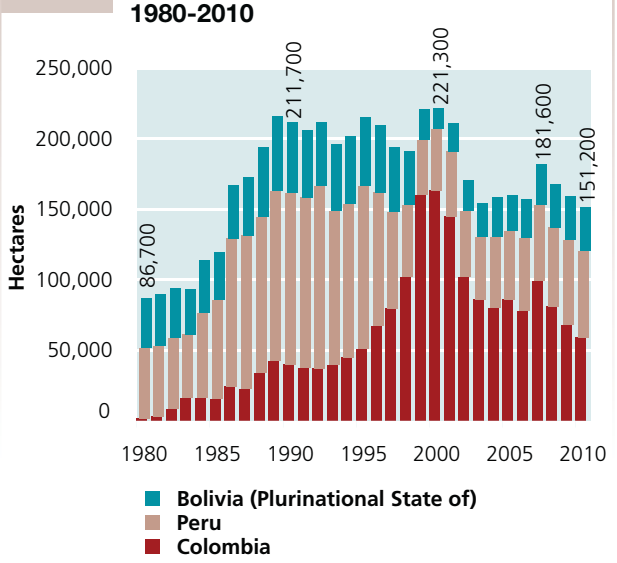
Other significant opium production areas have emerged in Latin America, notably in Mexico (starting in the mid-1970s) and Colombia (in the 1990s). Recent years have seen declining opium production in Colombia, while in Mexico such production appears to have increased in spite of extensive illicit crop 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.

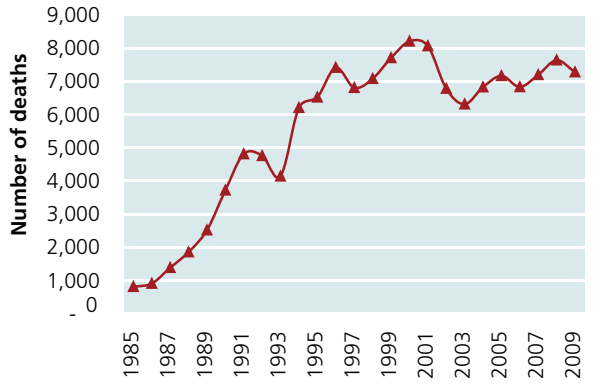
Consumption: from old to new markets

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.

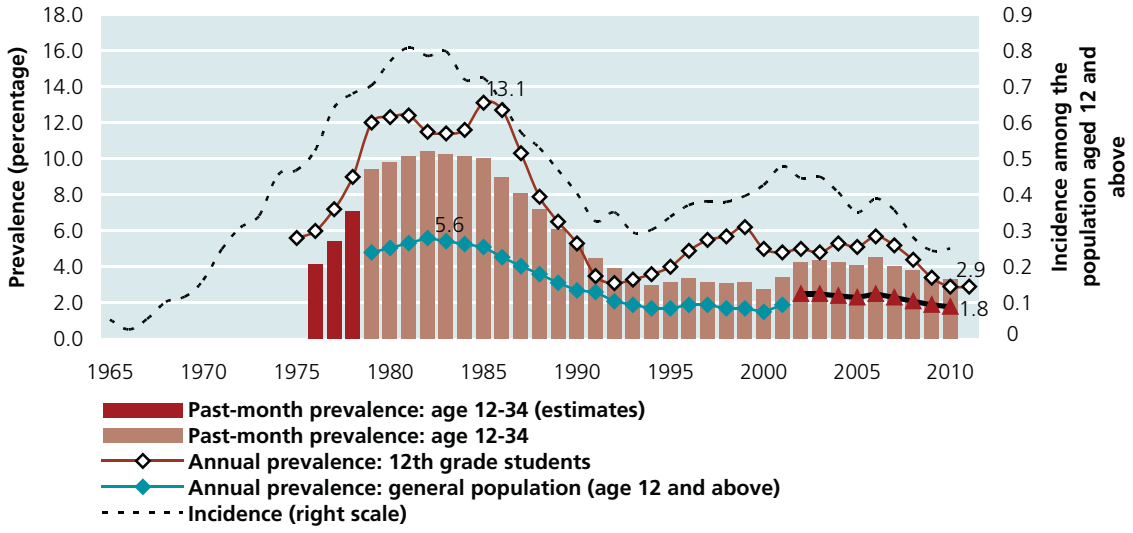
Different trends have been observed in Oceania. Heroin use in Australia increased strongly in the 1990s but declined by some 75 per cent in 2001, following a "heroin drought" brought on by coordinated Australian and South-East Asian law enforcement operations targeting major heroin trafficking groups. 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

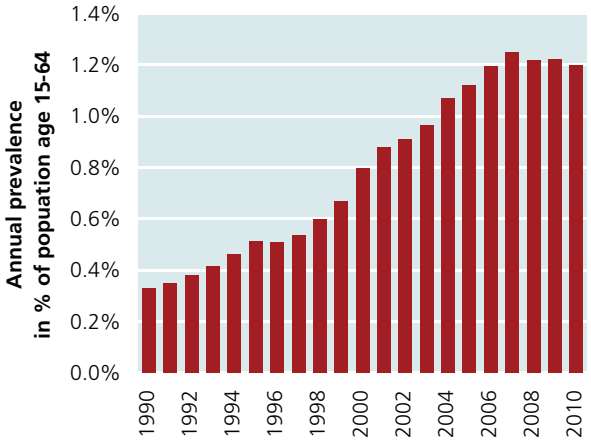


Source: United States, Department of Health and Human Services, Substance Abuse and Mental Health Services Administration, National Survey on Drug Use and Health, 2010 (and previous years); United States, National Institute on Drug Abuse, *Monitoring the Future survey*, 2011.

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.

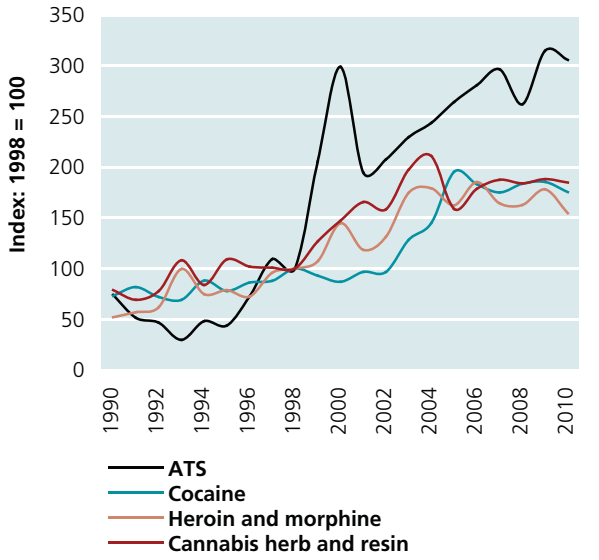
Heroin produced in South-East Asia used to be intended for illicit markets in North America, Oceania and Europe. Nowadays, the heroin produced in South-East Asia is consumed mostly in China, though the total production has declined significantly and, in recent years, has been insufficient to satisfy 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 2011.

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]

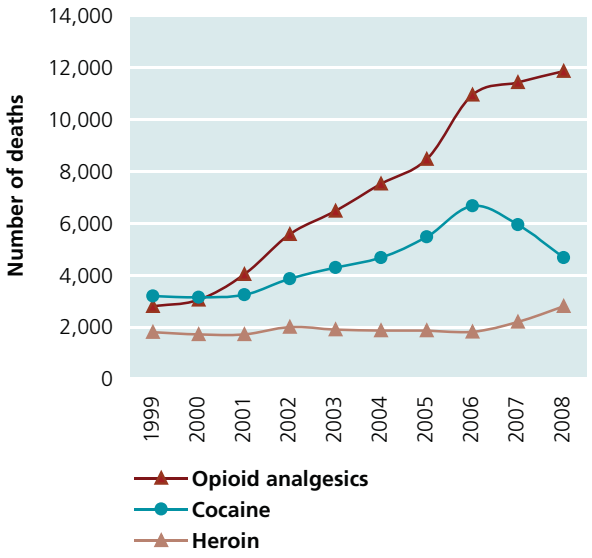
Global licit production of many opioids, including morphine, codeine, thebaine, hydrocodone, oxycodone and methadone, has increased dramatically over the past two decades. For example, global manufacture of oxycodone, a commonly misused opioid marketed as OxyContin in the United States, increased from 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

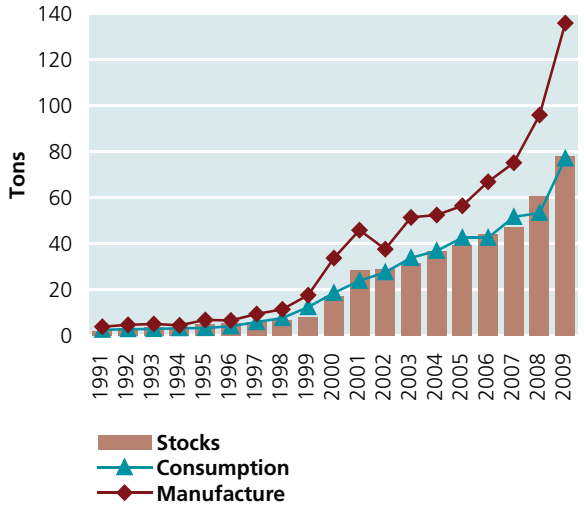
Central nervous system depressants are usually prescribed as sedatives or anxiolytics (for the treatment of anxiety disorders). Benzodiazepines are currently the main substances of concern in this class of drugs, having largely replaced barbiturates (both are used as anxiolytics and sedative-hypnotics) 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

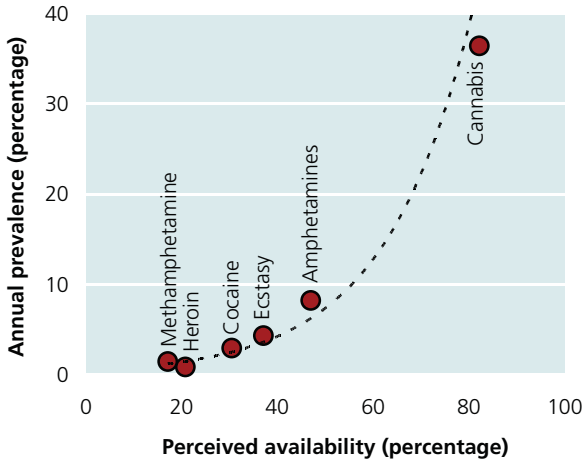
129 United States, Department of Health and Human Services, Substance Abuse and Mental Health Services Administration, "Analyzing Data Online". Available from www.icpsr.umich.edu/icpsrweb/SAMHDA/sdatools/resources (accessed 30 March 2012).

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.*

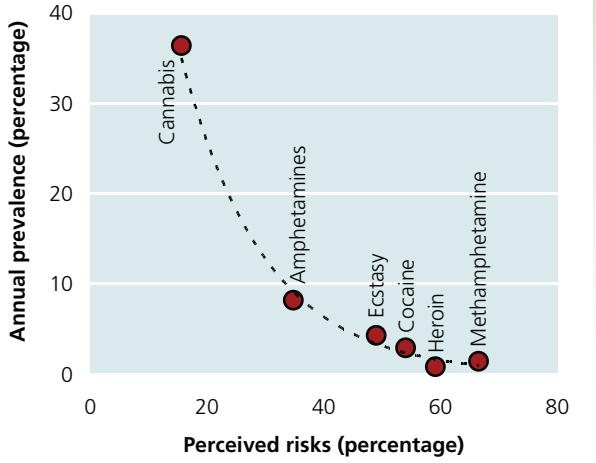
132 *World Drug Report 2011.*

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.

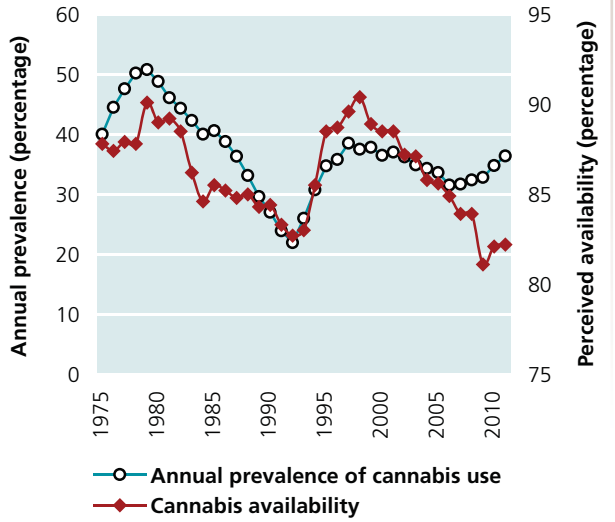
The data also show a very strong negative correlation between perceived risks and annual prevalence for key illicit drugs; that is, the higher the risks associated with the use of a specific drug, the less likely it is that that drug is consumed (see figure 23). The risks are perceived to be highest 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.

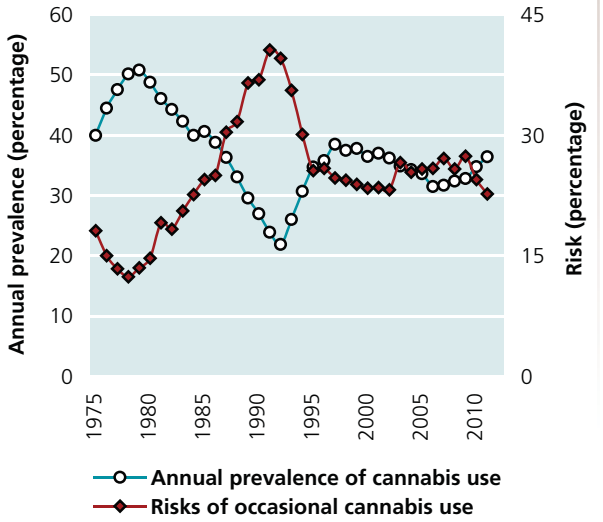
134 European Centre for the Epidemiological Monitoring of HIV/AIDS, "HIV/AIDS surveillance in Europe", Mid-Year Report 2007 No. 76 (Saint-Maurice, France, French Institute for Public Health Surveillance, 2007); European Centre for Disease Prevention and Control and WHO Regional Office for Europe, *HIV/AIDS 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.