DEVELOPMENTS AND EMERGING TRENDS IN SELECTED DRUG MARKETS
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New trends in cannabis products

By several measures, the cannabis market remains by far the largest drug market worldwide, with nearly 219 million estimated users in 2021 and production reported in almost every country.1 In the past few decades, there has been a diversification in the types of cannabis products available to users, particularly in jurisdictions that have legalized the supply of cannabis for non-medical use.2

The Cannabis sativa plant contains more than one hundred phytocannabinoids and terpenoids,3, 4 including the main psychoactive cannabinoid in cannabis, delta-9-THC. Some of these compounds are psychoactive, and some have the potential to be used in medicine.5

In the last few years, the market has also seen a number of naturally occurring psychoactive cannabinoids being synthesized, in some cases in an attempt to circumvent cannabis laws, particularly those that focus specifically on delta-9-THC. These substances are mostly produced from CBD through a series of chemical reactions.6

In the last 15 years, the drug market has seen the emergence of wholly synthetic cannabinoid receptor agonists (or “synthetic cannabinoids”7), most of which are not structurally related to phytocannabinoids and do not occur naturally in the cannabis plant. They are a diverse group of substances whose common feature is that they bind to the same cannabinoid receptors in the human body as delta-9-THC and thus produce somewhat similar psychoactive effects in the user, but often with heightened health risks.8, 9, 10

FIG. 25 Types of cannabis products used by past-year users of cannabis in Canada, the United States of America and Australia, 2018–2021

**TABLE 5** Selected cannabinoids recently sold on different markets

<table>
<thead>
<tr>
<th>Molecular structure</th>
<th>Psychoactive effects</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Delta-9-tetrahydrocannabinol</strong> <em>(delta-9-THC)</em></td>
<td>Main psychoactive compound in cannabis</td>
</tr>
<tr>
<td><img src="image1" alt="Molecular structure" /></td>
<td></td>
</tr>
<tr>
<td><strong>Delta-8-tetrahydrocannabinol</strong> <em>(delta-8-THC)</em></td>
<td>Psychoactive, estimated to be 50–75 per cent as potent as <em>delta-9-THC</em>[^a, b, c]</td>
</tr>
<tr>
<td><img src="image2" alt="Molecular structure" /></td>
<td></td>
</tr>
<tr>
<td><strong>Delta-10-tetrahydrocannabinol</strong> <em>(delta-10-THC)</em></td>
<td>Psychoactive, likely to be less potent[^d] than <em>delta-9-THC</em> (limited evidence)</td>
</tr>
<tr>
<td><img src="image3" alt="Molecular structure" /></td>
<td></td>
</tr>
<tr>
<td><strong>Delta-9-THC acetate ester</strong> <em>(THC-O or THCOA)</em></td>
<td>Psychoactive, likely to be more potent than <em>delta-9-THC</em> (limited evidence)</td>
</tr>
<tr>
<td><img src="image4" alt="Molecular structure" /></td>
<td></td>
</tr>
<tr>
<td><strong>Hexahydrocannabinol</strong> <em>(HHC)</em></td>
<td>Psychoactive, likely to be less potent than <em>delta-9-THC</em>[^e] (limited evidence)</td>
</tr>
<tr>
<td><img src="image5" alt="Molecular structure" /></td>
<td></td>
</tr>
<tr>
<td><strong>Hexahydrocannabinol acetate</strong></td>
<td>Psychoactive</td>
</tr>
<tr>
<td><img src="image6" alt="Molecular structure" /></td>
<td></td>
</tr>
<tr>
<td>Molecular structure</td>
<td>Psychoactive effects</td>
</tr>
<tr>
<td>--------------------</td>
<td>----------------------</td>
</tr>
<tr>
<td>Cannabidiol (CBD)</td>
<td>Non-psychoactive</td>
</tr>
<tr>
<td>Cannabigerol (CBG)</td>
<td>Non-psychoactive</td>
</tr>
<tr>
<td>Cannabinol (CBN)</td>
<td>Non-psychoactive</td>
</tr>
<tr>
<td>Cannabidivarin (CBDV)</td>
<td>Non-psychoactive</td>
</tr>
</tbody>
</table>

d Karen Jaynes and Chad Johnson, “A Hemp Field Day for Psychoactive Effects: The Science of Δ8 & Δ10-THC” (University of Maryland, School of Pharmacy, Maryland, USA, 2022).
Signs of increases in cannabis potency in South America

Cannabis potency – the delta-9-THC content of cannabis products – has been increasing in Western and Central Europe and in North America. It is important to track the delta-9-THC content of cannabis products because it may affect the level of risk that they pose to health, including the risk of acute harm (such as accidents, psychotic symptoms and paediatric poisonings) and of chronic harm (such as cannabis use disorders and cognitive impairment).

There are no systematic data on levels of and long-term trends in the delta-9-THC content of cannabis products outside Europe and North America, so it is challenging to determine whether and to what extent cannabis products are evolving elsewhere. However, sporadic information from South America suggests that the potency of cannabis may also be increasing in this subregion.

By 2011, a new strain of cannabis that was reported to be genetically modified and to contain high levels of THC had appeared in Colombia with the name “Creepy”. Other names used for the product there and in surrounding countries include “Crippy”, “Cripi”, “Krippy”, “Kreepy” and “Cripa”. Since 2013, both the consumption and seizures of “Creepy” have been increasingly reported in Colombia, Ecuador, Peru and, occasionally, other countries in South America. Recently, Guyana reported the appearance of a product with a similar name – “Poppy” or “Creepy”. It is possible, however, that the name has been used for several hybrids or varieties with a higher THC content than that of typical cannabis herb in the subregion. Chile has reported the penetration of “Creepy” into virtually all of its regions, and Colombia has observed an increase in people seeking medical attention as a result of using the product for recreational purposes. More recently, interceptions of “Creepy” seem to have increased; in Chile, for example, such seizures rose by 700 per cent between 2017 and 2020. In addition, in 2019 Colombia reported the presence of highly potent cannabis “wax” on its drug market.

Data on the potency of “Creepy” are scarce. Analyses from 2017 revealed a delta-9-THC content of 18 to 42 per cent in Colombia while a 2021 study in Chile found an average potency of 17 per cent, with some samples having a delta-9-THC content of up to 80 per cent. These levels contrast with the potencies of 2 to 5 per cent typically reported in South and Central America and the Caribbean in the past decade.

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f Gloria Rose Marie de Achá, Stock de Cannabis En América Latina: Radiografía Del Microtrafico y La Venta al Menudeo (Colectivo de Estudios Drogas Y Derecho, 2019).
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h Irma Coraima Pacheco Díaz, Consumo de Creepy y Su Influencia En La Conducta Disocial En Un Adolescente de 16 Años (Babahoyo, Ecuador: Universidad Técnica de Babahoyo, 2019).
m de Achá, Stock de Cannabis En América Latina: Radiografia Del Microtrafico y La Venta al Menudeo.
Proliferation of novel hemp-related products

A number of (sometimes illegal) entrepreneurs have introduced to the market substances with psychoactive effects that are intended to mimic those of delta-9-THC, often in order to evade cannabis-related laws. Some are wholly synthetic substances (synthetic cannabinoids), while others are semi-synthetic or of natural origin. At the time of writing, the most commonly sold semi-synthetic cannabinoids, typically synthesized from CBD, but sometimes from THC, include delta-8-THC, hexahydrocannabinol and, occasionally, others such as delta-10-THC and THC-O acetate.

Interest in delta-8-THC in the United States grew during 2020. The compound was not controlled under United States drug legislation at that time, which contributed greatly to its popularity, especially in states where recreational cannabis had not been legalized. An additional factor that may have added to the substance’s appeal is its relatively lower price (in terms of milligrams per dollar ratio) compared with delta-9-THC. Numerous products containing delta-8-THC became available on the market within a short period of time, mainly in the form of edibles and vaping cartridges, but also concentrates and tinctures. Users report experiencing, at a comparable dose, a lower subjective psychoactive effect than delta-9-THC and fewer adverse reactions. This is consistent with experimental evidence and could be related to several possible pharmacokinetic mechanisms. However, owing to several factors, the doses that people use may differ widely and thus lead to health risks, which may also arise from impurities. The characteristics of people who use delta-8-THC are only beginning to emerge; a study conducted in the United States found that among past-month cannabis users, men were more likely than women to report delta-8-THC use.

Little is known about the safety of delta-8-THC and its effects in humans. The existing evidence is rather anecdotal, and at the time of writing, no national regulations on dosing or age restrictions could be located in any country. Products containing delta-8-THC that have been designed to appeal to young people, such as chocolates, gummies and cookies, many of which are marketed with bright and colorful designs and appealing flavours, are being sold in the United States in a manner similar to that of cannabis products sold in jurisdictions where products that contain delta-9-THC have been legalized. In the absence of regulations and quality controls, a number of harmful contaminants (by-products of the synthesis of delta-8-THC) and unlabelled adulterants have been found in delta-8-THC products sold in jurisdictions where products that contain delta-9-THC have been legalized. In August 2021, 21 states of the United States restricted or banned delta-8-THC, and warnings to consumers were issued in September 2021.

Delta-8-THC use has appeared sporadically elsewhere, for example in Italy, Spain and Sweden, but the selling of and trade in the compound may remain illegal in many countries, depending on national legislation, thereby limiting its availability.

Other THC-related products that are currently on the market include delta-10-THC and THC-O acetate. The little that is known from the scientific literature
suggestions that the acetate group within the molecule increases its bioavailability and that the potency can be three times higher than that of the delta-9-THC molecule, and have hallucinogenic properties.\textsuperscript{43}

Although HHC was originally described 80 years ago,\textsuperscript{44} the non-medical use of the substance is new; it was first reported in the United States in late 2021.\textsuperscript{45} HHC can be synthesized from CBD, but can also be derived from delta-8-THC or delta-9-THC. Data on the health effects of HHC use are almost non-existent,\textsuperscript{46,47} because the pharmacology and toxicology of the substance in humans has not been studied to date.\textsuperscript{48} Moreover, products containing HHC also often contain contaminants, other intentionally added cannabinoids and diluents.\textsuperscript{49}
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In a survey conducted in the United States in 2022, a total of 35 per cent of current users of CBD and 30 per cent of users of cannabis had purchased psychoactive hemp-derived products (such as those containing delta-8-THC) in the previous six months. As a result, many companies that market CBD add delta-8-THC and similar products to their portfolios.64

There are indications that the commercial companies involved in marketing cannabis medicinal products and CBD wellness products are often linked with the companies that invest in the legal recreational cannabis market; in fact, sometimes they are the same entities.65 These companies, driven by profit maximization, favour policies and approaches that are likely to increase consumption.66, 67 A recent analysis has shown, for example, how the corporate social responsibility practices of major North American cannabis companies are aimed at normalizing and legitimizing the industry.68 As has been the case with the “Big Alcohol”, “Big Tobacco” and “Big Pharma” industries, concerns have been raised, in particular in jurisdictions that have legalized the non-medical supply of cannabis, about “Big Cannabis” and the practices of lobbying, aggressive marketing and the potential influencing of scientific research.70

However, not all cannabis products emerging on the market are driven by the same segments of the expanding industry. For example, there is not a clear link between the emerging companies that sell products containing delta-8-THC and HHC and “Big cannabis”; they may currently represent different and potentially competing71 segments of the industry.

The role of the cannabis industry in the popularization of cannabinoids

The rapid emergence on the market, in particular the online market, of the multitude of products containing delta-8-THC and HHC testifies to the involvement of the industry in making them available. For example, according to a recent business report, in the United States delta-8-THC products have generated profits of about 2 billion dollars in two years and accounted for about 50 per cent of the cannabinoid market by the end of 2022.63 As an indication of the complexities of
Ketamine – a marginal or a mainstream drug?

Phencyclidine derivative ketamine is a dissociative anaesthetic that was first synthesized in 1962. It is a non-competitive antagonist of N-methyl-D-aspartate (NMDA) receptors, but also interacts with other receptors (e.g. opioid receptors).

Ketamine is an NPS; it is not under international control, but the substance is controlled at the domestic level in a number of countries. However, the debate surrounding the possible international control of ketamine is ongoing, and the issue remains a drug policy dilemma, given the need to ensure access to ketamine as an essential medicine on the one hand, and growing evidence of its misuse and related harms on the other hand.

Ketamine is on the WHO Model List of Essential Medicines. It is used in human and veterinary medicine mainly as an anaesthetic with a wide safety margin, but also for the treatment of pain. More recently, it has been studied (in controlled trials) as a possible treatment for (treatment-resistant) depression, bipolar disorder, post-traumatic stress disorder, suicidality and substance use disorders (alcohol and cocaine).

The first accounts of the non-medical use of ketamine date back to 1967.

Acute ketamine administration may result in the blocking of sensory input, the impairment of memory and cognitive function, tachycardia, increased blood pressure, visual alterations, psychological dissociation and hallucinations. Its non-medical use can lead to depersonalization, derealization and, at high doses, a “K-hole” – a state of complete dissociation, sometimes accompanied by an out-of-body experience. Deaths related to accidental ketamine poisoning are rare, but do occur. In addition, ketamine intoxication may have lethal consequences because the drug impairs the user’s judgment, leading to lethal accidents.

Effects vary depending on the route of administration and the dose administered (various doses have been documented in non-medical users, from 10 to 300 mg). At low doses, stimulant effects predominate; at high doses, psychedelic effects prevail.

Ketamine can increase violent behaviour and sexual impulses. It is one of the drugs used during “chemsex” encounters, in particular among men who have sex with men. It is also used as a “date rape” drug.

Chronic, non-medical use of ketamine may lead to impaired cognition (memory, learning and executive functions), mental disorders, cystitis (“ketamine bladder”) and an intense abdominal pain that is known as “K cramps” and that is caused by prolonged, heavy use. Renal damage can be so extensive as to require dialysis; upper gastrointestinal symptoms and cholestasis are also frequent, as are structural and functional abnormalities of the brain in long-term users. Female users may experience greater levels of severity of cognitive impairment and urinary discomfort than male users of the substance.

There is evidence of the development of tolerance and withdrawal syndrome, and of ketamine use disorders, including ketamine dependence. The experience of withdrawal symptoms may be more severe in women.

The most common routes of administration (non-medical use) are oral and nasal, but there are also reports of the drug being smoked, injected and administered rectally and, more recently, vaped.

User groups of ketamine include regulars on the electronic dance music scene, “psychonauts”, injecting drug users and opioid users, and LGBTQI+ persons on the club scene. Users are typically young people.
Historical overview of the non-medical use of ketamine: a main drug of use in parts of South-East Asia

The non-negligible non-medical use of ketamine started to emerge in the United States of America in the 1980s, in connection with the rave dance scene, and in Western Europe in the 1990s. Hard data from that period are available only for North America and Western Europe, although the non-medical use of ketamine at alternative dance parties on beaches in Goa, India, in that early period has also been reported.\textsuperscript{111}

Surveys conducted in Western Europe in the early 1990s suggest that ketamine was used in relatively high doses,\textsuperscript{112, 113} often in private settings,\textsuperscript{114} by recreational users wanting to experience the psychedelic effects of the drug rather than its stimulant effects as a dance drug.\textsuperscript{115} Towards the end of the 1990s, ketamine may have acquired a bad reputation on the European dance scene as a result of it being sold as “ecstasy”, leading to it being used inadvertently\textsuperscript{116} and having effects that were potentially markedly different from users’ expectations.

In the early 2000s, while the use of ketamine was lower than the use of internationally controlled drugs in Europe and was decreasing among young people in the United States,\textsuperscript{117} a surge in ketamine use was occurring in East and South-East Asia. Also in connection with the dance scene,\textsuperscript{118} the non-medical use of the substance in Asia was initially documented in China in 1997.\textsuperscript{119} From the early 2000s, such use was also documented in Hong Kong, China, Taiwan Province of China,\textsuperscript{120} Macao, China, and Malaysia.\textsuperscript{121}

Indicators of ketamine availability rose sharply in that period and the popularity of ketamine in Hong Kong, China, increased so steeply that within three years of the introduction of the substance on the illicit market, it became the first drug of choice among people under 21 years of age.\textsuperscript{122, 123, 124} In Taiwan Province of China, the popularity of ketamine soared in the early 2000s;\textsuperscript{125} in a series of surveys among middle- and high-school students in the early 2000s, ketamine was one of the most commonly used drugs, along with “ecstasy”.\textsuperscript{126, 127} By 2014, 222,000 people, or more than 15 per cent of all registered drug users in China, were officially registered by the police as users of ketamine.\textsuperscript{128} The non-medical use of ketamine was placing a health...
Taiwan Province of China, Hong Kong, China, and Macao, China, seem to have recorded peaks in ketamine popularity; after that, clear decreases in the indicators of ketamine use were observed, likely a consequence, at least partially, of the new regulations.

Trends in ketamine supply: recent diversification in source countries

Although ketamine can be diverted from the medical supply chain, the illicit manufacture of the drug appears to have become the main means of its illicit supply in recent years. Trends in ketamine seizures are challenging to analyse, given that the substance is not under international control; hence, variations in national policies can result in different interception rates.

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The patterns of ketamine use and, to some extent, the user groups observed in East and South-East Asia in the early 2000s were different from those described in early studies in Europe. In 2004, ketamine users and even health-care workers in Taiwan Province of China, were largely unaware of the out-of-body, “K-hole” experience that could be induced by ketamine, which was mostly smoked with tobacco there. Around the same time, in Hong Kong, China, the drug was being consumed mainly by young, working-class people in mainstream dance settings. This suggests that ketamine was being used in lower dosages, primarily for its “stimulant” properties. This was confirmed by descriptions of the effects experienced by interviewed users. Other factors that seem to have contributed to the growing popularity of ketamine in the subregion in the early 2000s were its lower price and the less strict regulations to which it was subject compared with other drugs.

To combat the health burden of ketamine, numerous countries in the subregion introduced stricter regulations on the drug and the precursors used in its manufacture. In China, for example, ketamine was reclassified as a category-1 psychotropic substance in 2013. Subsequently, between 2009 and 2016, China,

FIG. 28 Persons treated for the non-medical use of ketamine as their primary drug in Macao, China, 2008–2019

Source: UNODC, responses to the annual report questionnaire.

FIG. 29 Quantities of ketamine and phencyclidine-type substances seized worldwide by subregion, 2001–2021

Source: UNODC, responses to the annual report questionnaire.

Note: The quantities of ketamine reported as having been seized can be significantly influenced by the fact that the substance is not under international control, and the variation in national policies can result in different interception rates.

Trends in ketamine seizures are challenging to analyse, given that the substance is not under international control; however, significant seizures of the drug began to be reported after 2000. Given that some countries have placed ketamine under national control at different points in time, annual fluctuations in the quantity of the drug seized may be a reflection of that rather than of changes in its supply.

On the basis of the quantities of ketamine seized, it appears that trafficking in the drug in China accounted
for an increasingly large majority of the quantities trafficked worldwide until 2015. After that time, trafficking in ketamine in China declined dramatically, and other countries, mostly located in geographical proximity to the country, began to dominate. In recent years, for example, there has been a surge in seizures of ketamine in other countries in East and South-East Asia, primarily driven by the illicit manufacture of substantial quantities of the drug in the subregion, in particular in Cambodia and Myanmar.\textsuperscript{139}

There has been a marked change not only in terms of the quantities of ketamine seized but also in the trafficking routes and source countries of the drug, with countries outside Asia increasingly reported as countries of departure. INCB also reported a diversification in trafficking routes beyond East and South-East Asia in 2019, on the basis of official reports of ketamine seizures in the Project Ion Incident Communication System.\textsuperscript{140, 141}

Further accounts of the geographical expansion of trafficking in ketamine beyond East and South-East Asia exist. A number of seizures of ketamine have been made in Africa in the last five years, attesting to trafficking in the drug in the region. While such events suggest that countries in West and Central Africa, Southern Africa and East Africa are being used as transit countries for ketamine destined mostly for the United States, but also for countries in Western and Central Europe, Australia and Hong Kong, China,\textsuperscript{142, 143} it remains unclear whether a local market for the drug is emerging in Africa.

As is the case with seizures of ketamine, the dominance of China in terms of illicit manufacture of the drug has
also declined. The country accounted for 83 per cent of the 500 illicit ketamine-manufacturing laboratories worldwide that were dismantled and reported to UNODC in the past decade, but the number of laboratories dismantled in China peaked in 2013 before decreasing gradually, with only a handful being dismantled in recent years.

**Use of ketamine seems to remain below that of controlled drugs but is increasing in some countries, in particular among young people**

The limitations of the available data make estimating the global prevalence of ketamine use challenging. It is clear, however, that use of the substance remains below that of internationally controlled drugs such as cannabis, opioids, cocaine, amphetamines and “ecstasy”. Likewise, in most countries with available data, the lifetime prevalence of ketamine use is also markedly higher among men than among women.

Ketamine was the fourth or fifth most commonly used drug reported to UNODC in several countries in 2020 or 2021, but no country reported it to be the most commonly used drug. That said, responses to an international online survey comprising a convenience sample of Internet users in dozens of countries located mainly in Western and Central Europe, North America and Oceania, indicated that there had been an increase in ketamine use among respondents between 2017 and 2020. The data collected in 2021 revealed that the annual prevalence of ketamine use was 13.7 per cent, which was almost identical to the prevalence of ketamine use found in a similar web-based survey focusing on Europe conducted in the

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*Source: UNODC, responses to the annual report questionnaire.*

*Note: Prevalence estimates are based on the population aged 15–64 or similar. Data were included provided that the data collection was carried out no later than in the past decade.*
Fig. 33  Lifetime use of ketamine, most recent data from population surveys, by sex, 2013–2020

Source: UNODC, responses to the annual report questionnaire.

Note: Prevalence estimates are based on the population aged 15–64 or similar. Data were included provided that the data collection was carried out no later than in the past decade. The median annual prevalence was 0.23 per cent (the first and third quartiles being 0.10 and 0.68 per cent, respectively). The scale of ketamine use in East and South-East Asia is not well documented owing to a lack of data from the majority of countries in the subregion, although East and South-East Asia has accounted for a significant share of total global ketamine seizures in recent years, and anecdotal evidence of use exists.

Fig. 34  Trend in past-year use of ketamine among Internet users, 2014–2022

Source: Global Drug Survey reports, various years.

Weight is added to those findings by a longitudinal survey of young people (aged 18–34) on the nightlife scene in five European countries, which found that the use of ketamine clearly increased over the period 2017–2018, both in terms of the number of people using the drug (increase by 21 per cent) and the frequency of its use (increase by 15 per cent), although regular use of the drug did not increase.

Despite signs of increased ketamine use in several European countries, however, the resulting level of acute harm to health tends to be relatively low compared with that of other drugs, with ketamine involved in 1.3 per cent of acute drug toxicity presentations in 2020.

The increase in ketamine use has also occurred in countries outside Europe. It occurred in Australia, for example, between 2016 and 2019, mainly owing to a doubling of prevalence rates among people in their 20s, with a similar increase recorded among regular “ecstasy” users after 2015. Ketamine use remains low in general, however.
Ketamine use and availability have been documented in South America at an even lower level since the mid-2010s. Past-year use among university students in the Plurinational State of Bolivia, Colombia, Ecuador and Peru in the period 2019–2021 was, for example, 0.1 per cent or lower. Nevertheless, the quantities of ketamine seized were clearly on the rise in the subregion between 2015 and 2019 (increasing from more than 50 to more than 300 kg) and a laboratory that was illicitly producing ketamine was dismantled in the nearby Dominican Republic in 2017.

In Argentina, Chile, Colombia and Uruguay, ketamine was recently identified as an ingredient in concoctions such as “pink cocaine”, which has a number of different street names, including “tuci” and “tucibi”. Moreover, ketamine was identified in the oral fluids of almost one third of attendants at electronic music events held in Brazil between September 2018 and January 2020. More recently, in the period 2019–2022, “pink cocaine”, or “tuci”, containing ketamine has also been identified by law enforcement agencies and drug-checking services outside South America, including in North America and Europe.

Since 2021, ketamine has also been identified as an ingredient in concoctions such as “happy water” in Singapore, Thailand and Myanmar, and “k-powdered milk” in Thailand, which resulted in 13 deaths in January 2021. In the same year, the substance was found to be an adulterant in “ecstasy” pills in Singapore and Thailand.

As a result of ketamine being sold in concoctions with various street names, the use of the substance may be underreported in surveys, owing to users being unaware of using it.

Recent shift in ketamine demand and supply in East and South-East Asia

Ketamine use appears to be stable or declining in some countries, territories and geographical areas in East and South-East Asia. In China, for example, 37,449 users of ketamine were registered in 2021, down from 222,000 in 2014. This massive decrease coincided with a fall in the number of manufacturing facilities for the drug being dismantled in the country. Ketamine continues to pose significant challenges in the subregion, however.

In parallel to a shrinking market in
China, increases in use have been reported in Cambodia and Hong Kong, China, and ketamine manufacture has increased in other countries in East and South-East Asia, in particular Myanmar. Authorities in Myanmar and neighbouring countries, most notably Thailand, started seizing significant quantities of the drug after 2016, suggesting that the market has expanded. The use of ketamine has also been confirmed in nightclubs in Thailand, although the extent of its use there is unknown.

In addition, since the early 2020s, the presence of criminal groups involved in the illicit manufacture of ketamine is likely to have been increasing in Cambodia. Seizures of the drug in that country have increased significantly in recent years, amounting to nearly 2.8 tons in 2021 and 13.5 tons in 2022. Increased seizures have also been recorded in Myanmar (2.3 tons) and the Lao People’s Democratic Republic (1.9 tons) in 2022.

Does ketamine have the potential to become a mainstream drug?

The expansion of the ketamine market in East and South-East Asia over the past two decades suggests that, under certain circumstances, ketamine has the potential to become a mainstream drug. Contributing factors in this subregion have been the use of smaller doses, at which the stimulant effect of the drug is more pronounced than its psychedelic effect, its low price and its relatively easy availability. Only time will tell whether the recently observed increases in ketamine use in some European countries and Australia will result in an expansion of the non-medical market for the drug and greater harm to users. The recent proliferation of concoctions containing ketamine in South America and East and South-East Asia is a possible attempt by drug traffickers to expand the market base by making products containing ketamine attractive to new user groups through their diversification.

Nitrous oxide misuse – a cause for concern in some subregions?

In addition to ketamine, another dissociative anaesthetic, nitrous oxide, a colourless gas with a sweet taste and smell and legitimate medical and even culinary uses, may have become a cause for concern in some subregions. Its non-medical use has been documented since the early 19th century, when it was nicknamed “laughing gas”, owing to its short-term immediate effects such as euphoria, which may be accompanied by giggling or laughter, relaxation, calmness and distortions of perception.

Although used less and less for that purpose, when nitrous oxide is used medically (chiefly as a sedative and analgesic), it is considered to have a wide safety margin. But when used non-medically, the side effects associated with “heavy use” (typically defined by poison centres in the Kingdom of the Netherlands and Denmark as the use of 50 or more balloons in a single session) can be significant. While the non-medical use of the gas is not new, it has recently become a phenomenon of concern in Western and Central Europe. The scientific literature in this field has recently expanded, in particular since 2017, providing more evidence on the health impact of nitrous oxide.

For the purpose of non-medical use, a rapid but short-lasting effect (of up to 5 minutes) is usually achieved by inhaling from a balloon filled with nitrous oxide taken from a gas cartridge (like those used for dispensing whipped cream or soda), although other, more risky methods of non-medical use, such as inhaling directly from a larger cylinder, have appeared recently. This method of administration poses a risk of pressure injury to the lungs and frostbite. Other short-term side effects are generally mild and disappear within 30 minutes. However, “excessive use” for longer periods of time (chronic use) leads to inactivation of vitamin B12 and a wide range of haematological, neurological, cardiovascular and psychiatric harms, including neurotoxicity, which, if not treated in a timely manner, may result in irreversible neurological damage. Littering of the cartridges and balloons has recently caused significant public concern in Western and Central Europe.

The global extent of the non-medical use of nitrous oxide cannot be quantified at the moment, because population level estimates are limited and concentrated in high-income countries. The non-medical use of the gas is usually...
not included in large drug use surveys or is grouped together with other substances (most often inhalants). The available information suggests that non-medical users of nitrous oxide are often young: teenagers and people in their twenties. Most of this information relates to the non-medical use of the gas in Western and Central Europe, North America and Australia, with few medical studies documenting its health impact in countries in Asia and Africa.\(^{g,h,k,l,m,n,o}\) In some countries, such as France and the United Kingdom, nitrous oxide has become the second most popular drug after cannabis among students.\(^{p,q}\) In addition, between 2017 and 2020, there was an increase in the number of toxicity cases involving nitrous oxide presented at poison centres in the European Union, for example in Belgium, France and Netherlands (Kingdom of the).\(^r\)

The situation is complicated by the lack of awareness among young people and most medical professionals about the risks and harms associated with the non-medical use of the gas,\(^s\) as intensive use of the substance seems to be a relatively new phenomenon. Moreover, there is no diagnostic marker to identify the presence of the gas in biological samples after its use;\(^t\) therefore, when users do not disclose their use of the gas, such use may go undetected, leading to underreporting of cases and suboptimal treatment.

In Western and Central Europe, concerns have been raised about changes in availability and supply, including relating to the intentional supply of nitrous oxide for non-medical use. For example, in France, the increased availability of nitrous oxide from 2017 coincided with the sale of gas cartridges in convenience stores, bars and nightclubs; in Denmark, until recent changes in the legislation, such cartridges were being sold in large boxes in kiosks; and in the Kingdom of the Netherlands, there was open advertising of the gas on leaflets or online banners, for recreational use as “laughing gas” or “party gas”.\(^s\)

Some countries in Western and Central Europe have recently introduced legislation to regulate and restrict access to gas cartridges (regulating the maximum quantity that can be sold, the minimum age of buyers, points of sale and advertising),\(^s\) and have developed other strategies, such as information campaigns, to prevent further harm.\(^u\)
The global cocaine market: strong acceleration on the back of major turning point

Over the past decade, the global cocaine market has seen major shifts and an unprecedented expansion, visible not only in the volume of supply and demand, but also in the consolidation of established markets and the emergence of new routes and hubs pushing the boundaries of cocaine trafficking and use beyond their traditional confines.

Major turning points in the mid-2010s leading to the expansion of major markets and the development of new trafficking routes

The unprecedented expansion of the global cocaine market followed major changes in both source and destination markets. Around 2012, the increasing involvement of groups from the Balkan region, beginning with Albanian-speaking groups, in the direct procurement of cocaine from Latin America increased competition among traffickers supplying markets in

### TIMELINE OF MAIN DEVELOPMENTS IN THE GLOBAL COCAINE MARKET, 2012–2021

- **2012**: 
  - **Western and Central Europe**: availability starts to increase and supply expands through northern ports.
  - **South-Eastern Europe**: first signs of trafficking expansion.
  - **Colombia (2014–2016)**: supply begins to increase sharply, fragmentation of the criminal landscape.

- **2013**: 
  - **Brazil (2015–2016)**: increase of cocaine flows into the country and onward towards the Atlantic Ocean through seaports.

- **2014**: 
  - **Colombia (2014–2016)**: peace agreement with FARC-EP.
  - **South-Eastern Europe (2015–2016)**: first signs of trafficking expansion.

- **2015**: 
  - **Colombia (2016)**: market expansion accelerates.
  - **Western and Central Europe (2016–2017)**: market expansion accelerates.
  - **Australia (2016–2017)**: medium-term increases in availability and consumption.
  - **More cocaine starts to transit the Paraná-Paraguay waterway, seizures increase (2016 onward)**.
  - **South-Eastern Europe (2015–2016)**: first signs of trafficking expansion.
  - **Brazil (2015–2016)**: increase of cocaine flows into the country and onward towards the Atlantic Ocean through seaports.
  - **United States**: market starts to contract.

- **2016**: 
  - **Colombia (2016)**: peace agreement with FARC-EP.
  - **Bolivia (Plurinational State of) and Peru (2016)**: coca bush cultivation increases.
  - **New, more direct maritime routes through North Africa (2016–2019)**.
  - **Transit through West Africa rebounds**.

- **2017**: 
  - **Western and Central Europe (2016–2017)**: market expansion accelerates.
  - **Australia (2016–2017)**: medium-term increases in availability and consumption.
  - **More cocaine starts to transit the Paraná-Paraguay waterway, seizures increase (2016 onward)**.
  - **Transit through Western and Central Europe and Australia: temporary drop in consumption**.
  - **Brazil**: Temporary disruption in outward flows from Brazil.

- **2018**: 
  - **Record highs in global cultivation, production and seizures. Transit through the Gulf of Guinea increases. Consumption rebounds**.

- **2019**: 
  - **Bolivia (Plurinational State of) and Peru**: temporary overabundance of coca leaf.

- **2020**: 
  - **Western and Central Europe and Australia**: temporary drop in consumption.

- **2021**: 
  - **Colombia**: peace agreement with FARC-EP.
  - **Bolivia (Plurinational State of) and Peru**: temporary overabundance of coca leaf.
  - **United States**: market starts to contract.
  - **Brazil**: Temporary disruption in outward flows from Brazil.
Western and Central Europe, the second largest destination market for the drug, triggering improvements in the efficiency of the supply chain, increasing purity and decreasing prices and paving the way for a steady increase in consumption. In the United States, the first ever major market for cocaine consumption, a distinct declining trend, visible in several cocaine use indicators, came to an abrupt halt around the same time.

Supply at source reached a turning point between 2014 and 2016, as cultivation in Colombia tripled between 2013 and 2016 and coca bush cultivation started to increase in the Plurinational State of Bolivia and Peru in 2016. The changes in the criminal landscape in Colombia following the demobilization of the Revolutionary Armed Forces of Colombia – People’s Army (FARC-EP), formalized in 2016, had various ramifications, including a freer, more competitive market incentivizing improvements in the efficiency of the supply chain, in particular the steps in processing coca bush to cocaine hydrochloride, meaning that production continued to rise even as cultivation levelled off from 2017 to 2020. Between 2016 and 2020, the average quantity of cocaine hydrochloride obtained from one hectare under productive coca bush cultivation during a given year increased from 6.5 kg to 7.9 kg in Colombia, aided by improvements in agricultural practices such as the use of more productive cultivars, more frequent use of agrochemicals and optimization of the number of plants per hectare, improvements in the ability of farmers to extract the cocaine content from coca leaf, as well as larger and more efficient laboratories producing cocaine hydrochloride. During the same period, the production chain gravitated increasingly towards specific “enclaves”, located close to borders or in strategic locations for trafficking routes, where these improvements occurred. By 2020, the enclaves had come to account for 40 per cent of coca bush cultivation.

In the United States, cocaine seizure quantities almost tripled between 2014 and 2017, and the estimated number of past-year users of cocaine grew in parallel with the average frequency of use (increases of 42 per
cent in the period 2013–2017 and 11 per cent in the period 2014–2017, respectively). However, around 2017 the United States market began to show signs of saturation, and routes towards other destination markets likely became the paths of least resistance absorbing the increases in supply.

The growth of the cocaine market in Western and Central Europe – the beginnings of which can be traced to 2012 – accelerated between 2015 and 2017, with marked increases in consumption (reflected in measurements of metabolites in wastewater from 2016 onward) as well as seizures (most notably from 2017). By 2018, notable increases in the relative frequency of use of “crack” cocaine, as opposed to cocaine hydrochloride, among new entrants to drug treatment programmes were visible in several countries in this subregion. Unlike in the United States, the expansion of the cocaine market in Western and Central Europe continued unabated through 2019, by which time consumption levels had roughly doubled in comparison with 2015. In 2020, this market saw a temporary slowdown in parallel with the onset of COVID-19, with seizure quantities levelling off at record levels, possibly due to short-lived supply-side disruptions and a dip in consumption levels.

The expansion of the market in Western and Central Europe was likely facilitated by a number of emerging European organized criminal groups increasing their intercontinental reach, establishing direct ties with suppliers in South America, challenging the long-standing dominance over the transatlantic trade of a handful of brokers and organized criminal groups and ultimately rendering the cocaine supply chain more efficient, thus enabling the European market to “converge” towards that of North America. The fragmentation of cocaine production and trafficking activities in Colombia and the consequent elimination of monolithic actors may also have contributed to the formation of these new transatlantic supply chains.

The supply-related turning point observed around 2015 likely had consequences in the form of new or expanding routes through South America. In particular, the expansion in the Plurinational State of Bolivia and Peru may have contributed to increasing flows into Brazil. Cocaine seizures at Brazilian seaports mushroomed between 2015 and 2019 (from 1.5 tons to nearly 67 tons) beginning with Sao Paolo and later extending to other ports and reflecting, to a large extent, a growing role for Brazil as a transit country. At the same time, wholesale purity levels in Brazil increased; in particular, the purity of cocaine seized in base form, likely had consequences in the form of new or expanding routes through South America. In particular, the expansion in the Plurinational State of Bolivia and Peru may have contributed to increasing flows into Brazil. Cocaine seizures at Brazilian seaports mushroomed between 2015 and 2019 (from 1.5 tons to nearly 67 tons) beginning with Sao Paolo and later extending to other ports and reflecting, to a large extent, a growing role for Brazil as a transit country. At the same time, wholesale purity levels in Brazil increased; in particular, the purity of cocaine seized in base form, likely intended for products consumed on the domestic market, rose abruptly in 2016.

In the same year, there was a noticeable increase in the seizure quantities of cocaine that was linked to the Paraná-Paraguay waterway, connecting the Plurinational State of Bolivia and Paraguay with the River Plate estuary and the Atlantic Ocean, suggesting increased use of the Southern Cone route, along which cocaine originating in Peru and the Plurinational State of Bolivia is trafficked southward towards the Atlantic Ocean. The first steps along this route typically involve clandestine flights on light aircraft carrying batches of up to 500 kg of cocaine, which often land in Paraguay. The consignments are then frequently
routed towards ports on the Paraná-Paraguay waterway, where they are loaded onto barge “trains” or other shallow-water conveyances and shipped southward towards the Atlantic Ocean. At some point on the waterway, from the vicinity of Rosario, Argentina, onward, the consignments are trans-shipped onto ocean-going vessels that then travel towards the final destination – often to Europe or Africa. The largest ever seizure of cocaine in Europe – 16.2 tons seized in the port of Hamburg in February 2021 – consisted of a consignment that had been trafficked along this route.

The effects of the upturn in cocaine supply around 2015 were also observed in Australia, where retail purity levels and cocaine consumption levels rose significantly between 2016 and 2019, while retail prices fell. Not only did the number of past-year cocaine users increase sharply between 2016 and 2019, but several indicators of more intensive use outpaced this growth, suggesting that use patterns may have become more harmful. For example, the number of closed treatment episodes for drug use where cocaine was a principal drug of concern rose by 163 per cent between the reporting periods July 2015/June 2016 and July 2018/June 2019.

Emergence of cocaine transit points in Africa

The effects of the expansion of the cocaine market were felt beyond the established markets for the drug. New maritime routes directly to North Africa had emerged by 2016, when Morocco traced significant quantities of cocaine trafficked from Brazil and detected the use of a fishing boat for trafficking into its southern provinces. The development of cocaine routes into and through Morocco may have been facilitated by the existence of long-standing routes for trafficking cannabis resin into Spain and the ties to Morocco of the Netherlands criminal underworld, which is responsible for channelling large quantities of cocaine to the Kingdom of the Netherlands.

From 2016 onward, the majority of cocaine flows into Morocco were assessed to be entering along maritime routes. Soon afterwards, maritime routes began to reach the Mediterranean coast of North Africa, including Algeria (with significant seizures in the ports of Oran and Skikda in 2018 and 2019, respectively) and very likely Libya, with an increase in the number of consignments detected that were apparently en route to Libya, for example in Colombia (43 kg detected in the port of Buenaventura in July 2018), Italy (17 kg in the port of Gioia Tauro in October 2018), Ecuador (582 kg in the port of Guayaquil in December 2020), Malta (612 kg in December 2020) and off the coast of the Canary Islands (218 kg in January 2023).
In 2019, the ripple effects of the increases in cocaine supply became visible on the western coast of Africa and nearby islands, with notable individual seizures being made in Cabo Verde (9.5 tons in February and 2.3 tons in August 2019), Guinea-Bissau (789 kg in March and 1.8 tons in September 2019) and Senegal (five seizures ranging between 43 kg and 798 kg and collectively amounting to 1.9 tons). In contrast, seizures in the entire subregion of West and Central Africa had amounted to less than 1 ton annually in the period 2015–2018 and 4.6 tons at the previous peak in 2007.

Seizure data suggest that in 2021, the cocaine flows into West and Central Africa further expanded via countries in the Gulf of Guinea, such as Benin, Côte d’Ivoire, Nigeria and Togo. This shift may have been facilitated by an increasing pattern of sailing vessels departing from Brazil. In any case, cocaine reaches the two arrival zones (the west coast and the Gulf of Guinea) in contaminated cargo, in particular containerized shipments, as well as on dedicated Atlantic crossings on sailing, fishing and merchant vessels (and combinations thereof). From these arrival zones, some cocaine may continue northward along the coast of West and North Africa. Some also continues overland, across the Sahel towards the Mediterranean coast, and from there likely towards Europe or possibly the Middle East.

Expansion of trafficking routes via South and South-Eastern Europe

Around the mid-2010s, maritime trafficking routes also began to increasingly reach countries in South and South-Eastern Europe. Some of the earliest observations of this development were made by Italian authorities, which, on the basis of data up to 2016, drew a possible link between increasing seizures of incoming cocaine on the north-eastern land borders of Italy and the activities of Balkan criminal groups facilitating maritime cocaine flows into ports in South-Eastern Europe and subsequently along the well-established Balkan route, known mainly for trafficking in heroin.

According to Italian authorities, since 2020 Italian ports, mainly the southern port of Gioia Tauro, have been increasingly used as trans-shipment points for cocaine being trafficked eastward to ports on the Aegean Sea and the Black Sea. At these ports, large
shipments of cocaine from South America are received by Balkan criminal groups, who ensure its wholesale distribution and transportation to markets and stockpiling areas in Greece, Bulgaria, Romania and (prior to the armed conflict) Ukraine.223 Significant developments have also been observed in Türkiye, where seizures almost quadrupled between 2014 and 2017 (from 393 kg to 1,485 kg) and Romania, where the number of cocaine seizures – likely reflecting the domestic retail market – began to increase in 2015, with a similar increase in Bulgaria beginning two years later.224

2021, a record year for cocaine supply after the outbreak of the COVID-19 pandemic

In 2021, coca bush cultivation, cocaine production and cocaine seizures all reached record highs. Coca bush cultivation and cocaine seizures increased very sharply. As the expansion of coca bush cultivation in Colombia involved the cultivation of new fields of younger, and hence less productive, plants, cocaine production increased less sharply than seizures and cultivation. Nevertheless, 2021 saw the seventh consecutive year-on-year increase, with estimated production in 2021 standing at more than 2.5 times the level observed in 2014. Moreover, as coca bushes mature, productivity per unit area is likely to recover in the coming years.

In 2021, record quantities of cocaine were seized in numerous countries, including countries in South America and countries representing or close to the main destination markets. In some subregions, in particular Western and Central Europe and West and Central Africa, the very high seizure levels in 2021 can be seen as a continuation of an already existing expansion, which in some cases was slowed down by the onset of the COVID-19 pandemic and resumed in its aftermath.

In Asia, Hong Kong, China, has shown some of the clearest signs of an increase in cocaine trafficking in recent years, and 2021 was no exception. Seizures increased gradually but steadily from 2016 to 2019, declined in 2020 and then rose to a record 2.9 tons in 2021.225

Seizure data also suggest that the Mediterranean routes to South-Eastern Europe and the eastern Mediterranean coast also continued to gain importance as entry channels for cocaine shipments. However, in this case, the impact of the COVID-19 pandemic (if any) was less clear. For example, cocaine seizures in Türkiye increased at progressively faster rates in 2019 (by 10 per cent), 2020 (by 20 per cent) and 2021 (by 45 per cent).

In other cases, the increases of 2021 appear to represent a turning point. For example, in the United States, seizures rose by 66 per cent to a record 252 tons in 2021, having previously declined for three consecutive years. Annual seizures in South Africa, which were always below 1 ton in the period 1990–2020, reached 5.3 tons in 2021. In the United Arab Emirates, seizure quantities remained modest in 2021 (625 kg), but were almost three times higher than the previous record (218 kg in 2015). In India, annual seizures had remained below 115 kg for 14 consecutive years (2007–2020), but reached 364 kg in 2021.
between 2006 and 2014, the developments during the 2010s provided opportunities for supply to readjust to demand. Cocaine seizures have grown significantly, outpacing the growth in production and, therefore, somewhat limiting the net supply available for consumption. Factoring in both the mitigating factor of seizures on supply and the increasing demand suggests that, despite the very sharp increases in cocaine supply, cocaine is currently not as abundant, on a per capita basis, as it may initially appear; indeed, it seems that 2006 and 2015 were years when extremes in availability were reached, while the ongoing high levels have been triggered by the low point of 2015 but have not quite reached the peak levels of 2006.

**Prolonged surge in cocaine supply felt across the globe, beyond traditional markets**

The world is currently experiencing a prolonged surge in both cocaine supply and demand. While, during the early years of their expansion, the major cocaine markets consolidated, recalibrated and further integrated, including through improvements in supply chains and the development of new routes, the prolonged surge is now being felt across the globe and is likely to spur the development of new markets beyond the traditional confines of the Americas, Western and Central Europe and Oceania. Moreover, although the global cocaine market continues to be concentrated in the Americas and in Western and Central Europe (with very high prevalence also in Australia), in relative terms it appears that the fastest growth is occurring in developing markets in Africa, Asia and South-Eastern Europe.

There are also signs of geographical diversification in the cocaine production process. Responses to the annual report questionnaire provide evidence in 2021 of the small-scale, likely experimental cultivation of coca bush beyond the main production countries of Colombia, Peru and the Plurinational State of Bolivia, in Guatemala, Honduras, Mexico and Ecuador. Laboratories producing intermediate cocaine products (coca paste or cocaine base) were found in Honduras (13), Guatemala (3) and Mexico (1). It appears that limited quantities of cocaine are converted from base...
form to salt (hydrochloride) form for export to destination markets in Ecuador (four cocaine hydrochloride laboratories reported in 2021), Paraguay (six laboratories reported) and Venezuela (60 laboratories reported). In Europe, the refinement of cocaine into hydrochloride form continues to be detected alongside extraction from carrier materials, notably in the Kingdom of the Netherlands, which in 2021 detected seven large-scale clandestine laboratories producing cocaine in base form (which requires further processing in order to be marketed as cocaine hydrochloride) and 14 medium-scale laboratories producing cocaine in hydrochloride form.

In Western and Central Europe, the available evidence suggests that the conversion of cocaine from base form to cocaine hydrochloride has typically occurred in the context of carrier materials impregnated with cocaine, and subsequently retrieved (initially in base form) using sophisticated techniques in “secondary extraction” laboratories. One clear sign of changing dynamics emerged in April 2023, when a law enforcement operation in Spain led to the dismantling of a large-scale laboratory processing coca paste into

![FIG. 42 Record quantities of cocaine seized in potentially developing markets, 2019–2021](chart)

**FIG. 42** Record quantities of cocaine seized in potentially developing markets, 2019–2021

Sources: UNODC, responses to the annual report questionnaire; and UNODC, Drugs Monitoring Platform.

*Note: Due to incomplete reporting in Africa, totals of individual seizures recorded in the UNODC Drugs Monitoring Platform for that region were considered in cases where they exceeded the available aggregate annual value.*

![FIG. 43 Global cultivation of coca bush, cocaine seizures and cocaine production, 2010–2021](chart)

**FIG. 43** Global cultivation of coca bush, cocaine seizures and cocaine production, 2010–2021

Source: UNODC, responses to the annual report questionnaire.

*Note: The calculation excluding 2020 is based on the average of 2019 and 2021 in comparison with the average of 2016, 2017 and 2018.*
The current increase in cocaine supply in Latin America, the expansion of trafficking in the drug eastward, the highly globalized and interconnected nature of society and the inherent potential for consumption in Africa and Asia, especially in countries with increasingly large affluent segments of the population, may lead to an expansion of the markets in these regions.

cocaine hydrochloride. The case involved the seizure of a large quantity (1.3 tons) of coca paste, which had been trafficked inside metal machinery, suggesting that the last stage of conversion (from base to hydrochloride) was carried out on Spanish soil as a strategic choice by traffickers, rather than as a consequence of the concealment method.
These markets are still limited, but they have the highest potential to grow given the size of their populations. If, hypothetically, the prevalence of cocaine use in these countries were to increase to the point of matching those of the established markets (a shift which is, in reality, highly unlikely to materialize in the short term), the population of cocaine users would increase tremendously. For example, the number of past-year cocaine users would increase by 55.5 million from the currently estimated 21.6 million if prevalence in Asia, Africa and the rest of Europe were to increase to the level of Western and Central Europe, and by an additional 9.9 million should it further increase in those (sub)regions (and in Western and Central Europe) to the level observed in North America. Asia, where cocaine use is comparatively very low, has the greatest potential for an increase in the number of cocaine users, largely due to its population size.
Emerging trends in methamphetamine supply: expansion to non-traditional markets

Methamphetamine use and trafficking are expanding and affecting more regions

Methamphetamine manufacture, trafficking and use appear to have increased at the global level over the past two decades, not only in the traditional, long-standing markets for the drug in North America, East and South-East Asia and Oceania, but also – and even more markedly – in a number of relatively new non-traditional markets in Asia, Europe and Africa. Indeed, increases in methamphetamine use over the last decade have been reported not only by officials in traditional markets but also by officials in non-traditional markets such as the Near and Middle East/South-West Asia, South Asia, South-Eastern Europe and West and Southern Africa.

Aggregated seizures of methamphetamine in the drug’s non-traditional markets accounted for 12 per cent of global methamphetamine seizures in 2021, compared with less than 0.1 per cent in 2001, and increased from 60 kg to more than 50 tons over the same period.

FIG. 45  Distribution of global quantities of methamphetamine seized, 2017–2021

Source: UNODC, responses to the annual report questionnaire.

FIG. 46  Reported trends in methamphetamine use in traditional and non-traditional markets, 2009–2021

Source: UNODC, responses to the annual report questionnaire.

Note: Traditional markets: North America, East and South-East Asia and Oceania; non-traditional markets: Africa, Asia and Europe. The methamphetamine use trends index is based on qualitative information on trends in methamphetamine use reported by Member States. Calculations are based on the reports of 95 countries – on average, 31 countries per year over the period 2010–2021. The trend line is calculated based on the number of countries reporting increases minus the number of countries reporting decreases (2 points for a “large increase”, 1 point for “some increase”, 0 points for a “stable situation”, -1 point for “some decrease”, -2 points for a “large decrease”).

FIG. 47  Quantities of methamphetamine seized in non-traditional markets, 2012–2021

Source: UNODC, responses to the annual report questionnaire.
Moreover, the number of countries reporting seizures of the drug beyond its traditional markets of North America, East and South-East Asia and Oceania has almost tripled over the past two decades. Although such seizures may reflect growing concern about methamphetamine and related shifts in law enforcement priorities, they could well point to increases in the supply of and demand for the drug and are a further indication of the geographical expansion of methamphetamine trafficking.

In recent years, methamphetamine seizures and reported trafficking activities in the Americas, with the exception of North America, have remained relatively small, possibly reflecting the ease of access to a readily available and generally cheaper alternative stimulant in South America, namely, cocaine products.\(^{229, 230}\) By contrast, increases in terms of methamphetamine trafficking activities have been most marked in South-West Asia, South-East, West and Central Africa and South Asia.

In addition, there are indications that the manufacture of methamphetamine is no longer restricted to the established markets, as reflected in the detection of clandestine methamphetamine laboratories in non-traditional markets such as South-West Asia, South Asia or Africa. While the number of dismantled laboratories in traditional markets has been declining, it has been increasing in a number of other countries. Caution is required as the output of several hundred small-scale laboratories may still be negligible compared with a few industrial-scale laboratories supplying most of a market.

Moreover, data also show that seizures of precursors used in the manufacture of methamphetamine are no longer limited to traditional markets. Such seizures have been reported in, inter alia, South Asia, South-West Asia and Africa (notably, West and South-East Africa) in recent years.
Methamphetamine trafficking in South-West Asia continues to increase and reach markets beyond the subregion, including South Asia

The most striking expansion of methamphetamine manufacture beyond the drug’s traditional markets over the past decade seems to have taken place in South-West Asia. This began with the expansion of the clandestine manufacture of methamphetamine in the Islamic Republic of Iran in the first decade of the new millennium, until its decline after 2015. In recent years, methamphetamine manufacture has expanded in Afghanistan, where the drug is produced both from the locally grown Ephedra plant and from pharmaceutical ephedrine extracted from over-the-counter cold medications. Some seizure cases suggest that methamphetamine exports from Afghanistan have also potentially increased and now reach markets in East and South-East Asia, South Asia, Central Asia and Transcaucasia, as well as in Africa, Europe and Oceania. It is not clear, however, whether the rise to power of the Taliban in Afghanistan in August 2021 and the officially declared ban on Ephedra cultivation in a number of Afghan provinces in December 2021 and on illicit drug production, in general, in April 2022 have fundamentally changed methamphetamine manufacture and exports from Afghanistan.
FIG. 49  Quantities of methamphetamine seized in South-West Asia

South-West Asia, 2005–2021

Afghanistan, 2013–2021

<table>
<thead>
<tr>
<th>Year</th>
<th>Kilogram equivalents</th>
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<td>2021</td>
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</table>

- **Afghanistan**
- **Pakistan**
- **Iran (Islamic Republic of)**
- **South-West Asia**

Sources: UNODC, responses to the annual report questionnaire.

MAP 20  Significant seizures of methamphetamine in South-West Asia and neighbouring subregions, by origin, 2014–2018 and 2019–2022

**DESI-NATION OF METHAMPHETAMINE ORIGINATING IN AFGHANISTAN, 2019–2022**

- **Azerbaijan**
- **Uzbekistan**
- **Tajikistan**
- **Kyrgyzstan**
- **Czechia**
- **France**
- **Hong Kong, China**
- **Pakistan**
- **Australia**
- **Indonesia**
- **Sri Lanka**
- **United Arab Emirates**
- **Eastern Africa, United Republic of Tanzania, Mozambique, Yemen**
- **United Kingdom**

Sources: UNODC, responses to the annual report questionnaire; UNODC Drugs Monitoring Platform.

The boundaries and names shown and the designations used on these maps do not imply official endorsement or acceptance by the United Nations. Final boundary between the Republic of Sudan and the Republic of South Sudan has not yet been determined. Dotted line represents approximately the Line of Control in Jammu and Kashmir agreed upon by India and Pakistan. The final status of Jammu and Kashmir has not yet been agreed upon by the parties.

Source: UNODC Drugs Monitoring Platform.
South Asia increasingly exposed to methamphetamine trafficking from the east and west

In South Asia, methamphetamine manufactured in Afghanistan reaches both India and Sri Lanka. Most users of ATS (mainly methamphetamine) in India are found in the country’s western states, while the prevalence of methamphetamine use is highest in its eastern states, close to Myanmar. As the mapping of individual seizures suggests, India is increasingly being squeezed between the expansion of methamphetamine trafficking from South-West Asia and from South-East Asia (mainly originating in Myanmar), which poses a high risk of significantly increasing the availability and use of the drug.

In addition, some local manufacture of methamphetamine has been reported; six clandestine laboratories have been reported dismantled in India since 2014. In parallel, significant seizures of the main precursors used in the manufacture of methamphetamine, ephedrine and pseudoephedrine were reported by India in the period 2017–2021 (exceeding 3.5 tons in methamphetamine equivalents).

That said, seizure data suggest that the largest methamphetamine market in South Asia is Bangladesh. The methamphetamine found in that country continues to originate primarily in South-East Asia, in particular Myanmar.

Seizures of methamphetamine in South Asia, 2000–2021

**Significant individual seizures of methamphetamine in South Asia and neighbouring subregions, 2017–2019 and 2020–2022**

The boundaries and names shown and the designations used on these maps do not imply official endorsement or acceptance by the United Nations. Dotted line represents approximately the Line of Control in Jammu and Kashmir agreed upon by India and Pakistan. The final status of Jammu and Kashmir has not yet been agreed upon by the parties.

Source: UNODC, Drugs Monitoring Platform.

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*a* Ministry of Social Justice and Empowerment, Government of India, Magnitude of Substance Use in India 2019 (New Delhi, February 2019).


*c* UNODC, responses to the annual report questionnaire.

Levels of individual drug seizures in South-West Asia (excluding Afghanistan, in the absence of reporting) were similar in 2021 and 2022; indeed, there was even an increase between 2021 and 2022 when the wider region is considered (i.e. seizures that occurred in South-West Asia, South Asia, Central Asia, Transcaucasia and the Near and Middle East and in international waters in the Indian Ocean and off the coast of the Arabian Peninsula). Meanwhile, seizures made in sub-regions that are further away (South-Eastern Europe and Eastern Europe) and less linked to methamphetamine supply from South-West Asia showed some declines.235

**Methamphetamine trafficking is on the increase in Africa**

Another non-traditional market for methamphetamine undergoing an expansion is Africa, where the number of countries reporting use of the drug almost tripled, from 4 to 11, between the periods 2010–2011 and 2020–2021. Overall, 14 African countries reported the use of methamphetamine in the period 2011–2021 – almost a quarter of all 58 countries in the region.

Methamphetamine trafficking also seems to be on the increase in Africa. Seizures of the drug were reported by 26 countries in the region in the period 2011–2021 – almost triple the number in the period 2000–2010 and accounting for almost half of all the countries in Africa. The overall largest aggregated quantities of methamphetamine seized in the region over the past decade were in Mozambique and South Africa, followed by Nigeria.

Although methamphetamine remains an ATS of only secondary importance in Africa, given that most African countries suffer primarily from a large number of falsified pharmaceutical stimulants used for non-medical purposes being peddled on their streets236, 237 several pockets have emerged in recent years where the use of and trafficking in methamphetamine have been gaining in significance. These pockets are located, for example, in Nigeria and some of its neighbouring countries, as well as in South Africa, Mozambique, the United Republic of Tanzania, Kenya and Egypt.238

Methamphetamine markets in Africa are mainly supplied with methamphetamine produced in South-West...
Asia (with shipments to Mozambique, South Africa, Kenya and the Sudan having been reported) and East and South-East Asia (with shipments to South Africa and Benin having been reported), but the clandestine manufacture of the drug seems to be on the increase in the region, where the total number of officially dismantled methamphetamine laboratories rose from 10 in the period 2012–2016 to 18 in the period 2017–2021.

Locally produced methamphetamine supplies some of the domestic markets in Africa, although some of it is also destined for overseas markets, in particular in East and South-East Asia (Malaysia, Indonesia, Brunei Darussalam, Hong Kong, China, the Republic of Korea and Japan), and in Western and Central Europe (most notably Belgium, France, Spain and Italy).

A total of 28 clandestine methamphetamine laboratories were officially reported to have been dismantled in Africa in the period 2012–2021, 15 of them in South Africa and 13 in Nigeria, but there are indications that clandestine methamphetamine manufacture may also be taking place in other countries in the region. The Democratic Republic of the Congo, Kenya, Mozambique, South Africa and the United Republic of Tanzania, as well as Nigeria, Benin and other countries in West Africa, were identified by other countries in Africa, Asia and Europe as countries of origin of the methamphetamine seized on their territory in the period 2010–2019, although the possibility cannot be ruled out that some of these countries were only transit or departure countries.

In any case, trafficking in methamphetamine to, through and out of Africa already seems to be widespread. Overall, 26 countries in Africa were identified as countries of origin, departure, transit or destination for methamphetamine over the last decade (2012–2021), with the most frequently mentioned countries being Nigeria and South Africa, followed by Benin, Ghana, Cameroon, the Niger, Mozambique and Kenya.
Consumption of and trafficking in methamphetamine in Europe: recent surge in South-Eastern Europe

The methamphetamine use market in Europe continues to be smaller than that of amphetamine. However, seizures of methamphetamine and analysis of wastewater in selected cities, located mainly in Western and Central Europe and, to a lesser extent, in Eastern and South-Eastern Europe, indicate an overall increase in methamphetamine consumption and trafficking in the continent over the past decade.

In 2021, the number of cities in Western and Central Europe showing a decline in methamphetamine consumption (49) slightly outnumbered those showing an increase (43), while in Eastern and South-Eastern Europe, more cities reported an increase (11) than a decline (3). Those trends suggest that the increase after 2019 was mainly driven by countries and cities in South-Eastern Europe.

At the same time, trafficking in methamphetamine has expanded geographically in Europe, with seizures being reported by 36 countries in 2020–2021, exactly double the number reported in 2000–2001. In addition, methamphetamine manufacture in Europe has extended from pockets in central Europe, most notably Czechia, from where it has spread to neighbouring countries, including Slovakia, Poland, Germany, the Kingdom of the Netherlands, Belgium, Austria and other countries across Europe.

More than 2,700 methamphetamine laboratories were dismantled in 23 European countries in the period 2011–2021. Czechia reports the largest number every year, accounting for 86 per cent of all methamphetamine laboratories dismantled in Europe from 2011 to 2021. Primarily consisting of small laboratories (“kitchen labs”), the number of laboratories dismantled annually in Czechia decreased by more than 50 per cent, from 338 in 2011 to 188 in 2021. The next largest numbers of methamphetamine laboratories were dismantled in the Kingdom of the Netherlands (15) and Poland (14) in 2021. In 2021, however, most of the industrial-scale laboratories in Europe were dismantled in the Kingdom of the Netherlands (9), whereas none were reportedly dismantled in Czechia.
The manufacture of methamphetamine appears to have increased considerably in the Kingdom of the Netherlands and Belgium in recent years.\textsuperscript{244} It is largely carried out using precursors and pre-precursors of P-2-P, as is the case in Mexico, rather than ephedrine and pseudoephedrine, the traditional precursors used in the manufacture of the drug. The methamphetamine originating in Belgium and the Kingdom of the Netherlands is not only destined for markets in Europe but also trafficked to other regions,\textsuperscript{245} including Australia and New Zealand, East and South-East Asia, West and Central Africa and, in recent years, South America, Central America and the Caribbean, although some may be intended for onward trafficking. Over the period 2012–2021, a total of 13 countries outside the European Union, including 10 over the period 2017–2021, cited Belgium or the Kingdom of the Netherlands as source or transit countries for methamphetamine found in their territories, while the authorities of Belgium and the Kingdom of the Netherlands identified another seven countries outside the European Union as intended destination countries over the last decade. Nonetheless, seizures suggest that overall trafficking in methamphetamine in Western and Central Europe has declined since 2019, when seizures peaked in the subregion.

The dynamics of trafficking in methamphetamine within Europe are changing. Interceptions of the drug have risen markedly since 2019, mainly as a result of large increases in quantities seized in South-Eastern Europe, in particular Türkiye. This may be linked to the ongoing smuggling of methamphetamine into the country from (or via) the neighbouring Islamic Republic of Iran\textsuperscript{246} (possibly an indication of trafficking in methamphetamine manufactured in Afghanistan).\textsuperscript{247}
while the drug may be passing through, destined for markets in East and South-East Asia, Central Asia, Europe and North Africa. Some of it may also end up on the domestic market in Türkiye; wastewater data indicate an increase in consumption of the drug in some of the country's cities. 

Significant seizures also suggest an increase in methamphetamine trafficking in Eastern Europe, most notably in the Russian Federation, in and around St. Petersburg and Moscow, from the period 2017–2019 to 2020–2022. 

**FIG. 52** Quantities of methamphetamine seized in Europe, 2000–2021

**MAP 25** Significant individual methamphetamine seizures in Europe, 2017–2022

The boundaries and names shown and the designations used on these maps do not imply official endorsement or acceptance by the United Nations.

Note: The laboratories dismantled may be of varying size, indicating varying manufacture capacity.

Source: UNODC, Drugs Monitoring Platform.

Source: UNODC, responses to the annual report questionnaire.
South Asia, located in between the world’s two largest opiate production areas of South-West Asia and South-East Asia, is the largest consumer market for opiates worldwide. The proportion of the global total of opiate users who reside in South Asia was 20 per cent in 2002 and increased to 39 per cent in 2021, or 12 million people – a significantly larger number than in the Near and Middle East and South-West Asia combined, which accounted for 19 per cent of the global total, or in Europe, which accounted for 10 per cent. At 1.1 per cent, the prevalence of opiate use in South Asia was almost twice the estimated global average (0.6 per cent) in 2021.

Majority of opiates found in South Asia originate in South-West Asia

The largest opiate market in South Asia is India, which is projected to become the world’s most populous country in 2023. With close to an estimated 11 million opiate users in 2021, India accounted for nearly 90 per cent of the estimated number of opiate users in South Asia, or 34 per cent of the global total, which is nearly double the country’s share of the global population (18 per cent). India also accounts for a major share of the heroin seized in South Asia – two thirds in the period 2017–2021, followed by Sri Lanka (23 per cent) and Bangladesh (7 per cent) – and has seen an increase in seizures of heroin in the past decade, as has South Asia overall.

Opium is produced licitly for the pharmaceutical industry in India; production has declined over the past two decades and has stabilized at between 200 and 300 tons annually since 2018. Some diversion of opium from licit sources may occur, but is likely limited. Indeed, the overall average quantity of opium per hectare supplied to the authorities by licensed opium farmers has actually increased, from an average of 47 kg per ha in 1994/95 to 64 kg per ha in 2020/21. In parallel, the Indian authorities report that, unlike in the past, most of the opium seized in India nowadays is no longer from licit sources, which also points towards a reduction in the diversion of licit opium.

Opium was, and continues to be, illicitly cultivated in India, primarily in the country’s north-eastern and

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**FIG. 54** Opiates seized in South Asia, by drug, 2002–2021

**Source:** UNODC, responses to the annual report questionnaire.

*Note:* It is assumed that an average of 10 kg of opium are needed to produce 1 kg of heroin or 1 kg of morphine.

**FIG. 55** Seizures of heroin in South Asia, by country, 2002–2021

**Source:** UNODC, responses to the annual report questionnaire.
Irrespective of opium production in India, most of the heroin found in South Asia in recent years appears to have originated primarily in South-West Asia, having been manufactured from opium produced in Afghanistan, the world's largest producer of the substance. Following two decades of increase, Afghanistan accounted for 86 per cent of global illicit opium production in 2021. Traffickers from Myanmar, which accounted for some 6 per cent of global illicit opium production in 2021, regularly supply some of the north-eastern states of India with heroin.

The bulk of Afghan opiates continues to be trafficked to neighbouring countries and along the Balkan route to markets in Western and Central Europe. Recently, however, seizure data have suggested that trafficking in Afghan opiates has increased markedly along the southern route towards South Asia and Africa, to the extent that the total quantities of Afghanistan-related heroin and morphine seized along the southern route are now larger than those seized along the northern route, which mainly supplies markets in the Russian Federation, via Central Asia.

South Asia accounted for the majority of heroin and morphine seized on the southern route in most years over the last two decades and in each year since 2017. In 2021, about one third of the heroin and morphine seized on the southern route was seized in Africa, while two thirds were seized in South Asia. Although most of the heroin shipped to Africa has been for domestic consumption or re-export to Europe, some of it is now also heading to South Asia, thus reversing the traditional trafficking flows that saw, inter alia, shipments of heroin being transported from South-West Asia to Africa, via India. Major African transit countries identified in relation to heroin trafficking to India have been South Africa, Uganda and Kenya, with trafficking mostly carried out by human carriers as well as in courier parcels. In several cases, this has involved the participation of Nigerian traffickers, who accounted for the majority of African traffickers arrested for drug trafficking in India in 2021, ahead of traffickers from Uganda and the United Republic of Tanzania.

Although it has increased in recent years, notably during the COVID-19 pandemic, such trafficking via...
Africa still accounted for less than 5 per cent of all heroin seized in India in 2021.

The bulk of the heroin found in South Asia continues to be shipped more directly from South-West Asia to South Asia. Official reports suggest that more than half of the heroin found in India in 2017 entered the country from Pakistan and Afghanistan (53 per cent), and just 0.4 per cent came from Myanmar (the origin of the remainder was unknown). According to the Indian authorities, the main trafficking route for heroin has traditionally been across the India-Pakistan border, notably through the State of Punjab and the union territory of Jammu and Kashmir, from where the heroin is then trafficked to other states across the country. It seems, however, that this route has changed recently; in 2021, the Indian authorities identified the Islamic Republic of Iran as the primary country of departure for heroin shipments. The vast majority of that heroin entered India by sea, a mode of trafficking that has strongly increased in recent years.

The single largest interception of heroin by India (of close to 3 tons) was reported in September 2021, when that heroin was seized in two shipping containers at the seaport of Mundra in the State of Gujarat, the country’s largest container hub. The heroin originated in Kandahar, Afghanistan, and was routed through the port of Bandar Abbas (Islamic Republic of Iran) to the port of Mundra. To a lesser extent, Pakistan and Afghanistan were still identified by the Indian authorities as major departure countries for heroin shipments, while neither Myanmar nor India itself were among the most significant ones in 2021.

Sri Lanka reported that most of the heroin arriving on its territory in 2019 and 2020 had transited through the Islamic Republic of Iran (68 per cent in 2019), and that a much smaller quantity had transited through Pakistan (11 per cent in 2019). The situation is less clear in Bangladesh, which reported that a small proportion of the heroin found on its market in 2019 had originated in Myanmar (5 per cent), while the vast majority was reported to have originated in India (95 per cent), although much of it might only have transited through India.

In line with opium production patterns in Asia, individual drug seizures show that most opium continues to be seized in South-West Asia and, to a lesser extent, in South-East Asia, while seizures in South Asia remain rather limited and are mostly restricted to India. Individual heroin seizures also show the dominance of South-West Asia, and to a lesser extent that of

**FIG. 58** Distribution of Afghanistan-related heroin and morphine seizures in 2021

Source: UNODC calculations based on UNODC, responses to annual report questionnaire.
South-East Asia. In this case, however, a clear increase in heroin seizures along the coast of north-western India and around Sri Lanka can be identified, reflecting the growing significance of maritime trafficking in heroin in South Asia in recent years.²⁷³

Supply, demand and demographic factors may explain the expansion of the opiate market in South Asia

The expansion of opiate trafficking in South Asia may be the result of a combination of supply, demand and demographic factors. The sharp increase in opium production in Afghanistan over the past two decades may have led to an increase in the availability of opiates on
partly because of an actual increase in the prevalence of opiate use. In the absence of comparable survey data, qualitative information provided by Member States and subnational studies in the subregion, drug treatment data and seizure data all suggest an actual increase in opiate use in South Asia over the past two decades. The latest survey on substance use in India, partly because of an actual increase in the prevalence of opiate use. In the absence of comparable survey data, qualitative information provided by Member States and subnational studies in the subregion, drug treatment data and seizure data all suggest an actual increase in opiate use in South Asia over the past two decades. The latest survey on substance use in India,
The boundaries and names shown and the designations used on this map do not imply official endorsement or acceptance by the United Nations. Dotted line represents approximately the Line of Control in Jammu and Kashmir agreed upon by India and Pakistan. The final status of Jammu and Kashmir has not yet been agreed upon by the parties.

Source: UNODC, Drugs Monitoring Platform.

carried out in 2018, attributed the higher estimates to both an increase in the use of opioids in the country and to improvements in the methodology for estimating drug use.274

Factors affecting drug use in South Asia are, in general, not that different from those reported in other regions, and include curiosity, peer pressure, pain reduction, anxiety and work efficiency.275 Having said that, demographic dynamics may be specifically affecting South Asia, not least the increasing rate of urbanization. In India, for example, the use of opium is still primarily a rural phenomenon,276 while the use of heroin and non-medical use of pharmaceutical opioids is more of an urban phenomenon.277 The urban population of India has grown substantially over the past three decades, its share of the country’s total population having increased from roughly a quarter to more than a third by 2021.278 This phenomenon may have contributed to the overall increase in the use of heroin and non-medical use of pharmaceutical opioids in the country.

At 2.1 per cent, India had the highest prevalence of opioid use in South Asia in 2018.279 Opioid use in the country is still mainly a male phenomenon; more than 95 per cent of all opioid users in India are men, and the prevalence of use among men is 4 per cent, compared with 0.2 per cent among women.280 Opiate use, especially the use of heroin, is of particular concern in Punjab, a state that has been strongly affected by the influx of Afghan heroin through Pakistan.281

Detailed analysis of opioid use in India reveals that rates vary widely within the country. Among the population aged 10–75, overall rates of opioid use range between 0.2 and 25.2 per cent, and rates of opioid use disorders between 0.1 and 6.9 per cent. The highest prevalence of people with opioid use disorders is found in the eastern parts of the country, while the largest numbers of people with opioid use disorders are found in north-western India (Uttar Pradesh, Punjab and Haryana) as well as in some of the central-western states (Maharashtra and Madhya Pradesh). Traditionally, the prevalence of opiate use was high in the country’s north-eastern and north-western states;282 however, the high level now also found in Maharashtra seems to be linked to the increasing quantities of opiates being trafficked to India from South-West Asia by sea.
FIG. 61  Prevalence of opiate use in South Asia, 2002–2020

![Graph showing prevalence of opiate use in South Asia, 2002–2020](image)

Source: UNODC calculation for the World Drug Report, based on responses to the annual report questionnaire.

FIG. 62  Prevalence of opioid use among men in India, 2000/01 and 2018

![Graph showing prevalence of opioid use among men in India, 2000/01 and 2018](image)


FIG. 63  Annual prevalence of opioid use and prevalence of opioid use disorders among people aged 10–75 in India, 2018

![Graph showing annual prevalence of opioid use and prevalence of opioid use disorders among people aged 10–75 in India, 2018](image)


Note: The survey defines people with opioid use disorders as problem opioid users.

FIG. 64  Type of opioid used by people who used an opioid in the last year (current use) and people with opioid use disorders in India, 2018

![Graph showing type of opioid used by people who used an opioid in the last year (current use) and people with opioid use disorders in India, 2018](image)


Note: A person may use more than one type of opioid. The survey defines people with opioid use disorders as problem opioid users.
FIG. 65 Proportion of people with opioid use disorders among opioid users in India, 2018


Note: The survey defines people with opioid use disorders as problem opioid users.

FIG. 66 Number of people in India with opioid use disorders (people who need help for opioid-related problems), by state, 2018


Note: The overall number of problem opioid users in India is 7.7 million. The top 10 states account for 65 per cent of all problem opioid users in India.
FIG. 67 Prevalence of opioid use disorders (people aged 10–75 who need help for opioid-related problems), by state of India, 2018 (expressed as a percentage of the population aged 10–75)

Conflicts and drug supply: Ukraine, Yemen and the Sahel

As noted in the World Drug Report 2022, “illicit drug economies can flourish in situations of conflict and weak rule of law, and can, in turn, prolong or fuel conflict”. The relationship between drugs and conflict has been evidenced by the direct involvement of parties to a conflict in the drug economy or in its “taxation”. When conflicts have erupted in areas with sizeable drug production or trafficking activities, the parties have exploited them. There are also cases where conflicts have provided a fertile environment for the substantial manufacture of synthetic drugs, particularly when the conflict has developed close to a large consumer market for the drugs.283, 284 In some conflict areas, the drug economy and instability are linked through a vicious cycle in which weak rule of law facilitates the expansion of the drug economy, which can, in turn, provide financial resources for maintaining or expanding the conflict.

Sometimes, however, conflict and instability can disrupt drug production and trafficking, as was seen during the civil war in the former Yugoslavia in the 1990s, when trafficking routes shifted from the western Balkan route to the eastern Balkan route (through Bulgaria, Romania and Hungary).285, 286, 287, 288

That said, there have been a number of conflicts during which the drug economy has flourished; some were described in the World Drug Report 2017 and the World Drug Report 2022, which dealt with the links between drugs and instability in a number of geographical areas, including Afghanistan, Myanmar, Colombia, Peru, Central America, Mexico, the Syrian Arab Republic, Ukraine and the Sahel. Moreover, a recent rapid assessment by UNODC details the drug trafficking flows – primarily of cocaine and cannabis – transiting Haiti and helping
to fuel spiralling gang violence and a profound security crisis.289

In addition to providing an update on the ongoing armed conflict in Ukraine and the drug situation in the Sahel, the present section examines one conflict area not analysed previously: Yemen.

The links between drugs and instability in Haiti and the Sahel are examples of drug markets that fuel and have been fuelled by the violence and the governance vacuum that characterize conflict situations. In Ukraine, the armed conflict seems to have disrupted existing and emerging trafficking routes for heroin and cocaine, although there are signs that it could trigger a further expansion of the manufacture of and trafficking in synthetic drugs that had emerged in the country shortly before the conflict. In the case of Yemen, the information is too patchy to draw any conclusions; however, sporadic seizure data suggest that some drugs may transit through Yemen. Nevertheless, the links between the conflict and these drug dynamics are still unclear.

**DATA LIMITATIONS IN CONFLICT SETTINGS**

Data on drug markets in conflict situations are typically very weak, and existing information is based mostly on seizures, which may reflect interdiction capacity more than actual drug supply. Analysing seizures in countries in the same region as the conflict, particularly countries that neighbour the conflict area, can help to overcome this limitation partially, since significant changes observed across all relevant countries are likely to indicate actual changes in the market.

Ukraine: displacement of plant-based drug trafficking routes and the threat of synthetic drugs

The ongoing armed conflict in Ukraine has had an impact on drug trafficking. Seizures of heroin and cocaine in 2021 indicated that those substances were increasingly being trafficked through Ukraine before the onset of the conflict, albeit at a relatively low level. However, the armed conflict seems to have disrupted this drug trafficking route. The quantity of heroin seized in Ukraine decreased substantially, by more than 90 per cent from 2021 to 2022, as did the identification of Ukraine by other States as a destination, transit or departure country for heroin; similar declines were also reported in the case of cocaine.

The situation appears to be different in respect of the synthetic drug market, which does not seem to have been disrupted by the armed conflict. Prior to 2022, the internal market for synthetic drugs was expanding, as shown by the sharp increase in seizures of synthetic cathinones and amphetamine in 2021, and by the increase in the use of synthetic drugs.290, 291, 292 During the armed conflict, the quantities of a number of synthetic cathinones seized have increased sharply in Ukraine, most notably alpha-PVP (rising sixty-seven-fold from 2021 to 2022), mephedrone (rising sevenfold) and synthetic cannabinoids (rising fourfold).293 Seizures in countries neighbouring Ukraine also suggest that the market for synthetic drugs is expanding regionally, providing fertile ground for the possible expansion of the manufacture of and trafficking in these drugs in Ukraine.

If the armed conflict creates prolonged governance gaps in certain areas, the internal and regional demand for synthetic drugs294 could facilitate the development of manufacturing sites, as seen in other conflict areas.295 Even prior to the ongoing conflict, the number of dismantled clandestine laboratories was growing in Ukraine. In fact, in both 2020 and 2021, most of the amphetamine laboratories dismantled in Europe were in Ukraine (67 and 69, respectively, up from five in 2019), in addition to a smaller number of laboratories manufacturing methamphetamine (five dismantled in 2021, up from three in 2020 and one in 2019) and mephedrone (two dismantled in 2020).

Yemen, a country long blighted by civil war and exposed to trafficking in multiple drugs

Although levels of violence did not change much in the period 2020—2022 and actually declined in 2022 owing to a temporary truce mediated by the United...
Nations. Yemen is among the countries that suffered the largest number of incidents of political violence worldwide in 2022. A broader index of “conflict severity”, based on four indicators (fatality rate, violence targeting civilians, subnational spread of conflict and fragmentation of violent non-State groups), shows Yemen to be one of eight countries worldwide suffering from “extreme conflict severity”, a position Yemen shares in the Near and Middle East only with the Syrian Arab Republic.

The cultivation and consumption of khat have been widespread in Yemen for centuries. Khat is not under international control, although a number of countries (excluding Yemen) have placed it under national control. About 50 per cent of men (42.7—57.1 per cent) and 1.3 per cent of women (0.5—2.6 per cent) are estimated to be current users of khat in Yemen. Moreover, according to media sources, the authorities estimate that 15 to 20 per cent of children under the age of 12 chew the drug. The media has reported
that the current civil war has increased the use of khat, most notably among child soldiers, who chew the drug in order to remain alert on the battlefield. Violence in Yemen in recent years appears to have erupted in areas where the large-scale cultivation and consumption of khat have been reported. Yemeni farmers seem to cultivate khat primarily for domestic consumption, although some of it is also smuggled to Saudi Arabia, particularly to its south-western provinces bordering Yemen. In the past, some khat was also smuggled by air to countries in North America, Europe, South Asia (India) and East and South-East Asia (China, Malaysia, Thailand and the Republic of Korea); however, no such shipments have been reported since 2014, i.e. after the outbreak of civil war in the country.

Beyond the well-documented cultivation and use of khat, the limited information available suggests that Yemen is affected by trafficking in a wide range of drugs. Seizure cases reported in recent years indicate ongoing trafficking in cannabis and sporadic
trafficking in methamphetamine, “captagon”, heroin, cocaine and mephedrone as follows:

- Cannabis resin originating in Afghanistan and departing from Pakistan
- Methamphetamine likely originating in Afghanistan and departing from South-West Asia, notably the Islamic Republic of Iran and Pakistan
- “Captagon” originating in the Levant and departing from Jordan
- Heroin originating in Afghanistan and departing from Pakistan or the Islamic Republic of Iran
- Cocaine departing from Brazil
- Mephedrone departing from the Russian Federation

Although seizure data provide some information on the routes along which drugs are transported to reach Yemen, they do not clarify the extent to which such shipments are destined for the local market or for onward trafficking to neighbouring countries (e.g. Saudi Arabia) or overseas markets (including Europe). Such drug trafficking is not a new phenomenon: in the period 2007—2012, significant quantities of cannabis resin (26 tons in 2008) and “captagon” (2.3 tons in 2008) and smaller quantities of heroin (189 kg in 2007) and cocaine (16 kg in 2012) were seized in Yemen.

Drug trafficking in the Sahel at the intersection between criminal groups and non-State armed groups

In recent years, the Sahel countries of Mauritania, Mali, Burkina Faso, the Niger and Chad have suffered not only from drought and poverty affecting large swathes of their populations, but also from political violence and related conflicts, as well as from drug trafficking, which contributes to fuelling the various conflicts in the region. The monitoring of fatalities and violent incidents shows that there was an upward trend in both over the period 2020–2022, from an estimated 7,000 fatalities in 2020 to more than 10,000 in 2022 and from around 2,300 violent incidents to 3,600 over the same period. Although violence is widespread in the Sahel, the only country in the region identified as
through the payment of “taxes” and other “duties” in exchange for “protection” or safe passage through rebel-controlled areas. The Panel of Experts established pursuant to resolution 2374 (2017) on Mali has underlined how armed groups with a variety of allegiances have been involved in providing transportation for drug shipments, illustrating that illicit markets offer potential financial resources to those who are economically reliant on continuing warfare; drugs were shown to be trafficked through northern Mali on their way to Libya, providing financing to non-State armed groups.

In most countries in the Sahel, drug trafficking is organized by criminal groups that are profit-oriented. At the same time, drug trafficking may also finance various insurgency groups operating in these countries, having “extreme severity of conflict” was Mali in 2022. Various non-State armed groups have been active in the Sahel for some time, including jihadist groups asserting allegiance to Al-Qaida and Da’esh; these actors utilize the diverse range of income sources usually available to insurgents, including, to at least some degree, the illicit drug trade.

In most countries in the Sahel, drug trafficking is organized by criminal groups that are profit-oriented. At the same time, drug trafficking may also finance various insurgency groups operating in these countries, through the payment of “taxes” and other “duties” in exchange for “protection” or safe passage through rebel-controlled areas. The Panel of Experts established pursuant to resolution 2374 (2017) on Mali has underlined how armed groups with a variety of allegiances have been involved in providing transportation for drug shipments, illustrating that illicit markets offer potential financial resources to those who are economically reliant on continuing warfare; drugs were shown to be trafficked through northern Mali on their way to Libya, providing financing to non-State armed groups. The conflict between non-State armed groups

The boundaries and names shown and the designations used on this map do not imply official endorsement or acceptance by the United Nations. Final boundary between the Republic of Sudan and the Republic of South Sudan has not yet been determined.
difficult. Individual drug seizures in the last five years point to the wide availability of cannabis (herb and, to a lesser extent, resin) across the Sahel and to trafficking in other drugs, most notably tramadol for non-medical use, within the region. Cocaine, typically smuggled from South America to ports in West Africa, also finds its way to the Sahel, where it is trafficked northward to North Africa, with its final destinations likely to be in Western Europe and the Middle East.339 Trafficking in amphetamine, in contrast, seems to be more of a local issue.340

In terms of drug seizures made in the Sahel countries of Mauritania, Mali, Burkina Faso, the Niger and Chad, what is most striking is the increase in the quantity of cocaine seized, from on average of 13 kg per year in the period 2015–2020 to larger amounts in recent years, including a few seizure cases totaling around 860 kg in 2022 with the bulk reported by Niger, Burkina Faso and Mali. These seizures are probably only the tip of the iceberg of far larger undetected trafficking flows across the region.

Cannabis herb is the most seized drug in the five countries in the Sahel region analysed in this section. Of the record 36 tons reported as having been seized

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**MAP 32** Significant individual drug seizures in the Sahel and its vicinity, 2018–2022

The boundaries and names shown and the designations used on this map do not imply official endorsement or acceptance by the United Nations. Final boundary between the Republic of Sudan and the Republic of South Sudan has not yet been determined.

*Non-Self-Governing territory.

Source: UNODC, Drugs Monitoring Platform.
substances and/or falsified medicines with some stimulant properties, which seem to be mostly used in the domestic market. Amphetamine accounted for 15 per cent of ATS seized in that period and methamphetamine for 11 per cent.

Although the non-medical use of tramadol is widespread in West and Central Africa, seizures of the substance in the five countries remain small. At 195 kg in 2021, the total quantity seized was the equivalent of less than 1 per cent of all tramadol seized in the subregion. This was a larger amount than in 2019 and 2020, but smaller than the average amount in the period 2015–2020 (389 kg) and far smaller than the peak reported in 2014 (2.6 tons). The largest quantities of tramadol seized in the period 2015–2021 were reported by the Niger (89 per cent of the total seized in the five countries), followed, at far lower levels, by Chad (10 per cent) and Mali (1 per cent). However, in contrast to trafficking in other drugs, there appears to be little evidence of the involvement of armed groups in trafficking in tramadol, or in trafficking in medical products more generally, in Sahel countries.

Seizures of ATS (5 tons in 2021) in the five countries seem to be geographically concentrated in Burkina Faso, which accounted for 94 per cent of the quantity seized in 2021, followed by the Niger (3 per cent) and Mali (3 per cent). ATS seized in the period 2017–2021 were mainly médicaments de la rue, i.e. smuggled substances and/or falsified medicines with some stimulant properties, which seem to be mostly used in the domestic market. Amphetamine accounted for 15 per cent of ATS seized in that period and methamphetamine for 11 per cent.

Although the non-medical use of tramadol is widespread in West and Central Africa, seizures of the substance in the five countries remain small. At 195 kg in 2021, the total quantity seized was the equivalent of less than 1 per cent of all tramadol seized in the subregion. This was a larger amount than in 2019 and 2020, but smaller than the average amount in the period 2015–2020 (389 kg) and far smaller than the peak reported in 2014 (2.6 tons). The largest quantities of tramadol seized in the period 2015–2021 were reported by the Niger (89 per cent of the total seized in the five countries), followed, at far lower levels, by Chad (10 per cent) and Mali (1 per cent). However, in contrast to trafficking in other drugs, there appears to be little evidence of the involvement of armed groups in trafficking in tramadol, or in trafficking in medical products more generally, in Sahel countries.
Notes and references

1. See online segment of World Drug Report 2023 on latest data and trends.
5. Ibid.
7. A total of 338 synthetic cannabinoid receptor agonists were monitored by UNODC in 2022.
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