



**DEVELOPMENTS AND
EMERGING TRENDS IN
SELECTED DRUG MARKETS**

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New trends in cannabis products

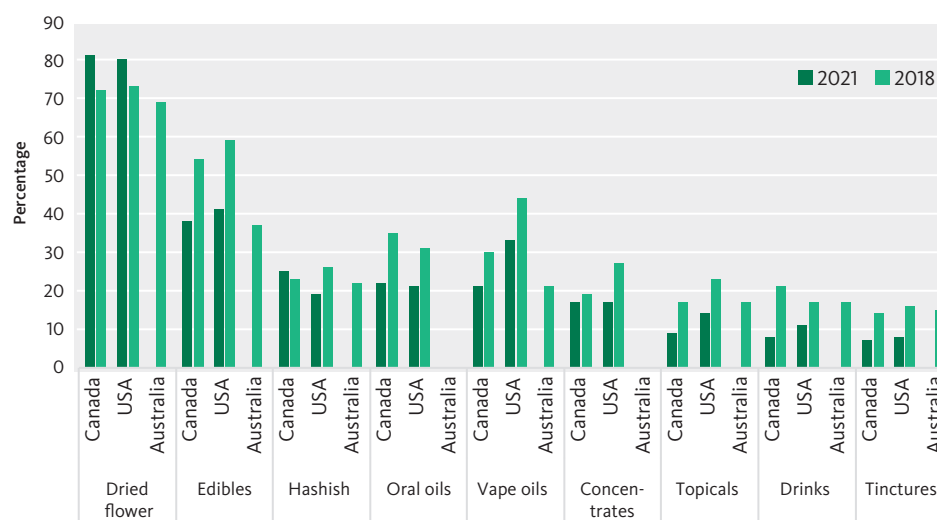
By several measures, the cannabis market remains by far the largest drug market worldwide, with nearly 219 million estimated users in 2021 and production reported in almost every country.¹ In the past few decades, there has been a diversification in the types of cannabis products available to users, 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”), 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

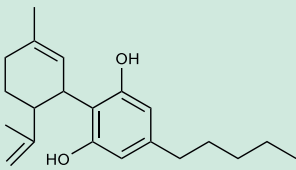
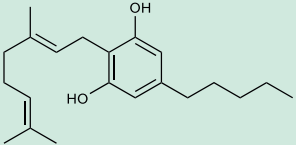
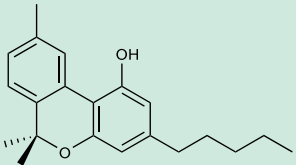
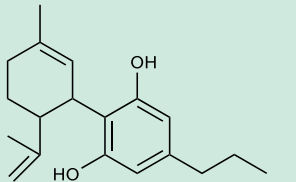


Source: David Hammond et al., “International Cannabis Policy Study - Canada 2021 Summary” (Waterloo, 2022); David Hammond et al., “International Cannabis Policy Study - United States 2021 Summary” (Waterloo, 2022); and David Hammond et al., “International Cannabis Policy Study - Australia 2021 Summary” (Waterloo, 2022).

TABLE 5 Selected cannabinoids recently sold on different markets

	Molecular structure	Psychoactive effects
<i>Delta</i> -9-tetrahydrocannabinol (<i>delta</i> -9-THC)		Main psychoactive compound in cannabis
<i>Delta</i> -8-tetrahydrocannabinol (<i>delta</i> -8-THC)		Psychoactive, estimated to be 50–75 per cent as potent as <i>delta</i> -9-THC ^{a, b, c}
<i>Delta</i> -10-tetrahydrocannabinol (<i>delta</i> -10-THC)		Psychoactive, likely to be less potent ^d than <i>delta</i> -9-THC (limited evidence)
<i>Delta</i> -9-THC acetate ester (THC-O or THCOA)		Psychoactive, likely to be more potent than <i>delta</i> -9-THC (limited evidence)
Hexahydrocannabinol (HHC)		Psychoactive, likely to be less potent than <i>delta</i> -9-THC ^e (limited evidence)
Hexahydrocannabinol acetate		Psychoactive



	Molecular structure	Psychoactive effects
Cannabidiol (CBD)		Non-psychoactive
Cannabigerol (CBG)		Non-psychoactive
Cannabinol (CBN)		Non-psychoactive
Cannabidivarin (CBDV)		Non-psychoactive

- a Alyssa F. Harlow, Adam M. Leventhal and Jessica L. Barrington-Trimis, "Closing the Loophole on Hemp-Derived Cannabis Products: A Public Health Priority", *JAMA* 328, no. 20 (22 November 2022): 2007.
- b Michael Tagen and Linda E. Klumpers, "Review of Delta-8-tetrahydrocannabinol (Δ -8-THC): Comparative Pharmacology with Δ 9-THC", *British Journal of Pharmacology* 179, no. 15 (August 2022): 3915–33.
- c Leo E. Hollister and H. K. Gillespie, "Delta-8- and Delta-9-Tetrahydrocannabinol; Comparison in Man by Oral and Intravenous Administration", *Clinical Pharmacology & Therapeutics* 14, no. 3 (May 1973): 353–57.
- d Karen Jaynes and Chad Johnson, "A Hemp Field Day for Psychoactive Effects: The Science of Δ 8 & Δ 10-THC" (University of Maryland, School of Pharmacy, Maryland, USA, 2022).
- e EMCDDA, *Hexahydrocannabinol (HHC) and Related Substances* (Luxembourg: Publications Office of the European Union, 2023).

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.^a 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).^{b, c}

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”.^d Other names used for the product there and in surrounding countries include “Crippy”, “Cripi”, “Krippy”, “Kreepy” and “Cripa”.^e Since 2013, both the consumption and seizures of “Creepy” have been increasingly reported in Colombia,^f Ecuador,^{g, h} Chile,^{i, j} Peru^k and, occasionally, other^l countries in South America.^m Recently, Guyana reported the appearance of a product with a similar name – “Poppy” or “Creppy”.^k 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.ⁿ More recently, interceptions of “Creepy” seem to have increased; in Chile, for example, such seizures rose by 700 per cent between 2017 and 2020.^o In addition, in 2019 Colombia reported the presence of highly potent cannabis “wax” on its drug market.^e

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.^e 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.^e

- a UNODC, *World Drug Report 2022* (United Nations publication, 2022).
- b PRSC Cannabis Concentration Workgroup, *Cannabis Concentration and Health Risks: A Report for the Washington State Prevention Research Subcommittee* (PRSC) (Seattle, WA, USA: University of Washington, 2020).
- c Wayne Hall, Janni Leung and Beatriz H. Carlini, “How Should Policymakers Regulate the Tetrahydrocannabinol Content of Cannabis Products in a Legal Market?”, *Addiction*, 2 February 2023, add.16135.
- d Elyssa Pachico, “Potent Colombian Pot Could Be Big Earner for FARC”, *InSight Crime*, 21 June 2011.
- e Inter-American Drug Abuse Control Commission (CICAD) and Organization of American States (OAS), *Information Bulletin: Cannabis with a High Concentration of Tetrahydrocannabinol (THC) and Synthetic Cannabinoids in Latin America and the Caribbean* (Washington, DC, USA, 2023).
- f Gloria Rose Marie de Achá, *Stock de Cannabis En América Latina: Radiografía Del Microtráfico y La Venta al Menudeo* (Colectivo de Estudios Drogas Y Derecho, 2019).
- g Genesis Geannine Bazurto Estupinan, *Factores Que Influyen En El Consumo De Drogas En Estudiantes De Bachillerato De La Unidad Educativa Rocafuerte* (Esmeraldas, 2021).
- h Irma Coraima Pacheco Diaz, *Consumo de Creepy y Su Influencia En La Conducta Disocial En Un Adolescente de 16 Años* (Babahoyo, Ecuador: Universidad Técnica de Babahoyo, 2019).
- i Carmen Paz Castañeda et al., “Uso de Cannabis En Jóvenes Hospitalizados Por Un Primer Episodio de Psicosis: Un Estudio Caso-Control”, *Revista Médica de Chile* 148, no. 11 (November 2020): 1606–13.
- j Antonia Sateler et al., “Nombres Populares y Clasificación de Las Drogas de Abuso Ilícitas En Chile”, *Revista Médica de Chile* 147, no. 12 (December 2019): 1613–20.
- k Inter-American Drug Abuse Control Commission and Inter-American Observatory on Drugs, *Report on Drug Supply in the Americas*, 2022.
- l “Police Discover Powerful Cripa Marijuana”, *Now Grenada*, 11 October 2018.
- m de Achá, *Stock de Cannabis En América Latina: Radiografía Del Microtráfico y La Venta al Menudeo*.
- n Inter-American Drug Abuse Control Commission (CICAD) and Organization of American States (OAS), *Information Bulletin. Data from the Early Warning System for the Americas*, vol. 1, 1, 2020.
- o Inter-American Drug Abuse Control Commission (CICAD) and Organization of American States (OAS), *Information Bulletin: Early Warning System of the Americas* (Washington, DC, USA, 2022).

GROWING HEALTH CONCERNS

associated with increasing *delta*-9-THC content of cannabis-related products achieved through:



Agricultural methods to obtain natural cannabis material (especially the flower) containing higher levels of *delta*-9-THC



Infusing of cannabis products with cannabis concentrates, for example, pre-rolled cannabis cigarettes (joints) infused with various cannabis concentrates



Availability of concentrated, natural cannabis-based products such as “dabs” and vaping cartridges

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.^{11,12} 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,¹³ hexahydrocannabinol and, occasionally, others such as *delta*-10-THC¹⁴ and THC-O acetate.

Interest in *delta*-8-THC in the United States grew during 2020.^{15,16} 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.^{17,18} 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.¹⁹ 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,²⁰ but also concentrates and tinctures.²¹ Users report experiencing, at a comparable dose, a lower subjective psychoactive effect²² than *delta*-9-THC and fewer adverse reactions.²³ This is consistent with experimental evidence²⁴ and could be related to several possible pharmacokinetic mechanisms.²⁵ 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.²⁶ 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.²⁷

Little is known about the safety of *delta*-8-THC and its effects in humans.²⁸ The existing evidence is rather anecdotal,²⁹ 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 States³⁰ 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,³¹ a number of harmful contaminants (by-products of the synthesis of *delta*-8-THC)³² and unlabelled adulterants³³ have been found in *delta*-8-THC products sold to consumers, including *delta*-9-THC, residual solvents, pesticides and heavy metals.³⁴ Adverse health consequences have started to be reported,³⁵ and case analysis also suggests a surge in *delta*-8-THC-related psychosis.³⁶ In August 2021, 21 states of the United States restricted or banned *delta*-8-THC, and warnings to consumers were issued in September 2021.³⁷

Delta-8-THC use has appeared sporadically elsewhere, for example in Italy, Spain³⁹ and Sweden,⁴⁰ 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.^{41,42} The little that is known from the scientific literature

HARM TO HEALTH RELATED TO DELTA-8-THC RECORDED IN THE UNITED STATES FROM 1 DECEMBER 2020 TO 28 FEBRUARY 2022³⁸

Food and Drug Administration

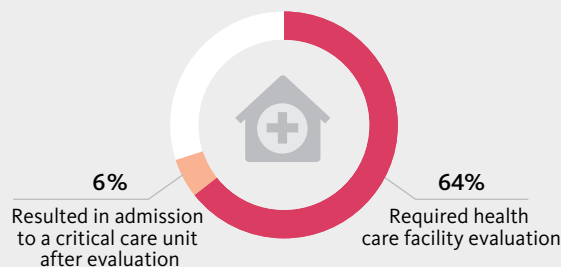
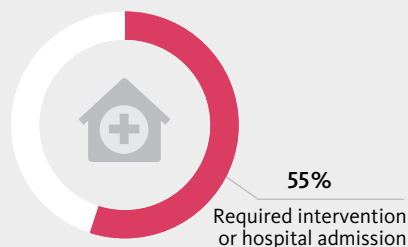
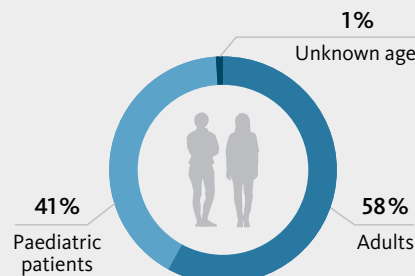
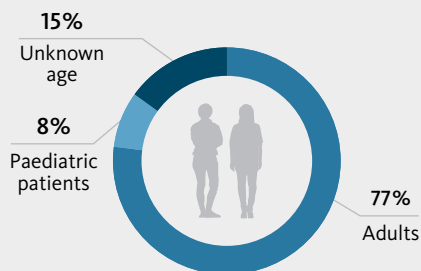
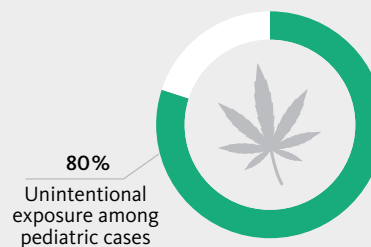
104 reports of adverse events

Most frequently:

- > Hallucinations
- > Vomiting
- > Tremors
- > Anxiety
- > Dizziness
- > Confusion
- > Loss of consciousness

National poison control centres

2,362 exposure cases



suggests 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.⁴³

Although HHC was originally described 80 years ago,⁴⁴ the non-medical use of the substance is new; it was first reported in the United States in late 2021.⁴⁵ 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,^{46,47} because the pharmacology and toxicology of the substance in humans has not been studied to date.⁴⁸ Moreover, products containing HHC also often contain contaminants, other intentionally added cannabinoids and diluents.⁴⁹

HHC is increasingly found on the European market,^{50, 51, 52} where it was first seized by the Danish police in May 2022.⁵³ The substance had been reported in 22 European countries by 31 March 2023,⁵⁴ where it is sold openly and marketed as a supposedly “legal” replacement for products containing THC in a range of brick-and-mortar and online shops.⁵⁵ Products containing HHC range from low-THC cannabis flower and resin sprayed with HHC and vaping cartridges or pens, to edibles (especially flavoured sweets such as gummies and marshmallows), oils and tinctures; their form and packaging resemble those of *delta*-8-THC in North America.^{56, 57} The emergence of HHC, like that of *delta*-8-THC, is likely related to legislative changes in the United States in 2018.⁵⁸ Law enforcement data suggest that HHC oils and finished products containing HHC are often shipped to European countries in bulk from the United States.⁵⁹ Moreover, between August 2022 and March 2023, two other related semi-synthetic cannabinoids, HHC acetate and hexahydrocannabinol, were reported in five European Union countries.⁶⁰

In addition, pre-rolled cannabis cigarettes (joints) are reported to be infused with various substances. In the United States, for example, joints infused with concentrates containing *delta*-9-THC have been reported.⁶¹ The adulteration of cannabis herb containing low concentrations of THC with synthetic cannabinoids has also been reported in the European Union. The substances most often detected were MDMB-4enPINACA in 2020 and ADB-BUTINACA in 2021 (in eight countries). The resulting product has been sold to unsuspecting persons as cannabis herb; its use has been associated with considerable harm, including poisonings, some of which proved fatal.⁶²

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

the market, there seems to be a significant overlap between consumers of CBD, cannabis, *delta*-8-THC and other emerging cannabinoid products: 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”⁶⁹ 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.

Ketamine – a marginal or a mainstream drug?



Phencyclidine derivative ketamine is a dissociative anaesthetic⁷² that was first synthesized in 1962.⁷³

It is a non-competitive antagonist of N-methyl-D-aspartate (NMDA) receptors,⁷⁴ but also interacts with other receptors (e.g. opioid receptors).⁷⁵



Ketamine is an NPS; it is not under international control,⁷⁶ but the substance is controlled at the domestic level in a number of countries.⁷⁷ 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.⁷⁸



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,^{79, 80} 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).⁸¹



The first accounts of the non-medical use of ketamine date back to 1967.⁸²



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.⁸³ 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.⁸⁴ Deaths related to accidental ketamine poisoning are rare, but do occur.⁸⁵ In addition, ketamine intoxication may have lethal consequences because the drug impairs the user’s judgment, leading to lethal accidents.⁸⁶



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^{87, 88}). At low doses, stimulant effects predominate; at high doses, psychedelic effects prevail.⁸⁹



Ketamine can increase violent behaviour and sexual impulses.⁹⁰ It is one of the drugs used during “chemsex” encounters, in particular among men who have sex with men.⁹¹ It is also used as a “date rape” drug.^{92, 93}



Chronic, non-medical use of ketamine may lead to impaired cognition (memory, learning and executive functions), mental disorders,⁹⁴ cystitis (“ketamine bladder”) and an intense abdominal pain that is known as “K cramps” and that is caused by prolonged, heavy use.^{95, 96} Renal damage can be so extensive as to require dialysis;⁹⁷ upper gastrointestinal symptoms and cholestasis are also frequent,⁹⁸ as are structural and functional abnormalities of the brain in long-term users.⁹⁹ Female users may experience greater levels of severity of cognitive impairment and urinary discomfort than male users of the substance.¹⁰⁰

There is evidence of the development of tolerance and withdrawal syndrome,¹⁰¹ and of ketamine use disorders,¹⁰² including ketamine dependence.¹⁰³ The experience of withdrawal symptoms may be more severe in women.¹⁰⁴



The most common routes of administration (non-medical use) are oral and nasal,¹⁰⁵ but there are also reports of the drug being smoked,¹⁰⁶ injected and administered rectally¹⁰⁷ and, more recently, vaped.¹⁰⁸



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.¹⁰⁹ Users are typically young people.¹¹⁰

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.¹¹¹

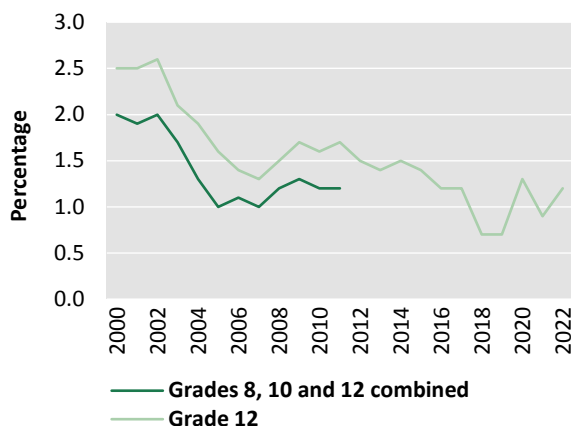
Surveys conducted in Western Europe in the early 1990s suggest that ketamine was used in relatively high doses,^{112, 113} often in private settings,¹¹⁴ by recreational users wanting to experience the psychedelic effects of the drug rather than its stimulant effects as a dance drug.¹¹⁵ Towards the end 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 inadvertently¹¹⁶ 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,¹¹⁷ a surge in ketamine use was occurring in East and South-East Asia. Also in connection with the dance scene,¹¹⁸ the non-medical use of the substance in Asia was initially documented in China in 1997.¹¹⁹ From the early 2000s, such use was also documented in Hong Kong, China, Taiwan Province of China,¹²⁰ Macao, China, and Malaysia.¹²¹

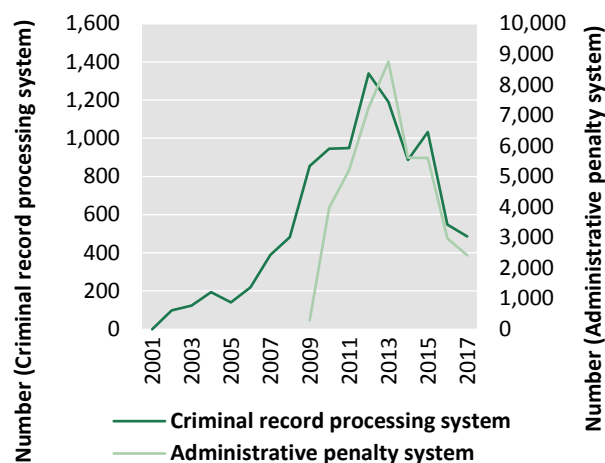
Indicators of ketamine availability rose sharply in that period and the popularity of ketamine in Hong Kong, China, increased so steeply that within three years of the introduction of the substance on the illicit market, it became the first drug of choice among people under 21 years of age.^{122, 123, 124} In Taiwan Province of China, the popularity of ketamine soared in the early 2000s;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”.^{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.¹²⁸ The non-medical use of ketamine was placing a health

FIG. 26 Trends in past-year ketamine use among high school students, United States, 2000–2022



Source: Richard A. Miech et al, *Monitoring the Future National Survey Results on Drug Use, 1975–2022: Secondary School Students* (Michigan: Ann Arbor: Institute for Social Research, University of Michigan, 2023).

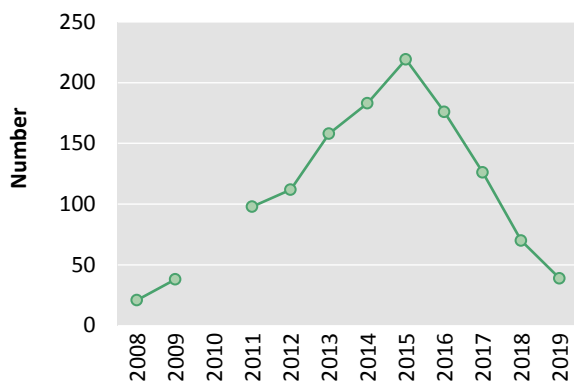
FIG. 27 First-time offenders who were arrested in Taiwan Province of China, in relation to ketamine, 2001–2017



Source: Criminal Record Processing System and Administrative Penalty System for Schedule III/IV Substances, Taiwan Province of China.

Note: Since 2009, only those possessing 20 g or more of ketamine are subject to criminal prosecution, while those possessing less than 20 g of ketamine are subject to a fine and obligation to attend a drug seminar.

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



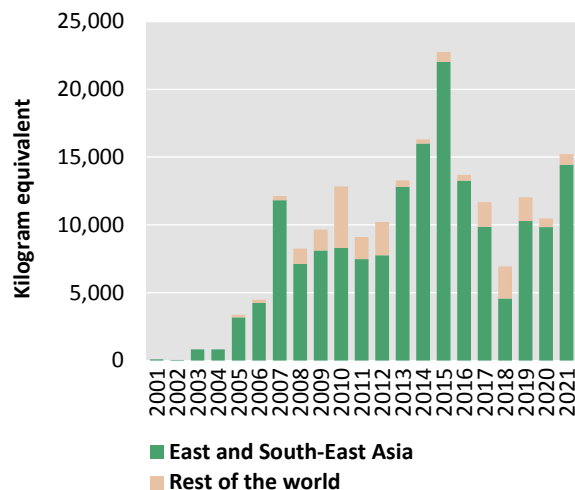
Source: UNODC, responses to the annual report questionnaire.

burden on Chinese society, as described in a study on ketamine cystitis published in 2015.¹²⁹

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.¹³⁰ In 2004, ketamine users and even health-care workers in Taiwan Province of China, were largely unaware of the out-of-body, “K-hole” experience¹³¹ that could be induced by ketamine, which was mostly smoked with tobacco there.¹³² Around the same time, in Hong Kong, China, the drug was being consumed mainly by young, working-class people in mainstream dance settings.¹³³ This suggests that ketamine was being used in lower dosages, primarily for its “stimulant” properties.¹³⁴ This was confirmed by descriptions of the effects experienced by interviewed users.¹³⁵ 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.¹³⁶

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-I psychotropic substance in 2013. Subsequently, between 2009 and 2016, China,

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.

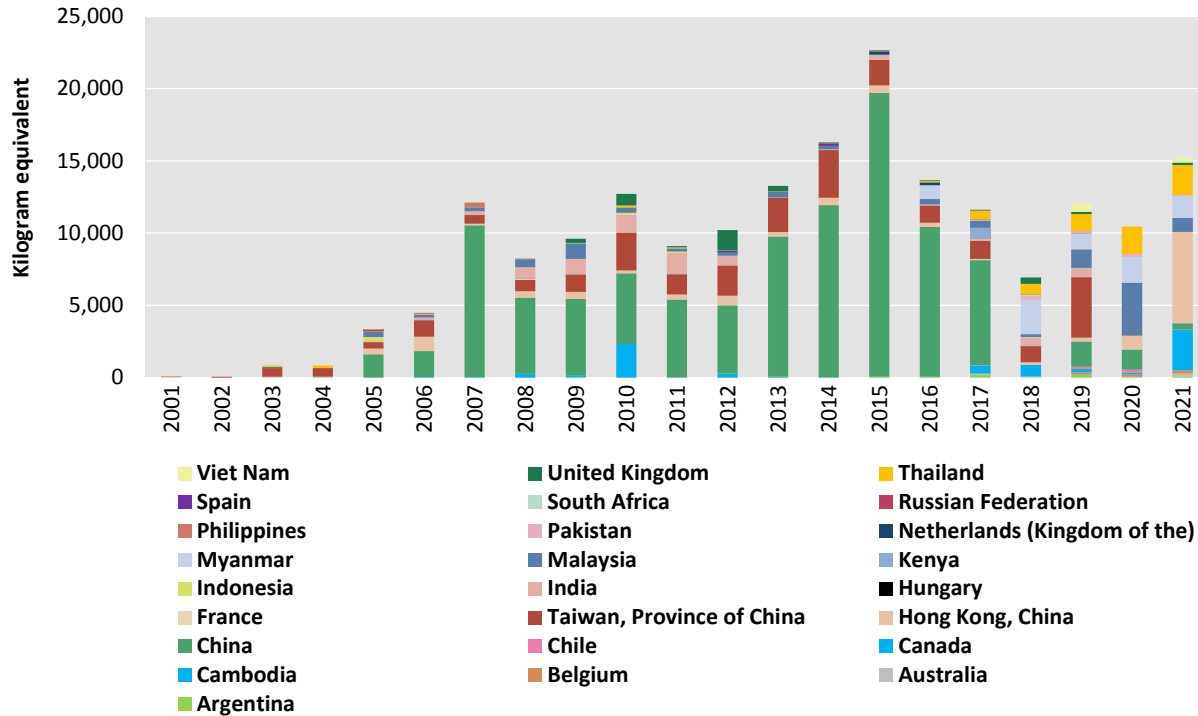
Taiwan Province of China, Hong Kong, China, and Macao, China, seem to have recorded peaks in ketamine popularity; after that, clear decreases in the indicators of ketamine use were observed, likely a consequence, at least partially, of the new regulations.

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.¹³⁷ 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 2000.¹³⁸ 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

FIG. 30 Quantities of ketamine seized by countries, territories or geographical areas reporting to UNODC, 2001–2021



Source: UNODC, responses to the annual report questionnaire.

Note: Only countries, territories or geographical areas that reported seizures of 100 kg or more during the entire period were included.

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.¹³⁹

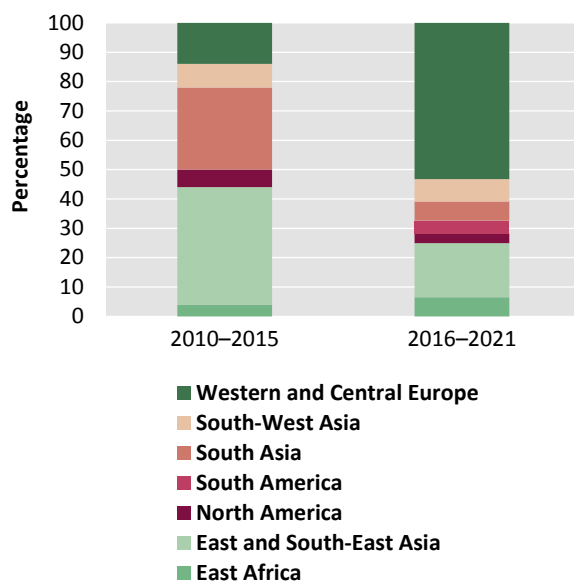
There has been a marked change not only in terms of the quantities of ketamine seized but also in the trafficking routes and source countries of the drug, with countries outside Asia increasingly reported as countries of departure. INCB also reported a diversification in trafficking routes beyond East and South-East Asia in 2019, on the basis of official reports of ketamine

seizures in the Project Ion Incident Communication System.^{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,^{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

FIG. 31 Numbers of mentions as “country of departure” of trafficked ketamine by authorities in transit or destination countries, by subregion, 2010–2021



Source: UNODC, responses to the annual report questionnaire.

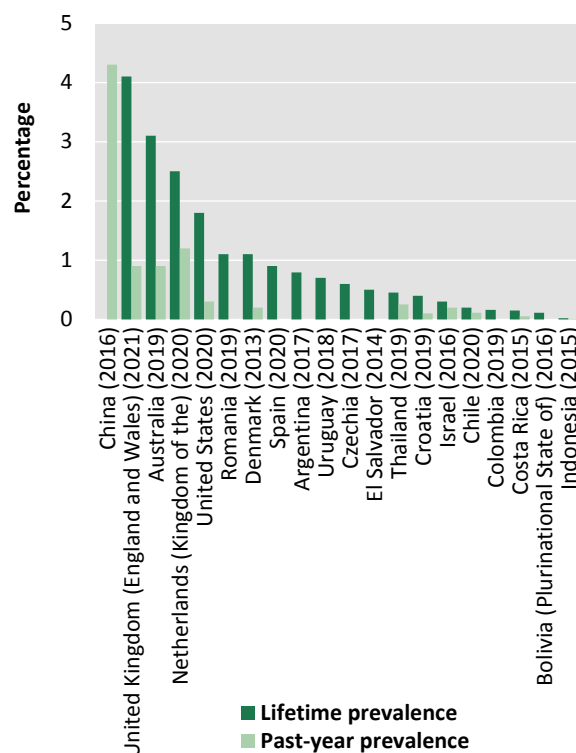
Note: The figures are based on reports from Member States regarding the most frequent departure countries for the ketamine on their markets. Only countries mentioned at least three times during the entire period were included.

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

FIG. 32 Use of ketamine, most recent data from population surveys, 2013–2021



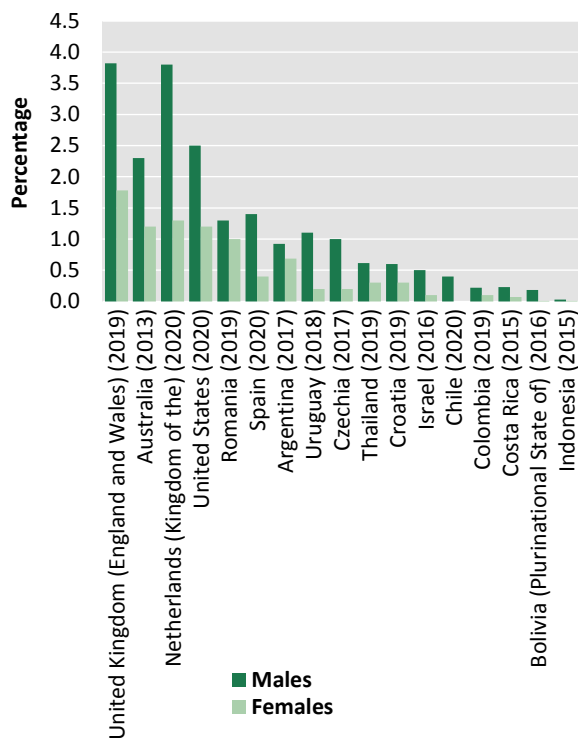
Source: UNODC, responses to the annual report questionnaire.

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.

data, the lifetime prevalence of ketamine use is also markedly higher among men than among women.

Ketamine was the fourth¹⁴⁴ or fifth¹⁴⁵ 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,¹⁴⁶ 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 2020.¹⁴⁷ 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

FIG. 33 Lifetime use of ketamine, most recent data from population surveys, by sex, 2013–2020



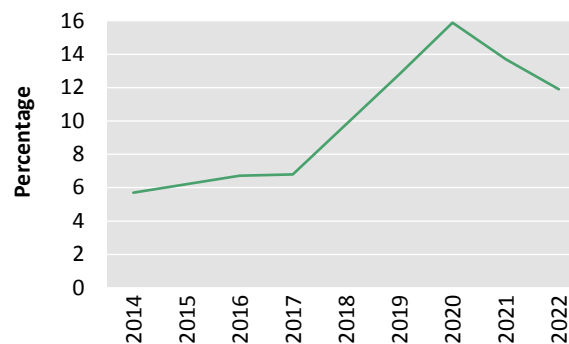
Source: UNODC, responses to the annual report questionnaire.

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.

same year (13 per cent),¹⁴⁸ although the annual prevalence of ketamine use was considerably lower in South-Eastern Europe, at 4 per cent. In contrast, there was an exceptionally high proportion of ketamine users in the Internet respondents from Georgia (30 per cent),¹⁴⁹ Ireland (24 per cent in total, 36 per cent among males aged 18–24)¹⁵⁰ and Lebanon (21 per cent).¹⁵¹

In some countries, the increase in ketamine use seems to have been driven by use among young people. For example, since 2015, ketamine use has increased in England and Wales, United Kingdom, as reflected by the increasing prevalence of past-year use among

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



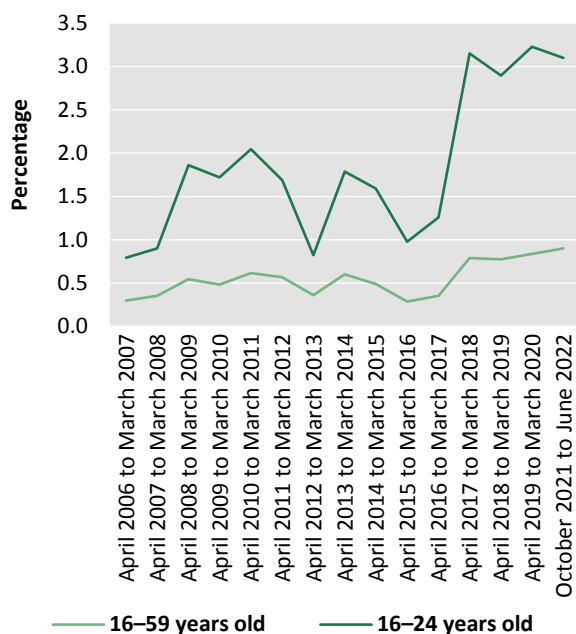
Source: Global Drug Survey reports, various years.

people aged 16–24 in particular.¹⁵² The Kingdom of the Netherlands has also reported a recent increase in ketamine use,¹⁵³ most notably among young people in nightlife settings, which was reflected by a sharp rise in ketamine use reported in a large nightlife survey conducted between 2016 and 2019, as well as a rise in ketamine intoxication requiring medical care.¹⁵⁴

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 drug¹⁵⁵ did not increase.¹⁵⁶

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 2020.¹⁵⁷

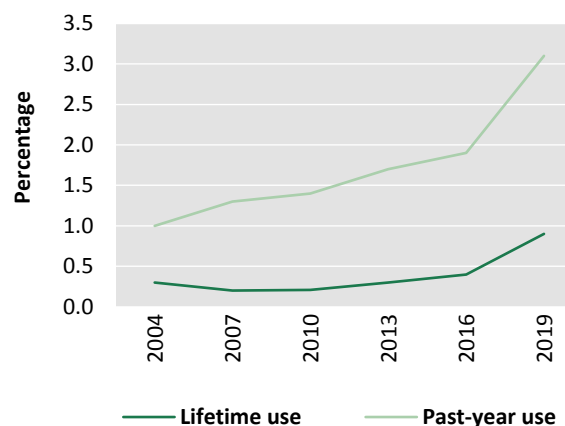
The increase in ketamine use has also occurred in countries outside Europe. It occurred in Australia, for example, between 2016 and 2019, mainly owing to a doubling of prevalence rates among people in their 20s,¹⁵⁸ with a similar increase recorded among regular “ecstasy” users after 2015. Ketamine use remains low in general, however.^{159, 160}

FIG. 35 Past-year use of ketamine in England and Wales, United Kingdom, 2007–2022

Source: United Kingdom Office for National Statistics, Crime Survey for England and Wales.

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.¹⁶¹ 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,¹⁶² ketamine was recently identified as an ingredient in concoctions such as “pink cocaine”, which has a number of different street names,¹⁶³ including “tuci” and “tucibi”.¹⁶⁴ 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 2020.¹⁶⁵ More recently, in the period 2019–2022, “pink cocaine”, or “tuci”, containing ketamine

FIG. 36 Ketamine use among the population aged 14 and older in Australia, 2004–2019

Source: Australian Institute of Health and Welfare, National Drug Strategy Household Survey 2019.

has also been identified by law enforcement agencies and drug-checking services outside South America, including in North America and Europe.¹⁶⁶

Since 2021, ketamine has also been identified as an ingredient in concoctions such as “happy water”¹⁶⁷ in Singapore,¹⁶⁸ Thailand¹⁶⁹ and Myanmar,¹⁷⁰ and “k-powdered milk” in Thailand, which resulted in 13 deaths in January 2021.¹⁷¹ In the same year, the substance was found to be an adulterant in “ecstasy” pills in Singapore and Thailand.¹⁷²

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 areas¹⁷³ in East and South-East Asia.¹⁷⁴ In China, for example, 37,449 users of ketamine were registered in 2021,¹⁷⁵ down from 222,000 in 2014.¹⁷⁶ 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.¹⁷⁷ In parallel to a shrinking market in

China, increases in use have been reported in Cambodia and Hong Kong, China,¹⁷⁸ 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.^{179, 180}

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.¹⁸¹ 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 2022.¹⁸² Increased seizures have also been recorded in Myanmar (2.3 tons) and the Lao People's Democratic Republic (1.9 tons) in 2022.¹⁸³

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,¹⁸⁴ at which the stimulant effect of the drug is more pronounced than its psychedelic effect,¹⁸⁵ its low price and its relatively easy availability.¹⁸⁶ 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,^a may have become a cause for concern in some subregions. Its non-medical use has been documented since the early 19th century,^b when it was nicknamed “laughing gas”,^c owing to its short-term immediate effects such as euphoria, which may be accompanied by giggling or laughter, relaxation, calmness and distortions of perception.^d

Although used less and less for that purpose,^e when nitrous oxide is used medically (chiefly as a sedative and analgesic)^e, it is considered to have a wide safety margin.^f 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)^g 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.^g The scientific literature in this field has recently expanded, in particular since 2017,^h 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)^h 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.^{h, i} This method of administration poses a risk of pressure injury to the lungs and frostbite.^h 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 B12ⁱ and a wide range of haematological, neurological, cardiovascular and psychiatric harms,^h including neurotoxicity, which, if not treated in a timely manner, may result in irreversible neurological damage.^j Littering of the cartridges and balloons has recently caused significant public concern in Western and Central Europe.^h

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”.^u

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

- ^a PubChem, National Library of Medicine, “Nitrous Oxide,” n.d., accessed April 4, 2023.
- ^b John B. West, “Humphry Davy, Nitrous Oxide, the Pneumatic Institution, and the Royal Institution,” *American Journal of Physiology-Lung Cellular and Molecular Physiology* 307, no. 9 (November 1, 2014): L661–67.
- ^c David M. Knight, *Humphry Davy: Science @ Power*, Cambridge Science Biographies Series (Cambridge; New York: Cambridge University Press, 1996).
- ^d EMCDDA, *Recreational Use of Nitrous Oxide: A Growing Concern for Europe*. (LU: Publications Office, 2022).
- ^e Wolfgang Buhre et al., “European Society of Anaesthesiology Task Force on Nitrous Oxide: A Narrative Review of Its Role in Clinical Practice,” *British Journal of Anaesthesia* 122, no. 5 (May 2019): 587–604.
- ^f Gurman Pal Mallhi, “Nitrous Oxide Sedation: A Review,” *MAR Dental Sciences* 3, no. 2 (August 1, 2021).
- ^g EMCDDA, *Recreational Use of Nitrous Oxide*.
- ^h Jordan Weastell and Karl Ng, “Whipping up Public Policy Discussion: Australia’s Problem with Recreational Nitrous Oxide Use,” *Internal Medicine Journal* 52, no. 5 (May 2022): 708–10.
- ⁱ W. Krajewski et al., “Impaired Vitamin B12 Metabolic Status in Healthcare Workers Occupationally Exposed to Nitrous Oxide,” *British Journal of Anaesthesia* 99, no. 6 (December 2007): 812–18.
- ^j Yuanyuan Xiang et al., “Recreational Nitrous Oxide Abuse: Prevalence, Neurotoxicity, and Treatment,” *Neurotoxicity Research* 39, no. 3 (June 2021): 975–85.
- ^k Adam Winstock, Rasmus Munksgaard, Emma Davies, Jason Ferris, Ahnjili ZhuParris, Monica Barratt, *Global Drug Survey (GDS) 2022 (Forthcoming)*, n.d.
- ^l Abderrahim Oussalah et al., “Global Burden Related to Nitrous Oxide Exposure in Medical and Recreational Settings: A Systematic Review and Individual Patient Data Meta-Analysis,” *Journal of Clinical Medicine* 8, no. 4 (April 23, 2019): 551.
- ^m Xuan Thi Dang et al., “Nitrous Oxide-Induced Neuropathy among Recreational Users in Vietnam,” *International Journal of Environmental Research and Public Health* 18, no. 12 (June 9, 2021): 6230.
- ⁿ Miao Yu et al., “Analysis of Clinical Characteristics and Prognostic Factors in 110 Patients with Nitrous Oxide Abuse,” *Brain and Behavior* 12, no. 4 (April 2022).
- ^o Bernd Fischer, “Laughing Gas: The Cheap High That Huffing Can Buy,” February 21, 2012.
- ^p Raphael Vollhardt et al., “Neurological Consequences of Recreational Nitrous Oxide Abuse during SARS-CoV-2 Pandemic,” *Journal of Neurology* 269, no. 4 (April 2022): 1921–26.
- ^q Jan van Amsterdam, Ton Nabben, and Wim van den Brink, “Recreational Nitrous Oxide Use: Prevalence and Risks,” *Regulatory Toxicology and Pharmacology* 73, no. 3 (December 2015): 790–96.
- ^r EMCDDA, *European Drug Report 2022: Trends and Developments*. (LU: Publications Office, 2022).
- ^s Julaine Allan, Jacqui Cameron, and Juliana Bruno, “A Systematic Review of Recreational Nitrous Oxide Use: Implications for Policy, Service Delivery and Individuals,” *International Journal of Environmental Research and Public Health* 19, no. 18 (September 14, 2022): 11567.
- ^t Luigi Cipolloni and Stefania De Simone, “Nitrous Oxide Intoxication: Systematic Literature Review and Proposal of New Diagnostic Possibilities,” *Egyptian Journal of Forensic Sciences* 12, no. 1 (December 14, 2022): 59.
- ^u Harry Sumnall, “Recreational Use of Nitrous Oxide,” *BMJ*, September 27, 2022, o2297.

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

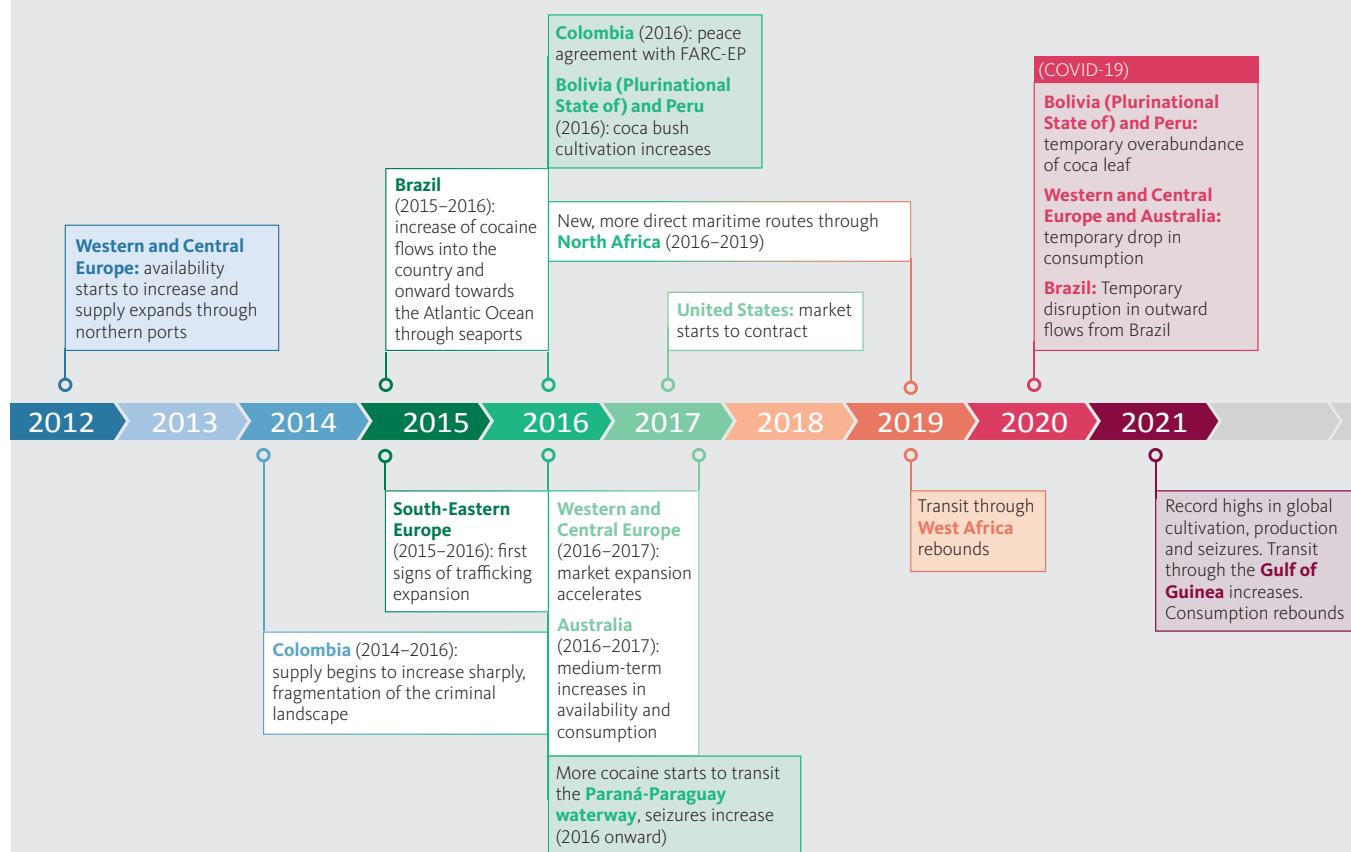
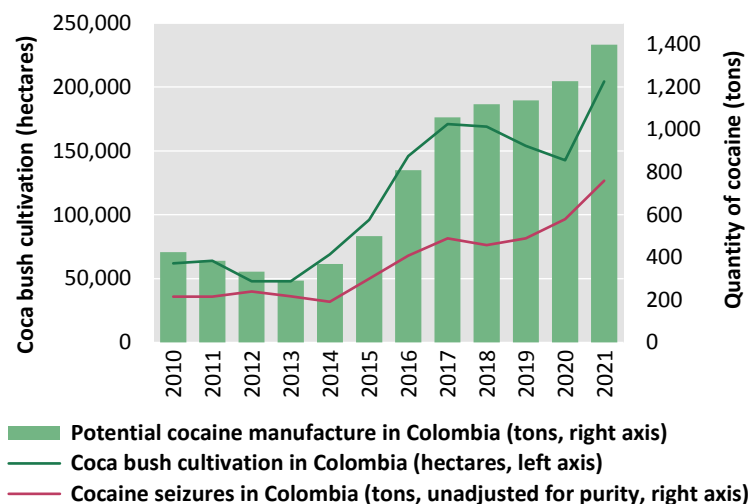


FIG. 37 Main supply-side cocaine market indicators in Colombia, 2010–2021

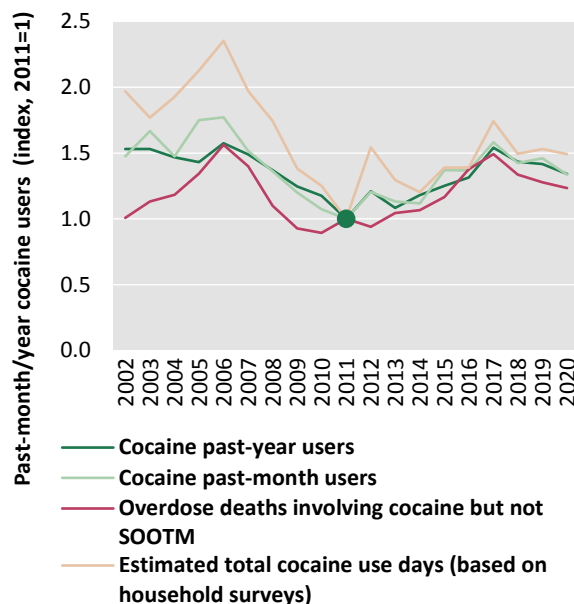


Sources: UNODC calculations based on UNODC data and data from the respective Governments and coca bush cultivation surveys carried out in Colombia in 2021 and previous years; and UNODC, responses to the annual report questionnaire.

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.¹⁸⁷ 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 2016.¹⁸⁸ 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.^{189, 190} Between 2016 and 2020, the average quantity of cocaine hydrochloride obtained

FIG. 38 Selected indicators of cocaine use, consumption and harm, United States, 2002–2020 (indexed)



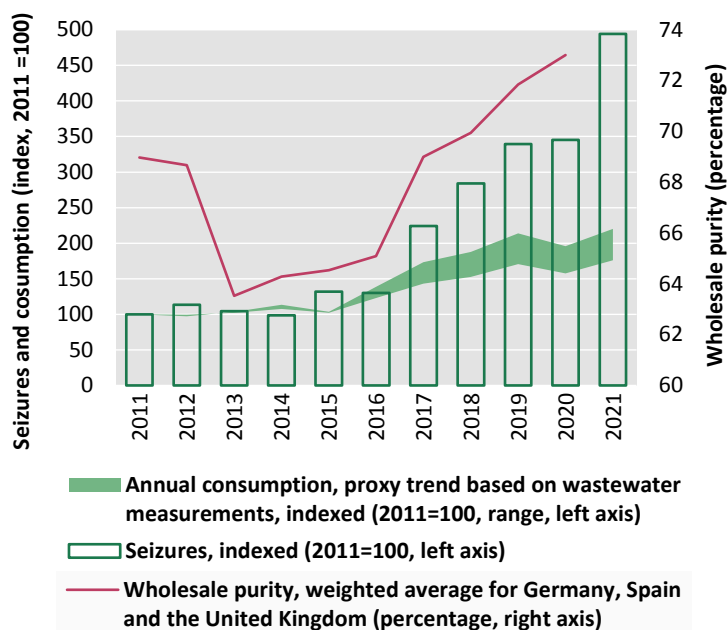
Source: United States *National Survey on Drug Use and Health 2020*, Detailed Tables; and United States Centers for Disease Control and Prevention, Wide-ranging Online Data for Epidemiologic Research (WONDER).

Note: SOOTM stands for “synthetic opioids other than methadone”.

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.¹⁹¹

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

FIG. 39 Trends in selected supply and demand indicators, Western and Central Europe, 2011–2021



Source: Wastewater: Sewage Analysis CORe group Europe; seizures: UNODC, responses to the annual report questionnaire, supplemented (for 2021) by data from the World Customs Organization (WCO), and UNODC, Drugs Monitoring Platform; purity: UNODC, responses to the annual report questionnaire.

Note: Seizure data for 2021 are incomplete and preliminary.

cent in the period 2013–2017 and 11 per cent in the period 2014–2017, respectively).¹⁹² However, around 2017 the United States market began to show signs of saturation,¹⁹³ 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 2012¹⁹⁴ – 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).¹⁹⁵ 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.¹⁹⁶ 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.¹⁹⁷

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.¹⁹⁸

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),^{199,200} beginning with Sao Paulo 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 2016.²⁰¹

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.²⁰² 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.²⁰³ The largest ever seizure of cocaine in Europe – 16.2 tons seized in the port of Hamburg in February 2021²⁰⁴ – consisted of a consignment that had been trafficked along this route.

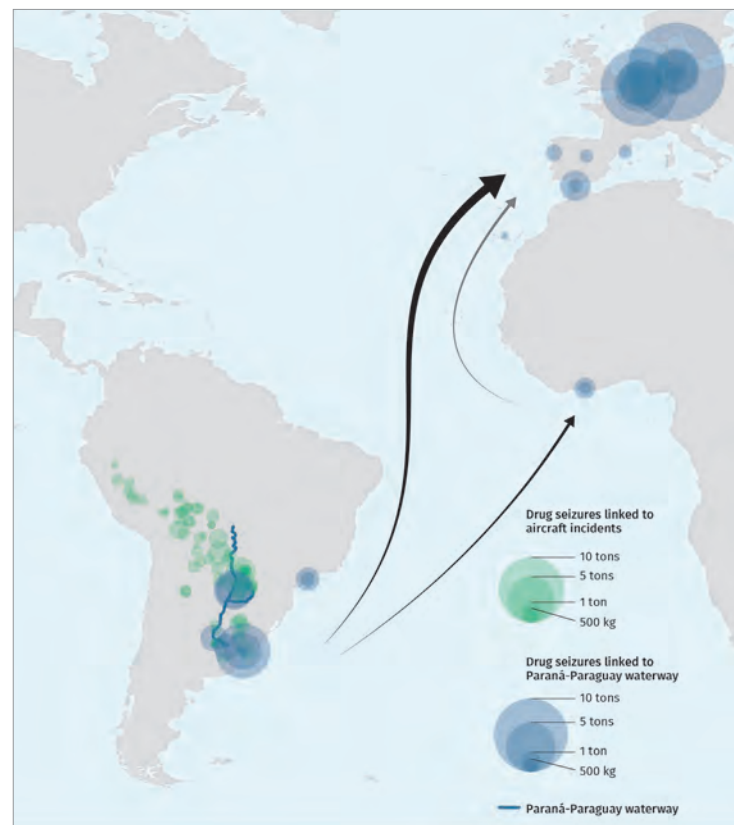
The effects of the upturn in cocaine supply around 2015 were also observed in Australia, where retail purity levels and cocaine consumption levels rose significantly between 2016 and 2019, while retail prices fell. Not only did the number of past-year cocaine users increase sharply between 2016 and 2019, 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 episodes²⁰⁵ 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 2019.²⁰⁶

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 2016,²⁰⁷ when Morocco traced significant quantities of cocaine trafficked from Brazil and detected the use of a fishing boat for trafficking into its southern provinces.²⁰⁸ 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.²⁰⁹

From 2016 onward, the majority of cocaine flows into Morocco were assessed to be entering along maritime routes.²¹⁰ Soon afterwards, maritime routes began to reach the Mediterranean coast of North Africa, including Algeria (with significant seizures in the ports of

MAP 13 Seizures of cocaine linked to the Paraná-Paraguay waterway or the River Plate estuary, and aircraft-related incidents along the Southern Cone route, 2017 to September 2022



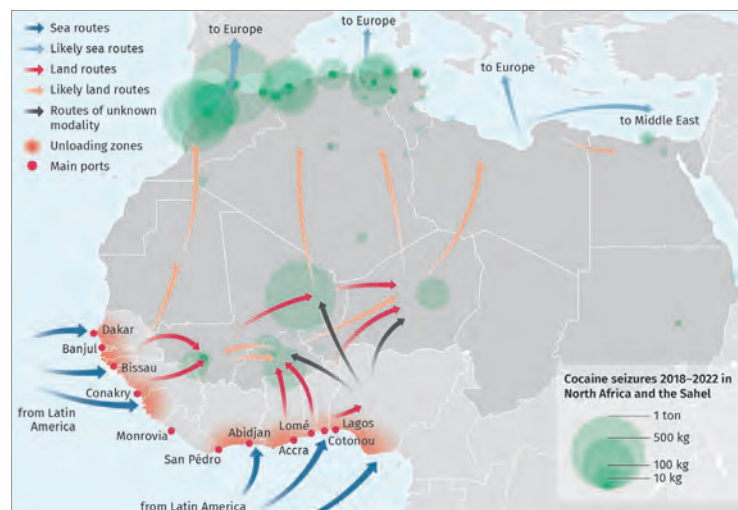
The boundaries and names shown and the designations used on this map do not imply official endorsement or acceptance by the United Nations.

Source: Reproduced from UNODC, *Global Report on Cocaine 2023: Local Dynamics, Global Challenges*.

Note: A seizure was considered to be linked to the Paraná-Paraguay waterway or the River Plate estuary if its itinerary (actual or planned) included a stretch or a port on the waterway or the estuary. Aircraft-related incidents linked to drug trafficking include episodes where the circumstances suggested that, at the moment of detection, drugs had just been, were about to be, or were being transported on an aeroplane. Not all of the aircraft-related incidents represent the physical seizure of the relevant aircraft by law enforcement.

Oran²¹¹ and Skikda²¹² in 2018 and 2019, respectively) and very likely Libya,²¹³ 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),²¹⁴ Italy (17 kg in the port of Gioia Tauro in October 2018),²¹⁵ Ecuador (582 kg in the port of Guayaquil in December 2020),²¹⁶ Malta (612 kg in December 2020)²¹⁷ and off the coast of the Canary Islands (218 kg in January 2023).²¹⁸

MAP 14 Cocaine trafficking routes across West and North Africa



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.

Source: Reproduced from UNODC, *Global Report on Cocaine 2023: Local Dynamics, Global Challenges*.

Note: Only individual seizures made in countries in the Sahel and North Africa are shown.

MAP 15 Cocaine trafficking routes involving South-Eastern and Eastern Europe



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

Source: Reproduced from UNODC, *Global Report on Cocaine 2023: Local Dynamics, Global Challenges*.

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).²¹⁹ 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.²²⁰ 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.²²¹

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.²²²

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

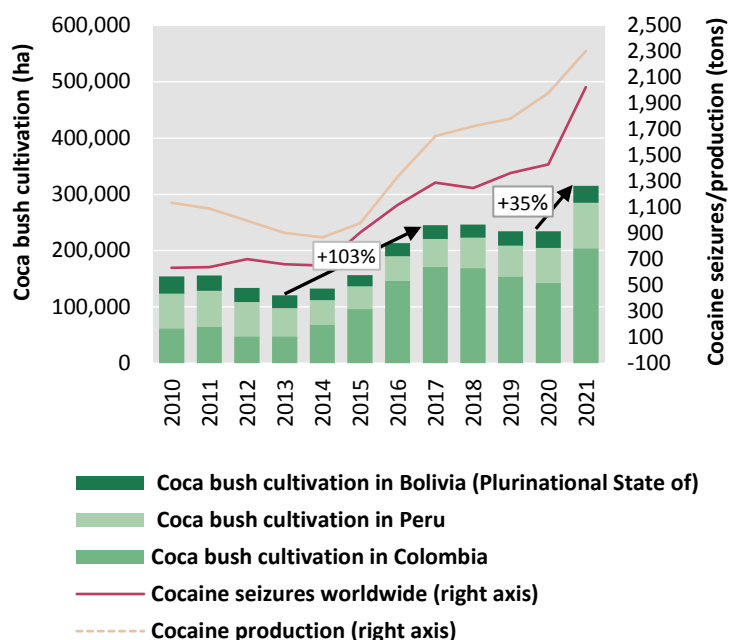
In 2021, coca bush cultivation, cocaine production and cocaine seizures all reached record highs. Coca bush cultivation and cocaine seizures increased very sharply. As the expansion of coca bush cultivation in Colombia involved the cultivation of new fields of younger, and hence less productive, plants, 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

FIG. 40 Global cultivation of coca bush, cocaine seizures and cocaine production, 2010–2021

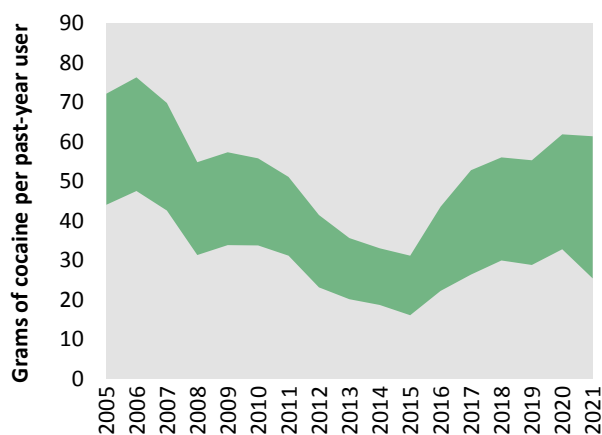


Sources: UNODC calculations based on UNODC data and data from the respective Governments, and coca bush cultivation surveys carried out in Bolivia (Plurinational State of), Colombia and Peru in 2021 and previous years; and UNODC, responses to the annual report questionnaire.

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.

FIG. 41 Estimated supply of cocaine available for consumption (net of seizures, purity-adjusted) per past-year cocaine user worldwide (range), 2005–2021



Sources: Production: UNODC calculations based on UNODC data and data from the respective Governments, and coca bush cultivation surveys carried out in Bolivia (Plurinational State of), Colombia and Peru in 2021 and previous years; seizures and purities: UNODC, responses to the annual report questionnaire.

Note: Although the available supply is expressed per past-year user, the quantities actually consumed by individual users vary widely, and supply may not always be consumed in its entirety. Moreover, the numbers of past-year users are mainly based on household surveys, which may not capture all users; however, in principle this applies consistently across countries and across time. In view of this, these values are best understood as benchmark ratios rather than typical quantities consumed by users.

The balance of supply, demand and interdiction

The current situation with regard to the global cocaine market is the result of developments at both source and destination, driven by a combination of demand-side and supply-side factors. Although supply-side factors tend to be more visible and to exhibit more sudden changes, it should be borne in mind that the population of cocaine users has been growing gradually but steadily, driven by the increase in the global population and compounded by increasing prevalence of use (estimated at 0.32 per cent of the general population aged 15–64 in 2004, 0.36 per cent in 2010 and 0.42 per cent in 2021). Moreover, in the early 2010s, cocaine availability in Western and Central Europe was still short of levels in North America, and the sub-region afforded space for growth and strong incentives for traffickers. Therefore, while cocaine supply declined

between 2006 and 2014, the developments during the 2010s provided opportunities for supply to readjust to demand.

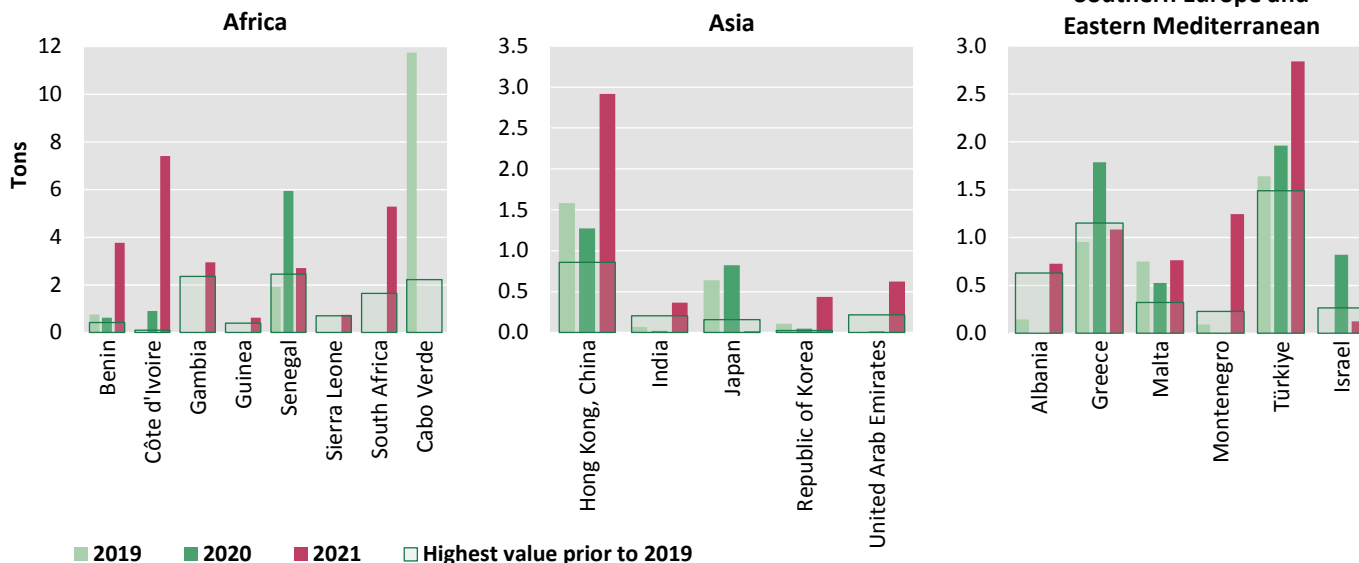
Cocaine seizures have grown significantly, outpacing the growth in production and, therefore, somewhat limiting the net supply available for consumption. Factoring in both the mitigating factor of seizures on supply and the increasing demand suggests that, despite the very sharp increases in cocaine 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.²²⁶ 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

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



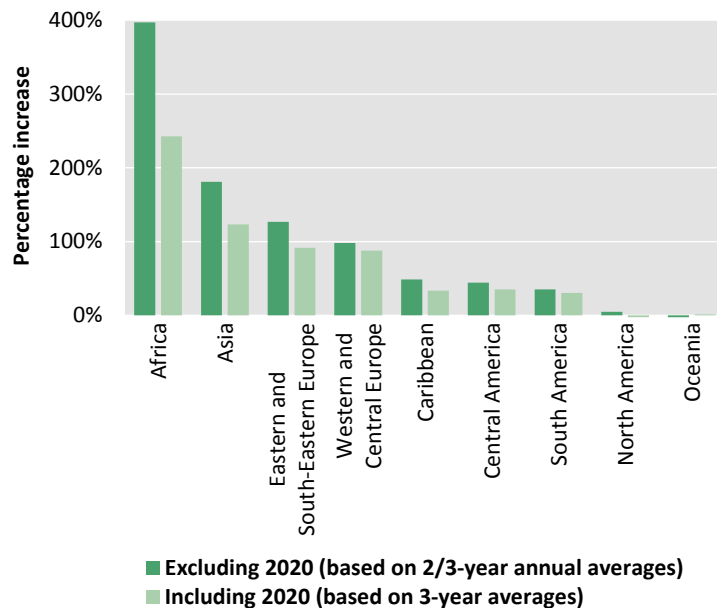
Sources: UNODC, responses to the annual report questionnaire; and UNODC, Drugs Monitoring Platform.

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.

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.

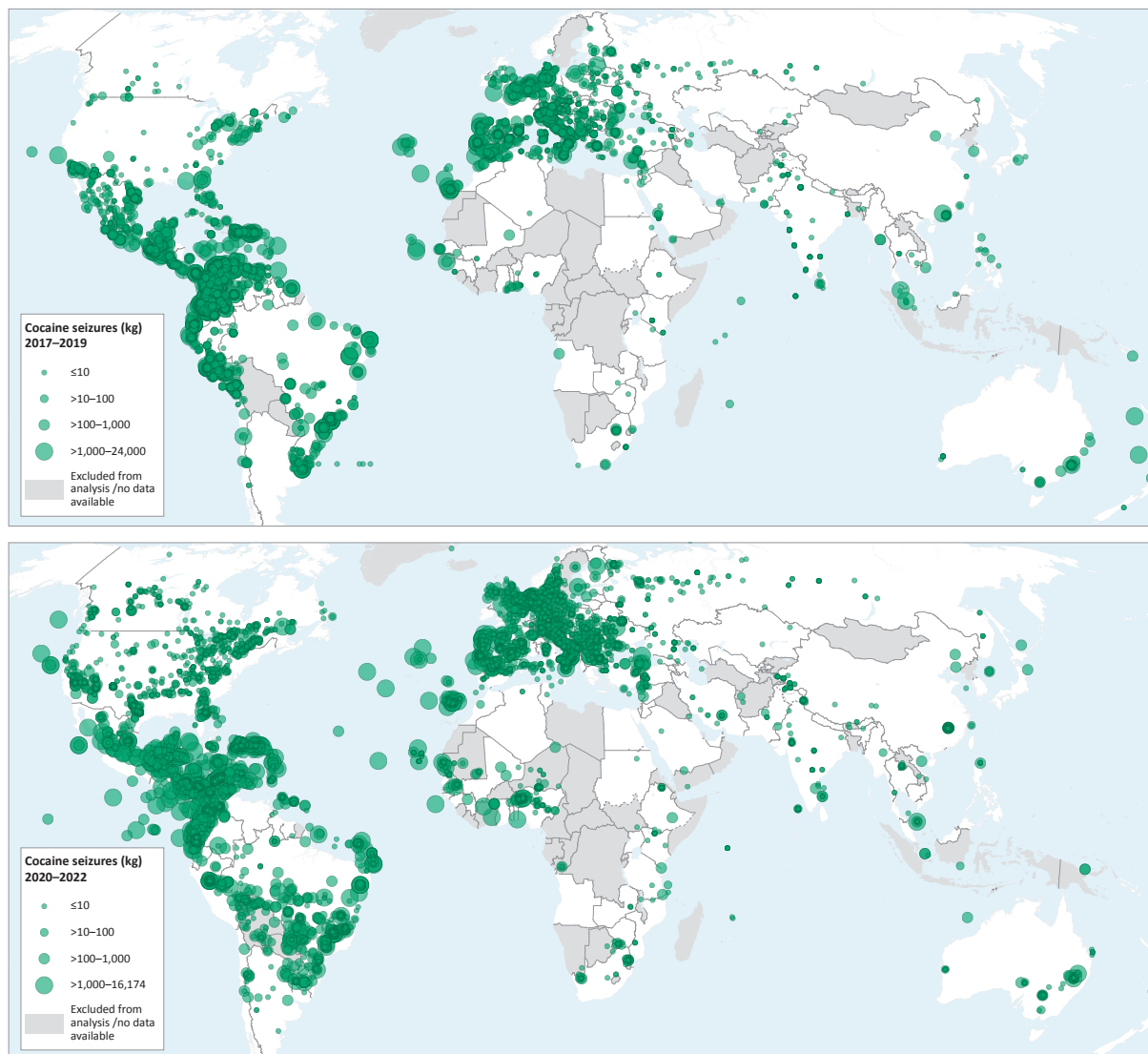
In Western and Central Europe, the available evidence suggests that the conversion of cocaine from base form to cocaine hydrochloride has typically occurred in the context of carrier materials impregnated with cocaine, and subsequently retrieved (initially in base form) using sophisticated techniques 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. 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.

MAP 16 Significant individual cocaine seizures at the global level, 2017–2019 and 2020–2022

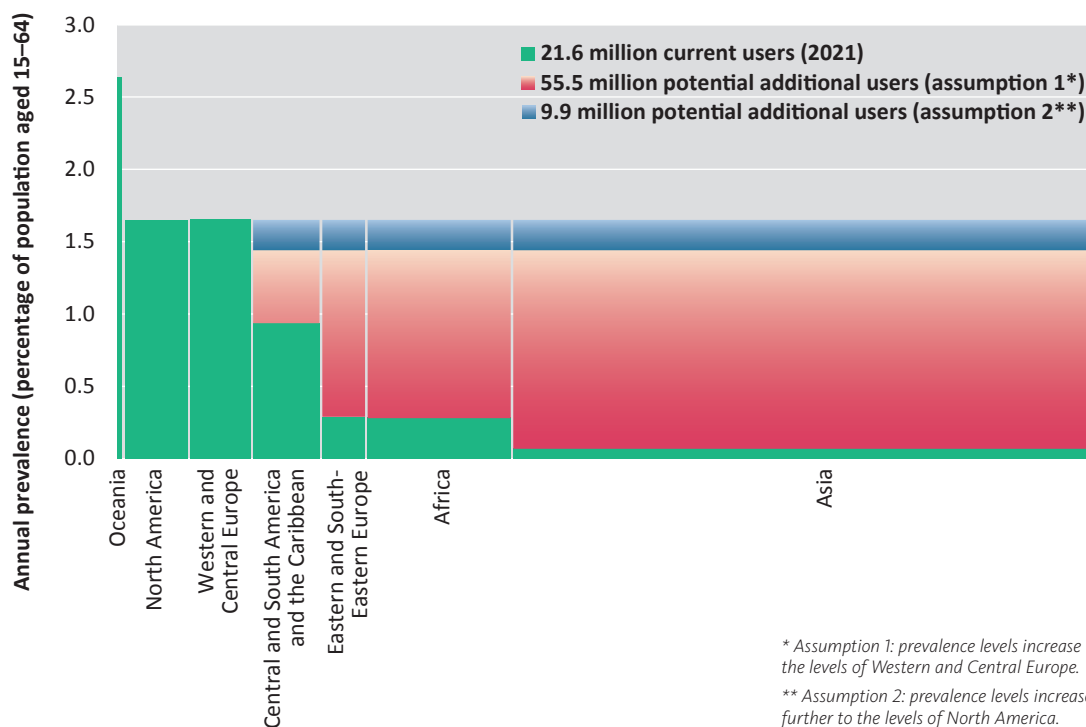
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Source: UNODC, Drugs Monitoring Platform.

cocaine hydrochloride. The case involved the seizure of a large quantity (1.3 tons) of coca paste, which had been trafficked inside metal machinery,²²⁷ 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.

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.

FIG. 44 Potential additional cocaine users if the prevalence of cocaine use in Western and Central Europe or in North America were to extend to other (sub)regions of the world



* Assumption 1: prevalence levels increase to the levels of Western and Central Europe.

** Assumption 2: prevalence levels increase further to the levels of North America.

Note: The total global population aged 15–64 is 5.1 billion.

Source: UNODC estimates based on responses to the annual report questionnaire.

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.

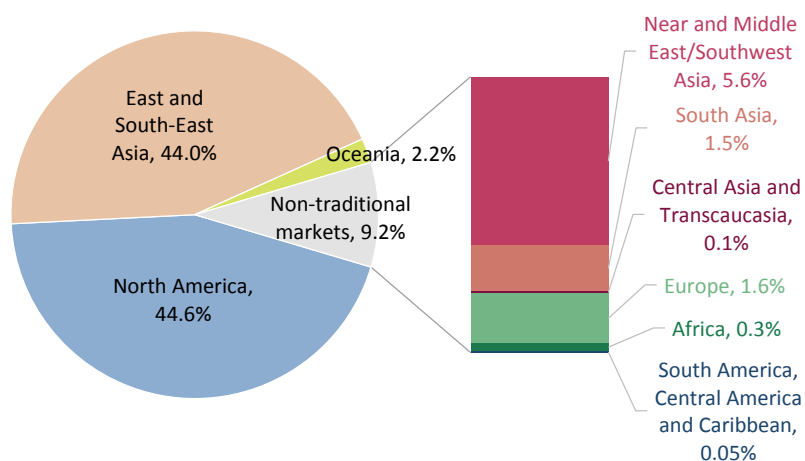
Emerging trends in methamphetamine supply: expansion to non-traditional markets

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,²²⁸ 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.

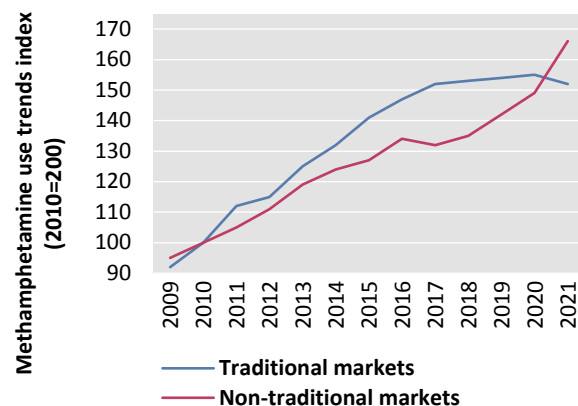
Aggregated seizures of methamphetamine in the drug's non-traditional markets accounted for 12 per cent of global methamphetamine seizures in 2021, compared with less than 0.1 per cent in 2001, and increased from 60 kg to more than 50 tons over the same period.

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



Source: UNODC, responses to the annual report questionnaire.

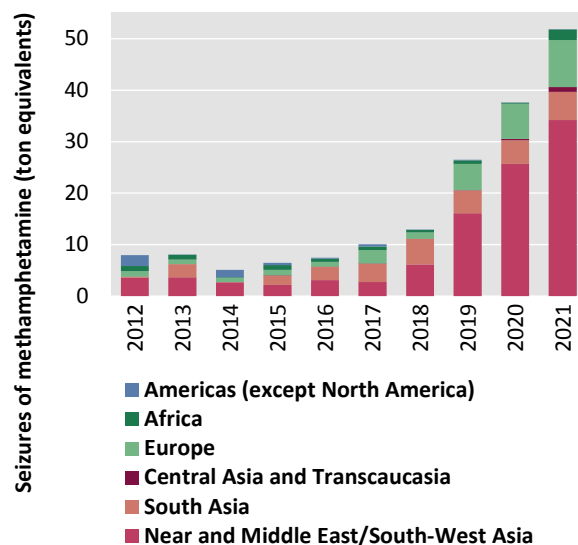
FIG. 46 Reported trends in methamphetamine use in traditional and non-traditional markets, 2009–2021



Source: UNODC, responses to the annual report questionnaire.

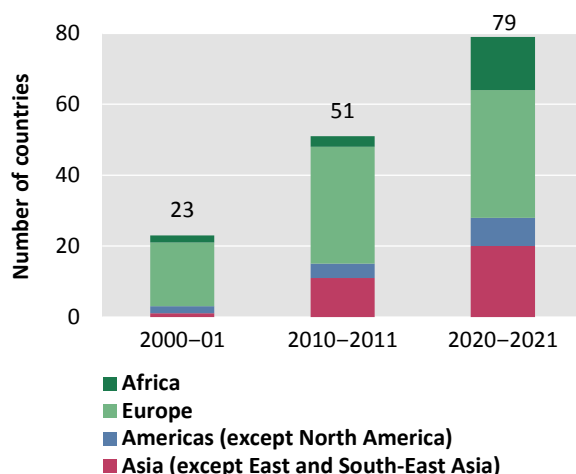
Note: Traditional markets: North America, East and South-East Asia and Oceania; non-traditional markets: Africa, Asia and Europe. The methamphetamine use trends index is based on qualitative information on trends in methamphetamine use reported by Member States. Calculations are based on the reports 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.

FIG. 48 Number of countries outside the traditional markets for methamphetamine that reported seizures of the drug, 2000–2001, 2010–2011 and 2020–2021



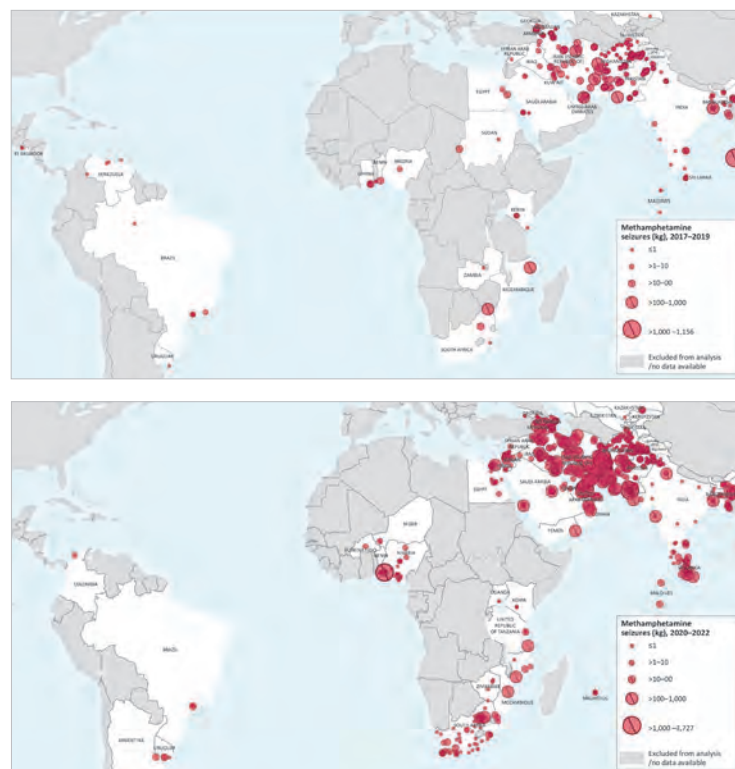
Source: UNODC, responses to the annual report questionnaire.

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

MAP 17 Significant individual methamphetamine seizures in non-traditional markets, 2017–2022



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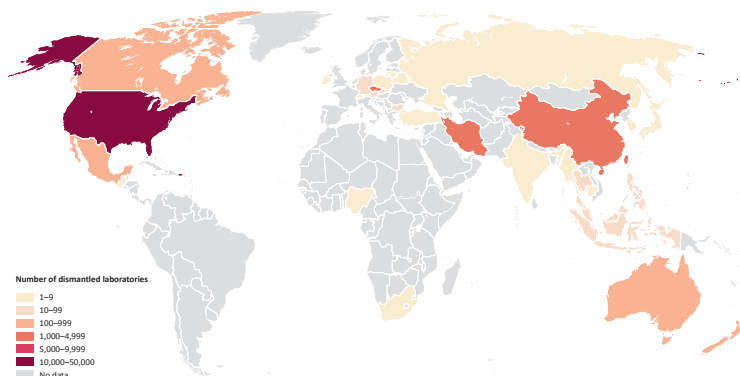
Source: UNODC Drugs Monitoring Platform.

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.

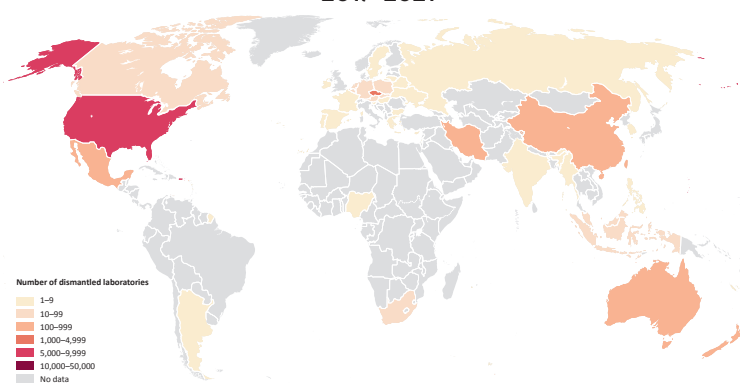
Moreover, data also show that seizures of precursors used in the manufacture of methamphetamine are no longer limited to traditional markets. Such seizures have been reported in, inter alia, South Asia, South-West Asia and Africa (notably, West and South-East Africa) in recent years.

MAP 18 Number of dismantled methamphetamine laboratories

2012–2016



2017–2021



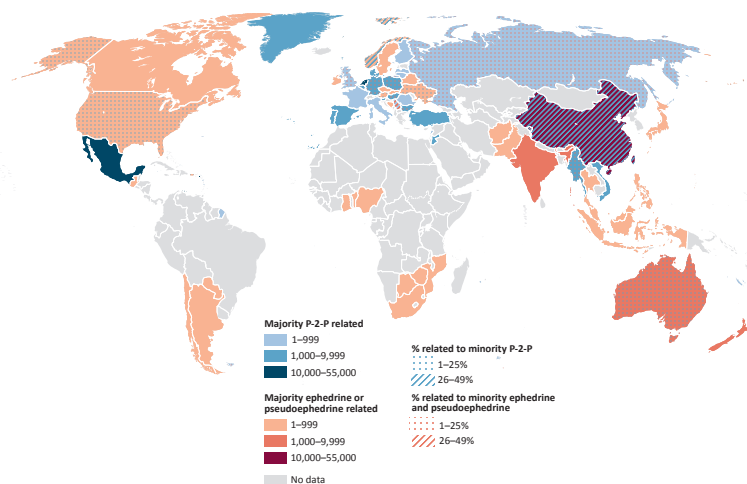
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Source: UNODC, responses to the annual report questionnaire.

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,

MAP 19 Quantities of precursor chemicals used in the manufacture of amphetamine and methamphetamine seized, 2017–2021



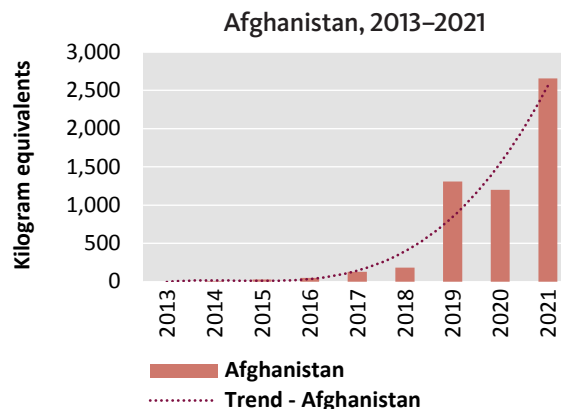
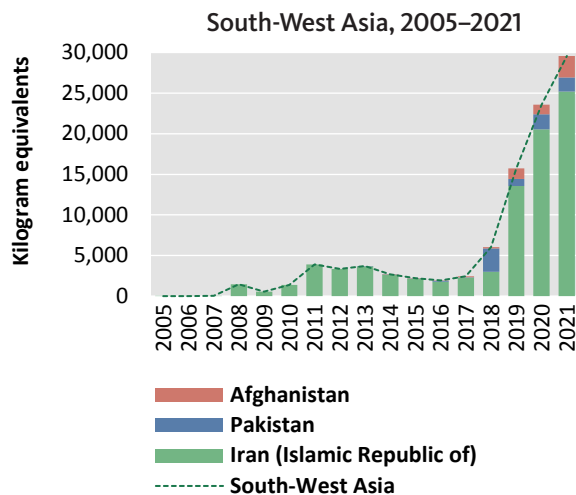
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Note: Most seizures of ATS precursors (ephedrine/pseudoephedrine and P-2-P-related) can be linked to the manufacture of methamphetamine, except for in Europe, where most of the P-2-P-related precursor seizures are still linked to the manufacture of amphetamine; only Belgium and the Kingdom of the Netherlands report P-2-P-related precursors being used in clandestine industrial-scale laboratories for the manufacture of methamphetamine.

Source: UNODC calculations based on INCB, Precursors 2022, Annex III, Seizures 2017–2021 (New York, February 2023).

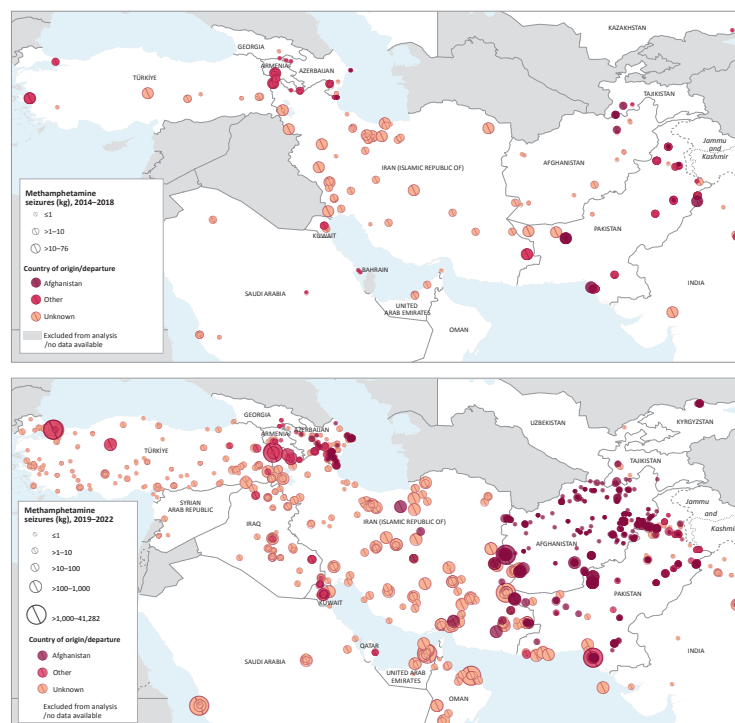
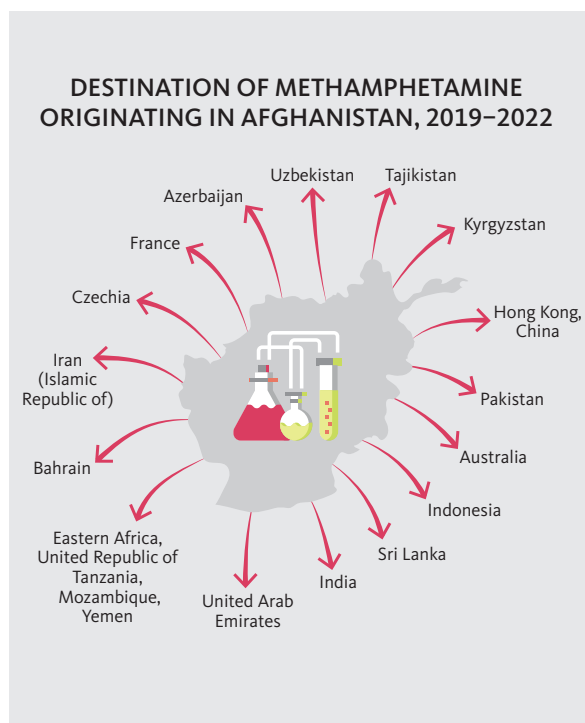
methamphetamine manufacture has expanded in Afghanistan, where the drug is produced both from the locally grown *Ephedra* plant²³¹ and from pharmaceutical ephedrine extracted from over-the-counter cold medications.²³² Some seizure cases suggest that methamphetamine exports from Afghanistan have also 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 2021²³³ and on illicit drug production, in general, in April 2022²³⁴ have fundamentally changed methamphetamine manufacture and exports from Afghanistan.

FIG. 49 Quantities of methamphetamine seized in 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



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.

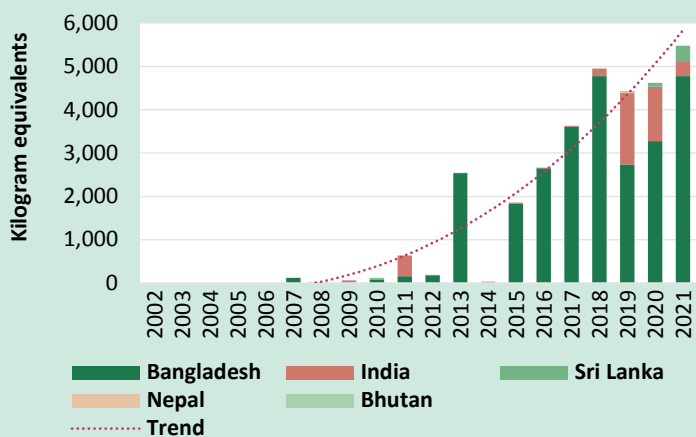
South Asia increasingly exposed to methamphetamine trafficking from the east and west

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.^a 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.^a 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).^b

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

Seizures of methamphetamine in South Asia, 2000–2021

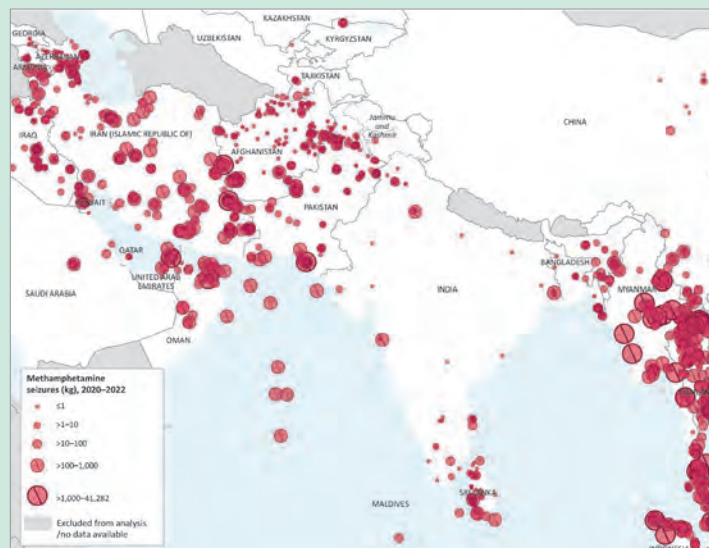
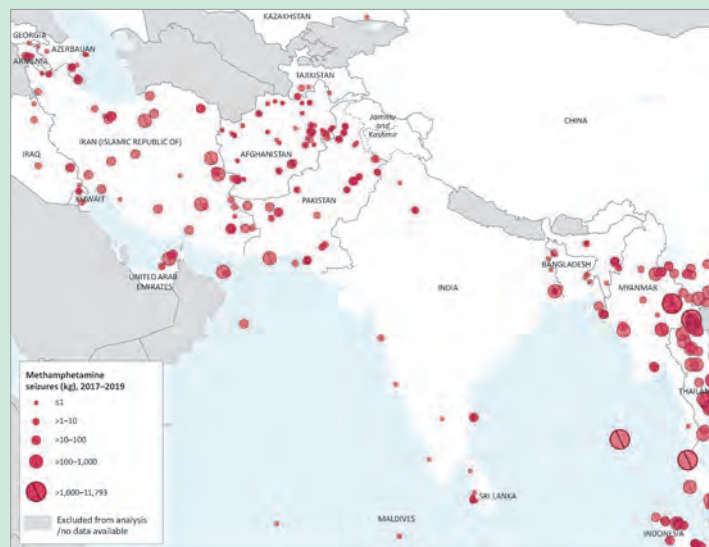


Source: UNODC, responses to the annual report questionnaire.

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

^b INCB, 2022 Annual Report on Precursors and Chemicals Frequently Used in the Illicit Manufacture of Narcotic Drugs and Psychotropic Substances. Annex III, Seizures 2017–2021 (Vienna: United Nations Publications, 2023).

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



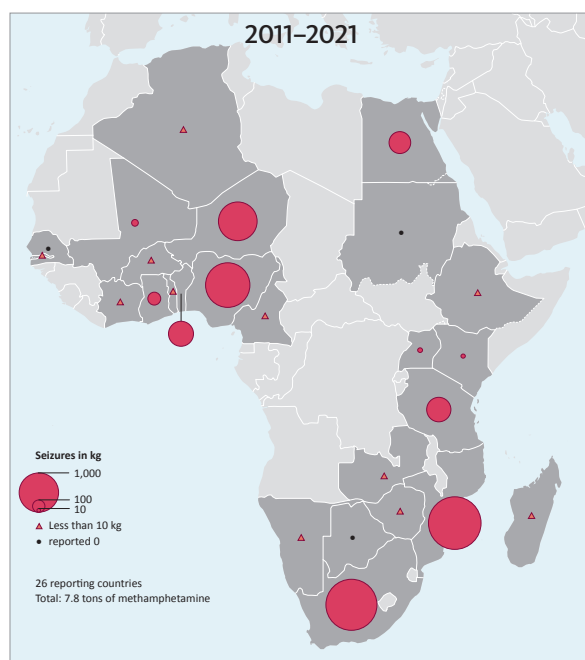
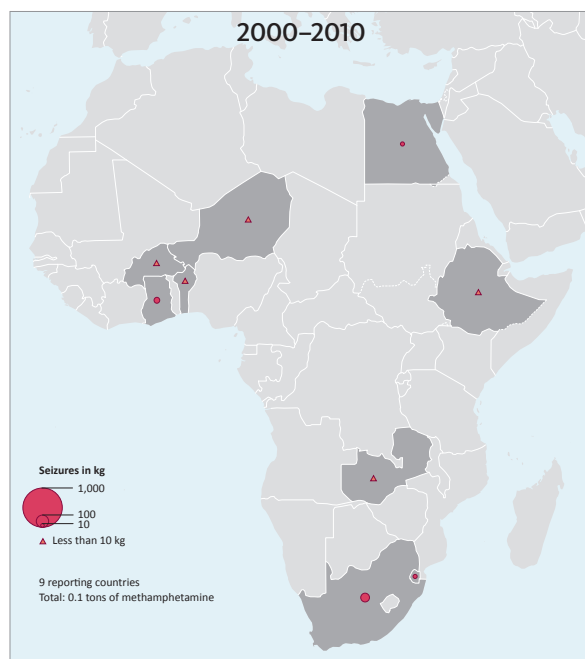
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Source: UNODC, Drugs Monitoring Platform.

^c UNODC, responses to the annual report questionnaire.

^d INCB, Report of the International Narcotics Control Board for 2020 (Vienna: United Nations Publications, 2021).

MAP 21 Quantities of methamphetamine seized in Africa, 2000–2021



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.

Source: 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 subregions 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

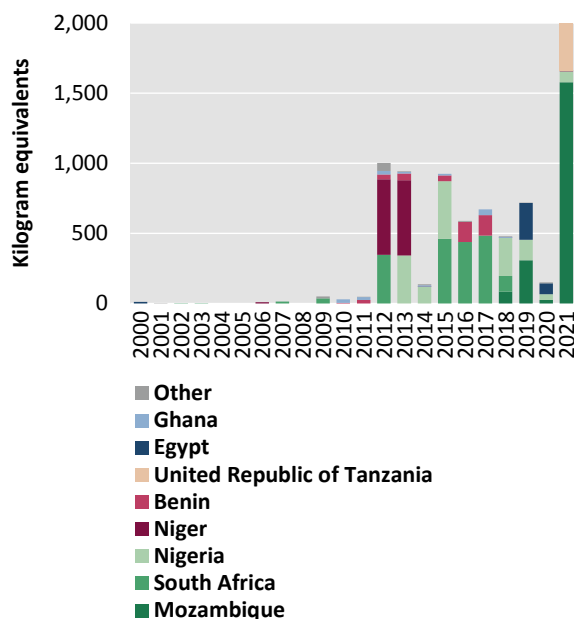
Another non-traditional market for methamphetamine undergoing an expansion is Africa, where the number of countries reporting use of the drug almost tripled, from 4 to 11, between the periods 2010–2011 and 2020–2021. Overall, 14 African countries reported the use of methamphetamine in the period 2011–2021 – 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 streets,^{236, 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

FIG. 50 Quantities of methamphetamine seized in Africa, 2000–2021



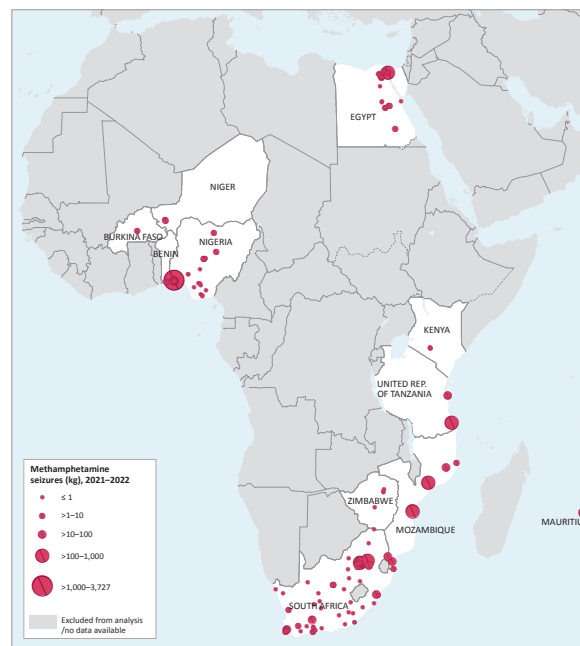
Source: UNODC, responses to the annual report questionnaire.

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.^{239, 240}

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

MAP 22 Significant individual methamphetamine seizures in Africa, 2021–2022



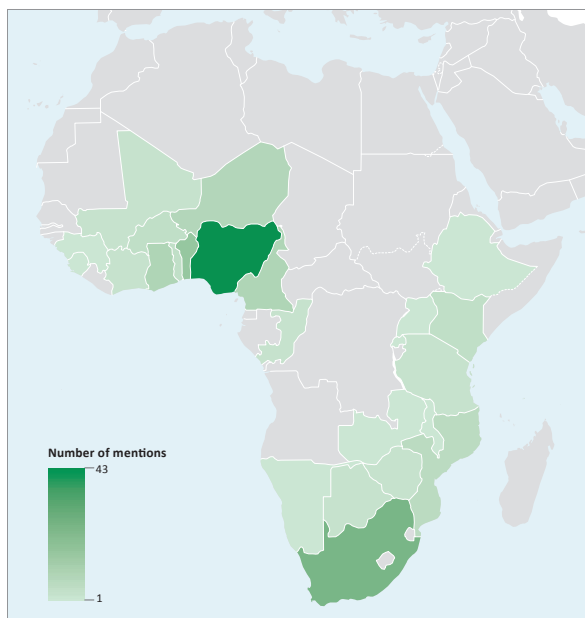
The boundaries and names shown and the designations used on this map do not imply official endorsement or acceptance by the United Nations. Final boundary between the Republic of Sudan and the Republic of South Sudan has not yet been determined.

Source: UNODC, Drugs Monitoring Platform.

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.

MAP 23 African countries most frequently reported as countries of origin, departure, transit or destination for methamphetamine, 2012–2021



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.

Source: UNODC, responses to the annual report questionnaire.

Moreover, ephedrine and ephedrine preparations, typically used in the clandestine manufacture of methamphetamine, have been seized both in West and Central Africa (Nigeria, Ghana and Benin) and in Southern Africa (South Africa and Mozambique) in recent years (2017–2021).²⁴¹

It may be also noteworthy that Nigeria, Egypt, South Africa and Ghana were among the 10 largest importers of ephedrine worldwide (in terms of volume notified through the INCB Pre-Export Notification Online (PEN Online) system) between November 2021 and November 2022, while Egypt was among the 10 largest importers of pseudoephedrine notified through the PEN Online system.²⁴² Furthermore, the export of a major shipment of 2.5 tons of ephedrine destined for Uganda, far more than the annual legitimate requirement for the country, was stopped by the authorities of India in the same period.²⁴³

Consumption of and trafficking in methamphetamine in Europe: recent surge in South-Eastern Europe

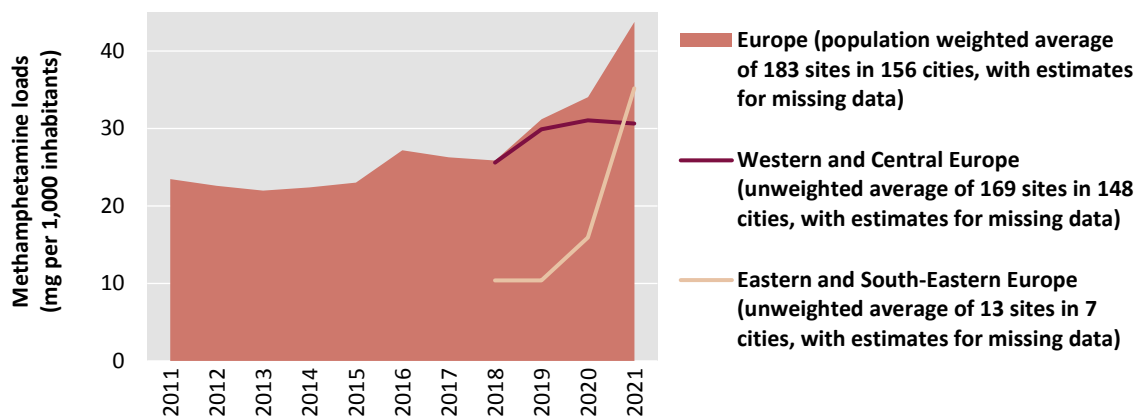
The methamphetamine use market in Europe continues to be smaller than that of amphetamine. However, seizures of methamphetamine and analysis of wastewater in selected cities, located mainly in Western and Central Europe and, to a lesser extent, in Eastern and South-Eastern Europe, indicate an overall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

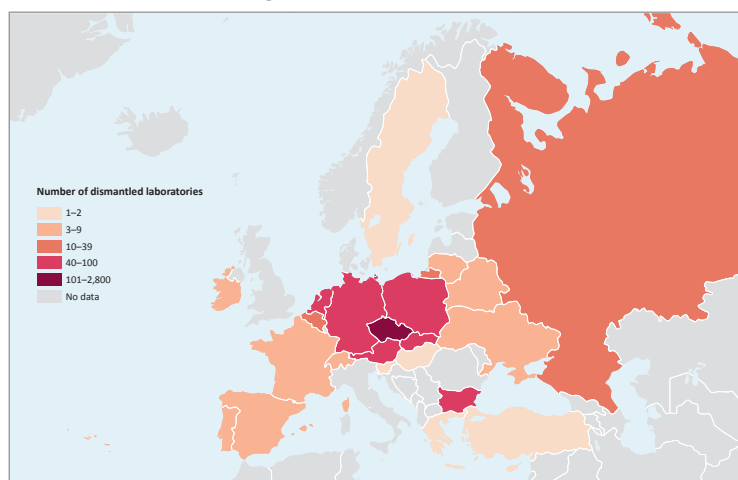
FIG. 51 Quantities of methamphetamine metabolites found in wastewater, 156 cities in Europe, 2011–2021



Source: UNODC calculations based on wastewater data provided by Sewage Analysis CORE group Europe.

Note: Of the seven cities in Eastern and South-Eastern Europe, six were located in South-Eastern Europe.

MAP 24 Number of methamphetamine laboratories dismantled in Europe (logarithmic scale), 2011–2021



The boundaries and names shown and the designations used on this map 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, responses to the annual report questionnaire.

The manufacture of methamphetamine appears to have increased considerably in the Kingdom of the Netherlands and Belgium in recent years.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

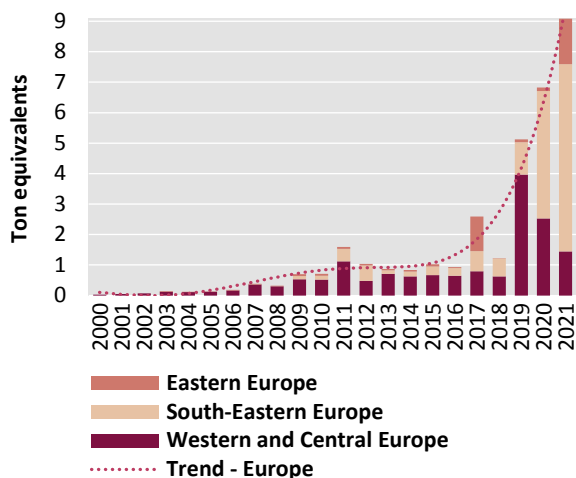
originating in Belgium and the Kingdom of the Netherlands is not only destined for markets in Europe but also trafficked to other regions,²⁴⁵ including Australia and New Zealand, East and South-East Asia, West and Central Africa and, in recent years, South America, Central America and the Caribbean, 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 Iran²⁴⁶ (possibly an indication of trafficking in methamphetamine manufactured in Afghanistan),²⁴⁷

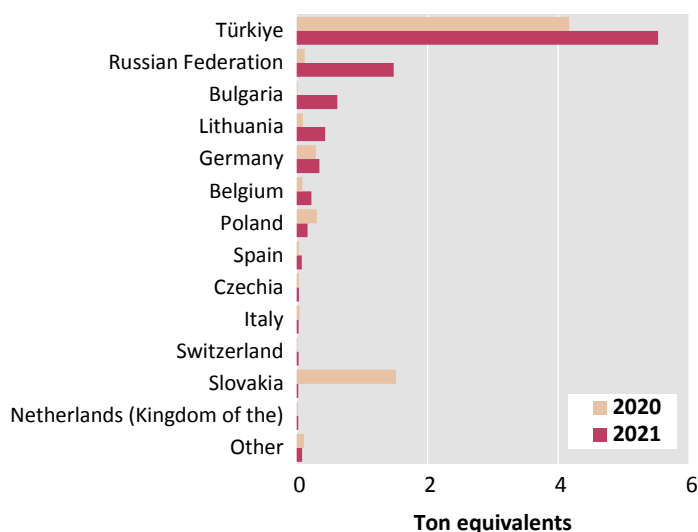
while the drug may be passing through, destined for markets in East and South-East Asia,²⁴⁸ Central Asia, Europe and North Africa.²⁴⁹ Some of it may also end up on the domestic market in Türkiye; wastewater data indicate an increase in consumption of the drug in some of the country's cities.²⁵⁰

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



Source: UNODC, responses to the annual report questionnaire.

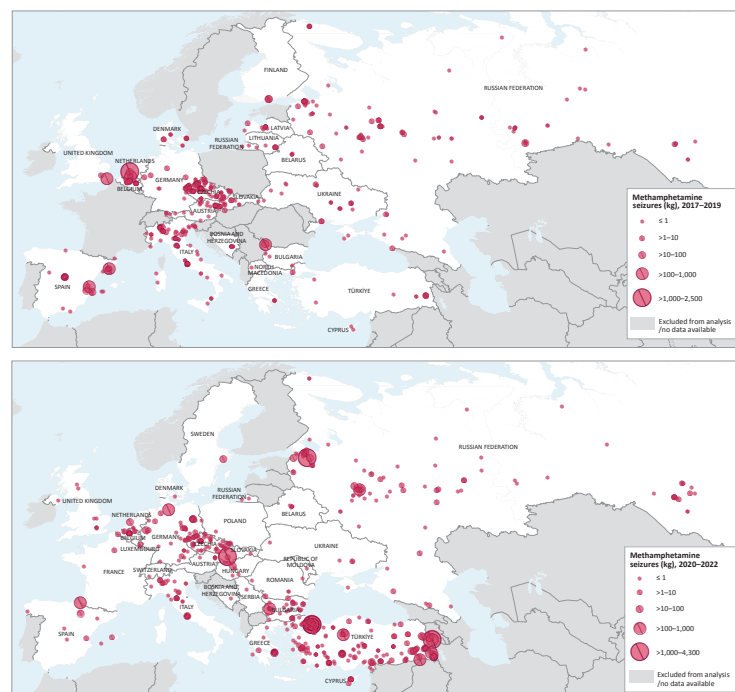
FIG. 53 Quantity of methamphetamine seized in Europe, 2020 and 2021



Source: UNODC, responses to the annual report questionnaire.

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 2020–2022.²⁵¹

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.

South Asia: a major opiate market that appears to be expanding

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.²⁵² 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 2021.²⁵³

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

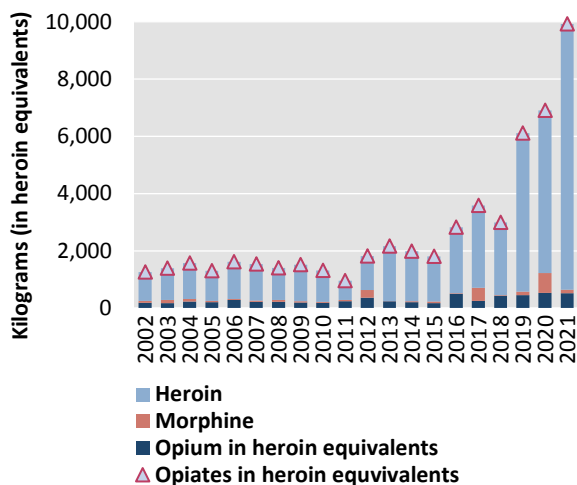
The largest opiate market in South Asia is India, which is projected to become the world's most populous country in 2023.²⁵⁴ With close to an estimated 11 million opiate users in 2021, India accounted for nearly 90 per cent of the estimated number of opiate users

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.²⁵⁵

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 2018.²⁵⁶ 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 2020/21.²⁵⁷ 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.²⁵⁸

Opium was,²⁵⁹ and continues to be, illicitly cultivated in India,²⁶⁰ primarily in the country's north-eastern and

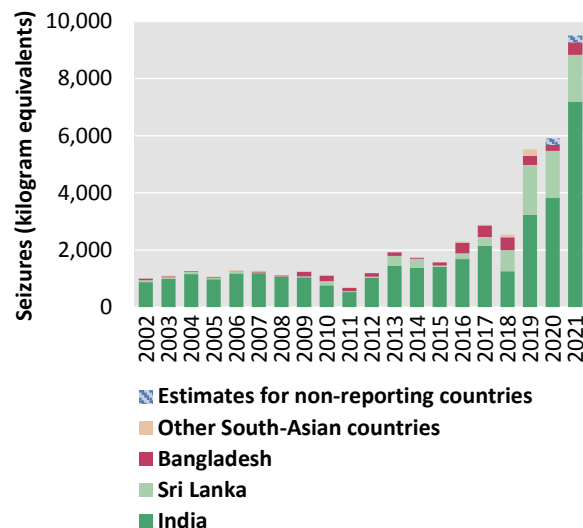
FIG. 54 Opiates seized in South Asia, by drug, 2002–2021



Source: UNODC, responses to the annual report questionnaire.

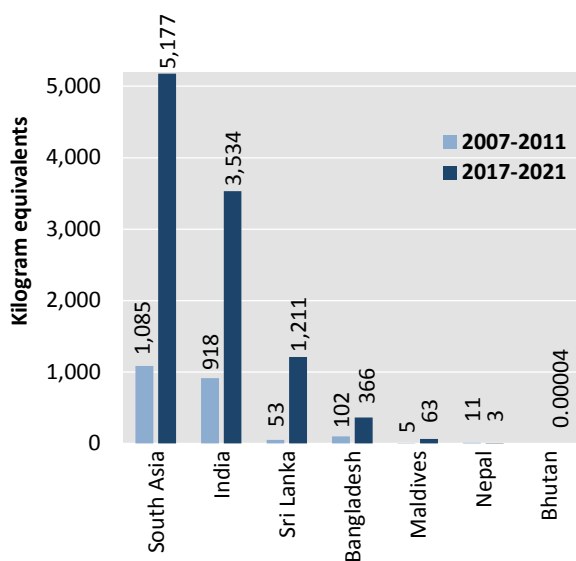
Note: It is assumed that an average of 10 kg of opium are needed to produce 1 kg of heroin or 1 kg of morphine.

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



Source: UNODC, responses to the annual report questionnaire.

FIG. 56 Average annual seizures of heroin in South Asia, 2007–2011 and 2017–2021



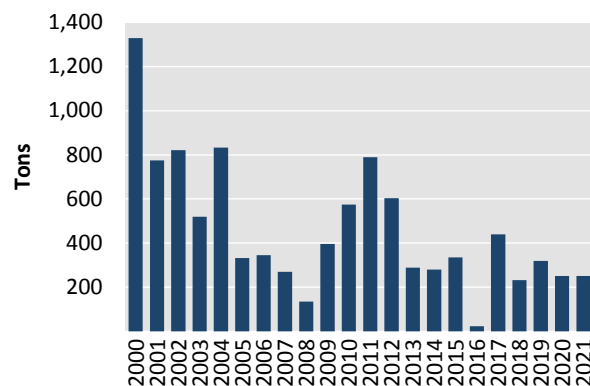
Source: UNODC, responses to the annual report questionnaire.

north-western states.²⁶¹ In the period 2020/2021, roughly 4,400 ha of illicitly cultivated opium poppy was eradicated,²⁶² which is almost the same area as the total area under licit opium poppy cultivation in India (4,941 ha in 2020 and 5,406 ha in 2021).²⁶³

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.²⁶⁴

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

FIG. 57 Licit opium production in India, 2000–2021

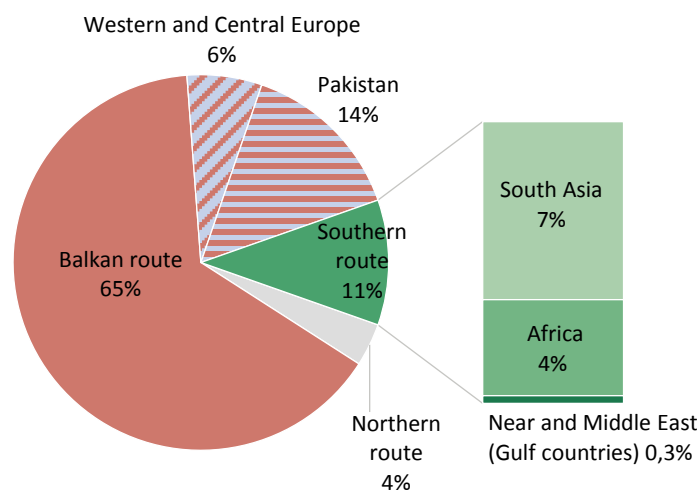


Source: INCB, Narcotic Drugs 2021 (Vienna 2022, and previous years).

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.²⁶⁵ 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.²⁶⁶ Although it has increased in recent years, notably during the COVID-19 pandemic,²⁶⁷ such trafficking via

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



Source: UNODC calculations based on UNODC, responses to annual report questionnaire.

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.²⁶⁸ 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.^{269, 270}

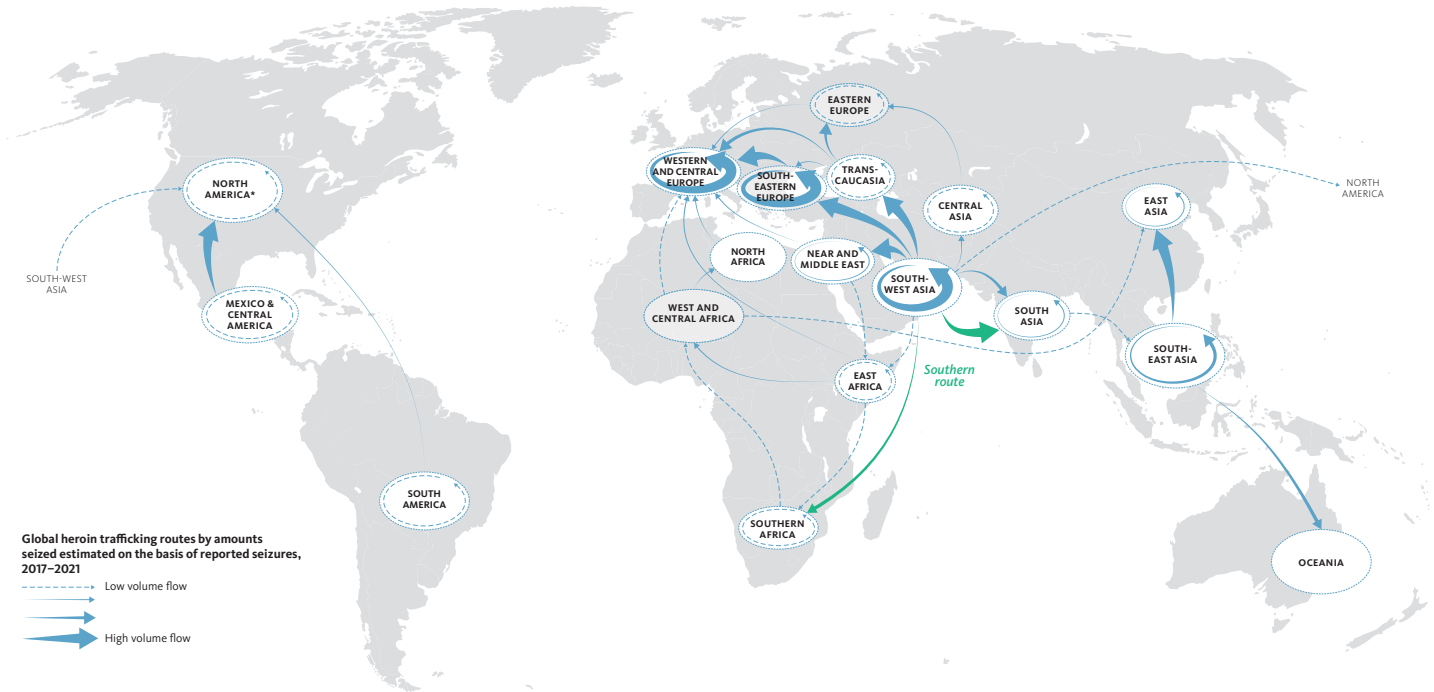
The single largest interception of heroin by India (of close to 3 tons) was reported in September 2021, when that heroin was seized in two shipping containers at the seaport of Mundra in the State of Gujarat, the country's largest container hub.²⁷¹ The heroin

originated in Kandahar, Afghanistan, and was routed through the port of Bandar Abbas (Islamic Republic of Iran) to the port of Mundra.²⁷² 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

MAP 26 Trafficking in heroin and morphine



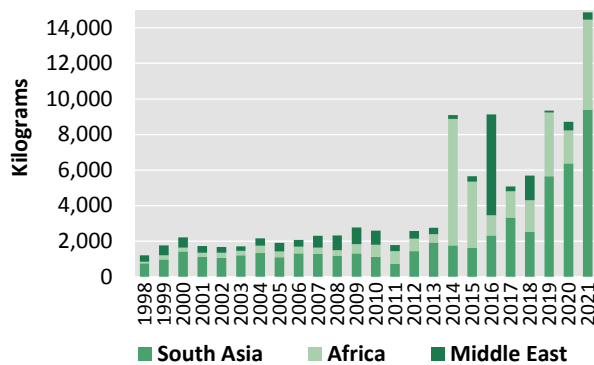
The boundaries and names shown and the designations used on this map do not imply official endorsement or acceptance by the United Nations.

Sources: UNODC.

Note: The size of the route is based on the total amount seized on that route, according to the information on trafficking routes provided by Member States in the annual report questionnaire, individual drug seizures and other official documents, over the 2017–2021 period. The routes are determined on the basis of reported country of departure/transit and destination in these sources. As such, they need to be considered as broadly indicative of existing trafficking routes while several secondary routes may not be reflected. Route arrows represent the direction of trafficking; origins of the arrows indicate either the area of departure or the one of last provenance, end points of arrows indicate either the area of consumption or the one of next destination of trafficking. Therefore, the trafficking origin may not reflect the country in which the substance was produced. Please see the Methodology section of this document.

* North America excluding Mexico.

FIG. 59 Seizures of heroin and morphine along the southern route, 1998–2021



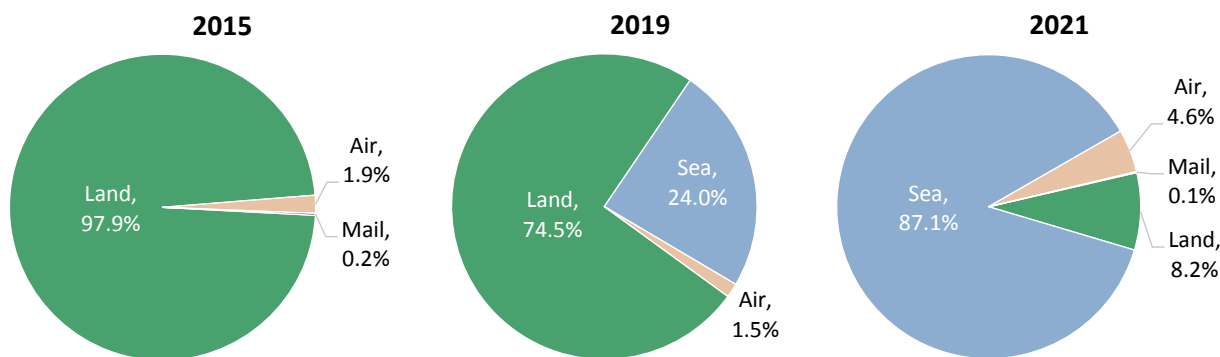
Source: UNODC, responses to annual report questionnaire.

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

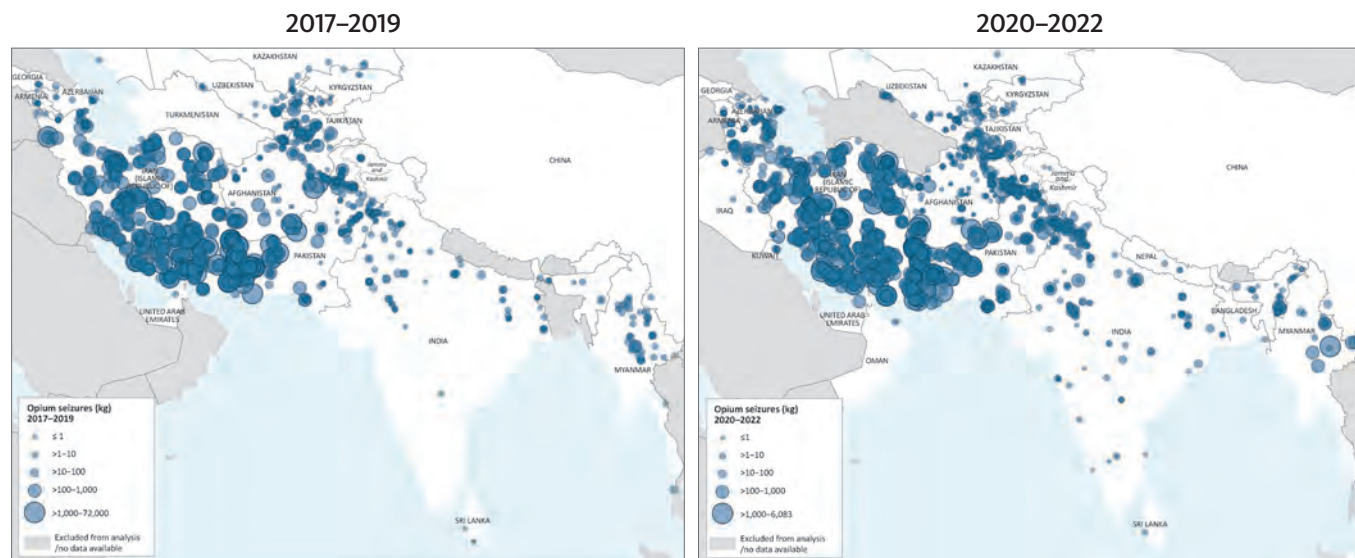
The expansion of opiate trafficking in South Asia may be the result of a combination of supply, demand and demographic factors. The sharp increase in opium production in Afghanistan over the past two decades may have led to an increase in the availability of opiates on

FIG. 60 Inbound trafficking in heroin as reported by the Indian authorities, 2015–2021



Source: UNODC, responses to annual report questionnaire.

MAP 27 Significant individual opium seizures in South Asia and neighbouring subregions



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.

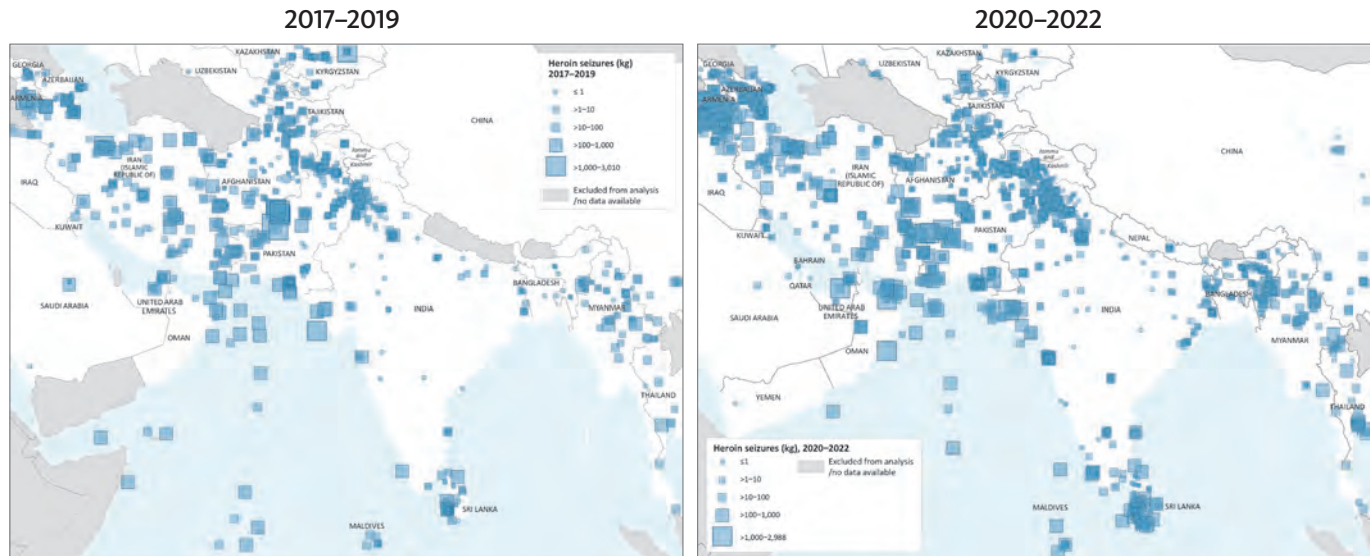
Source: UNODC, Drugs Monitoring Platform.

the market, while the expansion of the opiate supply towards South-Asia, in particular India, may have created an increase in demand.

The best estimates of the number of opiate users in South Asia show a clear increase over the past two decades. This is partly because of better data, partly because of population growth in the subregion and

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,

MAP 28 Significant individual heroin seizures in South Asia and neighbouring subregions



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

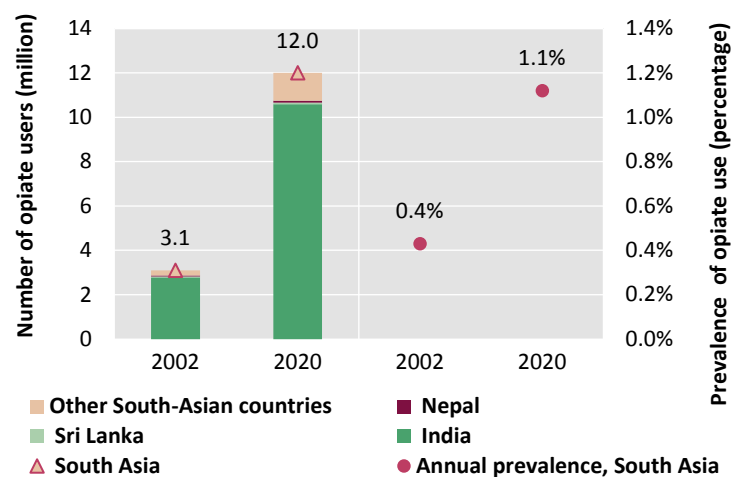
Factors affecting drug use in South Asia are, in general, not that different from those reported in other regions, and include curiosity, peer pressure, pain reduction, anxiety and work efficiency.²⁷⁵ Having said that, demographic dynamics may be specifically affecting South Asia, not least the increasing 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 inflow of Afghan heroin through Pakistan.²⁸¹

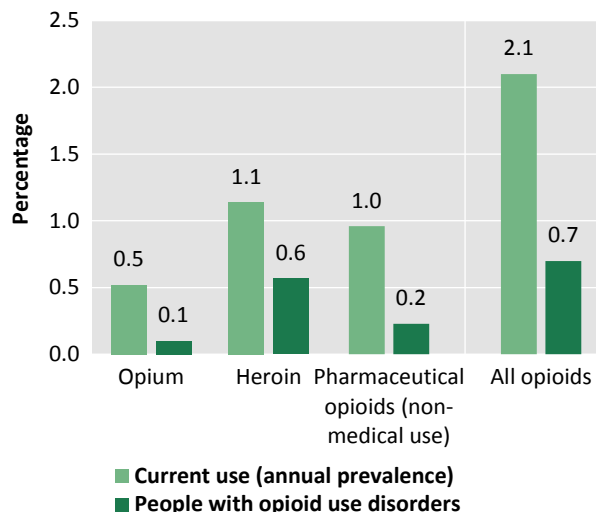
Detailed analysis of opioid use in India reveals that rates vary widely within the country. Among the population aged 10–75, overall rates of opioid use range between 0.2 and 25.2 per cent, and rates of opioid use disorders between 0.1 and 6.9 per cent. The highest prevalence of people with opioid use 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



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

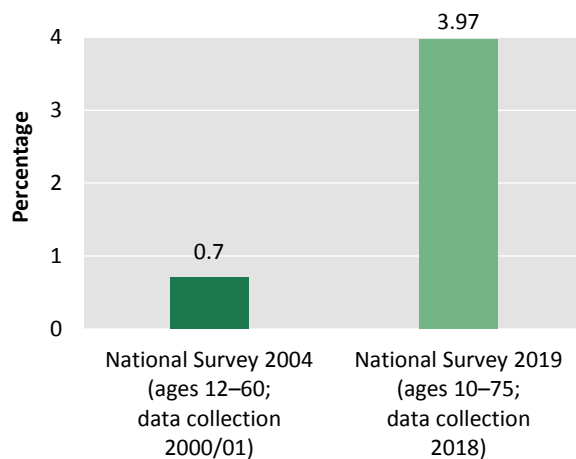
FIG. 63 Annual prevalence of opioid use and prevalence of opioid use disorders among people aged 10–75 in India, 2018



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

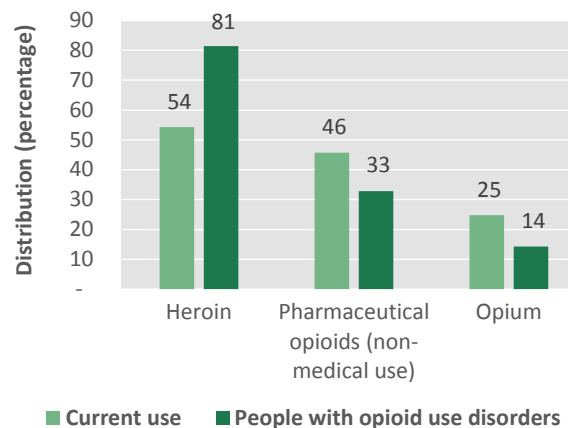
Note: The survey defines people with opioid use disorders as problem opioid users.

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



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

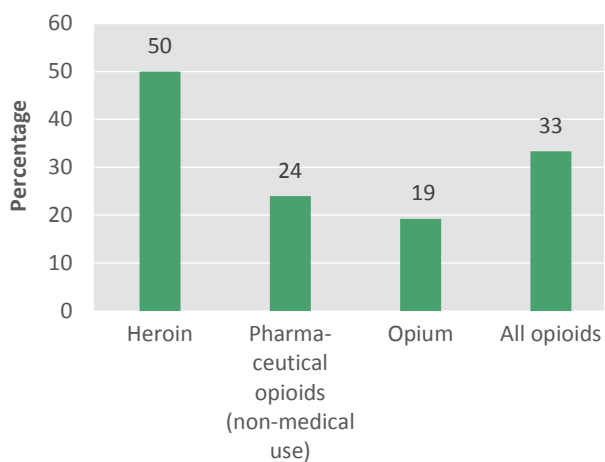
FIG. 64 Type of opioid used by people who used an opioid in the last year (current use) and people with opioid use disorders in India, 2018



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

Note: A person may use more than one type of opioid. The survey defines people with opioid use disorders as problem opioid users.

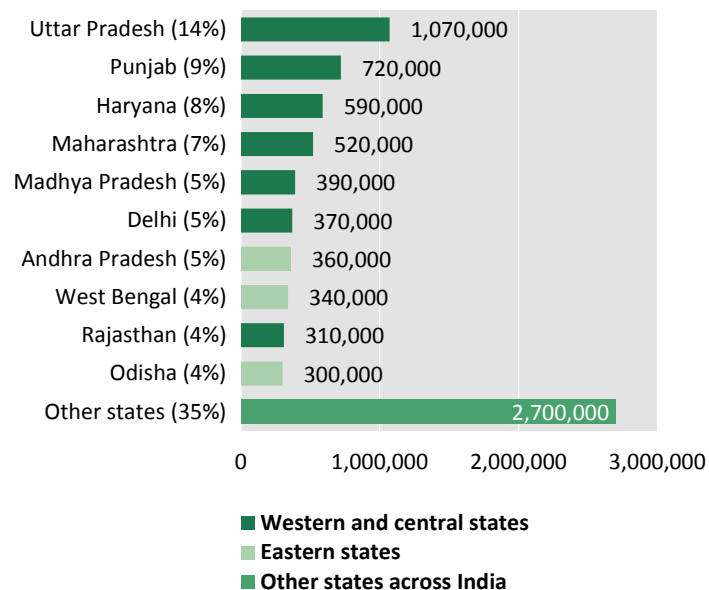
FIG. 65 Proportion of people with opioid use disorders among opioid users in India, 2018



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

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

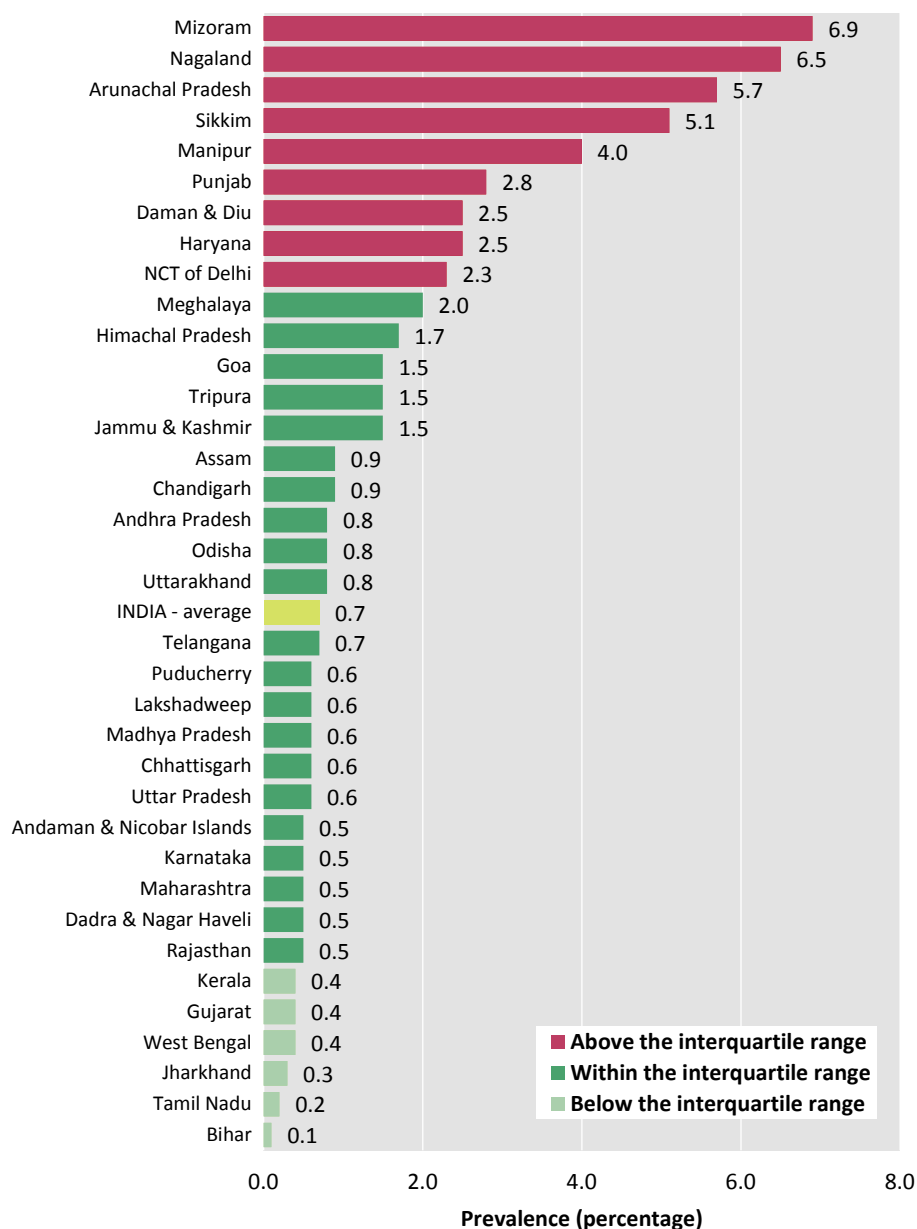
FIG. 66 Number of people in India with opioid use disorders (people who need help for opioid-related problems), by state, 2018



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

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)



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

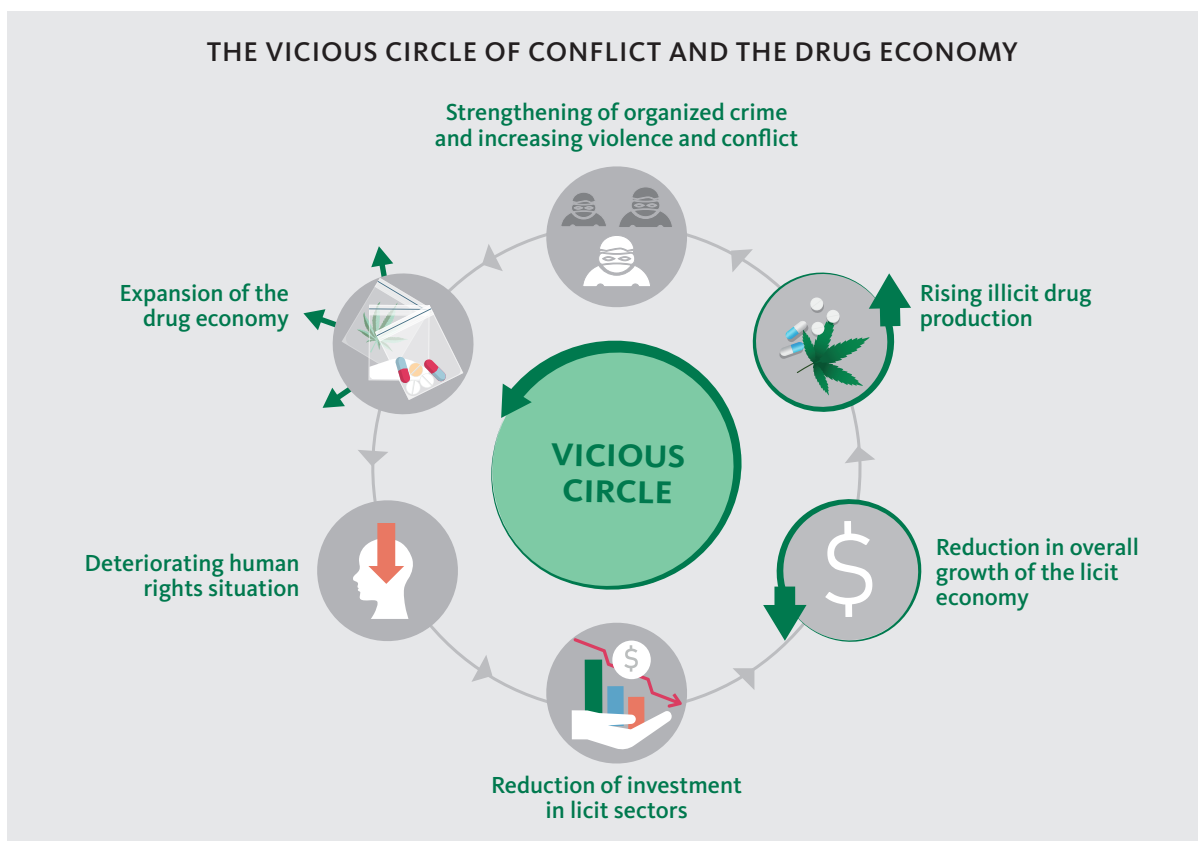
Conflicts and drug supply: Ukraine, Yemen and the Sahel

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.

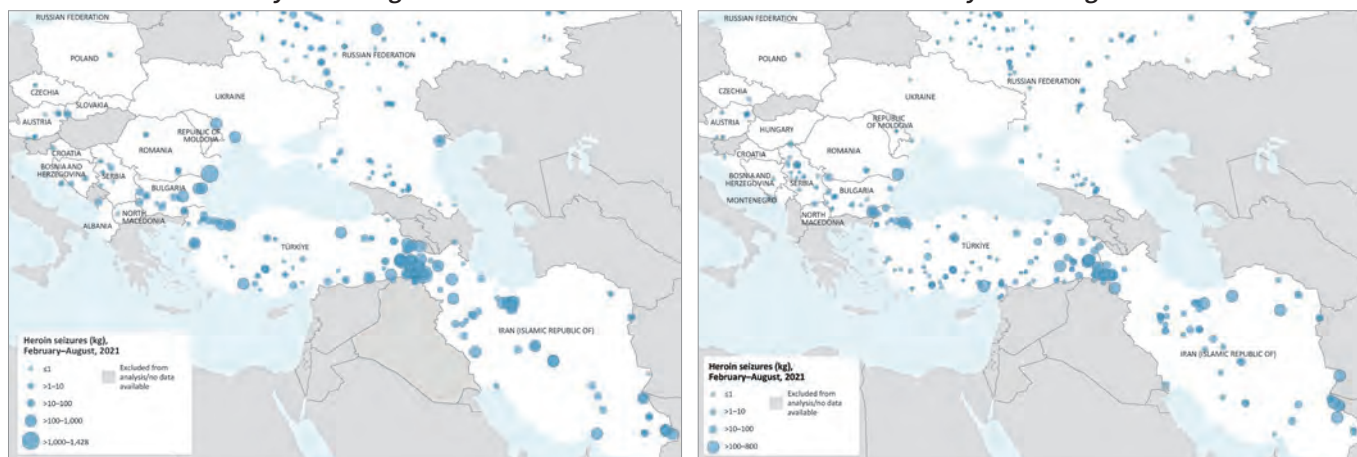
The situation appears to be different in respect of the synthetic drug market, which does not seem to have been disrupted by the armed conflict. Prior to 2022, the internal market for synthetic drugs was expanding, as shown by the sharp increase in seizures of synthetic cathinones and amphetamine in 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-sevenfold 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).

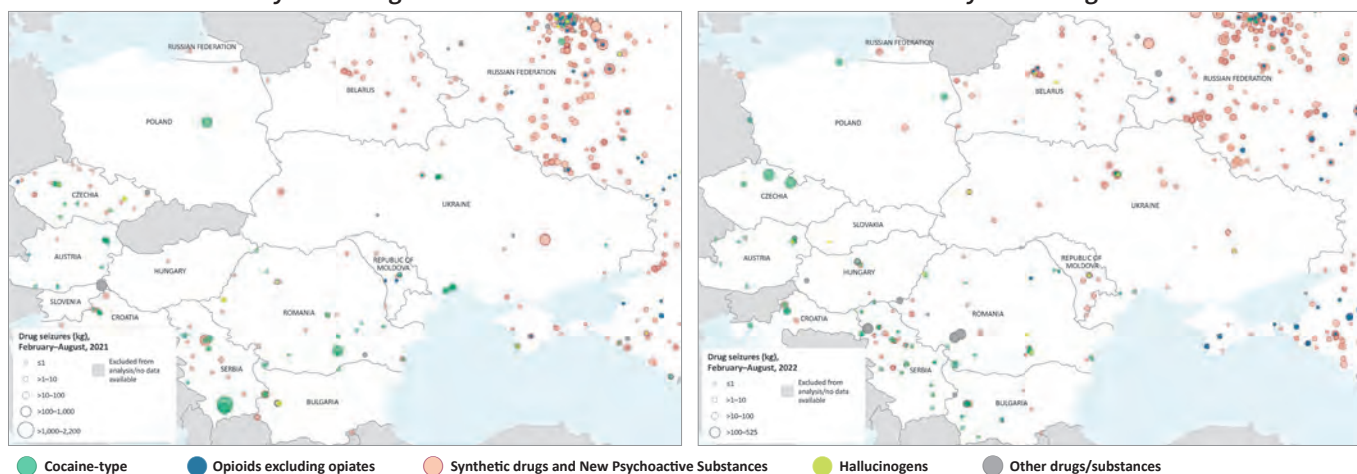
Yemen, a country long blighted by civil war and exposed to trafficking in multiple drugs

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

MAP 29 Significant individual seizures of heroin in Ukraine and countries in its vicinity, 2021–2022
February 2021–August 2021 February 2022–August 2022



MAP 30 Significant individual seizures of drugs other than heroin in Ukraine and its vicinity, 2021–2022
February 2021–August 2021 February 2022–August 2022



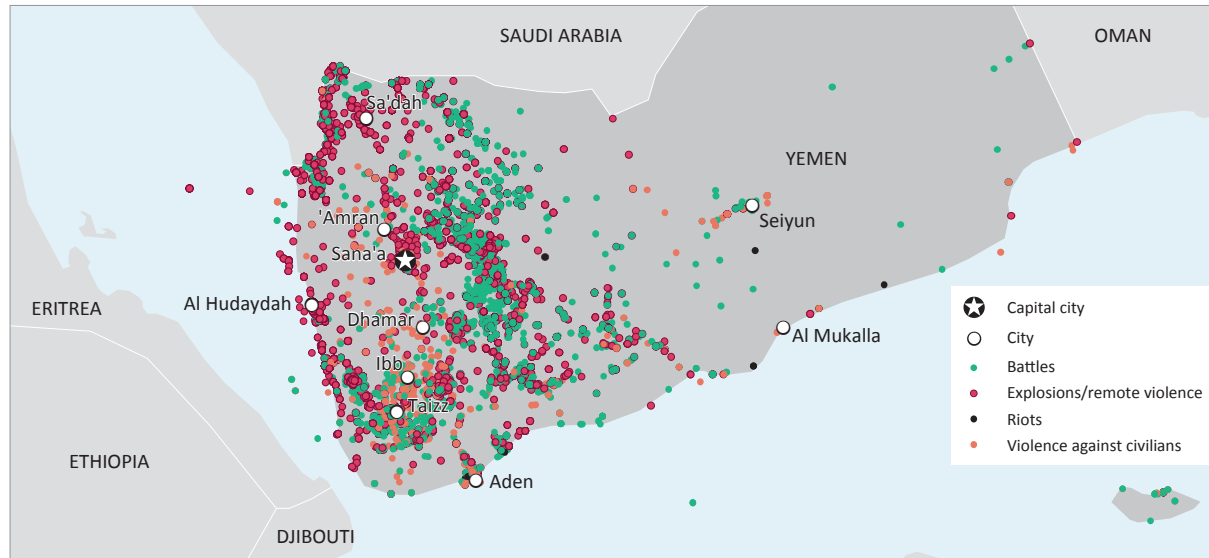
The boundaries and names shown and the designations used on these maps do not imply official endorsement or acceptance by the United Nations.

Source: UNODC, Drugs Monitoring Platform.

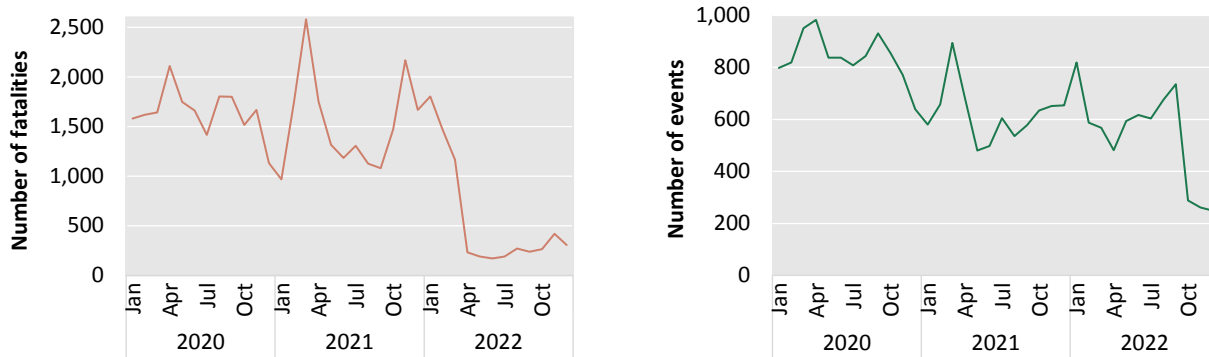
Nations,²⁹⁶ Yemen is among the countries that suffered the largest number of incidents of political violence worldwide in 2022. A broader index of “conflict severity”, based on four indicators (fatality rate, violence targeting civilians, subnational spread of conflict and fragmentation of violent non-State 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.²⁹⁷

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.²⁹⁸ 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.²⁹⁹ Moreover, according to media sources, the authorities estimate that 15 to 20 per cent of children under the age of 12 chew the drug.³⁰⁰ The media has reported

FIG. 68 Development and concentration of political violence in Yemen, 2020–2022



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

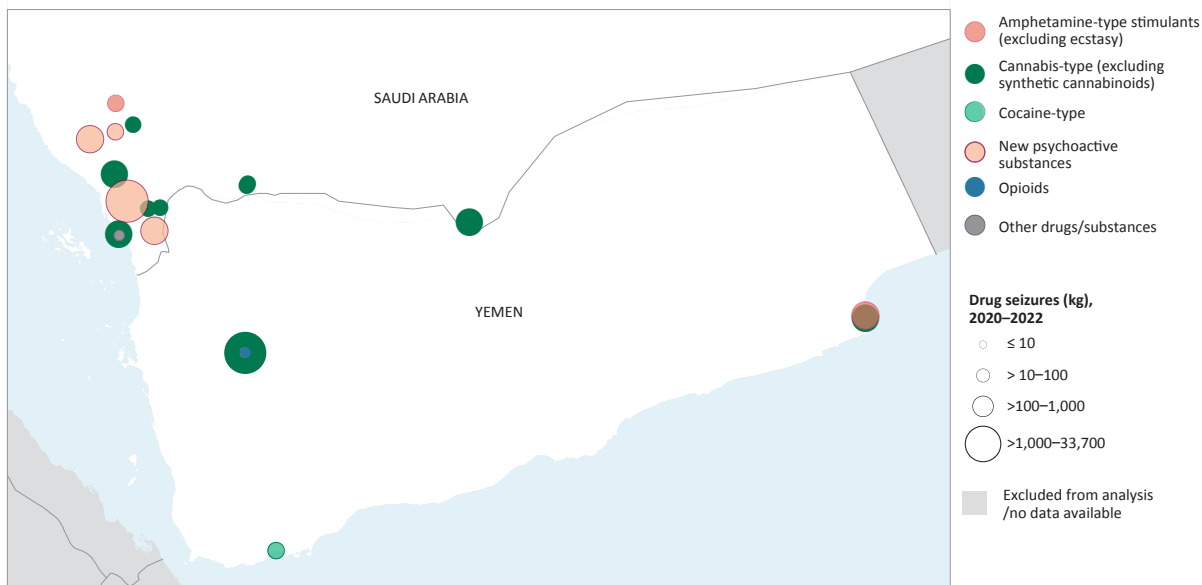


Source: Armed Conflict Location & Event Data Project (ACLED); www.acleddata.com, data from 01/01/2020 to 31/12/2022; OpenStreetMap contributors

that the current civil war has increased the use of khat,³⁰¹ most notably among child soldiers, who chew the drug in order to remain alert on the battlefield.³⁰² Violence in Yemen in recent years³⁰³ appears to have erupted in areas where the large-scale cultivation and consumption of khat have been reported.³⁰⁵ Yemeni farmers seem to cultivate khat primarily for domestic consumption,³⁰⁶ although some of it is also smuggled to Saudi Arabia, particularly to its south-western provinces bordering Yemen.^{307, 308} In the past, some khat was also smuggled by air to countries in North

America,^{309, 310} Europe,^{311, 312} South Asia (India) and East and South-East Asia (China, Malaysia, Thailand and the Republic of Korea);³¹³ however, no such shipments have been reported since 2014,^{314, 315} i.e. after the outbreak of civil war in the country.³¹⁶

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.^{317, 318} Seizure cases reported in recent years indicate ongoing trafficking in cannabis and sporadic

MAP 31 Significant individual seizures of drugs in Yemen, 2020–2022

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

Source: UNODC, Drugs Monitoring Platform.

trafficking in methamphetamine, “captagon”, heroin, cocaine and mephedrone as follows:

- > Cannabis resin originating in Afghanistan and departing from Pakistan³¹⁹
- > Methamphetamine likely originating in Afghanistan³²⁰ and departing from South-West Asia, notably the Islamic Republic of Iran³²¹ and Pakistan³²²
- > “Captagon” originating in the Levant³²³ and departing from Jordan³²⁴
- > Heroin originating in Afghanistan and departing from Pakistan or the Islamic Republic of Iran³²⁵
- > Cocaine departing from Brazil³²⁶
- > Mephedrone departing from the Russian Federation³²⁷

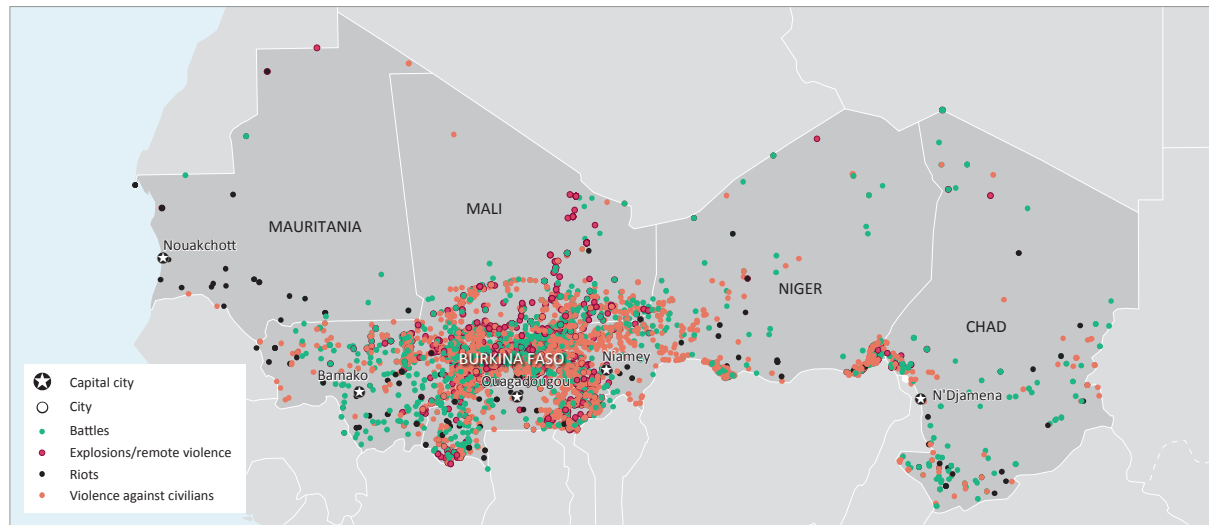
Although seizure data provide some information on the routes along which drugs are transported to reach Yemen, they do not clarify the extent to which such shipments are destined for the local market or for onward trafficking to neighbouring countries (e.g.

Saudi Arabia) or overseas markets (including Europe).³²⁸ 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.³²⁹

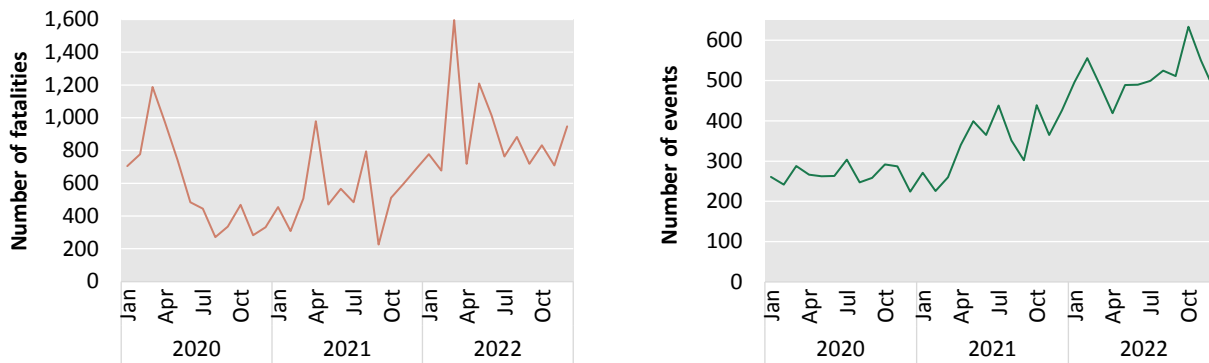
Drug trafficking in the Sahel at the intersection between criminal groups and non-State armed groups

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

FIG. 69 Development and concentration of political violence in five Sahel countries (Mauritania, Mali, Burkina Faso, the Niger and Chad), 2020–2022



The boundaries and names shown and the designations used on this map do not imply social 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.

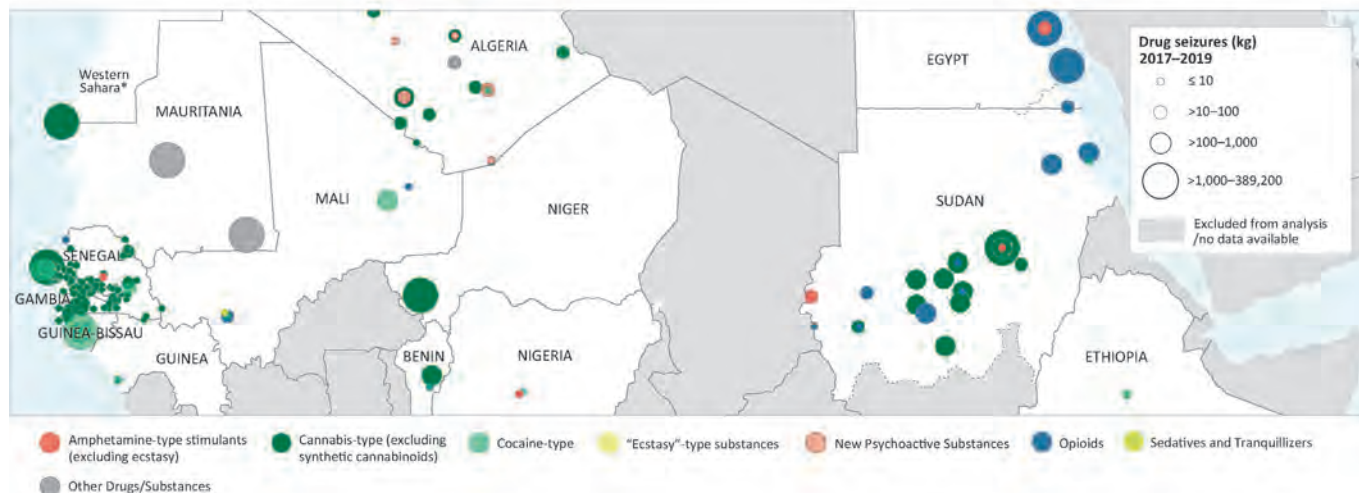


Source: Armed Conflict Location & Event Data Project (ACLED); www.acleddata.com, data from 01/01/2020 to 31/12/2022.

having “extreme severity of conflict” was Mali in 2022.³³⁰ 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.^{331, 332}

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,³³³ 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

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 social 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.

operating drug convoys and other competing groups has led to frequent clashes, resulting in numerous deaths and injuries among the different groups.³³⁴

Although there have been a number of media reports about the connections between terrorist groups and drug trafficking in Africa, very few case studies seem to reveal real evidence of the direct involvement of such groups in drug trafficking.³³⁵ Nevertheless, a few well-documented cases do exist, often linked to Mali. For example, in March 2019 a shipment of 789 kg of cocaine concealed in a truck loaded with frozen fish was seized in Guinea-Bissau;³³⁶ the shipment belonged to a Malian who, according to the Panel of Experts on Mali,³³⁷ was associated with the network of a United Nations-sanctioned supporter of the terrorist group Al Mourabitoun.³³⁸

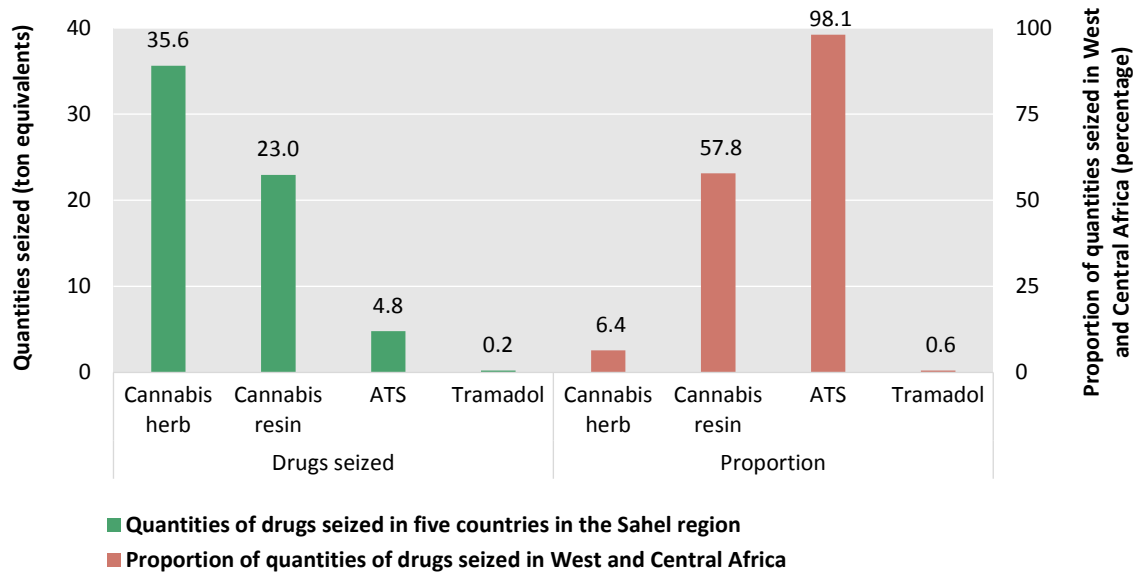
However, given the weak institutional infrastructure, including that of law enforcement, in many countries in the Sahel, individual drug seizures tend to be a poor indicator of underlying drug trafficking activities. The overall picture is also influenced by the reporting or non-reporting of such seizures by individual countries in specific years, rendering attempts to identify underlying drug trafficking trends on the basis of seizures

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 an 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

FIG. 70 Drug seizures in five Sahel countries (Mauritania, Mali, Burkina Faso, the Niger and Chad) and the proportion they represent of overall quantities of drugs seized in West and Central Africa, 2021



Source: UNODC, responses to the annual report questionnaire.

in 2021 (up from an average of 4 tons per year in the period 2015–2020), the largest quantities were intercepted in Mali (18 tons), Burkina Faso (12 tons) and the Niger (5 tons); much of this cannabis herb seems to have been intended for local consumption. The next most seized drug is cannabis resin, with 23 tons seized in 2021 – far more than in previous years. Over 70 per cent of the cannabis resin seized was reported by the Niger (17 tons), followed by Mali (6 tons). The origin of the cannabis resin trafficked along routes in the Sahel is typically Morocco, and its final destinations are frequently other countries in North Africa, and sometimes countries in the Middle East and Europe.³⁴¹ In several instances, large shipments of cannabis resin transiting from Morocco to Libya have resulted in deadly clashes between groups in the region, potentially constituting ceasefire violations.³⁴²

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,³⁴³ which seem to be mostly used in the domestic market.³⁴⁴ Amphetamine accounted for 15 per cent of ATS seized in that period and methamphetamine for 11 per cent.³⁴⁵

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.³⁴⁶

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