



European Monitoring Centre
for Drugs and Drug Addiction



EU Drug Markets Report

In-depth Analysis

2016





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Foreword

Illicit drugs are big business and drug markets continue to be one of the most profitable areas for organised crime groups operating in the European Union. Each year Europeans spend at least EUR 24 billion on illicit drugs. If the sums of money spent on illicit drugs are considerable, then the costs for our communities and citizens are even bigger. The analysis presented here explores these costs in detail. They extend beyond simply the harm to which those who use drugs are exposed; the collateral damage to society resulting from drug market activities is manifest in unsafe communities, damage to legitimate commercial activities, the corruption of officials, violent crime and even the destruction of the environment. This wider impact is why this topic is so important and why I am pleased that two agencies for which I am responsible, the European Union's law enforcement agency, Europol, and our drugs agency, the EMCDDA, have once again joined forces to produce a new state-of-the-art analysis of the European drug market and its impact. This information is invaluable for policy-makers and governments to be able to make informed choices and better policies for the benefit and protection of our citizens and societies overall.

We live in an increasingly joined-up and fast-moving world in which Europe faces social, economic and security challenges on several fronts. Globalisation and technological changes are impacting on all aspects of modern life and the drugs market is quick to exploit these new opportunities as they arise — as is illustrated by the rapid growth of the open trade and sale of new psychoactive substances. In this report it has been necessary to address the growing implications of new technology and the internet, the growth in global trade and the existence of a commercial infrastructure that enables goods to be moved rapidly across international borders. The report shows us why a better understanding of the operations of organised crime and the changing business models used by groups active in drug trafficking and production can help us better target the vulnerabilities of these groups. Importantly, it also explores links to and associations with other criminal activities, such as human trafficking and other illicit trade, and how the income generated from the drug trade can undermine international development efforts, support insurgency and even finance terrorism.

Finally, this report shows clearly that any measures to reduce drug supply will be ineffective unless equal vigour is devoted to addressing the demand for illicit drugs and factors that foster involvement in the drug trade. The EU Drug Markets Report 2016 demonstrates the importance and the growing complexity of the problems we face in this area. I am also convinced, however, that the points for action it contains will make a valuable contribution to both European and national strategies to disrupt the drug market and reduce the harm it causes.

Dimitris Avramopoulos

European Commissioner for Migration, Home Affairs and Citizenship



Introduction

In 2013, the European Monitoring Centre for Drugs and Drug Addiction (EMCDDA) and Europol published the *EU drug markets report: a strategic analysis*, which was the first report of its kind, bringing together our knowledge and understanding of the operation and structure of the drug market within the broader context of the illicit drugs phenomenon. In this report, we build upon the groundwork carried out during that first joint analysis, developing the themes and applying new ideas and concepts that give us an improved insight into this dynamic policy-relevant field. The coupling of Europol's expertise and knowledge of criminal networks with the EMCDDA's holistic overview of the drug situation helps to separate important signals from the ever-present noise. This provides a unique insight that will inform policy development and facilitate action at European Union (EU) and national level.

In this report we present cross-cutting themes that help us understand the illicit drug market. For this we first need to explain what exactly we mean by 'drug market'. Here we use the term to describe the entire chain of events from the production of the drug in the source country to acquisition of the drug by the user in the destination country. We can think of this in terms of the processes, the actors and the impacts/harms. The process includes, but is not limited to, the farming of drug crops; the procurement of precursor chemicals and specialist equipment; the production of the drug itself; trafficking activities and routes; concealment methods; the adulteration steps; and the distribution from wholesale all the way down to the retail level and, finally, consumption. The actors involved are farmers or synthetic drug 'cooks', members of organised criminal groups, facilitators, corrupt officials, middlemen, professionals, whether complicit or not, specialists providing criminal services, dealers and consumers. In addition, the report considers the broader harms associated with drug markets and their impact on society.

Reflecting upon the conclusions and recommendations of the first edition, we find that many are still relevant today, while some new themes are emerging. For example, the adaptable and opportunistic nature of organised crime remains a key challenge for law enforcement, often hampered by the refocusing of national priorities or the need to work with diminishing resources. Criminal elements respond to innovations and take advantage of their ready access to large amounts of cash to buy specialist services, such as the hacking of computer systems, or the latest communication equipment with secure encryption technologies. The internet continues to change how we live, and the recent developments of anonymising software and crypto-currencies such as 'bitcoin' offer new opportunities for online drug supply. Traditional trafficking routes persist, but diversification continues, and the routes appear to be less commodity specific than before, whilst legitimate transport and logistic infrastructures continue to be exploited, with maritime containers representing a convenient channel for large consignments of drugs coming to Europe.

There has been progress on many of the recommendations, and the report was influential in informing EU policy initiatives in this area. Examples of the wide range of initiatives being undertaken both within the EU and internationally are included in the report, and considerable work has been undertaken to improve our knowledge of organised crime operations and to focus on the individuals and groups who are most harmful, but there still remains more to be done. In some areas there has been less progress and, as a result, work on these recommendations needs to continue; however, new challenges are also emerging.

Our understanding of how criminal actors and activities in the drug market permeate our society has evolved to the point at which we can begin to describe it in some detail. Our

analysis shows how drug markets are related to other criminal activities, and that they create a strain on government institutions and have a serious impact on legal business and the wider economy, not to mention negative effects on neighbourhoods, families and individuals. We report how the drugs business and the organised crime groups that control it have an impact upon many aspects of society, from the exploitation of vulnerable migrants as a workforce for cannabis cultivation to the corruption of officials in public office.

The report also considers the critical success factors for criminal organisations operating within the drugs market and the conditions that influence their operations. Building on previous research projects, we present for the first time estimates of the retail market size, in terms of quantity and value, for the main drugs. These have been constructed as far as possible from the data routinely submitted by Member States to the EMCDDA, and we have been guided in doing so by an advisory group of leading experts in these methods. In making these estimates we have made some very bold assumptions, and the figures we have derived must be seen as indicative only. However, we believe that this is the right time to start undertaking this work, and that the estimation process itself will highlight important gaps in our knowledge which, if filled, will lead to improvements in the estimates in the future as the methodology is refined.

At the same time, we must not forget the on-going instability in some neighbouring regions that could have potentially profound effects on the drug situation in Europe. It is clear that illicit drug markets remain one of the key threats to the security of the European Union. Efforts to understand them and the key actors involved are essential if we are to make sound policy decisions that will have any lasting impact. This report aims to improve that understanding and provide a platform for debate in the coming years. After all, drug markets are essentially driven by two simple motives: profit and power. The ability to undermine these motives is critical if we are to have any impact on drug-related crime and reduce the wider impacts on society.

Alexis Goosdeel
Director, EMCDDA



Rob Wainwright
Director, Europol



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- the European Commission, for providing the original idea for this report, their contribution on the issue of drugs precursors, their revision of Chapter 8 and their input at the production stage;
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- law enforcement officials from the Member States and third countries, for sharing operational intelligence on criminal activities and groups affecting the European Union (EU), principally through the network of Europol National Units;
- the EU Reference Group on drug supply, for providing input on the structure and content of the report;
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In addition, we would like to thank the many other organisations and individuals whose work we have cited.

Sources of information used for this publication include reports from the International Narcotics Control Board, Interpol, the United Nations Office on Drugs and Crime, the United States Department of State and Drug Enforcement Administration and the World Customs Organization. Copyright for the photos used in this report lies with the sources cited.

The analysis provided in this report is based on a synthesis of the joint knowledge of the EMCDDA and Europol on the EU drug market. Where the opinions are literature based, citations are provided; otherwise, the findings are based on monitoring of the drug situation by the EMCDDA and Europol in accordance with their mandates, including information provided by their expert networks in the EU Member States and further afield, as well as contributions from other EU agencies, the European Commission and others.

Executive summary

This report explores the concept of the illicit drug market within the broader context of changing patterns of drug use, cultural and social factors and links to wider criminality. Drug markets continue to be one of the most profitable areas for organised crime groups (OCGs) and it is estimated that EU citizens spend over EUR 24 billion (range EUR 21 to 31 billion) every year on illicit drugs. The impacts that drug markets have on society are correspondingly large and go beyond the harms caused by drug use. They include involvement in other types of criminal activities and in terrorism; impacts on legal businesses and the wider economy; strain on and corruption of government institutions; and impacts on wider society.

Three overarching themes emerge from our analysis:

- The increasing organisational and technical complexity, interconnectedness and specialisation of groups involved in drug markets.
- Globalisation and technology are accelerating the rate of change in the drug market.
- Drug market-related activities are concentrated in a number of established and emerging geographical locations.

These developments challenge those trying to respond to the problems created by the illicit drug market and the associated wider problems and suggest that:

- A systemic analysis of drug market business models will be helpful for both operational and policy purposes.
- Partnerships between national authorities and with industry are becoming ever more important, as is engagement with international organisations and third countries.
- Efficient use of resources can be achieved through the identification and targeting of geographical locations where drug market-related activities are concentrated.
- Continuing recognition of the value of a strategic response, informed by sound information used to identify new opportunities as well as challenges, is essential.

The report also looks in more detail at the markets for the main drug types and the key points are summarised below.

Cannabis is the most widely used drug in Europe and it is estimated that cannabis accounts for around 38 % of the retail market for illicit drugs and is worth more than EUR 9.3 billion annually (range EUR 8.4 to 12.9 billion). Some 22 million adults in the EU have used it in the last year and around 1 % of European adults use it on an almost daily basis, increasing the risk of health and social problems. OCGs are heavily involved, making full use of technological innovations to produce larger quantities of more potent products in Europe itself. While the market is dominated by herbal cannabis grown within the EU, the cannabis resin from Morocco has been increasing in potency and may be trafficked to the EU alongside other illicit goods and human beings, a trend potentially exacerbated by instability in North Africa and the Middle East.

The **heroin** market is the second largest illicit drug market in the EU. It is estimated at EUR 6.8 billion annually (range EUR 6.0 to 7.8 billion) and is responsible for a significant proportion of drug-related deaths and social costs. Following a period of decline, there are recent signs of increasing availability that may signal increased harms. Opium production remains generally high in Afghanistan. Production techniques, locations, trafficking routes and modi operandi are increasingly flexible and dynamic, as shown by an increase in very large heroin seizures, suggesting a shift to maritime container trafficking, and new

routes involving Africa, the Southern Caucasus, Syria and Iraq are emerging. Nevertheless, the Balkan route remains a key corridor for heroin entry to the EU. There are also signs of diversification in the market, with prescription medicines and new synthetic opioids increasingly being misused.

Cocaine is Europe's most commonly used illicit stimulant, with a retail market estimated to be worth at least EUR 5.7 billion annually (range EUR 4.5 to 7.0 billion). Most use occurs in western and southern Europe and has been fairly stable over recent years, although there are signs of increasing availability. Coca cultivation appears to be increasing after a period of decline but there is uncertainty about how much cocaine is produced and where this occurs. Sea and air transport are used to traffic cocaine to Europe, with Colombia, Brazil and Venezuela being key departure points. The Caribbean and West Africa remain important transit areas, while Central America is emerging. Use of maritime containers shipped through major European ports is a continuing problem. An evolving array of concealment methods is used, including cocaine being incorporated into 'carrier materials' (e.g. plastics) before being chemically extracted on arrival in Europe. Colombian and Italian groups continue to dominate wholesale cocaine supply to Europe, in cooperation with other groups (e.g. Dutch, British and Spanish). West African, especially Nigerian, groups are also active in transporting cocaine from Africa to Europe and Balkan OCGs are emerging actors.

The market for the main synthetic stimulants, **amphetamine, methamphetamine and MDMA**, is estimated to be at least EUR 1.8 billion annually (range EUR 1.2 to 2.5 billion) in the case of amphetamines (including methamphetamine) and EUR 0.67 billion (range EUR 0.61 to 0.72 billion) for MDMA/ecstasy. Amphetamines appeal to both recreational and marginalised drug users and the market for them interacts with those for cocaine and some new psychoactive substances. Recent concerns include the availability of high-dose MDMA products and the increased use of methamphetamine. In the EU, the Netherlands and Belgium are important for MDMA and amphetamine production, while most methamphetamine appears to be made in the Czech Republic. Production is becoming more sophisticated and diverse, and the use of new precursor and pre-precursor chemicals may increase health risks. The dumping of toxic waste also poses health risks and causes environmental damage. Aggressive marketing is becoming more apparent in the ecstasy market suggesting competition between suppliers and more active targeting of specific groups of users.

A large number of **new psychoactive substances (NPS)** are sold openly as 'legal' replacements for illicit drugs. There are no signs of a slowdown in the development of these substances; 100 new substances were reported for the first time in 2015 and the EU Early Warning System is monitoring over 560. The market supplies both recreational and, increasingly, marginalised users and producers anticipate legal and regulatory controls by developing new substances. Globalised supply chains allow bulk quantities of NPS to be ordered online and transported to Europe where they are packaged and marketed on the open or illicit drug market. It is a low-risk, high-profit business attractive to organised crime and there are signs of production in Europe. Distinct but overlapping markets have emerged, such as 'legal highs', 'research chemicals' and 'dietary supplements' sold through 'bricks and mortar' and online shops. With increased availability, harms have increased, such as acute, sometimes fatal, poisonings and harms associated with injecting cathinones.



Overview

Background and aims of the report

This report provides a contemporary, strategic and action-orientated analysis of the information available on Europe's drug market. It is built on a synthesis of operational intelligence, research data and information available from the on-going monitoring of the drug situation. The extent and nature of the drug market, in all its ramifications, is an important topic for this sort of consideration. Significant effort and resources are dedicated to restricting the supply of drugs in the European Union (EU) as part of an integrated and evidence-based balanced approach that also recognises the parallel importance of reducing the demand for drugs. The justification for these investments is that activities in this area benefit both public health and community safety as well as contributing more generally to economic and social wellbeing. But sound policy and actions in an area such as drug control are possible only if they are grounded in an understanding of the complex nature of the problems they are addressing. The hidden, and criminal, nature of the drug market makes it a challenging issue in this respect. Moreover, these challenges are growing, as the drug market has become more dynamic, internally interlinked and externally connected to many of the other critical policy issues Europe faces today. This report helps address these information needs by providing a state-of-the-art review of the data currently available in this area, and draws from this analysis key learning and action points.

The report describes the EU drug market from a number of different perspectives. Starting with consideration of the overall impact of the drug market on society, the overlap with other criminal activities and the drivers of these, it then takes a more in-depth look at what is known about the markets for the main illicit drugs. The last part of the report then reviews the policy and operational responses to the challenges posed by these markets. Thus, the report is intended to provide a comprehensive overview of what is known about the European drug market. This is unavoidably derived from a triangulation between diverse, partial and often contradictory information sources. While putting these together helps provide a more complete picture, it remains important to acknowledge uncertainty and identify where critical information gaps exist. Therefore, throughout this report attention is also drawn to 'what we don't know, but need to know, about the European drug market', an essential introspection if future policies and actions in this area are to deliver maximum returns.

Insights provided by an analysis of the EU drug market in 2016

A number of overarching key themes emerge from the analysis presented in this report. There is increasing evidence that organised crime groups continue to take advantage of weak states and conflict zones, a situation that appears to be worsening. Furthermore, organised criminal groups actively facilitate their illicit business by managing risks and avoiding detection. This may be accomplished by establishing front companies, using the latest encryption and other technologies, hiring specialists to provide 'crime as a service', by corrupting officials and professionals, and by the use or threat of violence. At the same time, globalisation and the internet have continued to play a key part in transforming the way in which the drug market operates, resulting in supply chains becoming shorter and opportunities for detection being reduced. These developments represent major challenges for existing policy and practice in this area, but a better understanding of them may present new opportunities to intervene. There is a need to reinforce international cooperation efforts and to ensure that the available legal and judicial mechanisms, tools and platforms are used effectively. Efforts to improve the sharing of information and intelligence on a strategic and operational basis, building

border control capacities where needed, and to develop closer collaboration both between different law enforcement agencies, and between these agencies and the private sector, are clear priority areas for action. The exchange of knowledge, expertise and best practice, and the provision of training are domains in which the collective EU experience has the ability to plug gaps in vulnerable areas. It is abundantly clear that there are key strategic locations for the drug market and therefore coordinated operational activities targeting these areas are likely to be particularly valuable. Beyond this, the expanding demand for drugs in countries neighbouring the EU and elsewhere must have consequences for the EU in the future, and therefore vigilance and international engagement are likely to become even more important. Lastly, but of considerable importance, is the recognition that the drug market concept is one where the supply of drugs interacts with the demand for these substances. In order to adequately address the negative consequences of the drug market, both for individuals and for society as a whole, effective drug prevention, treatment and harm reduction interventions are as important as interventions aimed at reducing supply.

Key themes and their implications for action

Three overarching, interconnected themes emerge from the analysis developed in this report:

The increasing organisational and technical complexity, interconnectedness and specialisation of groups involved in drug markets. It is now common for organised crime groups (OCGs) involved with the drug market to diversify across multiple drugs, to engage in other forms of criminality, and to form alliances across ethnic and geographical boundaries. Meanwhile there is more specialisation seen in respect of roles and the use and sharing of assets alongside the harnessing of specialist expertise.

Globalisation and technology are accelerating the rate of change in the drug market. The dramatic transformation seen in legitimate commodity markets arising from developments in the global economy and information technology also affect the illicit drug market. Criminal groups are quick to identify and exploit the opportunities provided by easier access to information, the internet as a social and commercial medium, and the growth in international trade, with large volumes of goods rapidly moving across international borders and through multiple transit points.

Drug market-related activities are concentrated in a number of established and emerging geographical locations. Innovation in synthetic drug production and changes in cannabis cultivation have resulted in greater opportunities for drugs to be produced nearer to consumer markets in the EU. Nevertheless, within Europe and elsewhere, some specific geographical locations or 'hotspots' remain particularly important for drug production or trafficking. Some of these areas are long established, while new zones are also emerging.

For those taking action in this area, these themes have important implications, which are elaborated further in the action points in the main body of this report. They are:

A systemic analysis of drug market business models will be helpful for both operational and policy purposes. Understanding the dependencies and potential for interaction between different areas of the drug market, and the rationales, roles and organisational models used within it, is of growing importance. This perspective can assist the disruption of market activities by identifying *modi operandi*, structural vulnerabilities and emerging new threats, helping to refocus operational priorities on key target areas.

Partnerships between national authorities and with industry are becoming ever more important, as is engagement with international organisations and third countries.

Organised crime groups are likely to be active in a diverse range of criminal activities, spanning, or deliberately exploiting the existence of, national borders and involving links with legitimate business sectors. This means that inter-sectoral cooperation, coordination and intelligence sharing, both within and between countries, are of increasing value. Correspondingly, poorly coordinated responses may increase the risk of displacement to those areas where enforcement efforts or regulatory frameworks are weakest; transnational crime requires a transnational response.

Efficient use of resources can be achieved through the identification and targeting of geographical locations where drug market-related activities are concentrated. Such specific locations, which include large container ports, parcel delivery hubs, specific land or air border points, and relatively discrete geographical areas used for drug production, represent priority targets for interdiction efforts. More generally, the larger but still distinct geographical areas identified in this report as important zones for drug production or trafficking activities deserve special attention, and coordinated action plans, addressing development and governance issues alongside drug-related programmes, will be necessary for an effective response.

Continuing recognition of the value of a strategic response, informed by sound information used to identify new opportunities, as well as challenges, is essential. This report makes a strong case for continuing to invest in an intelligence- and data-driven approach to the drug market, which is supported by concrete examples of how and why this works. Looking to the future, the need to anticipate and respond more rapidly to emerging threats is clearly growing. It is equally important to identify and exploit new opportunities, for example: insights derived from forensic data (so-called ‘forensic intelligence’); new technologies for monitoring and surveillance; increased opportunities for international engagement driven by the recognition of shared problems; and growing operational understanding and capacity to work in challenging areas, such as cyber-enabled drug markets.

The EU Drug Markets Report — main elements

This report uses the concept of the drug market as a useful perspective for focusing on the illicit production, trafficking and sale of controlled substances. The rationale for this is that, despite being one of the priority areas for drug control policy and supply reduction activities, the drug market is rarely considered holistically or systemically and yet such a perspective is likely to be critically important to both the formulation and evaluation of activities in this area. Supply reduction efforts are central to Europe’s response to the drug problem, and in this report these are considered within the general context of a multidisciplinary approach which has the objective of improving public safety, with a focus on protecting public health, but also preventing and reducing violence and other harmful consequences associated with the production, distribution and use of drugs. At a strategic level, the identification, disruption and dismantling of serious organised crime groups involved in drug trafficking, money laundering and corruption are key elements of law enforcement activities in this area.

One of the key aims of this report is to highlight that drug markets, though largely hidden, do not operate in isolation but have widespread implications for society. Part I of the report explores the impacts of the drug market and the harms it causes not only to those involved in the trade, but also to the legal economy, government institutions and society more

generally. The links with other serious criminality that may also be perpetrated by organised crime groups involved in the drug trade are also explored. This includes human trafficking and exploitation, and there is also some evidence of links to terrorist activities. The damage to the environment caused by the dumping of waste materials from drug production is often overlooked, but its impact can be severe and include harm to fragile ecosystems and surrounding populations in producing regions, or pollution to land and water systems in the EU. Part I also examines the current drivers of drug market evolution, such as developments arising from globalisation and technological developments, including the increasingly important role of the internet in information exchange and as a marketplace.

Another new element of this report is the inclusion of an estimate of the size of Europe's drug market. Calculations in this area are extremely challenging, and the approach used here has been a deliberately cautious one. Based on the available data, a minimum estimate is provided, noting that some consumption remains unknown and cannot at present be included. Even a minimum estimate in this area, however, represents a considerable financial sum. Additionally, it is hoped that the existence of a data-based estimate, with identified areas for future improvement, not only provides a useful and technically credible baseline for informing current policy discussions, but also represents an important step to inform the future work necessary to improve the estimates. The methodology of how these estimates have been derived can be found in a supporting technical report.

Part II of the report provides an analysis of the market for each of the main drug types, discussed in order according to their market share: cannabis; heroin and other opioids; cocaine; and then the synthetic drugs amphetamine, methamphetamine and MDMA together. The new psychoactive substances, being slightly different from the other substances considered here, are dealt with separately at the end of Part II. Discussion of each drug follows a similar structure, commencing with the key issues in brief, followed by a detailed analysis, and then finishing with action points. These chapters detail the specificities of the market for each substance, but also illustrate the links between the different market areas. This is a point of critical importance to successful policy formation, as actions targeting any specific substance risk being ineffective, or even counterproductive, if they do not take into account their possible wider ramifications for other aspects of the drug market.

Finally, in any action-orientated analysis it is also necessary to both recognise the importance of, and describe, existing policies, structures and activities that are currently targeting the market-related aspects of Europe's drug problem and Part III of the report focuses on these. Here the relevant EU policies and legal, institutional and financial arrangements are described, as well as the actions and initiatives undertaken by the relevant bodies that play a role in their implementation. Many of these reflect the priorities and action points identified in the first *EU drug markets report: a strategic analysis*, emphasising the value that a strategic perspective can have in this area. Many of the issues described in that initial analysis remain important today and are further elaborated here. The 2016 analysis is, however, more grounded in published evidence, and the speed of development in this area has been so rapid that important new elements now need to be considered. Concrete examples of this include the role the internet is now playing with respect to drug supply and the continuing problems posed by the introduction of new psychoactive substances. These are two examples of issues that were addressed in 2013 but which have had to be significantly updated and revised for this report.

This report is accompanied by a Strategic Overview aimed at policymakers and covering the key points. This main report, in contrast, is intended as a more detailed reference document for professionals, practitioners and researchers working in the field of drug supply reduction.

The routine data that support the analysis, as well as the studies that were commissioned to inform the analysis provided in this report, are published separately and are available online. The EMCDDA and Europol would like to acknowledge all who played a part in the production of the report. We are indebted to our colleagues at the European Commission and other EU bodies and also note in particular the specialist networks of experts working in this area across Europe, whose insights and advice have proved invaluable in informing the drafting of this report.

I

PART I

Understanding the widespread ramifications of the drug market

CHAPTER 1

The ramifications of the illicit drug market

CHAPTER 2

Drivers of drug market developments

Key issues — Part I

Understanding the impact of drug markets and drivers of development

Drugs are big business, estimated to make up about one-fifth of global crime proceeds. In the EU they have been estimated to account for 0.1–0.6 % of the GDP (gross domestic product) of the nine Member States for which published data are available.

The EU retail drug market is estimated to be worth at least EUR 24 billion a year. The cannabis market is the largest, making up about 38 % of the total, followed by heroin (28 %) and cocaine (24 %). These estimates are based on limited data, with many gaps. Information about the economics of other aspects of the drug market is even more scanty.

The ramifications of the illicit drug market are wide ranging and go beyond the harms caused by drug use. They include:

- involvement in other types of criminal activities and in terrorism;
- impacts on legitimate businesses and the wider economy;
- strain on and corruption of government institutions;
- impacts on wider society.

Drug supply can usefully be viewed from a business perspective; consideration of features such as architecture, reputation and innovation, as well as risk minimisation and displacement, may identify new areas for law enforcement intervention.

Globalisation is a key driver for change and innovation in drug markets; organised crime groups (OCGs) rapidly exploit new opportunities for increasing profits and evading detection, while authorities often lack the commensurate flexibility to respond.

As with other consumer goods, the internet has had an important influence on the drug business, providing both open and hidden sales outlets, as well as opportunities to shorten the supply chain and for perceived anonymity for technology-savvy consumers on dark marketplaces, while reducing opportunities for law enforcement intervention.

Impact on the legal economy

The large amounts of cash generated by the drugs trade have to be legitimised in some way, and a portion needs to be sent overseas to pay suppliers.

Illegal money impacts on the legal economy as businesses and high-value assets are acquired to 'launder' cash. These 'investments' distort the true economy, leaving legitimate businesses and consumers at a competitive disadvantage.

The activities of criminals engaged in the drug market may have a direct impact on legitimate businesses, such as exposing companies to the risk of being associated with trade-based money laundering schemes, the theft of electricity or damage to rental properties used for drug production.

Wider criminal activity

Criminals, particularly OCGs, are adaptable, and hence there are many ways in which drug markets and those involved in them interact with other areas of illegal activity. These overlaps are not always recognised, so our knowledge of the extent of these interactions is limited and important intelligence and opportunities for action may be missed.

The interactions with other criminal activities can be viewed as being of three broad types:

1. when those involved in drug supply engage in the trade of other illicit goods, for example, firearms or migrant smuggling;
2. when drug supply is used as a means to a different end, as when it provides financing for other criminal activities or when drugs are used to control those being exploited;
3. when other criminal activity is integral to the drug trafficking activity, for example when trafficked individuals are coerced into participation in drug production or trafficking; when corruption is used to facilitate trafficking; when profits are laundered; when cash is smuggled to pay for supplies; or when violence is used to maintain market position.

Terrorism

Internationally there is evidence of some links between OCGs involved in drug trafficking and terrorist organisations, which use these links to fund their terrorist activities. However, these relationships are largely functional in nature.

In Europe, terrorist activity is increasingly fragmented, mainly carried out by either small cells or even a 'lone wolf'. Some of these terrorists may finance their activities through drug dealing or trafficking, but other sources of funding seem to be more common.

While some Member States have already addressed this issue, the functional separation and specialisation of those tackling terrorism and drugs can result in some links being overlooked.

Strain on and corruption of government institutions

Drug supply reduction activities account for the largest share of drug-related expenditure in most countries; budgets for public order and safety from which these activities are financed are under increasing pressure, adding to the strain on already tight resources.

The corruption of public officials in law enforcement and the judiciary, as well as those operating at the political level, facilitates the operation of the illegal market and exerts a corrosive effect, undermining the authority of governments. The corruption of professionals is also a common feature of how criminals avoid anti-money laundering regulations and manage to operate their illegal business within the licit economy.

Development and stability are adversely affected in transitional and developing drug-producing or transit countries, which are often targeted by criminals because of their weak governance structures. In such countries, where there may be few alternative options for legitimate income generation, drug policies need to be integrated with international development programmes.

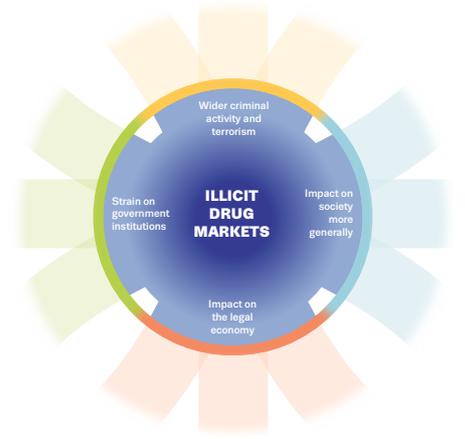
Impacts on wider society

Drug dependence is particularly associated with the need to commit acquisitive crime, causing losses to individual victims and businesses.

Drug-related violence, including homicide, is present in some drug markets as an inherent component used to gain market dominance or for the resolution of disputes. As well as affecting individuals and families, such systemic violence contributes to feelings of insecurity within neighbourhoods, as does the operation of open drug markets.

Drug production generally involves the use of chemicals, many of which are harmful to the environment when the waste materials are dumped. This threatens both fragile ecosystems and the populations where laboratories are located, in the EU and in other drug-producing regions of the world. In addition, a range of other harms are associated with the cultivation of cannabis, coca and opium poppies, such as deforestation and erosion; these harms, although they largely affect countries outside Europe, may nevertheless have an indirect impact in the EU through migration, destabilisation and climate change.

1



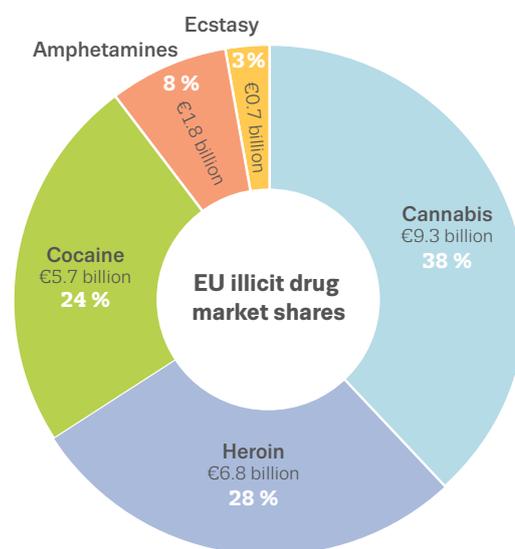
CHAPTER 1

The ramifications of the illicit drug market

Illicit drugs are big business. The hidden nature of the illicit drugs business makes it difficult to estimate the amount of money it generates, but the United Nations Office on Drugs and Crime (UNODC) has estimated that illegal drugs account for about 20 % (17–25 %) of global crime proceeds and are equivalent to about 0.6–0.9 % of global gross domestic product (GDP) (UNODC, 2011a). However, it is important to bear in mind that such figures are not precise estimates but rather an indication of orders of magnitude. To put the size of the illicit drug market into the context of the wider economy in the European Union (EU), it has been estimated that illegal drug production and trafficking in the eight Member States for which data are available ⁽¹⁾ represented between 0.1 % and 0.6 % of the national GDP in the period 2006–13 (Warmark Magnusson, 2008; ISTAT, 2014).

In the EU, the retail market for illicit drugs is estimated to have been worth at least EUR 24 billion in 2013 (range EUR 21 billion to EUR 31 billion); the cannabis market is the largest, accounting for about 38 % of the total, followed by the heroin (28 %) and cocaine (24 %) markets (Figure 1.1). These new estimates are based on very limited data, with many gaps, which has necessitated some very broad assumptions. Hence, these figures must be viewed as initial minimum estimates that will need to be revised in the future as the data underpinning them is improved (see box on page 28). The estimation process has built on previous work in the area (Trautmann et al., 2013) and uses a demand-side estimation approach described in detail in the accompanying technical report (EMCDDA, 2016a). Beyond estimates of the size of the retail market there is a need to develop our understanding of the economics of other aspects of the drug market, such as production and wholesale supply activities, to allow a fuller estimation of

FIGURE 1.1
Estimated minimum retail value of the illicit market for the main drugs in the EU



Note: Percentages do not add up to 100 % due to rounding.
Source: EMCDDA.

the costs and revenue generated at other stages of the drug market and inform broader estimates of illicit financial flows relating to the illicit drug market in the future.

The impact that drug markets have on societies is not restricted to their financial weight. As well as generating vast sums of money, as was highlighted in the previous edition of this report, drug markets are increasingly diversified and globalised and interact more and more with other licit and illicit markets and activities. Thus, drug production and supply, and the individuals or groups engaged in these activities, cannot be considered in isolation: they have connections and impacts throughout the criminal sphere, the licit economy, government institutions and society more generally.

⁽¹⁾ Estimates are publicly available for the Czech Republic (2010), France (2013), Germany (2011), Italy (2011), the Netherlands (2010), Spain (2010), Sweden (2006) and the United Kingdom (2009). The combined GDP of these countries accounts for over 80 % of the total EU-28 GDP.

The challenge of estimating the size of the illicit drug market

The illicit nature of drug supply means that the market is hidden and collecting data on the nature and extent of the phenomenon is very difficult; for this reason there are important gaps in our knowledge of key aspects. This hampers the estimation of the size of the market and any such estimates have a number of important limitations and often vary considerably as a result of the use of different data sources and the assumptions made to fill in gaps.

For this report our approach has been to use, wherever possible, data sources that are collected routinely and reported to the EMCDDA by most EU countries to enhance consistency and facilitate on-going development. Methods of imputation for missing data and all assumptions made, together with the limitations of the current estimates, have been documented in detail in the technical report (EMCDDA, 2016a).

The estimation process essentially involves taking estimates of the number of people who use each drug in a year for each country in the EU and then multiplies these by an estimate of the average amount used in a year and the average retail price in each country. The national estimates are then summed to provide a European total.

Key limitations to be borne in mind when considering the estimates presented here are:

- Undercoverage. General population surveys of adults (aged 15–64 years) have formed the basis of most of the estimates of numbers of users, but it is known that some groups of users, particularly some marginalised groups, may be under-represented in these surveys. While we have attempted to use estimates of problem

users and treatment data to identify use by some of these groups, there are still likely to be gaps in coverage.

- Under-reporting of use. Estimates of numbers of users, as well as of frequency of use and amounts consumed, are based on self-reports and it is known that, particularly with respect to stigmatised behaviours, people will often underestimate or under-report use. We have not made any adjustment for this because, at present, we have no robust data on which to base any adjustment and the extent of under-reporting is likely to vary considerably between countries.
- Knowledge gaps. There are significant gaps in the availability of the basic information that we need to estimate market size. In particular, we have very little information about the amounts of drugs used by different groups of users (such as occasional versus frequent users), the relative use of different forms of drugs (e.g. cannabis resin versus herb or ecstasy powder versus tablets) or quantities consumed in different countries, although we do know that there are large differences between countries. Similarly, information on the prices paid is limited. In such areas, we have had to make assumptions and use the best data available.

In the light of the above limitations and others described in the accompanying technical report, it is clear that the estimates presented in this report must be interpreted with caution and must be seen as minimum estimates. There is a need to develop a programme of work to improve the basic data on which such estimates are based to improve future estimates.

These areas of interaction and overlap can be considered within four broad groupings, as illustrated in Figure 1.2, although the distinctions between these groupings are blurred. These broad areas, the most important of which are discussed in more detail below, are:

1. interference in or involvement with legitimate businesses and the wider economy;
2. involvement in other types of criminal activities, e.g. human trafficking and exploitation, and terrorism;
3. strain on and corruption of government institutions;
4. impacts on society in general.

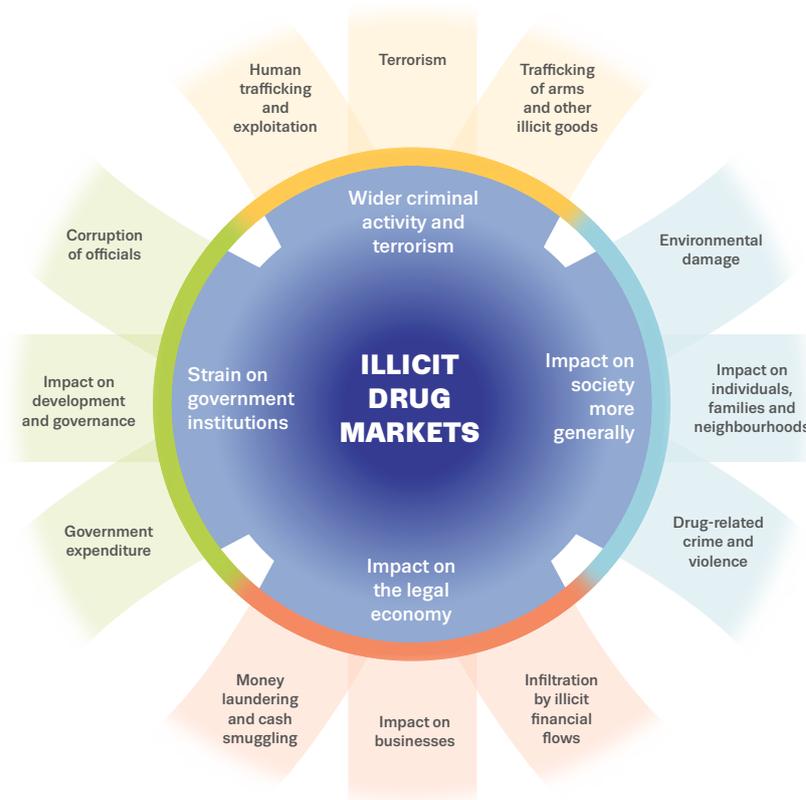
The impact of drug markets on legal business and the economy

Drug trafficking interferes with legal economic activity in many different ways, as do other types of crime. The consequences stem largely from the direct and indirect influences of the large amounts of money generated by the illicit trade, which must be legitimised, but also from the direct impact of losses to legitimate business and corruption associated with the drug trade.

The extent of illicit financial flows

The drug trade generates large sums of money that then need to be dealt with in some way, and a range of methods

FIGURE 1.2
The widespread ramifications of illicit drug markets on society



Source: EMCDDA.

are used by those engaged in the market to integrate these financial flows into the licit economy to legitimise income and establish power and influence. Obtaining estimates of the extent and sources of illicit financial flows is challenging but, as indicated above, drug trafficking is a major contributor to these, estimated to account for about one-fifth of all crime proceeds and about half of all transnational organised crime proceeds in 2009 (UNODC, 2011a). The important contribution of the drug trade to illicit financial flows was also highlighted in a recent report looking at illicit trade in the EU (Savona and Riccardi, 2015). This estimated that illicit drug markets in the EU (heroin, cocaine, cannabis, amphetamines and ecstasy) accounted for one-quarter of the proceeds from all illicit retail markets.

An analysis of the cocaine trade carried out as part of the UNODC study yielded an estimated global value equivalent to EUR 61 billion ⁽²⁾ (USD 85 billion) in 2009, of which EUR 60 billion (USD 84 billion) was considered to be gross profit ⁽³⁾. The analysis sought to take account of what is

known about the structure of the cocaine market and the impact of seizures, and the fact that many of those involved at the lower levels of trafficking organisations make very little, if any, profit, while a few at the higher echelons make huge sums. The cocaine market in Europe was estimated to be worth EUR 19.4 billion (USD 27.5 billion) overall in 2009, with 44 % of retail profits and 90 % of wholesale profits (or 55 % of total profits) being available for laundering, equivalent to EUR 10.8 billion (USD 15.1 billion). Not all of this would be laundered within Europe; the analysis suggested that about half would be laundered in the country in which it was generated and that some would flow out of the region (e.g. to the Caribbean or South America), but almost equivalent amounts would flow in (e.g. South American organised crime groups (OCGs) investing in property in Spain), so that net outflows from the region would be small (UNODC, 2011a).

If we assume that the figure of 44 % of retail profits being available for laundering holds for other European drug markets and apply it to our estimate of retail market size of about EUR 24 billion, this would suggest that something in the region of EUR 11 billion arising from the retail drug trade in the EU might be laundered annually. However, this is a crude estimate and needs to be treated with caution.

⁽²⁾ US dollar amounts have been converted to euros using 2009 exchange rates.

⁽³⁾ Although, strictly speaking, this is not gross profit as no expenses were deducted. It should be noted that the methodology used in these estimates was different from that used in our estimates of the retail market, e.g. including wholesale activities, and is therefore not directly comparable.

Case study 1: The use of legitimate businesses for money laundering

Fourteen businesses, including restaurants, nightclubs and bars, worth EUR 15 million were seized by Italian authorities investigating the money laundering activities of a mafia clan involved in a portfolio of crime including drug crime and extortion. The choice of businesses, which were all owned and managed at arm's length from the criminals, further facilitated the criminality by providing locations for drug dealing. Drug dealers were paid for their criminal activities through 'legitimate' wages paid to family members employed as service staff that in fact came out of criminal funds. The scheme was discovered because the profits from the businesses declared to the tax authorities seemed unreasonable relative to the actual running costs.

Source: Europol (2015a).

Money laundering

The profits from the drugs trade generally need to be 'laundered' to make them appear legal before they can be used further. Money laundering schemes are often complex, involving the placement of the 'dirty' money into the financial system, transferring it internationally to increase the distance from the initial transaction in an attempt to obscure the audit trail and hamper detection efforts, and then returning the 'clean' money to the hands of the criminal in a manner that does not arouse suspicion. In many EU countries, prosecution for money laundering depends on linking the money to the predicate offence, i.e. the underlying criminality that generated the profits in the first place. Proving a link between suspicious funds and a specific predicate offence remains a key challenge for law enforcement. Drug offences account for 21 % of all predicate offences in the EU, the highest proportion of all crimes according to a survey of the Member States conducted by Europol — ahead of corruption/bribery (14 %), fraud and swindling/scams (11 %), and human trafficking/smuggling of migrants (10 %) (Europol, 2015a). A limited number of Member States have provisions for 'unexplained wealth', whereby the authorities can pursue civil forfeiture if they can prove that wealth has not been derived from a legitimate source. Indications of criminality, however, are normally required in order to achieve forfeiture. Such investigations require significant investment in order to be successful: a combination of specially trained officers and prosecutors, international cooperation and a degree of persistence. They can last several years in complex cases. The investigation of money laundering offences is a key priority in the EU Policy Cycle on Organised Crime; however, the efforts of investigators

in this field are frustrated by a combination of the creativity of criminals, slow or inadequate international cooperation, and limited domestic legislation in this area.

A number of characteristics have been identified that make certain legitimate business sectors particularly attractive to money launderers. They tend to be cash intensive, territorially specific (as this facilitates control over the territory in which drug dealing may occur), low-tech and labour intensive. In addition, they often involve public administration or public subsidies (which provides opportunities for infiltration and corruption), small firms useful for their illicit activities, or activities subject to weak regulation. Thus, the legal business sectors most targeted for criminal investment are bars and restaurants (as illustrated in Case study 1), construction, wholesale and retail trade, especially of food and clothing, transportation, real estate activities and hotels (Savona and Riccardi, 2015).

Gambling in casinos, on fixed odds betting machines, or on horse racing, and lotteries are also ways used to legitimise funds. For example, small-denomination notes obtained from drug dealing can be fed into betting terminals and the winnings are returned with a ticket showing that cash has been received from gambling. Although a proportion of the original stake is lost, the remainder now has a legitimate provenance. In the case of lotteries, the money launderer buys winning tickets for more than the prize value and obtains a 'clean' bank cheque when the tickets are redeemed (Europol, 2015a). Insurance policies purchased with 'dirty' cash and then redeemed early, even if this incurs a penalty, are even harder to detect.

Purchases of high-value assets may be used for money laundering but also have other uses. For example, real estate properties may be purchased for money laundering purposes, providing a high return on investment or income, or used to facilitate the trade, providing sites for drug production or sales. Similarly, boats and cars may be useful for trafficking and as status symbols. The purchase of securities, such as bonds or stocks, may provide cover and an apparently legitimate reason for transfers, as well as ownership of legitimate businesses that may be used for money laundering or to facilitate drug trafficking (Schneider, 2012).

Trade-based money laundering, which involves using trade transactions to disguise the source of funds or move money around and which is particularly difficult to detect, is another vehicle for integrating illicit funds into the legal economy. Practices such as over- or under-invoicing for goods or services, or falsely describing them, are used to misrepresent the price, quantity and quality of goods traded, and transfer value from one party to another.

Trade-based money laundering is thought to account for as much as 80 % of illicit financial flows from developing economies (FATF, 2006; PwC, 2015).

Successful money laundering often requires the involvement of professional enablers working in the financial and legal sectors, although the degree to which they are criminally complicit may vary; some will be fully aware of the illegal source of the money involved, whereas some will be indifferent and others simply negligent or incompetent in applying anti-money laundering measures. Activities that fall into this category include the services provided by individual professionals, for example the use of a solicitor to purchase property or other assets, but professional involvement may also take place at the corporate level. For example, major international banking organisations have been found negligent in their application of financial controls; in 2012, HSBC was fined for allowing drug cartels in Mexico and Colombia to launder large sums of money through their accounts (Mollenkamp, 2012; US Senate, 2012). The importance of continued vigilance by financial regulators is illustrated by other recent cases involving other banking groups that have failed to apply proper controls, leaving the banking system vulnerable to exploitation by drug trafficking groups (e.g. Young, 2014; Slater and Jones, 2015).

The need for money transfer and the importance of cash

The transfer of money overseas, whether to pay for drugs or trafficking services or for investment or concealment, is achieved in a variety of ways. Examples using legal financial institutions include electronic transfers or depositing small amounts of cash ('smurfing'), but informal money or value transfer systems (see Case study 2), such as the *hawala*, also known as *hundi*, system, are also used; and sometimes money is simply moved as hard cash. As controls in the regulated financial sector are tightened worldwide, the use of informal value transfer systems and cash smuggling for money laundering may become increasingly attractive (FATF, 2013).

Cash, and its transfer between countries, plays an important role in drug markets for two main reasons. First, drug sales themselves generate large amounts of cash, generally in low-denomination notes. Large sums in this form are bulky so before such money can be spent by dealers it needs to be laundered such that it can be used without arousing suspicion. Hence, it is unsurprising that, in the EU, drug trafficking is the offence most commonly linked to the use of cash in money laundering schemes. Secondly, cash is useful within the laundering process because it is a bearer negotiable instrument, which means

that it belongs to whoever has it and, unlike electronic transfers, it is hard to ascertain its source and impossible to know the intended beneficiary. Institutions subject to regulation may still be involved at some stage and cash is still the main trigger of suspicious transaction reports, making up a third of all reports (Europol, 2015a).

Cash may be physically smuggled between countries, often using methods similar to those used to transport drugs themselves, and cash smuggling is a specialist service. In return for a proportion of the amount to be smuggled (4),

Case study 2: Transforming cash

A recent investigation by French authorities into a drug trafficking network led to several arrests relating to the laundering of the group's profits.

Money from the sale of cannabis was collected in France. The laundering process began with the transport of cash from Paris to Belgium, where it was used to buy gold. Thereafter, couriers (often Belgian students) acted as mules, transporting the gold to Dubai. In Dubai the gold was then made into jewellery, which was then sent to India to be sold on the gold market. The profits were finally shared between the OCGs and money launderers with the assistance of bankers with access to the financial system.

A key organiser admitted having laundered EUR 36 million since 2010 and sending 200 kg of gold from Belgium to India. The network collected about EUR 170 million per year.

Furthermore, the case revealed a connection between tax evasion and drug trafficking in a scheme designed to balance two illegal flows of cash. Cash coming directly from cannabis dealing in Paris was exchanged for sums secreted in Swiss bank accounts which tax evaders sought to access or repatriate. The cash profits from drug sales were handed over in plastic bags full of small dirty notes to individuals with hidden Swiss accounts. Equivalent amounts were debited from their secret Swiss accounts and further transferred through a complex network of shell companies which integrated funds through the purchase of high-value assets. In this way, the need to smuggle the proceeds of drugs across the French border was eliminated.

Source: Europol.

(4) For example, in a study of smuggling between the Netherlands and Colombia this proportion has been estimated to be between 10 and 17 % (Soudijn and Reuter, 2015).

FIGURE 1.3
Examples of cash smuggling attempts detected at European airports



Photo © Dutch Schiphol teams (Customs/FIOD/Marechaussee)



Photo © German Customs, via Europol

the smuggler guarantees the transfer and then uses various trafficking means to deliver the money to the required destination. Because of their smaller volume, high-value notes are important here and traffickers are prepared to spend significant proportions of their revenue to make the conversion. For instance, EUR 1 million in EUR 500 notes equates to just 2 000 notes weighing 2.2 kg, and would fit inside a small laptop bag. In comparison, the same amount of money in EUR 50 notes would weigh over 22 kg and occupy the space of a small suitcase (Soudijn and Reuter, 2015). This suggests that it is important to tighten controls on outgoing traffic to identify cash smugglers as well as incoming traffic for drugs and to review the continued issuing and controls on access to EUR 500 notes.

In some countries, informal value transfer schemes such as *hawala* (also known as *hundi*) may be of particular importance. For example, a recent report on the financial flows associated with the trade in Afghan opiates highlights the importance of these systems in this context, with an estimated 50–90 % of transactions in Afghanistan taking place through such systems (FATF, 2014). It is believed that in most cases payments from consumer countries are first transferred through the banking system to intermediate countries, such as Pakistan and the United Arab Emirates, from where the money is transmitted to Afghanistan via value transfer schemes.

Impact on businesses and the economy

The drug trade has both direct and indirect impacts on businesses, many of which are easy to overlook. For example, open or street drug markets can negatively affect local businesses by reducing the attractiveness of the area to customers and the general public and lowering property values. A more specific example is the large amounts of electricity required for indoor cannabis plantations, which may be illegally diverted from electricity suppliers, reducing revenues and tax payments, and potentially increasing costs to legitimate customers (Ofgem, 2013). The illicit drug market also absorbs resources from the legal economy. Money spent on illicit drugs is denied to governments in taxes and to producers of other consumer goods.

The large proportion of illegal proceeds from the drug trade that is not reinvested in illegal activities but channelled back into the legal economy can also have a negative impact (Unger, 2007). For example, the market for products or services can be distorted when business and investment decisions are made not on a commercial basis but to reduce the risk of detection or facilitate drug-related activities, thus

Case study 3: Corruption and manipulation of public sector procurement

The threats posed by modern OCGs are increasingly diverse. Some activities of OCGs are obviously criminal but others less so, such as the use of criminal acts to achieve unfair advantage in other areas. Some EU Member States have reported cases of criminals bribing public officials to allow them to win tenders for public contracts that provide opportunities for money laundering.

Another example of corrupt practice is provided by the tender process for a contract to provide transportation services for patients travelling to and from hospitals in a region of Scotland. A total of seven tenders were submitted from two separate companies that were associated with OCGs engaged in drug supply by both reputation and criminal intelligence reports. The two companies colluded in the process to provide the appearance of open competition and, for some unknown reason, there were no other applications from any competitors. In the absence of any serious alternative bidders, the contract was awarded, despite the efforts of law enforcement to intervene and prevent public money flowing into the hands of one of the criminally associated firms.

Sources: CSD (2010) and Murray (2016).

undercutting legitimate businesses operating in the same field and effectively pricing them out of the market. Moreover, those involved in the drug trade may bring their criminal tactics into the legal businesses area, for example by rigging tendering processes (see Case study 3), or by using violence to obtain competitive advantage or discourage competition. There can also be an increase in corruption, especially when OCGs seek to use legitimate business to facilitate their activities, for example to get access to containers for drug shipments, and this has a knock-on effect on legitimate business as well as undermining the credibility of legal institutions (UNODC, 2011a).

The application of controls on illicit drugs that also have pharmaceutical uses and on precursor chemicals also poses a financial burden on legitimate businesses as well as the state. The diversion and thefts of these substances is another source of financial loss while counterfeiting and the illegal production of substances that are then sold on the black market may lead to reputational damage for legal producers.

Drug markets and the link to wider criminal activity and terrorism

This section examines some of the links that exist between drug markets and other forms of criminal activity, including terrorism. There are numerous reasons why drug-related and non-drug-related crime may coexist. For example, those primarily engaged in other forms of criminal activity or terrorism may simply be attracted to the drug trade as a convenient source of funds. Alternatively, the large profits generated by drug trafficking organisations may encourage diversification into other illicit activities, while the networks and logistical infrastructure established for this purpose may also be utilised to traffic other commodities. In addition, areas where drugs are produced and/or through which they transit are often home to other illegal activity and may be attractive to OCGs more generally because of their fragile legal and political systems.

Terrorism

Terrorist activities need to be funded and drug trafficking provides substantial profits. These facts are the basis of a potential direct link between these two types of activity, and internationally there have been examples of terrorist groups directly engaging in the drug trade to finance their activities (Makarenko, 2012). Historically, this direct involvement is probably best documented in areas where drug production

takes place, such as parts of Latin America, and such geographical links arise at least partly because both drug trafficking groups and terrorist organisations are attracted to countries where judicial and political systems are weak. However, there are obviously a variety of potential sources of finance for terrorist organisations, with direct contributions from supporters generally thought to be among the most important overall (Tupman, 2014). Moreover, terrorist organisations appear adept at seeking out new revenue sources, as illustrated by recent reports that Da'esh has generated significant income through illicit oil sales. Nevertheless, the proximity of conflict zones, where terrorist groups are active, to established routes for drug trafficking and drug production areas, close to EU borders, means that the monitoring of developments in this area must be regarded as both strategically and operationally important.

Conceptually, links between organised crime and terrorism can be thought of as being either links between entities or links between activities. Such links range from simply operational ones, with one type of group making use of the tactics or expertise of the other, through closer organisational ties, to links that could be described as evolutionary, when a terrorist group transforms over time into an OCG, or vice versa. So far, it appears that, in Europe, there are no systematic links between crime and terrorism, linkages being largely of the more limited operational type, with either temporary or more long-term alliances of convenience existing between OCGs and terrorist organisations.

Where they exist, the rationale for operational alliances is that they often provide access to specific expertise or support, linked to the need for terrorist groups to finance their operations. For example, it has been reported that in southern Colombia both the FARC guerrilla group and the paramilitary organisations fighting them imposed 'taxes' on all the actors involved in the cocaine chain including the cartels operating cocaine labs in the regions under their control (Jansson, 2006; Labrousse, 2004). Likewise, in Afghanistan, the Taliban reportedly taxed the actors of the heroin chain including the criminal organisations operating heroin laboratories (Felbab-Brown, 2010). In 2012, Irish Republican groups were reported to be laundering money on behalf of the 'Ndrangheta OCG, which is heavily involved in drug trafficking to Europe, and it has been reported that the Basque separatist group ETA had links with Italian mafia organisations involving exchanges of drugs for arms. Of the 27 operational alliances between OCGs and terrorist organisations active in Europe identified between 2000 and 2010, 18 involved drug-related activities, mostly drug trafficking. In more than half of the cases reviewed, the networks had links to countries outside Europe, including in the Balkan region and the former Soviet Union (Makarenko, 2012).

An additional area of concern in Europe is the potential for radicalisation of second- or third-generation diaspora youth whose families originated in areas historically affected by Islamist or nationalist conflicts. Disaffected young people with a history of criminality, which may include involvement with the drug market, may use their criminal networks in support of terrorist activities. An example of this kind of relationship is the case of Mohamed Merah, who used his criminal contacts for financial and material support of the terror attacks in the south-west of France in March 2012.

A study of jihadi terrorist cells in western Europe found that the majority of the activities did not require significant funds, and there was a trend towards single-actor plots (Ofstedahl, 2015). However, given the adaptability of such organisations, this may change once again. In this study drug trafficking was only rarely a source of finance. Nevertheless, the increasingly fragmented nature of terrorist activity in Europe gives rise to concerns that groups or individuals with a dual criminal/terrorist profile may be harder to detect, as their activities may not register as important with either those concerned with organised crime or those investigating terrorism. There is therefore a need for continued monitoring and analysis of potential linkages in this area, to determine where they occur and who are likely to be involved, in addition to greater communication between the different agencies involved in tackling these threats.

A further, but poorly documented, area of potential linkage is the use of illicit drugs by terrorists or insurgents while undertaking their terrorist activities or in battle, for example the use of illicit opiate-based painkillers to treat wounded combatants or of stimulants to keep fighters going through long engagements. It has been reported that captagon tablets, which generally contain amphetamine or other stimulants, are commonly used by fighters in Syria, for example, and media reports have linked the use of this drug to recent terrorist atrocities in the EU. Although it may be overly simplistic to assume such direct links, this remains an area that needs to be monitored.

Human trafficking and exploitation

The relationship between drug and human trafficking is multifaceted, but the hidden nature of both of these phenomena makes this area difficult to study. Although statistics on human trafficking are collected and efforts are being made to improve the information available, at present recorded data are likely to underestimate the true figures, and published statistics do not currently record whether or not human trafficking offences are associated with drug markets (Eurostat, 2015).

One way in which the activities can be linked is if both activities are conducted by the same OCGs. For example, Turkish and Balkan groups are reported to smuggle both drugs and migrants into and within Europe. One of the reasons why drug trafficking groups may also be attracted to human trafficking activities is that there is some overlap between the routes used and there are advantages to be gained by sharing established logistical infrastructure, which includes transportation and storage facilities. The risks associated with people trafficking are also low compared with drug trafficking as rates of prosecution are lower and penalties are generally less, making it a potentially more attractive business opportunity (Shelley, 2012). However, differences between these areas can also be observed. For example, human trafficking organisations tend to be smaller than some of the large criminal organisations engaged in drug trafficking.

Drugs may also play a part in the human trafficking process, facilitating and maintaining the exploitation of the victims. The United Kingdom National Crime Agency's *Strategic assessment of the nature and scale of human trafficking* highlights that the grooming of women and children by older males, involving the use of drugs and alcohol, is an important method of recruitment for sexual exploitation (NCA, 2014). Substance misuse may also be a pre-existing risk factor for exploitation, with vulnerability arising from either personal or parental substance misuse (Beckett et al., 2013; Klatt et al., 2014). Victims may be given drugs to make them comply with sexual exploitation without resistance, but may also become drug dependent and continue to participate in order to maintain their access to drugs or to pay off drug debts. In addition, the use of stimulants to allow victims to work harder and for longer has been noted (Shelley, 2012; McCarthy, 2014).

The victims of human trafficking may also be made to play a more active role in the drug trade, and there is evidence of this from a number of European countries. For example, vulnerable individuals are lured from their home country by false promises of well-paid work, and after their arrival in the destination country may be coerced into working in the drugs or sex industry, often in order to repay debts accrued to the trafficking organisation or because of threats to family members at home (Anti-Slavery International, 2014; NCA, 2014).

In Europe the use of trafficked individuals, mainly Vietnamese, to act as 'gardeners' maintaining indoor cannabis plantations is well documented, and can involve both adults and children (see Case study 4). In the United Kingdom, for example, 29 of the 54 individuals identified as potential victims of human trafficking for cannabis cultivation in 2013 were children (NCA, 2014).

Case study 4: Human trafficking for the drug trade

Trafficking for cannabis farming

A is from a small village in rural Vietnam. After a poor harvest his family were struggling for food. His parents took out a loan and he was then coerced into working abroad until the debt was repaid. A was transported from Vietnam to the Czech Republic, where he was locked in a warehouse with other Vietnamese boys and men. When he questioned the traffickers or asked to go home, he was subjected to beatings and verbal abuse. He was then smuggled by lorry to a house in Birmingham in the United Kingdom. The windows were boarded up and the house was used for cultivation of cannabis. A was taught how to look after the crop, made to sleep in the kitchen and told that if he left the premises his family would be hurt.

When A was discovered by the police who raided the house, he was disorientated and frightened, and unable to ask for help because he could not speak English. He was arrested and charged. At his interview A was assigned a Vietnamese interpreter who could not understand his regional accent. As he had no identity documents and no registered address, A was detained

in custody. A was 16 years old when he arrived in the United Kingdom but it was assumed that he was over 18 and he was tried in an adult court. He was advised by his lawyer to plead guilty to charges of cultivating an illegal drug. He was sentenced to 21 months in prison to be followed by immediate deportation.

Trafficking for drug smuggling

B, a Nigerian woman, was trafficked to Denmark and forced to transport cocaine in a body belt on her person. She was caught by the authorities and arrested. She was visited in prison by someone from HopeNow, a Danish non-governmental organisation (NGO), who identified her as a victim of human trafficking. A HopeNow representative testified at her trial, stating that she was indeed a victim of trafficking and that her exploiters had threatened to kill her child, who had since been moved elsewhere in Nigeria for safety. B's claim to have been a trafficking victim was dismissed by the court because of lack of evidence and she was sentenced to 3 years in prison for drug smuggling.

Source: Anti-Slavery International (2014).

In addition to cannabis production, victims of human trafficking have been coerced into working in methamphetamine production sites, as drug couriers and as dealers in street drug markets. In addition to being exposed to the physical hazards of working in these environments, they risk prosecution and the coercive nature of their involvement with the offence may not always be taken into account (Hales and Gelsthorpe, 2012). Exploitation for the purpose of criminal activities such as drug trafficking within the domain of the criminal offence of trafficking in human beings is addressed in EU Directive 2011/36, on preventing and combating trafficking of human beings, which came into force in 2013, and may improve the way these cases are dealt with in the future.

Human trafficking and exploitation is not just a transregional or transnational phenomenon but also occurs within European countries; one recent estimate suggests that around one-third of trafficking cases are domestic (UNODC, 2014a). For example, recent reports from the United Kingdom have highlighted the issue of the exploitation of vulnerable young people who go missing from home and are recruited as runners for drug dealers or are 'groomed' for sexual exploitation using drugs and

alcohol. Vulnerable and drug-dependent people may also be coerced into allowing their accommodation to be used for drug dealing or drug production (NCA, 2015a; Sturrock and Holmes, 2015).

Trade in other illicit goods

It is likely that interaction and links between the drug trade and the trade in other illicit goods also exist, given the similarities of criminal 'business models' and supporting expertise and infrastructures in these areas. However, this is currently an under-investigated area.

Falsified, counterfeit, substandard and unauthorised medicines

Globally, the sale of falsified, counterfeit, substandard and unauthorised medicines is big business and a serious and growing public health problem. Over the past decade this market has seen high growth, fuelled by globalisation. As discussed below, the combination of modern transport networks, the internet, low labour costs,

and the rapid growth of the chemical and pharmaceutical industries, particularly in China and India, has facilitated the development of this large market. The potential for huge profits has also led to the involvement of OCGs, although the relationship between these groups and the drug market remains poorly understood. It has been suggested that some illicitly produced opium may now even be used to produce counterfeit medicines.

Alongside the risks to health posed by using such medicines, consumers also face the risk of being victims of fraud by buying from this market. This risk may be compounded by the poor security of many online shops, which could lead to consumers having their personal and financial information stolen or exposed. However, information on the extent of these problems is limited.

Another problem reported in the EU is the diversion of psychoactive medicines for misuse. Here more information is available, although most illicit drug monitoring systems were not designed to identify signals of such misuse so the data are patchy. Nevertheless, data are available from the EU Early Warning System and recent developments to EMCDDA annual data collections mean that some substances are now included. Therefore the information available is improving and, while still limited, raises concerns that misuse of psychoactive medicines may be a growing problem. Data from both individual studies and routine monitoring suggest that the main types of medicines misused in Europe are opioid analgesics, benzodiazepines and 'Z-drugs' (hypnotic drugs such as zolpidem and zopiclone). In particular, the diversion of methadone and buprenorphine from opioid substitution treatment is reported to be a significant problem in some countries, accounting for a non-trivial proportion of overall drug-related morbidity.

FIGURE 1.4
Illicit medicinal products



Fake diazepam tablet containing diclazepam seized in Inverclyde, Scotland, October 2013.

Photo © Police Scotland

Medicines that are traded illicitly may reach the drug market in different ways: they may be diverted from licit use, as is the case when people who are prescribed opioids or benzodiazepines sell a proportion of their prescription; they may be stolen from the legitimate supply chain, including from manufacturers, wholesalers, pharmacies or prescribers; they may be obtained fraudulently through forged prescriptions; they may be purchased from online pharmacies that do not insist on a prescription; or they may be produced specifically for the illicit market. Different approaches are needed to tackle these diverse phenomena. For example, there is a need to focus on prescribing practices as the implementation of good practice in this area may reduce diversion by patients. In some settings, real-time prescription drug monitoring programmes have been found to be successful in reducing inappropriate prescribing (Clark et al., 2012).

Similarly, good practice in medical waste disposal can reduce the risk of the diversion of used fentanyl patches. Partnerships with industry, the development of regulatory controls, as well as customs and policing activity are all likely to be appropriate responses to the involvement of OCGs, which are more likely to divert larger quantities of medicines by infiltration of the supply chain or through the importation of falsified, counterfeit and unauthorised medicines from outside the EU.

The EMCDDA and the European Medicines Agency (EMA) routinely exchange information on the misuse of medicines through EU legislation: the Council Decision covering new psychoactive substances⁽⁵⁾ and the medicinal products legislation related to pharmacovigilance⁽⁶⁾. The EMCDDA also collects information on psychoactive medicines through its on-going drug monitoring activities. Nonetheless, the limitations of current monitoring systems mean that some potentially important developments in this area are difficult to observe; for example, the misuse of tramadol, gabapentin and pregabalin appears to be increasing, but this currently is difficult to detect in the routine data sources available (Griffiths et al., 2014).

Alcohol and tobacco

The revenues from the illicit trade in alcohol and tobacco products also have the potential to generate substantial profits for OCGs; however, to date there is little evidence

⁽⁵⁾ Council Decision No 2005/387/JHA of 10 May 2005 on the information exchange, risk-assessment and control of new psychoactive substances, OJEU L127, 25.05.2005, p. 32.

⁽⁶⁾ Regulation (EC) No 726/2004 of the European Parliament and of the Council laying down Community procedures for the authorisation and supervision of medicinal products for human and veterinary use and establishing a European Medicines Agency, OJEU L 136, 30/04/2004, p.1.

concerning links between the markets. The profits from illicit tobacco sales within the EU, for example, have been estimated to be similar to those derived from the cocaine or heroin market (Savona and Riccardi, 2015). As in the case of the illicit medicines market, the trade in these products appears to be evolving, and is characterised by the presence on the market of smuggled genuine products (where tax is not paid in either source or destination country, or both) and illicitly manufactured products (including counterfeit products). As the penalties are less severe than those available for drug trafficking activities, this makes them high-profit, low-risk activities and would suggest that alcohol and tobacco smuggling are likely to be an attractive area for OCGs. The expertise and infrastructure are likely to be to some extent common for both drugs trafficking and tobacco and alcohol trafficking although the market outlets may differ.

Firearms

Firearms are sometimes used by those involved in the drug market and, unsurprisingly, there are reports of drugs and firearms being smuggled together. For example, a lorry driver from the Netherlands was jailed in 2014 for attempting to smuggle drugs and firearms into the United Kingdom. Along with two guns and ammunition, more than 600 kg of cannabis resin/cannabis, 60 kg of amphetamine, 50 litres of amphetamine in liquid form, 6 kg of cocaine and 1 kg of MDMA were intercepted (NCA, 2015b). However, the best and most consistent documented link between the supply of arms and drugs concerns outlaw motorcycle gangs (OMCGs). These groups are noted as having a long history of involvement in the supply of both drugs (see individual drug chapters in Part II) and weapons. There are also concerns about the growth in numbers of such gangs and about the potential impact on the EU of OMCGs based in neighbouring countries. OMCGs are particularly active in trafficking drugs, weapons and humans from the western Balkans to western and northern European countries. Efforts are currently being made to develop a strategic response to this problem and it remains a potentially fruitful area for cross-border intelligence sharing and coordinated operations (Council of the European Union, 2015a).

Strain on and corruption of government institutions

Government expenditure

A large amount of government spending that would otherwise be available for other purposes is used in tackling drug markets or responding to the problems associated with it. The amount of public expenditure invested in the supply reduction area is difficult to estimate with any precision simply because of the wide range of public sectors involved and the fact that many activities are undertaken as part of general policing or customs activity. This expenditure forms part of the broader expenditure category of public order and safety but will not be identified (or 'labelled') as drug related.

Despite these difficulties, just over half of EU Member States have in the last decade attempted to estimate overall drug-related expenditure, including both those expenditures labelled as drug related and those related to day-to-day activities. Overall, these data indicate that drug supply reduction initiatives account for the largest share of drug-related expenditure in most countries. There is, however, considerable variation between countries in the proportion of overall expenditure on public order and safety that is estimated to be drug related, which ranges between 1 % and 20 % of the total (EMCDDA, 2014a).

Recently, economic conditions have resulted in European countries reviewing and seeking savings in many areas of public finance. Drug-related budgets have come under scrutiny and, while there is no clear pattern to be seen, some reductions have been observed. More generally, overall public expenditure on public order and safety, the source of finance for most supply reduction activities, appears to have declined markedly in real terms since 2008, especially in 2011.

Early findings from a repeat survey of the availability and activity of drug squads across Europe show a mixed picture, with some countries reporting reductions in staffing — through reductions in either total posts or posts filled — but others suggesting no decrease. Several respondents reported reorganisation or re-prioritisation of work on drugs, in the latter case most commonly suggesting a possible downgrading of the priority being given to drug markets in the face of other threats such as terrorism and border security.

Corruption of officials

Countering corruption is generally a solely national competence; however, as it is identified as a key threat at EU level, concerted efforts are being made to monitor and improve the situation. Such efforts include the adoption of the 'Communication on Fighting Corruption in the EU' (European Commission, 2011) and the establishment of the EU Anti-Corruption Report.

Corruption of public officials, from low-level law enforcement officers at one end of the spectrum through to high-level members of the judiciary and politicians at the other, is a systemic feature of all illicit markets. That said, some countries are more affected than others as a result of historic and social factors as well as cultural specifics; in some countries, corruption is present in all levels of public administrations while in others cases are sporadic. Drug markets have been identified to be one of the two most corruptive influences in the EU (prostitution being the other), with OCGs most commonly targeting low-ranking police and public administration employees, with tax authorities and financial regulators targeted to a much lesser degree (CSD, 2010).

The aim of police corruption by OCGs is usually to obtain information on investigations or operations, or to protect on-going illegal activities. Pressure from corrupt magistrates or prosecutors may, for example, obstruct police investigations of influential individuals who are members of criminal networks. In relation to drugs, the goal of corruption of customs officers is usually to facilitate the free passage of smuggled goods and avoid investigations.

This is most apparent in small town border areas in the eastern EU; in the large western European ports, rather than attempting to corrupt officials, smugglers prefer to rely on the fact that the risk of detection is relatively low because of the huge numbers of containers passing through.

In most countries the judiciary appears to be much less targeted than police officers or politicians. When it occurs, the most frequent reasons are to avoid pre-trial detention, to delay court action or to influence trial outcomes. Staff working in public prosecutors' offices may also be bribed to leak information about on-going cases. Political corruption at the level of elected representatives or heads of agencies/departments appears to be rare. However, political corruption at local level is more common, as evidenced by the fact that in many EU Member States, but especially those along the EU's eastern land border, mayors or city councillors have been convicted of associating with organised or 'white-collar' criminals. These officials may be accessed via social, political, professional and family networks, and in some countries elite social networks allow criminals direct access to the upper echelons of public office.

Most Member States have legislation to address corruption in the private sector (sometimes called 'white-collar' corruption) following the adoption of EU regulations (7); however, data are not routinely collected by governments. The term 'collusion' may also be used to describe the behaviour of professionals such as lawyers, accountants and real estate brokers who provide services to organised

European cooperation against corruption

The European Partners Against Corruption (EPAC) and the European Contact-point Network against corruption (EACN) are high-level European networks of anti-corruption practitioners operating since 2004 and 2008 respectively, composed of more than 70 organisations, including the EU's anti-fraud agency, OLAF. In November 2015, OLAF, together with 52 other European anti-corruption and police oversight bodies, adopted the Paris Declaration, which calls on European decision-makers to strengthen the fight against corruption.

The Declaration calls for:

- deterrent punishment of crimes of corruption through both custodial and financial punishments and effective systems of recovery of assets;

- the introduction of a cross-border automatic exchange of financial information for the investigations of crimes of corruption by the law enforcement agencies;
- the establishment of an appropriate tool at both national and transnational level for the protection of threatened key witnesses and disclosers of crimes of corruption;
- further intensified cooperation and information sharing between anti-corruption authorities and police oversight bodies in Europe through the newly launched EPAC/EACN communication tool within the Europol Platform for Experts.

Source: http://ec.europa.eu/anti_fraud/index_en.htm

(7) Council Framework Decision 2003/568/JHA on combating corruption in the public sector.

crime. Examples of practices for which corruption may be used include diversion of chemicals to illegal markets, the facilitation of drug trafficking by workers in the transportation industry, and the distribution of illicit goods, as, for example, when nightclub door staff distribute drugs. However, it is money laundering, as discussed above, that is the key reason for corruption within the private sector, with the most common issue being bribery to avoid suspicious financial activity being reported to authorities (CSD, 2010).

Some observers draw a distinction between offences based on the official's motivation (Carter, cited in Stinson, 2015). Thus, offences undertaken for personal gain, such as taking bribes, can be distinguished from those that are committed by officials because they are perceived to be legitimate ways of achieving their organisational objectives, such as in the case of perjury, violations of criminal procedure or the planting of evidence. What is clear is that, whatever form it takes, corruption exerts a corrosive effect, undermining the authority of governments, and facilitates the work of organised crime.

Drug markets and development

The global nature of drug supply means that the impact of drug markets on other countries can have serious repercussions for the EU. The impact of drug production and supply on development and stability within developing and transitional countries that are producer or transit countries are wide ranging and complex. The associated corruption and violence can undermine both social and economic development. As noted already, trafficking groups are attracted to areas of the world where governance and judicial structures are weak. The dominance of the illicit economy also encourages other forms of criminality, decreasing tax revenues and reducing respect for the law and state institutions in a vicious circle that increases vulnerability to further exploitation and destabilisation.

It also needs to be recognised that, in some communities, involvement in the drug trade may represent one of the few opportunities available for income generation. This has been acknowledged in the focus given to alternative development support alongside crop eradication efforts in producer countries, articulated in the 1998 UN Action Plan on International Cooperation on the Eradication of Illicit Drug Crops and on Alternative Development, reaffirmed in 2009 and again in the 2013 United Nations Guiding Principles on Alternative Development (UNODC, 2015a). That said, there has been criticism that current investments are more focused on eradication and interdiction activities (Buxton, 2015), and that the alternative development

programmes lack a strong evidence base on which to judge their effectiveness.

This has led to an increasing recognition in the international policy debate in this area of the importance of integrating drug policies with international development policies and programmes if either is to be successful. There have been calls for a paradigm shift to a more holistic approach that addresses a broader set of issues: sustainable development addressing issues such as land distribution as well as income opportunities, strengthening state governance, resilience building and human rights (Gutierrez, 2015; UNDP, 2015). The EU and Member States make significant investment in both drug control measures and development support to drug producer and transit countries in Asia, Africa and the Americas, so ensuring coherence and seeking synergies between these areas is important.

Other impacts on society

Illicit drug markets have a range of impacts on neighbourhoods and society in general. The illegal nature of the drug market means that those who use drugs expose themselves to more harms than would be the case in a legitimately regulated market. However, the harms extend beyond drug users, in that violence, corruption and fear of visible drug markets also affect non-users (Wilson and Stevens, 2008). The drug market can also result in environmental degradation, high crime rates, decreases in property values and loss of amenities because areas associated with drug use become 'no-go areas' and lead to business closures. If the police are seen as ineffective at dealing with drug markets, there may be a knock-on loss of confidence in policing and a reluctance to report drug-related or other offences. In some deprived areas or among marginalised communities, involvement in the drug market may be perceived as providing one of the few available opportunities for income generation and therefore attract vulnerable young people into involvement with criminal behaviour. This can have long-term negative consequences for both those involved and the wider community (Bibard et al., 2013; Connolly and Donovan, 2014).

Drug-related economic-compulsive crimes

The extent to which drug use is associated with offending (other than drug law offences) is dependent on a variety of factors, including the type and pattern of drug use,

socio-economic situation and lifestyle factors. Drug dependence, with the resulting need to finance drug habits, can lead users to engage in acquisitive crime, such as shoplifting, robbery or burglary, as well as drug dealing. Offending is often reduced following engagement with drug treatment services. In the EU, the association with acquisitive offending is most noted in relation to dependent opioid use and some chronic patterns of stimulant use. Drug-related crimes can have a major impact on society, causing significant losses to individual victims and businesses. One study in England and Wales estimated that, on average, heroin users commit 160–230 acquisitive offences a year, around 70 % of which are shop theft, and that this generates ‘an income’ of about EUR 4 700–7 900 (GBP 4 000–6 700) a year. The overall costs imposed on society by an average heroin user’s drug-related crime, although highly uncertain, are placed in the range EUR 71 000–118 000 (GBP 60 000–100 000) ⁽⁸⁾ (Bryan et al., 2013). The overall cost to society of drug-related acquisitive crime in England and Wales in 2010/11 has been estimated to be EUR 6 200 –7 650 million ⁽⁹⁾ (GBP 5 318–6 566 million) (Mills et al., 2013).

Drug market-related violence

Drug market violence is often framed as resulting from the effects of drugs on individual users (e.g. violence stemming from drug-induced psychosis) or as a by-product of involvement in some acquisitive crime, such as robbery, as mentioned above. However, the illicit production and trafficking of drugs has an additional element that links violence, including homicidal violence, with drugs. This

‘systemic’ violence is an inherent component of the illicit drug market, used to gain or maintain market share or resolve disputes (Goldstein, 1985; Goldstein et al., 1989). However, such systemic violence, at least in the European context, appears most often directed towards other groups or individuals participating in the marketplace, rather than consumers. Inter-gang rivalries and struggles over territory are a concern in many countries and have international reach (see Case study 5).

Internationally, both the production and the transit phases of transnational drug trafficking generate a significant amount of crime and violence, as homicides are frequently associated with organisations involved in the movement of drugs (UNODC, 2013a). In a variety of settings, cartels that derive their primary financing from illicit drugs production have been implicated in a substantial proportion of homicides (Castle, 2009; Agren, 2010; Mejia and Restrepo, 2013). With regard to retail markets for illicit drugs, as well as to trafficking, there is evidence that the extent of violence varies and some drug markets are less violent than others (Coomber, 2015).

Representing the most serious form of drug market violent crime, homicides linked to the drug trade have been proposed as a potential indicator of systemic violence (Ouimet, 2012). However, although some information on the frequency of homicides in different countries is available, these figures currently do not provide contextual information, such as the relationship to illegal drug trade, consistently across Europe. This information is either unavailable or limited in comparability because of legal and definitional differences. Although the methodological

FIGURE 1.5

Dump sites of chemical waste from synthetic drug production



A stolen van loaded with waste product from MDMA manufacturing that was set on fire in the Netherlands.

Photo © Dutch National Police/LFO



Waste product from synthetic drug production dumped in a rural area in the Netherlands.

Photo © Dutch National Police/LFO via Europol

⁽⁸⁾ Pounds sterling have been converted to euros using 2013 exchange rates.

⁽⁹⁾ Pounds sterling have been converted to euros using 2010 exchange rates.

Case study 5: Systemic violence associated with drug markets — international and long-lasting

Homicide can be categorised according to the relationship between the offender and victim and the context in which it takes place. Dutch researchers have noted that in the Netherlands most homicides that take place in the criminal environment are drug related. They include the murder by drug users of dealers or other drug users, and the murder of dealers by other dealers, so-called ‘liquidations’. Of all homicides, approximately 11 % fall into this category. The following case compiled from media reports — one of the potential key sources for monitoring drug-related homicide — illustrates the impact of such activity on public order and security.

In December 2014, Vedat Şahin, the Rotterdam-based brother of a top Turkish gangster, was murdered in Istanbul on the same day as his associate, a Dutch-Turkish criminal named Ali Akgün. Şahin was shot whilst walking in the street with his two bodyguards, one of whom also died later in hospital. Akgün was shot dead in his car while it was stopped at traffic lights. According to the public prosecutor, Akgün had been linked to a series of liquidations in the Netherlands, where he was connected with the upper echelons of Dutch organised crime.

One of the people arrested during the police investigation was Atilla Önder, alleged to be connected to the drug trade and to several liquidations, and who narrowly avoided being murdered himself in the Netherlands. In April 2015, Atilla Önder’s son, Baris Önder, was murdered in Amsterdam when his car came under fire. Baris Önder’s close criminal associate of Turkish origin, Murat Garki, who was being tried in a major case of alleged extortion of a drug trafficker, had been murdered in Amsterdam in December 2014. Önder and Garki were suspected to be involved in heroin and synthetic drug distribution and had been arrested earlier in 2014 during an investigation into the murder of Aytas Görler, who had once owned an Amsterdam nightclub called ‘The Sand’, in which Atilla Önder had invested at one time. The Sand nightclub was shut in September 2014 by order of the mayor after a fatal shooting on the premises.

Sources:

Research project European HOMICIDE Monitor (<http://law.leiden.edu/organisation/criminology/research/homicide/characteristicshomicide.html>), Liem et al. (2013) and press reports.

issues in this area are not trivial, it is worth exploring, for future monitoring purposes, if information on drug-related homicides can be improved at the European level. In addition to lessons from the European Homicide Monitor (Liem et al., 2013), some work conducted in Canada provides one potential model that could inform European discussions on this topic (Homicide Survey, Statistics Canada ⁽¹⁰⁾).

Environmental impacts

The illicit production of plant-based and synthetic drugs entails a range of environmental harms where it takes place and the dumping of waste products from synthetic drug production in parts of Europe is a growing problem (Figure 1.5), which is addressed in more detail in the individual drug chapters. Many of the chemicals used in the production of drugs are toxic. The hazardous waste products are often simply dumped on the ground or in streams and rivers in the areas where drug labs are located, which may often be in populous areas or host to fragile ecosystems.

Although precise estimates are not available, it is probable that millions of tonnes of hazardous waste from drug production are released into the environment each year (UNODC 2006a, 2015a). The impact and harms will vary depending on where this takes place. Deforestation is a particular concern and can impact on biodiversity and climate change and increases the risk of erosion. This is a particular concern in areas with heavy rainfall, and when the land under cultivation is on a slope, which is the case of much of the area of coca and poppy cultivation in South America and South-East Asia, as well as areas under cannabis cultivation in the Moroccan Rif area. In addition, the excessive use of chemical fertilisers, herbicides and pesticides in order to increase production can also cause environmental problems. Moreover, in regions with limited water resources, drug production needs compete with other water needs (Chouvy, 2003; Afsahi and Chouvy, 2015).

⁽¹⁰⁾ See <http://www23.statcan.gc.ca/imdb/p2SV.pl?Function=getSurvInstru-ment&SurvId=1723&InstalD=201339>

2

CHAPTER 2

Drivers of drug market developments

As highlighted in the previous EU drug markets report, the drug market is highly adaptable and innovative. The drug market is becoming increasingly diversified and the overlap with other types of criminal activity and the legal economy also appears to be expanding, although this may be due in part to an increased recognition of the potential for it to occur. Consideration of the factors that influence or drive these changes can help the design of new interventions to tackle these issues.

OCGs are increasingly flexible, engaging in multiple forms of criminality. Criminals capitalise on new opportunities in order to generate profit, especially when they are able to use existing infrastructures, personnel and contacts. This is particularly true for groups involved in the transportation and distribution of illicit commodities. For example, a group trafficking cannabis resin from Morocco to the Iberian Peninsula can easily use the same people, routes and means of transport to also traffic cocaine transiting West Africa. OCGs will also expand their enterprises into other supporting or associated activities. 'Crime as a service' approaches are developing. For instance, some OCGs specialise in maritime smuggling or in money laundering, others in disposing of the waste from synthetic drugs manufacturing, while some groups are providers of security services for major drug deals.

Poly-drug trafficking is a common approach chosen by OCGs active in the EU. OCGs involved in the distribution of drugs in the EU typically traffic various types of drugs depending on their price, demand and availability. In addition, OCGs are becoming increasingly multinational in their membership. Some are dominated by one nationality, others by two or more. Some large criminal networks have members of more than 60 nationalities. Whilst acknowledging this, the description of OCGs in this report points out certain nationalities that are dominant players within the networks.

Drug supply as a business

A number of studies that have considered organised crime have suggested that illicit markets, such as drug markets, and the groups engaged in them can be viewed as part of a 'continuum of business' or a spectrum of legality (Savona and Riccardi, 2015; Murray, 2016). For OCGs, involvement in the legal economy is linked to the fact that legitimacy is important for achieving, and enjoying, wealth, power and influence. While they are to some extent similar to legitimate businesses, they also differ in some important ways. Most obviously they carry forward their criminal methods 'use of force, threats, monopoly control, and/or the corruption of public officials' into the licit business world, as in the case of an OCG in Scotland that rigged a contract tendering process for provision of hospital transport (see Case study 3 on page 32). Also, the risks they face and their goals in investment in the legal economy differ from those legal businesses (CSD, 2015), as discussed earlier in the section on the impact of drug markets on the legal economy.

It is also important to recognise that, as is the case in the legal business world, the size of organisations or entities involved in illicit drug supply is highly diverse, ranging from lone individuals or small-scale enterprises to large criminal organisations. For example, at one end there are young people engaged in what is known as 'social supply', who purchase drugs, such as ecstasy, on behalf of friends and may sometimes sell them for a small profit. At the other end are the large organised crime gangs, such as Italian mafia groups, engaged in trafficking large amounts of drugs transnationally. This same diversity can be seen in the different groups engaged in growing cannabis, from individuals growing for personal use to OCGs growing thousands of plants.

A potentially fruitful area for development would be the elaboration of a conceptual framework for understanding the business drivers and contextual factors that influence

those involved in supplying the drug markets. The evidence suggests that key concerns for most people involved at all levels of the drug market are making a profit, sustainability and maintaining a competitive advantage, while minimising risk, for example by outsourcing or transferring it, as is the case for licit businesses. Therefore, viewing drug markets from a business perspective may provide valuable insights into their operations, including factors that may either enable or inhibit both expansion and diversification. Knowledge of such factors may in turn allow the development of more effective strategies for tackling drug supply and limiting the harms arising from it. Such an approach would require the collection of different kinds of information and intelligence as well as a different analytical focus. While it is still experimental, it is an approach that merits testing and builds on developments already under way in Europe.

As Murray (2016) describes in a working paper prepared as background for this report, factors that are likely to be important include the following:

- *Architecture* — contacts, logistical infrastructure, the availability of large cash resources, etc., may drive involvement in wider areas, such as illegal immigration, arms dealing or terrorism.
- *Reputation*, and the need to maintain it, may drive, for example, the establishment of legitimacy through legal business; the need to maintain a monopoly position and reputation may lead to diversification, both geographical and substance related, and potentially to violent crime to maintain position.
- *Innovation/entrepreneurship* — the need for adaptability to remain successful is illustrated by the use of the internet and cybercrime, dealing in new substances or moves into production. This is driven by a need to respond to wider contextual changes: globalisation, technological developments, changes in the regulatory environment and enforcement activity.

Consideration of these broad drivers can help identify potential areas for cross-involvement in different criminal and legitimate activities, mechanisms for quantifying the extent of these overlaps and also areas of possible weakness that might be targeted. This also suggests that responses should target the processes rather than the groups or individuals involved, looking at what is done and how, rather than who is doing it.

Case study 6: Analysing a cocaine supply business

An OCG in Scotland regularly received cocaine from a Liverpool-based group, supplied on credit with payment due in 1 week. A network of retail-level dealers was used to distribute the drug to customers, each receiving a batch of cocaine to sell over a period of 1 to 2 weeks. Each dealer kept GBP 200 of the takings as wages, and the remainder of the proceeds was collected by the local wholesaler. After the Liverpool group were paid, the remaining substantial profits had to be laundered quickly and three legitimate businesses were used for this purpose.

The first scheme involved using dirty cash to buy stock for a bar controlled by the OCG: excess profits were hidden by raising false invoices or paying wages to fictitious staff. The second scheme involved setting up a legitimate company to supply home improvements for 'Green Deal', a government environmental initiative designed to let members of the public and businesses make energy-efficiency improvements to their properties. Once the company was established, subcontractors were paid in dirty money; meanwhile the clean government subsidy money was 'stored' on the balance sheet. The third mechanism involved acquiring properties using mortgages arranged by a corrupt

financial adviser using false income declarations. The dirty money was used to make the mortgage payments through small bank deposits under the suspicious transaction reporting limit ('smurfing').

By taking a business analytical approach, it is possible to identify targets for law enforcement intervention; for example, the key relationships in the business architecture, the Liverpool cocaine supplier, the retail dealers, legitimate traders supplying goods to the bar, the subcontracted insulation installers and the corrupt financial advisor, all represent opportunities for disruption. The reputation of the group retailing the drugs is important, as it allows it to receive drugs on credit and the dealers know they will be paid on time; the exploitation of the Green Deal initiative shows innovation. Understanding these factors leads to opportunities to disrupt the activities of the group by damaging its reputation and inhibiting its access to the legal economy, for example by reporting the misuse of 'Green Deal', which may also serve to prevent other OCGs from attempting such schemes.

Source: Murray (2016).

For example, having certain types of key partners will be essential to enable OCGs involved in drug markets to access the profits they make and to deal with the vast sums of cash associated with this activity (see the section on money laundering in Chapter 1). Recognising this leads on to consideration of how many of such groups, that is, lawyers, bankers, accountants, etc., may be involved with drug trafficking organisations and the extent of this involvement. Appreciating that indoor cannabis farms require properties to house them leads on to consideration of how many estate agents and landlords wittingly or unwittingly are allowing their premises to be used for cannabis production and how they become involved. Case study 6 illustrates this sort of business analysis and also demonstrates many of the issues discussed in the previous chapter, including money laundering approaches and corruption. The importance of this approach is reflected in the SOCTA (Serious Organised Crime Threat Assessment) OCG indicators 'Expertise' and 'Human Resources' (Europol 2015b). Similarly, considering key activities would lead to the identification of the types of activities that are being undertaken by the drug trafficking organisations in both the criminal and licit spheres.

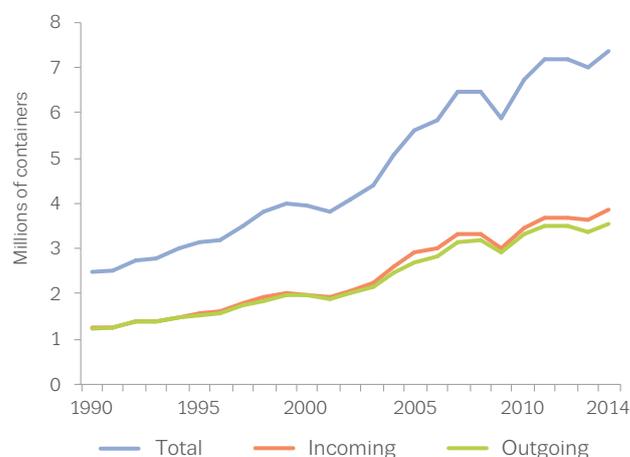
The influence of globalisation

Globalisation and the growing use of the internet are factors that have had a big impact on illicit drug markets and their wider ramifications. Globalisation simultaneously facilitates drug supply, by generally improving its efficiency and multiplying opportunities, while hampering drug supply reduction activities, by making it more difficult to stop larger and more numerous drug flows. In fact, it is probably the most challenging development faced by international drug control at present. Globalisation has created efficiency gains in trafficking activities. Lower transport, communication and information costs have increased the efficiency of illicit business operations. In addition, by opening up borders, globalisation has also made it possible to easily transfer scientific and technological know-how which can be exploited by illicit, as well as legitimate, businesses. If not offset by improved supply containment policies, the reduced costs of bridging the gap between suppliers and producers of illicit products may lead to lower retail prices if passed onto consumers, with the potential for stimulating consumption. Alternatively, or in addition, globalisation increases the potential profits for producers, which might increase production (Costa Storti and De Grauwe, 2009).

One of the main ways in which globalisation impacts on European drug markets is by increasing the diversity and

intensity of flows of people and goods in and out of Europe. Many of the plant-based drugs and precursor chemicals supplied to European markets are produced outside Europe and must be smuggled into the region, while some drugs and precursor chemicals are produced in the EU and supplied to other regions of the world. Each passenger, car, bus, lorry, aircraft, sea vessel and container entering or leaving the region (to say nothing of intra-European traffic) is effectively an opportunity to smuggle illicit goods, so the spectacular growth in global transport, trade and logistics over the past 25 years has multiplied such opportunities. The boom in container traffic entering and leaving Rotterdam by sea in the last 25 years or so is a telling example. The port of Rotterdam receives 30 000 sea vessels and 110 000 inland vessels every year and is Europe's largest, and the world's eighth largest, container port. Container traffic in Rotterdam increased threefold between 1990 and 2014, when 7.4 million containers went through the port (see Figure 2.1), on average a little more than 20 000 containers a day. During the same period the net weight of load transported by the containers processed through the port increased fourfold, to reach 127.6 million tonnes in 2014, or roughly 350 000 tonnes a day ⁽¹¹⁾. This spectacular increase goes a long way to explaining why increasing numbers of middling to large consignments of heroin and cocaine intended for distribution within Europe are seized from containers in the port of Rotterdam every year. Indeed, it takes about 3 minutes for traffickers to illegally open a container and retrieve a consignment of, for example, 100 kg of cocaine distributed in four or five duffel bags. Container traffic in almost all other large European ports, such as Hamburg, Antwerp, Algeciras, Felixstowe, Piraeus, Gioia Tauro and Le

FIGURE 2.1
Container traffic in the port of Rotterdam, 1990–2014



Source: Port of Rotterdam (<https://www.portofrotterdam.com/en/file/1134/download?token=T2mtJxpJ>)

⁽¹¹⁾ Source: <https://www.portofrotterdam.com/en/the-port/facts-figures-about-the-port>

Havre, to name just a few of those processing thousands of containers a year, is also growing.

Air passenger traffic has also increased in most major European airports and, owing to the development of low-cost air connections, in many smaller, regional airports as well. Thus, for instance, the number of passengers using Spanish airports increased from about 166 million in 2004 to about 196 million in 2014 (Aena, 2004, 2014). Land connections are also growing. Thus, for instance, lorry traffic at Kapitan Andreevo, a key border crossing point between Bulgaria and Turkey (Greece is also quite close), was already increasing even before Bulgaria joined the EU, from about 193 000 lorries in 2001 to more than 300 000 in 2003 (CSD, 2004).

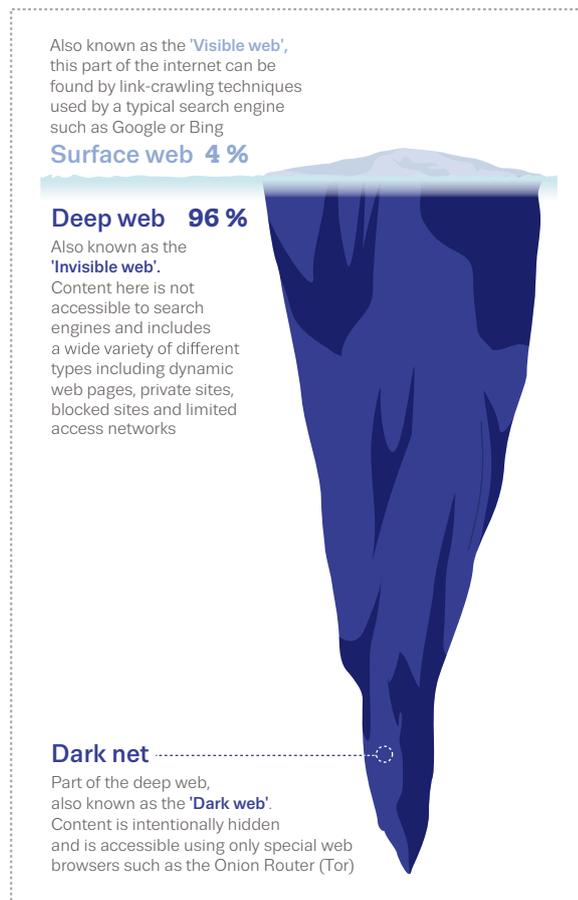
Another perspective on globalisation's impact on drug markets can be obtained by looking at changes in the chemical industry in the last 20 years or so. The precursors used in the manufacture of most traditional illicit drugs are generally produced legally by legitimate firms and then diverted to illicit ends, while new psychoactive substances and their precursors are predominantly made in Asia, particularly China and to a lesser extent India. Four main recent trends have made it simultaneously easier for drug market actors to source chemicals and more complicated for authorities to tackle them. Firstly, the global chemical industry has experienced unprecedented expansion and growth during the last 20 years and continues to grow. Chemicals are now manufactured in most countries of the world and global output of the chemicals industry almost doubled between 1990 and 2010, meaning that it grew faster than global GDP. Secondly, international trade in chemicals has grown even more strongly than their manufacturing, with exports of chemicals increasing 3.5-fold between 1990 and 2012. Thirdly, a significant proportion of international trade in chemicals is made up of re-exports, highlighting the increasing role played by brokers and other intermediaries. In practice, this means that more chemicals are traded between more countries through more intermediaries than ever before, seriously complicating the task of those in charge of targeting illicit shipments. Finally, Asia has become the largest chemical manufacturing region in the world, supplying 44 % of global output in 2010, with China alone supplying 27 % of global output. And a key characteristic of the Asian chemical sector, including China and India, is that it is made up of a large number of comparatively small companies, as opposed to a limited number of large firms. This makes the implementation of in-country controls more difficult because of the large number of sources of chemicals and potential opportunities for diversion (UNODC, 2014b).

Finally, at a general level, demographic shifts worldwide, such as rapid population growth and urbanisation in Africa and Asia, alongside economic developments, will have major implications for global drug markets and will impact on Europe's role in the world drug scene. Implications are difficult to predict, in part because, except in a few western countries, drug monitoring systems are poorly developed or non-existent. Nevertheless, it seems clear that socio-economic development is leading to the emergence of large drug markets in eastern Europe (Russia), the Middle East (e.g. Turkey, Iran), Africa (e.g. Kenya, Nigeria, South Africa), the Americas (Brazil, Mexico, etc.) and Asia (China, India, etc.). This suggests that in future Europe is likely to be even more of a transit point for drug flows starting and ending elsewhere. Early-warning signs are already discernible, for example in the transit through European airports of drug couriers (some of whom are nationals of the EU) carrying methamphetamine made in West Africa or Iran and destined for Japan or the Philippines. Globalisation also makes it probable that more drugs will be produced in Europe for export on foreign markets, as is already the case with MDMA, and that more European criminal organisations will become significant players outside Europe.

The expanding influence of the internet

An important contributor to globalisation that has impacted on the drug market in a number of different ways is the internet, providing not only new ways to access customers and suppliers but also opportunities to enhance the efficiency and security of off-line criminal activities. The internet encompasses what is known as the *surface* or *clear web*, that part of the internet that can be found by link-crawling techniques used by a typical search engine such as Google or Bing, and the *deep web*, which is not accessible to these search engines (see Figure 2.2). The deep web comprises a wide variety of different types of content, including dynamic web pages, private sites, blocked sites and limited access networks. These are generally accessible only by conducting a search of a particular website; for example, much of the information contained in government databases and libraries lies in the deep web. However, a small proportion of the content on the deep web, known as the *dark web* or *dark net*, has been intentionally hidden and is accessible only using special web browsers. This is the portion of the internet most associated with illicit activities because of the relative anonymity associated with this network. However, while much attention has been given to the online marketplaces

FIGURE 2.2
Understanding the web: the iceberg analogy



found on the deep web, the surface web also plays an important role, particularly with respect to sales of new psychoactive substances.

The internet as a facilitator of drug trafficking processes

The internet facilitates drug trafficking in many ways, along all stages of the chain, but a key benefit of internet use for drug supply is the reduction of risk by allowing different stages of the trafficking process to be managed without the need for physical interaction with people, for example through the use of online booking and parcel tracking systems. Similarly, internet phone services, such as Skype, are used to avoid detection through the interception of communications (Lavorgna, 2016).

The deep web also provides opportunities for criminals to network through underground forums and, in addition to providing new opportunities for profit (through online sales), it provides new ways for money laundering and buying access to technical skills (see Case study 7).

The dark net markets also open up the possibility of the establishment of new networks of drug producers/manufacturers, wholesalers, brokers and drug-using customers, on a scale and with a degree of freedom that significantly exceeds what was possible through conventional, interpersonal criminal networks (Martin, 2014). Previously, trafficking required a chain of on-the-ground connections and relationships of trust with drug dealers at different levels and/or producers and importers (McCarthy and Hagan, 2001; Morselli, 2001). With the advent of the dark net market, almost anyone with sufficient technological skills can access stock and, using postal delivery, serve a (potentially) worldwide market of unknown customers they encounter only in the virtual sphere (Aldridge and Décary-Hétu, 2014).

In this rapidly developing marketplace, it is not yet clear to what extent dark net markets, by directly linking drug-using customers and producers/manufacturers, cut out some of the middle level in the drug supply chain (Martin, 2013) or whether most are 'business-to-business' sales that represent the middle level of a drug market (Aldridge and Décary-Hétu, 2014). While a very limited number of cases of connections to more sophisticated drug trafficking operations on Silk Road 2.0 suggest that some vendors may have ties to sources above the retail level (Dolliver, 2015), emerging analysis of sales on a range of dark net marketplaces suggests that most are smaller-scale operations. Many vendors operate on the market for only a short period of time, and the majority (70 %) sell products worth no more than EUR 900⁽¹²⁾ (USD 1 000) in total, with only about 2 % of vendors managing to sell product totalling more than EUR 90 000 (USD 100 000) (Soska and Christin, 2015). A search of available data did not reveal any traditional OCGs selling and distributing drugs online, but it is not clear if this is because of a failure of detection as a result of the emergence of a new type of 'tech-savvy'

Case study 7: Accessing skills through the internet

In June 2013, police in Belgium and the Netherlands dismantled a Netherlands-based drug smuggling ring. The gang had hired hackers to infiltrate the systems controlling the movement and location of shipping containers at a large container port. This allowed the gang to manipulate the data to allow their own drivers to remove drug-loaded shipping containers before the legitimate haulier could collect them.

Source: Europol (2014a).

⁽¹²⁾ Converted using 2015 exchange rate.

OCG — a 'generational shift'. At present, there also appears to be little overlap between drug and non-drug trade activities and networks, with vendors generally selling either drugs or non-drug items (i.e. weapons, hacking, credit cards, etc.) but not usually both (Compton, 2015). However, continued monitoring is necessary to determine whether this market divide will continue, or whether criminal diversity will increase.

Technologies that provide some anonymity to internet users are particularly important as the perceived anonymity associated with the deep web can make people feel more comfortable engaging in illegal activities including, but not limited to, the drug trade (Ciancaglini et al., 2015). The operators on the dark net use a variety of systems to conceal their identity. Anonymisation tools, such as the Onion Router (Tor), are commonly used to hide the identity of participants and transactions, and these are complemented by crypto-currencies, the best known of which is bitcoin, although others continue to evolve.

Internet drug marketplaces

The surface web provides access to pharmaceuticals and new psychoactive substances through online pharmacies and specialist vendors. Not all of the substances on offer will be legal but, because of the many 'grey areas' with respect to these substances, vendors are able to operate on the surface web with relative impunity (Lavorigna, 2016). Like online retailers of other products, they usually provide customer testimonials or reviews and may claim to provide ethically sourced products.

Dark net markets also allow customers to search and compare products and vendors, in the manner of clear net marketplaces (e.g. eBay and Amazon); a vendor's ratings, and consequently their reputation, is one of the most important factors in creating trust and launching transactions. Following the Silk Road blueprint, in excess of 50 online anonymous markets were created between 2011 and July 2015 (Gwern Archives). At the time of writing, the Gwern Archives list 21 active and operational marketplaces, while 28 active marketplaces appeared on the Darknet Stats list at approximately the same time point (May–July 2015) (DarkNet Stats). These marketplaces are generally short-lived; the majority of those currently active appear to have been launched in the second half of 2014 or in early 2015. Market closures are generally the result of hacking, raids, exit scams (in which the site operators close the site down suddenly, taking the money from sales without fulfilling the orders) or voluntary exit and it is not clear what this market instability will mean for buyer safety or the popularity of dark net marketplaces in the future.

Although a number of successful law enforcement operations have been undertaken, including the take-down of Silk Road and Operation Onymous, these markets have proven to be very adaptable, and it appears that the effects of such interventions on the online anonymous ecosystem are short term (Soska and Christin, 2015) and those operating such sites develop new ways to evade detection, for example by improving encryption and anonymisation. It is suggested that a likely future development will be completely decentralised marketplaces that exploit aspects of game theory to side-step current weaknesses (Ciancaglini et al., 2015) — perhaps a 'dark cloud' on the horizon.

The drugs that feature most on dark net marketplaces are 'traditional' drugs, although there appears to be some variation in the pattern on different sites. For example, data from Silk Road showed that MDMA, cannabis and LSD were the three most common drugs bought in the United Kingdom, the United States and Australia (Barratt et al., 2014), whereas stimulants (e.g. cocaine, methamphetamine) and hallucinogens (e.g. LSD, PCP) made up over half the drug items on the Silk Road 2.0 market (Dolliver, 2015) and a study of 16 dark net marketplaces carried out between July 2013 and January 2015 found that cannabis, MDMA and stimulants accounted for over two-thirds of market share (Soska and Christin, 2015). When drug users in a global survey were asked about drugs bought through the dark net, MDMA, cannabis, LSD and cocaine were the most commonly reported (Winstock, 2015).

The United Kingdom (10 %) and the Netherlands (6.5 %) were among the top countries of origin for all items (the majority being drug related) listed on Silk Road; the EU represented 6 % of shipping destinations listed (Christin, 2012). On Silk Road 2.0, Germany (14 %) was the second most popular country of origin for drug items listed on the site, after the United States and closely followed by the United Kingdom (13.8 %); the EU represented 9.2 % of shipping destinations offered for drug items on Silk Road 2.0 (Dolliver, 2015). Although it is not clear how complete and representative such data are, the findings suggest that Europe may be a significant player in global online drug marketplaces.

The internet as a potential tool for reducing drug market harms

The surface web is also being used increasingly to host online tools to help people use drugs more safely or to give up using illicit drugs altogether as well as signposting people to traditional harm reduction and treatment

services. So there may be opportunities for benefit alongside the threat of wider drug supply.

Although dark net markets have been estimated to account, in revenue terms ⁽¹³⁾, for a very small proportion of the global drug trade, it has been argued that they are growing, serving an increasing customer base. There are a number of ways in which the use of the internet can reduce harms for both users and dealers. Research shows that customers value the quality and range of products offered by these markets, as well as the higher level of security than that afforded by street drug markets (Barratt et al., 2014; Winstock, 2015). From the drug sellers' perspective, the principal advantages are distance from street dealing and the associated risk of law enforcement detection and intervention, as well as access to a much larger potential market of purchasers (Van Hout and Bingham, 2014; Buxton and Bingham, 2015).

In addition, both the surface web and the deep web host a range of forums and chatrooms in which drug users are able to exchange information about particular drugs and vendors. The discussions on drugs include information on effects arising from use, modes of use and appropriate dosage, which may help promote safer use. The information on vendors made available on discussion forums can alert people to vendors who supply substandard products or simply fail to deliver. In addition, most dark net marketplaces now incorporate customer feedback and ratings into their systems along with escrow systems to reduce the risk from scams (Van Hout and Bingham, 2013).

⁽¹³⁾ Silk Road revenue generation before its closure was estimated at around EUR 13 million (USD 16.7 million) in 2012 and EUR 67.6 million (USD 89.7 million) in 2013 (Christin, 2012; Albridge and Décary-Hétu, 2014); for comparison, the global cocaine market was recently estimated to be worth between EUR 54.7 and 68.3 billion (USD 80 and 100 billion) in 2008 (UNODC, 2010a).

Action points

Improve our understanding of the widespread ramifications of the drug market

1. The collection of more detailed data on drug use, such as on the amounts and frequency of use among different groups of users, is needed to increase the accuracy of market size estimates and to monitor trends in the value of individual drug markets in the EU. These data will also assist in the development of drug policies and the assessment of their impact and effectiveness.
2. Research is required to better understand the crossovers between drug trafficking and the trafficking of human beings, as well as the role of drugs in the exploitation of vulnerable people. In addition, the relationship between the drugs trade and the alcohol, tobacco and firearms trades should be critically reviewed for intervention opportunities and, if needed, systematic monitoring.
3. There is a need for continued monitoring and analysis of potential linkages between organised criminals involved in the drugs trade and those engaged in terrorist activity. This will require greater cooperation between the different agencies tackling those threats as well as engaging with key partners.
4. There is a need to more effectively monitor the nexus between drugs and violence, in particular systemic violence, by developing methodologies for data collection with a focus on measuring the number of such criminal acts related to the conduct of the drugs trade, and potentially their cost burden.

Increase knowledge sharing and cooperation to improve responses and ensure coherence between policy areas

5. There is a need to share knowledge, expertise and best practice for tackling corruption, for example the use of internal corruption investigation departments, and to develop programmes to assist countries most affected. Continued support and commitment is needed for important initiatives, such as the Paris Declaration, and systematic monitoring should also be developed to enable benchmarking to be undertaken and to identify priority areas.
6. Steps must be taken to ensure coherence, maximise synergies and reduce duplication between drug control policies and international development and assistance programmes in important production and transit regions.
7. Greater dialogue, leading to positive engagement with drug-producing and transit countries bordering the EU and further afield, is required to safeguard the security of the EU. Focusing attention on financial centres, particularly the United Arab Emirates, is equally important.

Develop responses to drug markets by targeting drivers and interlinkages

8. A methodology and framework to describe illicit enterprises from a business perspective should be elaborated by studying case-level data on the phenomenon. By understanding the processes involved, this may highlight immediate, cost-effective and innovative opportunities for intervention.
9. The intelligence from operations targeting drug trafficking on the surface web and the dark net, as well as any best practice identified, should be shared with Europol. Though not exclusively related to internet trade, partnerships must be fostered with the payment card industry and money transfer companies, as well as parcel delivery services, while monitoring the developments with anonymous delivery technologies.

10. Work should be initiated to explore and develop strategies for engaging with young people in custodial environments for drug law offences and who may be vulnerable to radicalisation.
11. A comprehensive suite of best practice interventions targeting criminal finances and money flows should be developed. This would include methodologies for improving cooperation with financial institutions, conducting successful parallel financial investigations, and exploiting and sharing financial intelligence.
12. An assessment should be made of the key EU departure points of outgoing cash smugglers, and controls should be tightened in these areas to complement efforts to interdict incoming drugs.
13. Improvements in the systematic monitoring of national expenditures in the EU on drug supply reduction are needed in order to assess the cost-effectiveness of interventions and the subsequent avoidance of activities of low value. This may, however, be challenging, as many supply reduction activities are a result of general public order and safety, or revenue and customs law enforcement.
14. Awareness must be raised about the environmental damage caused by the dumping of waste from synthetic drug production sites in Europe. The data collection on this must be systematically implemented in the Member States and the knowledge, expertise and best practice developed in countries with the longest experience of tackling such environmental consequences could be more effectively shared with other Member States.

II

PART II

Main drug markets in the EU

CHAPTER 3

Cannabis

CHAPTER 4

Heroin and other opioids

CHAPTER 5

Cocaine

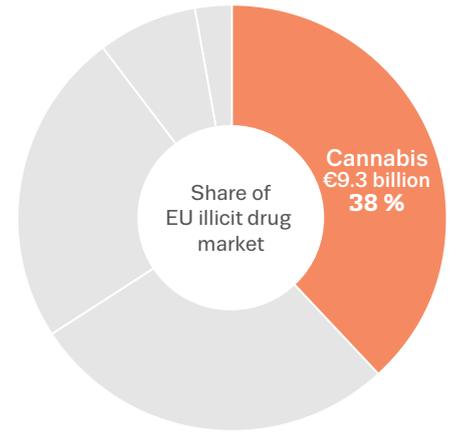
CHAPTER 6

**Amphetamine, methamphetamine and
MDMA**

CHAPTER 7

New psychoactive substances

3



CHAPTER 3

Cannabis

Key issues

The importance of the cannabis market in Europe

With an estimated retail value of more than EUR 9 billion per year (range EUR 8 to 13 billion) and over 22 million annual users, the illicit market for cannabis is the largest drug market in the EU. It represents an important source of revenue for OCGs and is associated with violence and other forms of crime that have a range of impacts on communities.

Market dominated by domestic herbal product

Cannabis is commonly available in Europe in two forms, herbal cannabis and cannabis resin. However, increased production in the EU in the last 10 years has led to a shift in the market, with domestically produced herb becoming more important and displacing imported resin in many countries. This has led to greater levels of intra-EU trafficking. In addition, Turkey reported seizing more cannabis herb in 2014 than any other European country.

Rapid innovation

There is evidence of product innovation with respect to edible products, oils and cannabis preparations intended for use in vaporisers. The adoption of these has the potential to affect patterns of use and harms, but information in this area is currently sparse.

Potency increases

Most of the herbal cannabis produced in Europe is cultivated indoors and appears to be of high potency. Furthermore, in Morocco, the main source of resin for Europe, there has been a switch to cultivation of higher-potency plants and the production of stronger resin. The average potency of both herbal and resin products available in Europe has almost doubled in the last decade, with prices only increasing slightly.

Health concerns

Trends in prevalence of use vary among countries, with some high-consuming countries showing marked declines in prevalence but other countries showing increases. There is also variability in demand for treatment related to cannabis use but, overall, this has increased. Public health concerns are greatest for daily users, estimated at 3 million, and those initiating use at an early age. High-potency forms of the drug may be more harmful.

Organised crime plays a key role

Dutch and ethnic Vietnamese OCGs, in particular, are well established and are expanding cannabis herb production in several EU Member States. They also provide know-how and equipment to other criminal groups that want to start cannabis production. Intensive domestic production sites have not only been linked to violent inter-group crime and to electricity theft but are also associated with human trafficking activities. Moroccan OCGs, working in partnership with European groups, have an established role in the importation and sale of cannabis resin in the EU, with the Netherlands and Spain acting as key distribution points. However, both countries may also be important herbal cannabis producers, since a recent increase in seizures in Spain suggests growth in production. Albanian-speaking groups play a variety of roles as producers of cannabis herb in both the EU and Albania and as distributors of Afghan resin, which is making inroads in some EU countries.

Moroccan resin moving east

The interception of large consignments of Moroccan cannabis resin moving eastwards along the North African coast raises the possibility of a new smuggling route into Europe or the opening of new markets in an unstable region.

Introduction

Today the market for cannabis products is the largest drug market in Europe, since cannabis is the most commonly used illicit drug. Although for many people cannabis use is experimental and short-lived, for a minority use can become problematic and have serious long-term mental health consequences. Europe has seen an increasing number of people seeking treatment for cannabis-related problems.

Cannabis can be cultivated outdoors in most parts of the world and anywhere indoors, making it the most widely produced illicit drug in the world. The illicit cultivation of cannabis usually produces two distinct cannabis products: herbal cannabis (marijuana) and cannabis resin (hashish). Herbal cannabis is produced by drying the flowering tops of the plants, and resin is the product of processed plant secretions that are normally compressed into blocks.

Globally, it appears that herbal cannabis tends to be produced for sale on domestic markets and in neighbouring regions rather than for export outside the region. As a result, herbal cannabis is less likely to be intercepted by authorities in relation to trafficking. In contrast, it seems that so far cannabis resin has been produced largely for export. In the majority of EU countries cannabis consumption is dominated by herbal products, which can be of high potency.

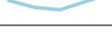
Improved cultivation methods, including indoor techniques and selective plant breeding, have resulted in cannabis plants that grow faster, produce more flowering tops and contain higher concentrations of the main psychoactive constituent, tetrahydrocannabinol (Δ^9 -THC). These factors are likely to have played a role in increased levels of domestic production in Europe, and a concomitant reduced demand for imports, and to have contributed to a shift in the consumer market. They have also probably contributed to a change in cannabis resin production in Morocco, Europe's main source of this drug.

The importance of THC and CBD levels in cannabis products

The two main psychoactive constituents of cannabis are tetrahydrocannabinol (THC) and cannabidiol (CBD). The amount of these and other cannabinoids in cannabis plants varies widely depending on factors such as genetic strain, growing environments, cultivation techniques, processing methods, packaging, transportation, storage and freshness. Intensive indoor cultivation has become widespread in Europe and elsewhere in recent years. This is based on seed varieties specially selected to give increased yields of flowering tops and THC as well as procedures such as artificial heating and lighting, hydroponic cultivation in nutrient solutions and propagation of cuttings of unfertilised female plants (sinsemilla). This leads to a high production of flowering material. Herbal cannabis produced by such intensive indoor methods may have a THC content two or three times greater than that of naturally grown imported herbal cannabis, but contains very low levels of CBD.

CBD is known for its antipsychotic properties. Therefore, any reduction in CBD in illicit cannabis may have implications for the overall negative health consequences associated with consumption. Data on drug treatment demand and some studies have shown links between cannabis use and an increased risk of developing psychotic illness, anxiety disorder or depression, although only a small proportion of users are affected. The absence of the protective effects of CBD in varieties of herbal cannabis with high THC and low levels of CBD may be a significant factor and, given these concerns, the levels of these chemicals in cannabis products should be carefully monitored as the cannabis market develops.

TABLE 3.1

CANNABIS IN EUROPE AT A GLANCE					
Estimated market size (2013)	Best estimate (low–high)	Value (billion EUR)		Quantity (metric tonnes)	
		9.3 (8.4–12.9)		1 289 (1 154–1 790)	
Consumption (1)	Lifetime	Age group (years)	Estimated number of users (million)	% of EU population (range between countries)	
		15–64	83.2	24.8 (4.3–40.9)	
		15–34	42.5	33.9 (7.1–53.0)	
	Last year	15–24	17.5	29.9 (5.1–46.7)	
		15–64	22.1	6.6 (0.9–11.4)	
		15–34	16.6	13.3 (3.2–23.9)	
	Last month	15–24	9.6	16.4 (3.4–27.1)	
		15–64	12.0	3.6 (0.4–6.6)	
		15–34	8.8	7.0 (1.4–13.5)	
	Last month	15–24	4.9	8.3 (1.2–16.0)	
				Number (% of admissions for all drugs)	Trends
		Drug treatment (2) (2014)	All admissions	139 000 (31 %)	
First admissions	75 000 (46 %)				
Drug law offences (2014)			Number (% of offences for all drugs)	Trends	
	All offences	813 000 (71 %)			
	Offences for drug use/possession for use	675 000 (76 %)			
	Offences for drug supply	136 000 (58 %)			
Seizures (3) (2014)	EU EU plus Norway and Turkey	Cannabis resin		Herbal cannabis	
		Quantity (tonnes)	Trends	Quantity (tonnes)	Trends
	EU	574		139	
	EU plus Norway and Turkey	606		232	
	EU EU plus Norway and Turkey	Number		Number	
		EU	229 000		453 000
EU plus Norway and Turkey	243 000		501 000		
Mean retail price (2014)	Range (IQR) (4)	EUR/gram		EUR/gram	
		3–22 (9–12)		5–23 (7–11)	
Mean potency (2014)	Range (IQR) (4)	% in EU		% in EU	
		7–29 (12–18)		3–15 (8–12)	

Notes:

(1) EU estimates are computed from national estimates weighted by the population of the relevant age group in each country. They are based on surveys conducted between 2004 and 2014/15 and therefore do not refer to a single year.

(2) Drug users entering treatment for cannabis problems. Units coverage may vary across countries.

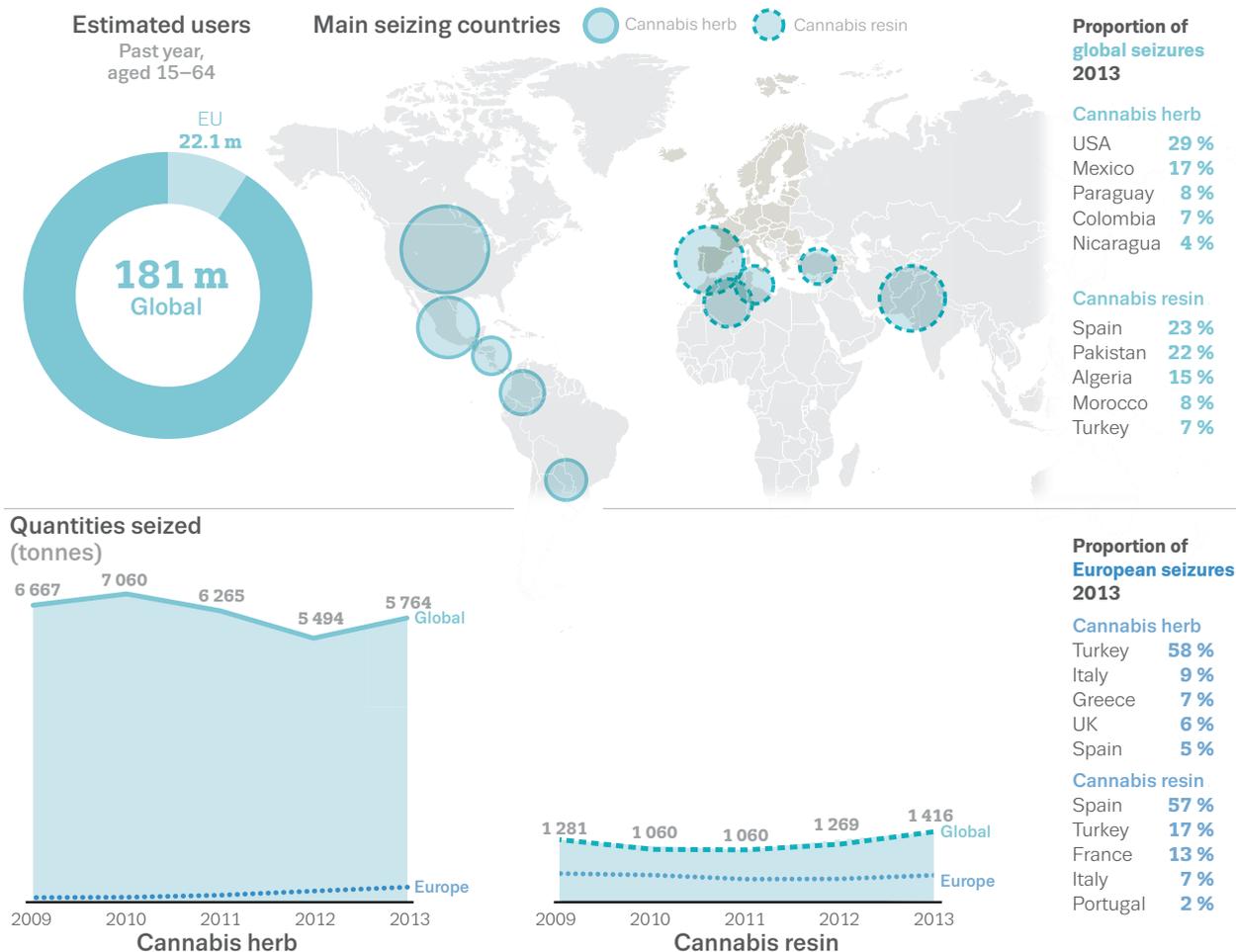
(3) The 2014 figures should be considered as estimates; where not available, most recent data were used in place of 2014 data, except for the number of seizures for the Netherlands, France and Poland where no recent data is available so they are not included. An additional 3.4 million cannabis plants and 1.9 tonnes of cannabis plants were seized (33 000 seizures) in Europe, including Norway and Turkey, in 2014.

(4) IQR: interquartile range, or range of the middle half of the reported data.

Data presented are for the EU unless stated otherwise. All trend lines shown in this table cover a 5-year period, 2010–14. All trends reflect absolute numbers except for trends on price and on potency which reflect averages of mean values. In the case of treatment, price and purity, trends are based only on data from those EU countries that have consistently submitted data since 2010.

Source: EMCDDA/Reitox national focal points.

GLOBAL OVERVIEW – CANNABIS



Note: The estimates for seizures presented are for 2013; more recent EU figures are available but have not been used for the purposes of comparability. For the most up-to-date European data, please refer to Table 3.1.

Source: UNODC, World Drug Reports. EMCDDA, 2015a.

Global overview

Cannabis is produced and consumed in virtually all countries of the world. Because illicit cannabis cultivation is so widespread and carried out both indoors and outdoors, it is very difficult, if not impossible, to estimate how much cannabis is produced worldwide annually.

Europe continues to be one of the world’s largest consumer markets for cannabis resin (hashish), the majority of which is sourced from Morocco. The Middle East, North Africa and South-West Asia also have large consumer markets for resin, and significant production occurs in these regions (UNODC, 2015a). The world’s two largest producer and exporter countries of cannabis resin appear to be Afghanistan and Morocco, although resin is also produced

in and exported from, but probably to a lesser extent, India, Lebanon, Nepal and Pakistan. Afghanistan is becoming more important in global resin production, with the UNODC suggesting that it has overtaken Morocco in terms of quantities of resin produced. Despite this, Afghan resin does not currently seem to be widely available in most of Europe (Chouvy, 2016).

In 2013, some 1 416 tonnes of cannabis resin was seized worldwide, confirming an increasing trend since 2011. After peaking at 7 060 tonnes in 2010, worldwide herbal cannabis seizures declined to reach 5 764 tonnes in 2013 (UNODC, 2015a).

Consumer market for cannabis in Europe

The cannabis market is now more diverse than ever before, with the potency of available products generally higher than in the past. These changes suggest a less benign image of the drug and a far more professionalised, commercial supply than the popular characterisation of cannabis in the 1960s and 1970s. However, it is not clear if these changes are driven by consumer preference or the changes in the production and supply. This is an area that merits further investigation to inform the current debates around the liberalisation of cannabis control.

In almost all countries the prevalence of cannabis use far exceeds that of the other major drug groups. Almost a quarter of 15- to 64-year-olds in the EU, approximately 83.2 million adults, are estimated to have tried the drug at least once in their lifetime. Use is higher among young adults, with almost one in eight young adults (aged 15–34 years), or 16.6 million individuals, using cannabis in the last year. However, cross-European estimates mask between-country variations not only in the extent of use (estimates of last-year prevalence of use among young adults range from less than 1 % to over 20 %), but also in trends in use. For example, surveys in Germany, Spain and the United Kingdom have shown decreasing or stable trends in reported use while, in contrast, increasing prevalence can be observed in Bulgaria, France and three of the Nordic countries (Denmark, Finland and Sweden) (EMCDDA, 2015a).

Other developments in cannabis consumption give rise to some concerns. In some countries where use has been declining or stable, there are some signs of a change in this trend among younger people. Cannabis is now the drug most frequently reported as the principal reason for treatment entry by clients entering treatment for the first time in the EU. When all treatment entrants are considered, it is the second most frequently mentioned drug. It is important to note, however, that treatment data reflect not only need but availability of cannabis treatment or referral practices. However, the change in the potency and the balance between THC and CBD in the cannabis on the market (see box on page 57) as well as age at first use of cannabis may also play a role.

Information on the frequency of cannabis use is becoming increasingly available from national surveys. It is estimated that 1 % of those aged 15–64 years in the EU, or about 3 million individuals, smoke cannabis on a daily or near-daily basis, but with considerable variability between countries (EMCDDA, 2015a).

The size of the market for cannabis

The estimated value of the retail market for cannabis in the EU is over EUR 9.3 billion in 2013, with a likely range of EUR 8.4–12.9 billion. This represents just under two-fifths of the total illicit market in drugs. Our estimates of amounts used suggest that in 2013 about 647 tonnes of herbal cannabis (range 581–903 tonnes) and 641 tonnes of resin (range 573–887 tonnes) were consumed.

In reaching these estimates, we have used information on numbers of users from the general population surveys conducted in most countries but, recognising that some groups of drug users are unlikely to be represented in these surveys, we have supplemented these with estimates of cannabis use by problem users of other types of drugs. Separate estimates for consumption of herbal cannabis and resin were also calculated but, since information on the type of cannabis use was not collected in the surveys used, these estimates are based on the proportion of the seizures (in terms of numbers) that are herbal cannabis, and this may not be a very good proxy for use. There are a number of other limitations to these estimates (see box on page 28) and further details of the estimation methods are given in the background paper published alongside this report (EMCDDA, 2016a).

Diversification of cannabis products

Apart from herbal cannabis and resin, which are by far the most common products, other products may be made from the cannabis plant. Probably the best known of these is cannabis oil, a product made by purifying either the herbal substance or the resin, to produce an extract that has a higher concentration of THC. Traditionally, little cannabis oil was seized in Europe. In 2014, however, fairly large amounts were seized. Indeed, 11 countries reported seizing a total of 119 kg of cannabis oil, with Spain alone confiscating 103 kg. This may be an indicator of on-going market diversification in Europe.

The liberalisation of cannabis use in North America and elsewhere may be driving a renaissance in innovative methods to prepare cannabis products, which could lead to an expansion of the range of cannabis products on offer in Europe. For example, there are reports that cannabis oil prepared using butane gas has become more popular in North America, although the process of making this is inherently dangerous due to the flammable gas used. The product, called BHO (butane hash/honey oil, 'wax' or 'shatter'), is reported to have a high concentration of THC. A recent study concluded that hospital emergencies due to burns associated with the production of BHO have increased since the liberalisation of cannabis policy in Colorado (Bell et

al., 2015). The situation in the United States has also led to the emergence of other products containing cannabis, most notably edible ones, such as cookies or 'brownies'.

For consumers interested in making their own cannabis resin, methods for domestic production are available. One such method combines a sieving technique with a cold water extraction process to produce a potent resin product that is then smoked. Kits and equipment to perform this procedure are commercially available in the EU and readily available in grow shops.

The use of electronic cigarettes or vaporisers to consume cannabis would also appear to be gaining in popularity, with many online shops offering advice and equipment for this purpose. In the absence of a better source of information, Google trends suggests that interest in 'vaping cannabis' has been increasing since September 2013, and to a lesser extent 'vaping cannabis oil' since early 2015. This may have positive implications for public health, particularly given the high levels of the co-use of tobacco and cannabis in European countries.

Finally, an important and more negative factor in the diversification of cannabis products is the appearance of synthetic cannabinoid products on the market (see also Chapter 7). These products are not in any way derived from the cannabis plant although they are aimed at cannabis users. They are mainly herbal products; resins and liquids containing the chemicals are also available, but to a much lesser extent. The motivations to take such products are numerous but poor access to real cannabis and the possibility of being drug tested are cited as key factors. Attempting to circumvent use-related prosecution or, in some countries, to avoid a cannabis-positive roadside drug test are other reasons cited (Fattore and Fratta, 2011; van Amsterdam et al., 2015). For example, the problem of synthetic cannabinoid use in prisons in England and Wales, where a random mandatory drug testing programme is in force, may be in part driven by the desire to avoid positive tests since these substances are not currently detected by such tests (HM Inspectorate of Prisons, 2015).

Cannabis production

Production processes

Key factors in the cultivation of cannabis, whether indoors or out, include exposure to light (natural or artificial), access to good-quality seeds or cuttings, the cultivation method used, plant density, water supply (irrigated or

FIGURE 3.1
Associating electronic cigarettes with cannabis symbols



Shop window in Glasgow, United Kingdom, December 2015.
Photo © Andrew Cunningham

rain-fed crops) and soil acidity or alkalinity, which affects the availability of nutrients. Outdoor cannabis crops may be planted as a single crop or hidden within other crops such as maize, and yields depend upon natural daylight cycles and climate. Outdoor cultivation may be large or small scale and usually produces one or two harvests per year (Clarke, 1998; UNODC, 2006b; EMCDDA, 2012).

Indoor cultivation ranges from small-scale home growing to professional operations run by criminal networks in industrial warehouses. The control that can be exercised over growing conditions (e.g. light, heat, water, plant density, pest control, etc.) allows for continuous cultivation throughout the year and can result in four to six full harvests per year (Vanhove et al., 2012). The benefits of indoor cultivation include lower risk of detection and generally higher yields of higher-potency strains. Most indoor cultivation in Europe uses soil, rather than the once-popular hydroponic method.

Cannabis is harvested by cutting the plant at the base and then drying it in warm, low-humidity, low-light conditions, either by hanging or by placing it upon drying shelves, although nowadays special drying equipment is commercially available. To prepare herbal cannabis for smoking, once the plant is dry the flowers are 'manicured' (either manually or with a machine) to remove the leaves and stems, leaving the inflorescence (bud), which is the material usually sold on the market.

Grow shops

One potential indicator of the spread in domestic production in Europe, in particular indoor production, is the apparent rise in the number of 'grow shops'. A grow shop is a shop selling products specifically — although not always explicitly, given legal considerations — for the cultivation of cannabis plants, and in 2009, 15 European countries reported the existence of such shops. Grow shops have increased in popularity since the 1990s in Europe. Some grow shops sell not only cultivation equipment but information, literature and smoking paraphernalia, suggesting that they can be regarded as 'centres of learning' about domestic cultivation. In a few countries (Belgium, France, the Netherlands) it has also been suggested that some grow shop operators sell seeds, buy their customers' harvests and dispose of their waste products (EMCDDA, 2012).

The recognition of the involvement of criminal actors in the grow shop business has led some EU countries to counter the activity, notably by a crackdown or a specific legislative act. In the Czech Republic, following a Supreme Court ruling that grow shops were unlawful, 50 shops were raided in a police crackdown in November 2013, leading to seven arrests. In March 2015, the Dutch implemented an Article in the Opium Act of the Netherlands (Article 11a), which 'prohibits the preparation or facilitation of professional cannabis cultivation or other criminal activities related to trafficking of large quantities of cannabis'. As a result of police enforcement activity linked to this Act, it is expected that Dutch grow shops will close and that facilitators of cannabis production, such as corrupt electricians and real estate agents, will be more effectively targeted and their assets seized. However, there remains the possibility of displacement to the virtual domain.

The production of cannabis resin, or hashish, entails dislodging the glandular trichomes that form mostly on flowers (buds). The result is a fine powder that is high in THC, which is then compressed to form hashish. Two main methods have been used in the main producing regions: hand-rubbing and sieving. Sieving is reported to produce much more resin much more rapidly than hand-rubbing, although in both cases several 'grades' of resin may be produced. However, even resins produced by the same methods can appear to be substantially different products (Clarke, 1998; UNODC, 2006b, 2010a).

As noted above, some cannabis resin (and cannabis oil) is also produced in Europe by extraction methods based on chilled water, or the use of electric tumbler/sieving

machines. The resins and oils produced by these 'modern' methods using high-THC cannabis plants are likely to be quite potent (see below).

Producing for European markets

The herbal cannabis and resin available on consumer markets in Europe come from a range of both domestic and external sources. Currently, systematic data on cannabis production sites or the origin of cannabis products seized in the EU are not available, but, despite this limitation, the overall situation can be described in general terms.

Cannabis resin

Historically, Europe has relied heavily upon production sources of cannabis resin outside the region, predominantly Morocco. However, Afghanistan may be re-emerging as a supplier of European resin markets (UNODC, 2013b). In both Morocco and Afghanistan, hashish is produced by the sieving method. Although recent qualitative information suggests that Afghan resin is rare in Europe, and mostly of low quality (Chouvy, 2016), British authorities recently reported to Europol that approximately 50 % of the hashish entering the United Kingdom originates in Afghanistan. In this respect it is notable that 3 tonnes of cannabis resin shipped from Pakistan was intercepted in Belgium in 2013 (Belgium: Reitox, 2014).

Evidence has emerged of a change in cannabis resin production in Morocco that is likely to be having an impact on the European market. The kif plants traditionally grown in the Rif mountains are being replaced by cannabis hybrids of various origins that allow for much higher resin yields and THC contents (Chouvy and Afsahi, 2014). This has led to the emergence of a new, more potent, type of Moroccan hashish, which may in part explain why the potency of the cannabis resins seized in many European countries has increased in recent years.

Another potential, but as yet more speculative, explanation for the potency increase of seized resins is hashish production in Europe itself, from domestically grown cannabis plants. Indeed, there is already evidence suggesting that some cannabis resin is produced in Europe using the 'modern' methods described above. So far this seems to be restricted to individuals producing small amounts of home-made resin from their own plants and for their own use. However, there is a distinct possibility that large-scale, commercial, production of cannabis resin may develop in Europe in the coming years (Chouvy, 2016; Denmark: Reitox, 2016).

Cannabis herb

In Europe, herbal cannabis tends to be produced for sale on domestic markets and in neighbouring countries rather than for export outside the region. Although some cannabis herb is imported from outside the EU, it is probable that most of what is available on European markets is produced in Europe itself. A data collection tool on the number and scale of the cannabis cultivation sites dismantled by law enforcement in Europe has recently been developed by the EMCDDA and Europol. The implementation of such a data collection will systematise information on this topic, allowing a more reliable analysis of the situation.

Major herbal cannabis-producing countries in the Balkan region, including Albania, Serbia, Bulgaria and, to some extent, Kosovo ⁽¹⁴⁾, supply the markets of central-eastern and south-eastern Europe. Albania appears to have been an important outdoor producer; however, this situation may have changed recently as a result of intensive eradication efforts in the summer of 2014. Cannabis plants were found growing on several hundred hectares in the southern municipality of Lazarat, in a mountain region near the Greek border, although commercial cannabis production probably also occurs elsewhere in Albania. Greece, where cannabis herb is also produced, is a major entry point into the EU for Albanian cannabis herb, which is distributed in several EU Member States, including Italy, Croatia, Hungary, the Czech Republic and Austria. In addition, some Albanian herb may also be sold in western Europe, for instance in France and Germany. Furthermore, Europol indicates that low-potency cannabis herb produced in Albania is trafficked to the Netherlands and

used to adulterate higher-potency cannabis, the mixture being destined for the UK market. Some Member States, such as Belgium and the United Kingdom, report that some cannabis herb is imported from sub-Saharan Africa and the Caribbean. Finally, the Ukraine has emerged as an apparently large producer of cannabis in recent years; however, as yet it has not been reported as a significant source of cannabis for European markets.

In Europe, cannabis production occurs indoors in most countries, with fewer countries reporting outdoor cultivation. Seizures of whole cannabis plants are generally thought to be an indicator of domestic cannabis cultivation in the country where they occur. The number of seizures of cannabis plants in the EU has been increasing for some time to over 30 000 seizures in 2014, compared with a little over 11 000 in 2006. Countries report the quantity seized either as an estimate of the number of plants seized or, in a few cases, by weight. The total number of plants seized in the EU remained stable at about 2.5 million annually in 2005–09, and then increased gradually to a peak of nearly 7 million in 2012 before falling to around 3.4 million in 2014 ⁽¹⁵⁾. The EU Member States that between them generally seize most of this total are the Netherlands, Belgium, Spain and the United Kingdom.

Historically, the Netherlands has been an important source of herbal cannabis supply within Europe, and thousands of cannabis production sites are dismantled by law enforcement there every year. Many of the innovations in growing techniques and equipment that have fostered the gradual professionalisation of cannabis production

FIGURE 3.2
Professional cannabis cultivation



Underground cannabis plantation dismantled in Zeist, the Netherlands, in March 2013: cultivation area (left) and electrical set-up (right).
Photos © Dutch National Police, Central Intelligence Division

⁽¹⁴⁾ This designation is without prejudice to positions on status, and is in line with United Nations Security Council Resolution 1244 and the International Court of Justice opinion on the Kosovo Declaration of Independence.

⁽¹⁵⁾ Data for the Netherlands for the years 2008–13 were obtained from the UNODC (2015a). Data for the UK were not available for 2014 so 2013 data have been used.

Case study 8: Dutch OCG producing cannabis herb in France

An indoor plantation of 600 cannabis plants was dismantled by the gendarmerie on a farm belonging to a 52-year-old Dutch national in a remote rural area of central France in January 2015. According to the press, he offered his property as a cultivation site to criminal contacts in Rotterdam in order to alleviate financial problems. The plantation was set up by members of a Dutch OCG who travelled from the Netherlands and supplied all the equipment and cannabis cuttings. After the first harvest in 2014, the OCG had collected the cannabis herb from the farm and transported it first to the Netherlands and eventually to the United Kingdom, where it was sold.

The prosecutor stated that the cannabis plants were of a high-yield variety and that they could be harvested four times a year. The defendant said that he expected to make a profit of about EUR 7 000 from the harvest of the 600 plants although its total retail value was estimated at about EUR 145 000. He also told the court that there were many other operations like his in France, where cannabis herb is produced for export to the Netherlands. The court in Moulins sentenced him to 5 years in prison, a EUR 5 000 fine and the confiscation of his farm.

Source: Larcher, 2015.

in Europe over the last 20 years, as well as many high-potency strains of cannabis, have been developed in the Netherlands. More recently, the internet has been identified as a key facilitator of the cultivation of cannabis, providing access to expertise and online shops selling growing equipment and seeds (Europol, 2015c).

Organised crime plays a major role in cannabis production in Europe. A significant development in this respect has occurred in recent years, a type of 'delocalisation' of production whereby some OCGs run cannabis plantations outside their place of origin and/or supply production equipment and know-how to other OCGs producing cannabis within EU borders for sale on EU consumer markets. Drivers for this include law enforcement actions against cannabis cultivation and social intolerance towards it, both of which are likely to be stronger in countries with a long history of cannabis production (e.g. the Netherlands). Other important factors include producing near the consumer markets in order to avoid smuggling drugs across borders, including internal EU borders, easier availability of premises in which to set up plantations, cheaper labour, lower law enforcement and social awareness of commercial cannabis cultivation. In

this respect, Dutch and Vietnamese OCGs appear to play a significant role. For example, Dutch OCGs are increasingly active in other countries, setting up plantations, as illustrated by a recent case in France (see Case study 8). Dutch OCGs also provide 'crime as a service' expertise to other criminal groups in Europe, notably through ownership of grow shops (see box on page 62) but also, for example, through the use of corrupt real estate brokers who help select premises for the setting-up of plantations. Other criminal services available include electricians specialising in electricity theft, a crucial requirement for modern indoor plantations.

Environmental effects of cannabis production

The single-cropping of cannabis plants over large surface areas has negative environmental effects, such as erosion and underground water pollution and depletion, although these are often overlooked. As is the case with other drugs, environmental harm caused by cannabis production is poorly documented, although some information is available for Morocco.

Cannabis production and the environment in Morocco

Cannabis is cultivated as a cash crop over an estimated 47 000 ha of land in the Rif mountains of northern Morocco, a relatively densely populated region located close to Europe (UNODC, 2015a). Illicit crops have taken a heavy toll on the forests of the Rif. An estimated 17 000 ha of forests was lost in the Chefchaouen province alone during the 1980s, largely in order to make way for cannabis crops (Grovel, 1996). Deforestation makes the soil much more vulnerable to erosion, which leads to soil depletion. Soil depletion is particularly acute when the affected land is on slopes, as is the case in the Rif mountains. Depleted soil and the need to maximise yields often lead to the use of agricultural chemicals, in many cases with little regard to dosage, further polluting already degraded soils and spreading to rivers and underground water deposits (Chouvy, 2003; Afsahi, 2009). The large-scale cultivation of imported hybrid cannabis plants is likely to bring additional environmental harm to a region already seriously affected by the effects of large-scale cannabis cropping. Indeed, in addition to more soil depletion and pollution caused by the large quantities of agricultural chemicals required by the new plants, widespread cultivation of water-hungry cannabis hybrids risks further depleting the Rif's water resources because of the frequent drilling of deep wells tapping underground water deposits (Afsahi and Chouvy, 2015).

Trafficking of cannabis in Europe

Supplementing domestic production within Member States, cannabis is imported from other EU Member States and from outside the EU, and cannabis is the most commonly seized drug in Europe, accounting for more than 75 % of the total number of seizures of all drugs made in the region in 2014. This reflects the widespread availability of the drug, which is the most consumed in Europe, among other factors. Although much larger quantities of cannabis resin continue to be seized in Europe, seizures of cannabis herb outnumbered those of resin for the first time in 2009, and the gap has widened since (see Figure 3.3). Thus, in 2014, 243 000 seizures allowed the confiscation of some 606 tonnes of resin in the EU, Norway and Turkey, while 501 000 seizures of herb resulted in the capture of 232 tonnes of cannabis herb.

Case study 9: Operation SAUCO — cannabis resin trafficking

In February 2014, almost 1 tonne of cannabis resin was discovered by Spanish police concealed in the false bottom of a sailing boat that had arrived in Spain from Morocco. Investigations revealed that the OCG behind the shipment comprised Moroccan, Spanish and German criminals who had set up false companies in Spain and Germany to launder their proceeds. Despite the seizure, the group continued to operate until it was eventually dismantled in October 2014, when 20 people were arrested in a joint day of action during which 44 vehicles, 21 properties, one yacht and EUR 27 500 cash were also seized.

Source: Guardia Civil (2014).

Spain, a major entry point for hashish produced in Morocco, has traditionally been the country seizing the largest quantities of cannabis resin in Europe, seizing nearly two-thirds of the European total in 2014. However, Spain, together with Greece and Italy, has also reported large increases in seizures of cannabis herb in recent years, although Turkey is now the country reporting the largest quantities of herbal cannabis seized in Europe, more than 90 tonnes in 2014. In 2013, Turkey also reported seizing more than 180 tonnes of cannabis herb, which is more than all other European countries combined (EMCDDA, 2015a).

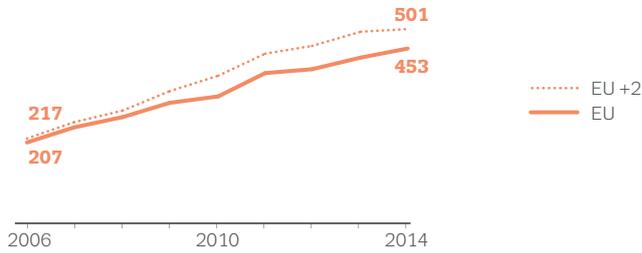
Cannabis herb is also imported from outside the EU. For example, several large seizures made in the port of Antwerp in 2013 originated from Senegal (7.6 tonnes), Ghana (4.1 tonnes) and Honduras (1.7 tonnes) (Belgium: Reitox, 2014).

Organised crime: a threatening player on the European cannabis market

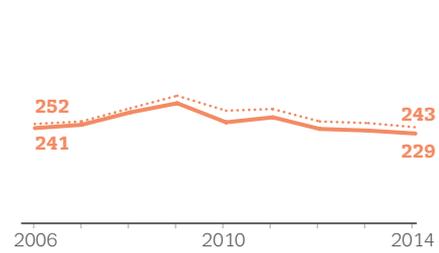
A recent Europol survey has mapped out the intra-European trafficking flows of EU-produced cannabis herb and imported cannabis resin associated with major crime groups active in Europe. The survey outlines a geography of strategic locations for organised crime activities linked to cannabis products (see Figure 3.4). Belgium, Italy, the Netherlands and the United Kingdom are reported to be important locations for producing cannabis herb for export because of their well-established industrialised structures linked to organised crime. Production of high-potency herbal material for export also appears to be significant in the Czech Republic, Hungary, Poland, Spain

FIGURE 3.3
Seizures of cannabis reported in Europe, 2006–14

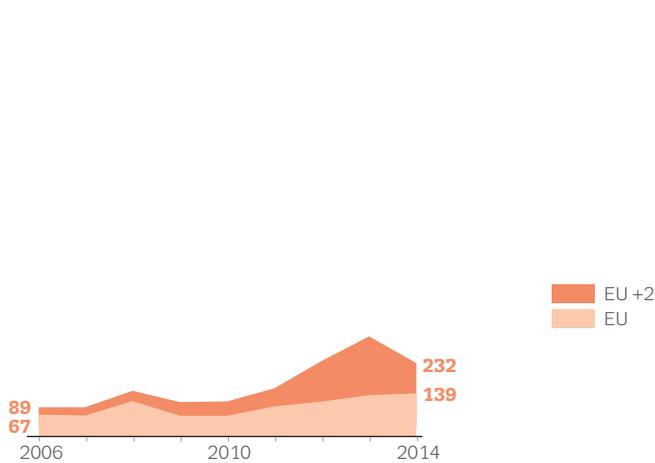
Herb: Number of seizures (thousands)



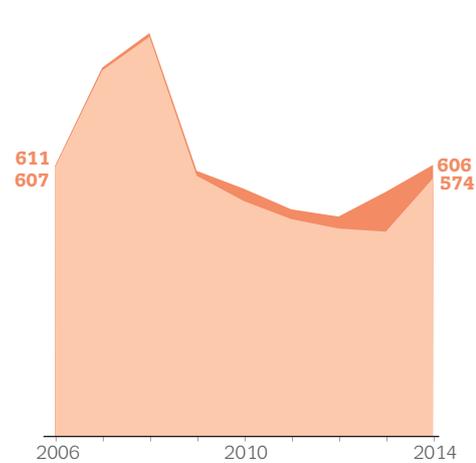
Resin: Number of seizures (thousands)



Herb: Quantities seized (tonnes)



Resin: Quantities seized (tonnes)



Note: Some data for 2014 is not available and the most recent data has been used instead, except for the number of seizures for the Netherlands, France and Poland where no recent data is available so they are not included.

Source: EMCDDA/Reitox national focal points.

and Slovakia. Spain is a key importation point for cannabis resin produced in Morocco (see Case study 9 on page 65), with Belgium, and even more so the Netherlands, acting as major distribution hubs for wholesale quantities. Albania and the Netherlands appear to be the main distribution hubs for Afghan cannabis resin (Europol, 2015d).

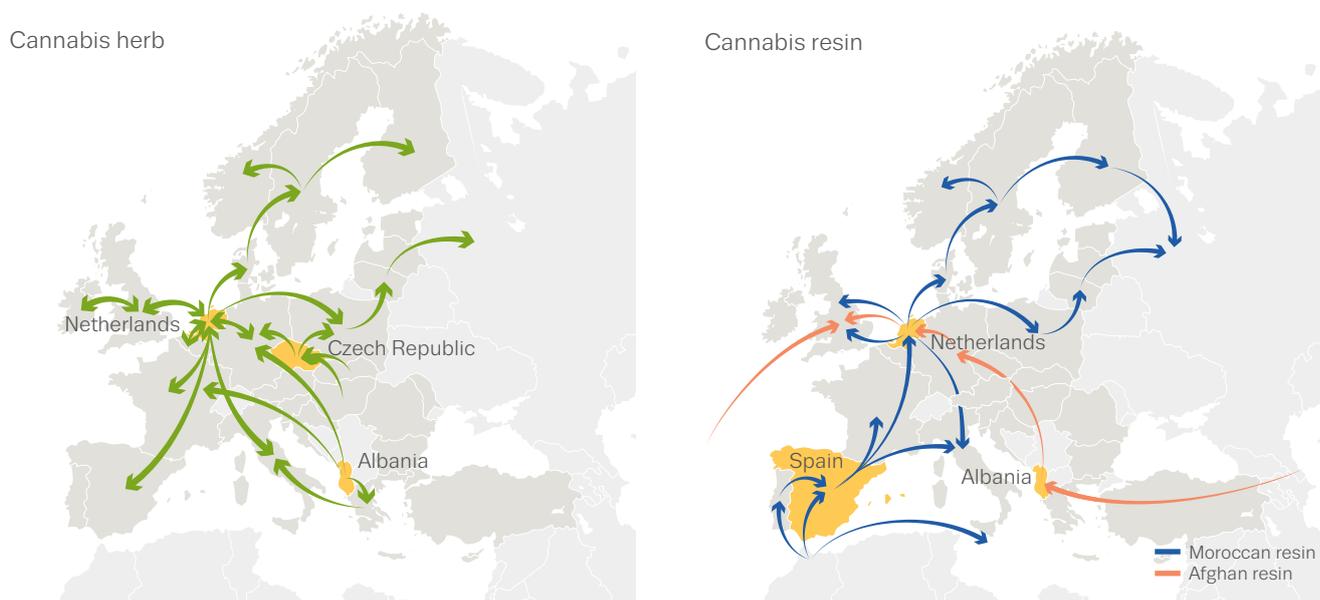
Violence, such as kidnapping, torture and murder, seems to be a salient feature of the sector of the European cannabis market controlled by OCGs, despite the fact that the groups also often collaborate with each other. This violence often occurs during or as a result of raids by rival gangs on cannabis plantations. Indeed, some OCGs, especially Moroccan groups, are reported to specialise in raiding other groups' cultivation sites in order to save the time, effort and money required to obtain cannabis harvests. Belgium, the Netherlands and the United Kingdom, as well as Switzerland, have all reported incidents of extreme violence linked to cannabis cultivation over the last 3 years.

The herb produced in the Netherlands, as well as that grown by Dutch OCGs in, for instance, Belgium, Spain, France, Germany and the United Kingdom, is trafficked practically everywhere in Europe. Major consumer markets for the cannabis herb produced by Dutch groups include relatively large and wealthy countries such as Denmark, France, Germany, Italy, Spain, Sweden and the United Kingdom, as well as Russia.

Dutch and ethnic Vietnamese OCGs: key players for cannabis herb

The important role played by Dutch OCGs in cannabis production has been described above, and Dutch OCGs are known to collaborate with Albanian-speaking and Moroccan criminal gangs involved in the cannabis trade. It should also be noted that some OCGs are involved in cannabis cultivation in the Netherlands, and in the

FIGURE 3.4
Main trafficking flows of cannabis in Europe



Note: The trafficking flows represented are a synthesis of a number of information sources and should be considered indicative rather than accurate descriptions of the main trafficking flows.

Source: Europol.

trafficking of cannabis products to countries in northern (e.g. Denmark, Finland), north-western (United Kingdom, Belgium) and central Europe (Germany, Austria). The Netherlands is also an important distribution centre for cannabis resin, especially from Morocco, trafficked via Spain, and from there to the Netherlands via France and Belgium.

Ethnic Vietnamese OCGs based in Europe are comparative newcomers on the cannabis scene, but they are now firmly established as important suppliers for consumer markets in many countries. In particular, their activities have been linked with recent increases in the number of professional cultivation sites dismantled in central and eastern Europe, especially the Czech Republic, Poland, Romania and Slovakia. However, Vietnamese OCGs have been active for some time in a number of Member States, including the United Kingdom, Ireland, Sweden and Hungary. Vietnamese OCGs run their own plantations but also sell technical expertise in setting up plantations to other groups, and are involved in other forms of crime such as methamphetamine production and trafficking of humans. Vietnamese OCGs are known for coercing illegal immigrants to work as gardeners in cannabis plantations, often in harsh conditions. Many of the immigrants used in this way are bonded by debt and work in cannabis production sites as a way to pay for their passage to Europe (MRCl, 2014) (see the section 'Human trafficking and exploitation' in Chapter 1).

Cannabis resin: Moroccan trafficking routes diversify while Afghan hash makes inroads

Although it has lost market share to cannabis herb in recent years, cannabis resin, mostly of Moroccan origin, is still widely consumed in Europe and its supply is largely in the hands of OCGs. The largest markets for cannabis resin are found in western and northern Europe (Belgium, Denmark, Finland, France, Germany, Italy, Norway, Spain, Sweden and the United Kingdom), but Russia and Belarus also appear to be important. The Netherlands and, probably to a lesser extent, Belgium are traditional distribution hubs for cannabis resin, for instance to Scandinavia via Germany, or to Russia and Belarus via Poland and the Baltic countries. Hashish is also distributed from Denmark to the Nordic countries. Many shipments of resin destined for the French market are organised and depart from Spain, especially Andalusia. Europol also notes that members of the Italian Camorra mafia group organise cannabis resin shipments from Spain to Italy, either directly or via the Netherlands.

A recent and potentially significant development in the trafficking of cannabis resin to Europe from Morocco is the use of ships that transport the resin eastwards on the Mediterranean Sea to countries in the north of Africa, where OCGs may be exploiting unstable security environments (Figure 3.5). This is evidenced by several large seizures in the region. The Maritime Analysis and

Operations Centre — Narcotics (MAOC-N) reports that in recent years it has been actively involved in the seizure of over 100 tonnes of cannabis resin off the coast of North Africa, at least some of which is thought to have been destined for European drug markets. A link has also been made between this maritime trafficking and the facilitation of illegal immigration to Europe, although the specifics of this are not well understood at present (Europol, 2015d).

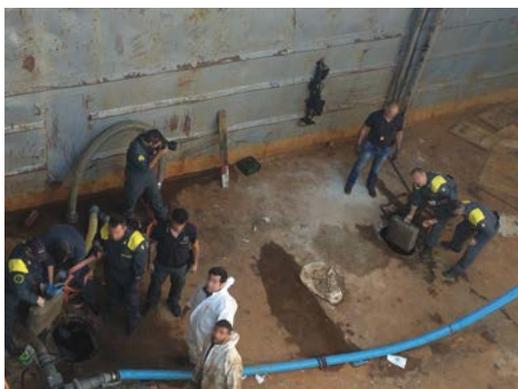
Moroccan criminal groups are major players in the supply of cannabis resin to Europe, sometimes in partnership with European OCGs, for instance Dutch and Albanian-speaking OCGs. Some Moroccan OCGs are able to control the whole chain of trafficking, from production in the Rif mountains to retail sales in, for instance, Marseille, France. In addition, their control over wholesale imports and sales allow them to exert significant influence on most markets in Europe. These groups are reported to cooperate with each other through Moroccan communities living in Europe, especially France, Belgium, the Netherlands and

the Nordic countries. Albanian OCGs are reported to be involved in the trade of Afghan cannabis resin, mostly to eastern and central Europe and, via the Netherlands, the United Kingdom. However, it seems that the United Kingdom also receives Afghan hashish directly from South-West Asia.

The retail market for cannabis

Cannabis is the most frequently used illicit drug in Europe, so it is unsurprising that it is also the one considered most easily accessible, with the number of young people reporting that they could easily obtain some within 24 hours being more than double the number claiming ready access to any other illicit substance (TNS Political & Social, 2014). However, not all cannabis consumed is purchased, as people may grow it for themselves, and not all cannabis purchased is for own-use, as it is often shared among groups of friends. For example, in a survey

FIGURE 3.5
Large maritime shipments of cannabis resin



A seizure of 20 tonnes of cannabis resin from the Jupiter cargo ship in Cagliari, Italy, in September 2015. One of several large seizures of Moroccan cannabis resin from ships traveling eastwards on the Mediterranean Sea. The cannabis resin was stored in a compartment hidden underneath a shipment of huge granite blocks.

Photos © Europol

of cannabis users in seven European countries (van Laar et al., 2013), nearly two-thirds of respondents said that they mainly bought the cannabis they used, but over one-quarter said that the cannabis they used was given to them for free, 7 % reported growing it and 3 % obtained it in some other way. There was considerable variation between countries, however.

Only limited information is available on how the retail market operates, although local studies show that different types of market are associated with different levels of risk to purchasers and dealers. There is considerable variation between countries in how the retail cannabis markets function, which may be a result of legislative differences, for example in the Netherlands coffee shops are allowed to sell cannabis and in other countries cannabis clubs are permitted, or of cultural differences or the maturity of the market. This is illustrated by the study mentioned above, which found that the vast majority of users in the Netherlands (87 %) usually purchase their cannabis from a coffee shop, a possibility not available in other countries. In Bulgaria, most people (58 %) reported buying their cannabis on the street or in a park, whereas purchasing at the seller's or someone else's home was the most common response among respondents in the remaining five countries where the survey was administered (the Czech Republic, Italy, Sweden, England and Wales, and Portugal), suggesting more closed markets in these countries. The data from the study also suggest that the market for cannabis at the retail level in most of the countries in the study is quite specialised, as in five of the seven countries the number of respondents who said that other drugs were available where they usually bought cannabis was less than one-third. This separation of the markets was greatest in the Netherlands, where most people buy their cannabis from coffee shops, indicating that the policy was achieving one of its key aims. The highest levels of market overlap were seen in Sweden (52 %) and Bulgaria (49 %).

Technological developments, such as the internet and the spread of mobile phones, also play a part in the cannabis market. As discussed in Chapter 2, the internet is an area of growing concern with respect to drug markets generally, although most surveys find that internet purchase of cannabis is not commonly reported. Nevertheless, in the Global Drug Survey (Winstock, 2015), cannabis was mentioned as one of the substances purchased through dark net markets, and a recent study of dark net drug markets found that cannabis accounted for a significant proportion of drug sales volumes, probably about a quarter (Soska and Christin, 2015). The use of mobile phones to arrange drug deals appears to be of increasing significance in many countries, facilitating either home

deliveries or constantly changing meeting places for the exchange of drugs. This reduces the risk of detection by law enforcement.

The reported prices of cannabis resin and herb, where available, are quite similar and have been essentially stable in recent years. In 2014, the interquartile range (IQR) of the price of cannabis resin was EUR 9–12 per gram, while that of herb was EUR 7–11 per gram (Table 3.1). However, prices need to be considered in terms of the potency of the substances purchased as well as the quantity typically used at any one time. The price of both types of cannabis has increased in recent years, but not to the same extent as potency appears to have increased (Figure 3.6). Reported average potency (measured in terms of the percentage of THC) in 2014 tended to be slightly higher for resin than for herb. The IQR of the potency of resin was 12–18 % while that of herb was 8–12 % (Table 3.1). The potency of both types has roughly doubled since 2006 (EMCDDA, 2015b).

FIGURE 3.6
Trends in cannabis potency and retail price in the EU, 2010–14



Note: Trends are based only on data from those EU countries that have submitted data consistently since 2010. Prices have not been adjusted for inflation. Typical values shown are the interquartile range (IQR) of the country average values, with high and low values showing the range.

Source: EMCDDA/Reitox national focal points.

Action points

Rising to the challenge of serious organised crime in the cannabis market

1. As the cannabis market is the largest drug market and the involvement of organised crime in cannabis production and trade poses a significant threat, it is important that it remains a priority for action within the EU.
2. It is important to continue to target and strengthen interdiction efforts in key geographical areas for cannabis production and trafficking, which include, but are not limited to, the Iberian Peninsula, the Netherlands and Belgium.
3. The sharing of good practices, technical innovations and effective policing strategies for combating domestic cannabis production needs to be strengthened and extended.
4. There is a need to engage with local communities to develop proactive responses to reduce the negative impact on areas affected by cannabis production, street markets and related criminality. Strategies to prevent vulnerable young people from becoming involved with the cannabis market should be developed.

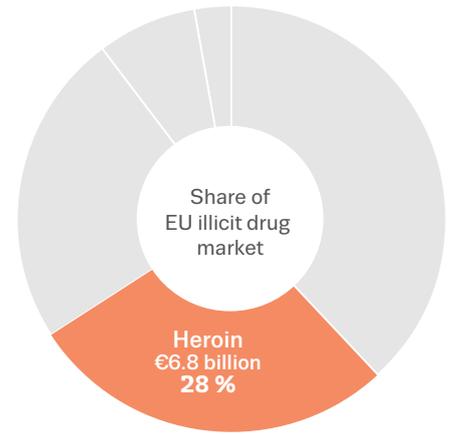
Monitoring and adapting responses to the diversification of products and production methods

5. Improvements in the monitoring of potency and different forms of cannabis available on the European market, including new products and technologies, are needed to understand and communicate their implications for public health in Europe. This is particularly important in the light of licit cannabis product developments in the Americas.
6. Prevention, treatment and harm reduction interventions need to address contemporary developments in the cannabis market including potency and product innovations.
7. Monitoring cannabis production in the EU should be further improved by making more use of existing tools, such as European Reporting on Illicit Cannabis Production (ERICP) sites, to build our understanding of scope, methods and trends at both national and European levels to enhance operational responses.

Addressing the key threats in production areas and along trafficking routes

8. Engage with international partners to address the social, environmental and economic problems underlying cannabis production in the Moroccan Rif — a region close to Europe that poses risks in terms of OCGs' activities, illegal immigration and possible links to terrorism.
9. As large consignments of Moroccan cannabis resin are trafficked towards the eastern Mediterranean, there is a need to build on existing EU measures and increase engagement with non-EU partners of the eastern Mediterranean (North Africa and the Middle East) to develop a greater strategic understanding of flows, new routes and financial links, especially to terrorist organisations, human trafficking and the trafficking of other drugs.
10. There is a need for active monitoring to identify potential threats related to production and trafficking activities in some areas, such as Afghanistan and Albania.

4



CHAPTER 4

Heroin and other opioids

Key issues

The European heroin problem

Although indicators suggest a long-term decline, the heroin market is still large, estimated as at least EUR 6.8 billion per year (range EUR 6 to 7.8 billion), and the drug remains responsible for a significant proportion of Europe's drug-related health and social costs. Worryingly, some signals suggest an increase in availability that may pose greater risks to current users and the potential for new heroin users.

Heroin and the market for opioid drugs

The opioid market, in which heroin still predominates, appears to be more dynamic and complex than in the past, with more substances available to consumers. Transitions between heroin and other opioids, such as fentanyl and substitution medicines, have been observed. Prescription medicines and new synthetic opioids, which can be purchased online, are likely to be of increasing importance for both public health and law enforcement.

Understanding production

Understanding heroin production is important in order to analyse market dynamics and estimate size. Opium production estimates for Afghanistan, the main source of heroin in the EU, fluctuate but remain high, even though methodological uncertainties exist. Moreover, increased opium production has recently been noted again in South-East Asia. Morphine seizures outside Afghanistan may signal displacement of heroin production to new countries, including Europe. Monitoring of the diversion and trafficking of acetic anhydride is not only an essential element for a robust control framework but can also signal changes in opiate production.

Implications of large seizures

The recent increase in seizures of very large heroin consignments has important ramifications. Shipments of this size imply that relatively few consignments could have a significant impact on availability. The implications of this change need to be better understood as it may be important for understanding the relative importance of different trafficking routes, particularly those exploiting maritime and container trafficking opportunities.

Organised crime and changing business models

Production techniques, locations, trafficking routes and associated modi operandi appear increasingly flexible and dynamic and quick to adapt to successful law enforcement activities. Turkish, Albanian-speaking and Pakistani OCGs are key players for heroin trafficking into Europe. Cooperation between groups, and with local OCGs, exists and may be increasing. The use of decentralised business models facilitates the sharing of assets and logistics, and results in risk displacement. OCGs are involved in trafficking of multiple drugs, precursors, weapons, other illicit commodities and, sometimes, migrants.

The importance of the Balkan route

The Balkan route remains a key corridor for heroin entry into the EU. This area therefore remains a natural focus for law enforcement efforts. Important recent developments include the emergence of two new off-shoots to the Balkan route involving the Southern Caucasus and Syria and Iraq. Turkey, in terms of both organised crime activities and anti-trafficking measures, remains of central importance, especially given its proximity to areas of instability in the Middle East. Potential connections between flows of heroin and other drugs and terrorist groups in this region are a major concern, and Turkey is a key partner to help counter these threats.

The wider impact of trafficking routes

Significant domestic demand already exists along all trafficking routes and may be growing, with drug trafficking acting as an additional destabilising factor in countries often faced with other serious political, social, health and economic problems. Developments on the Southern route, in particular, are worrying owing to the potentially larger role of this route in the supply of heroin and other drugs to Europe and its negative impact on African countries.

Introduction

Opioid use, and in particular heroin use, continues to be a major part of the drug problem in Europe, and has been for over 40 years. Heroin is the second largest contributor to the overall illicit drug market after cannabis, and the trafficking of heroin remains a significant source of revenue for OCGs. Although there has been a stabilisation or decline in the extent of opioid use in many countries in recent years, the illicit use of opioids remains responsible for a disproportionately large proportion of the health problems and mortality associated with drug use in Europe. High levels of dependence and associated, largely acquisitive, crime are common features of heroin use. Primary heroin users still represent one-third of all drug users entering specialised treatment, and in a number of countries there are signs of increasing use of a range of other opioids, mainly methadone, buprenorphine and fentanyl. Opioids, in particular heroin, are also still implicated in the majority of reported overdose deaths in Europe, and injecting heroin is associated with high levels of blood-borne virus infections and other health harms. There remain a significant number of problem opioid users in Europe with long-term polydrug use histories who are now aged in their 40s and 50s. The cumulative effects of this polydrug use, overdose and infections over many years accelerate physical ageing among these users, with growing implications for health and social support services, and the cost of treating opiate users will remain a significant burden on health budgets for many years to come.

Criminal justice costs associated with drug-related offending by opioid users and dealers also remain important. In spite of some law enforcement success in recent years, there are signs of recovery in the heroin market in the EU. Exceptionally large heroin seizures are now frequent in the EU, and seizures in Turkey are increasing. There are also signs of an increase in the purity of heroin on the streets of Europe. Since increased production in Afghanistan and elsewhere is also reported and the trafficking routes to Europe are diversifying, it is important that vigilance is maintained and the situation is carefully monitored, as there is a risk that greater availability will result in increased risks to users and the potential for new heroin outbreaks.

Opiates, opioids and heroin

Opiates are drugs that originate from naturally occurring alkaloids found in poppies. Opiates include opium, heroin, morphine and codeine. The term opioid generally refers to any substance that binds to the body's opioid receptors and therefore also includes synthetic drugs that produce opiate-like effects, such as fentanyl and oxycodone.

Heroin is another name for diamorphine. It is a semisynthetic product obtained by acetylation of morphine, which occurs as a natural product in opium, the dried latex of certain poppy species, especially *Papaver somniferum*. Although opium has been smoked for centuries, diamorphine was first synthesised in the late 19th century. Diamorphine is a narcotic analgesic used in the treatment of severe pain and usually comes as tablets or an injectable liquid. Illicit heroin is usually an off-white or brown powder that may be smoked, snorted or solubilised with a weak acid and injected.

Heroin purity has been classified into four grades. No 4 is the purest form — the purified hydrochloride salt, which is a white powder that can be easily dissolved and injected. No 3 is the purified base, 'brown sugar', used for smoking (base). No 1 and No 2 are unprocessed raw heroin (salt or base).

TABLE 4.1

HEROIN IN EUROPE AT A GLANCE			
Estimated market size (2013)	Best estimate (low–high)	Value (billion EUR) 6.8 (6.0–7.8)	Quantity (metric tonnes) 138 (121–162)
Problem opioid use ⁽¹⁾	Last year	Age group (years) 15–64	Estimated number of users (million) 1.3
Drug treatment ⁽²⁾ (2014)	All admissions	Number (% of admissions for all drugs) 150 000 (33 %)	Trends
	First admissions	24 000 (14 %)	
Drug law offences (2014)	All offences	Number (% of offences for all drugs) 49 000 (4 %)	Trends
	Offences for drug use/ possession for use	31 000 (3 %)	
	Offences for drug supply	18 000 (8 %)	
Seizures ⁽³⁾ (2014)	EU	Quantity (tonnes) 8.9	Trends
	EU plus Norway and Turkey	21.7	
	EU	Number 32 000	
	EU plus Norway and Turkey	40 000	
Mean retail price (2014)	Range (IQR) ⁽⁴⁾	Heroin base EUR/gram 25–140 (35–59)	Trends
Mean purity (2014)	Range (IQR) ⁽⁴⁾	% in EU 7–52 (15–29)	Trends

Notes:

⁽¹⁾ Estimate of the extent of problem opioid (mainly heroin) use within the EU.⁽²⁾ Drug users entering treatment for heroin. Units coverage may vary across countries.⁽³⁾ The 2014 figures should be considered as estimates; where not available, most recent data were used in place of 2014 data, except for the number of seizures for the Netherlands, France and Poland where no recent data is available so they are not included. An additional 0.9 tonnes and 353 000 tablets of other opioids were seized (7 000 seizures) in Europe, including Norway and Turkey, in 2014.⁽⁴⁾ IQR: interquartile range, or range of the middle half of the reported data.

Data presented are for the EU unless stated otherwise. All trend lines shown in this table cover a 5-year period, 2010–14. All trends reflect absolute numbers except for trends on price and on potency which reflect averages of mean values. In the case of treatment, price and purity, trends are based only on data from those EU countries that have consistently submitted data since 2010.

Source: EMCDDA/Reitox national focal points.

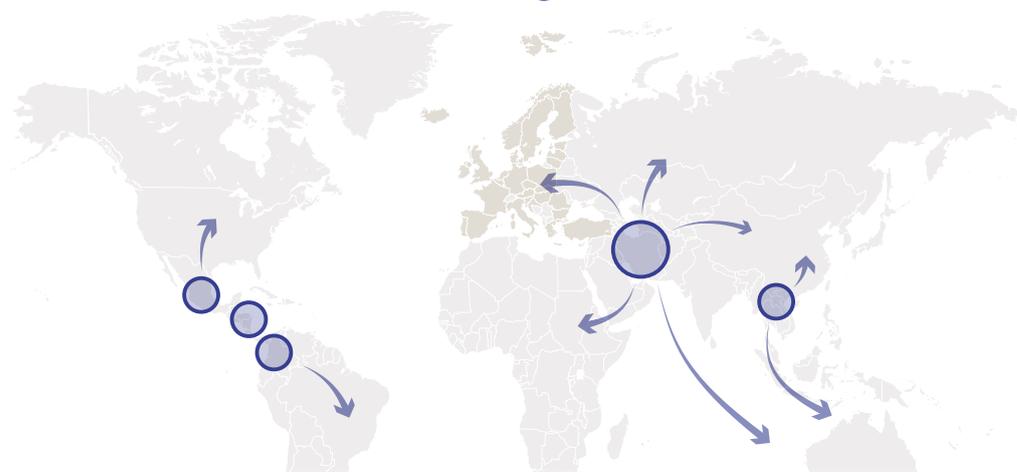
GLOBAL OVERVIEW – HEROIN

Estimated users
Past year,
aged 15–64

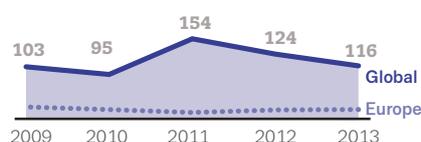


Main production and exporting regions

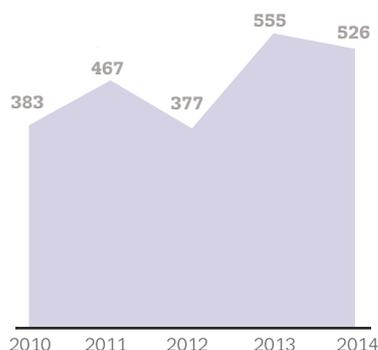
○ Production areas → Exporting areas



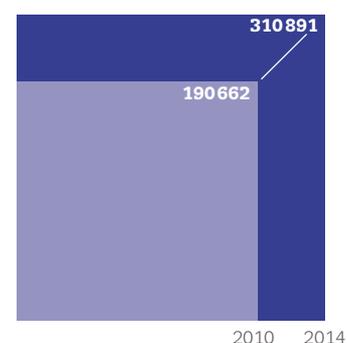
Quantities seized
(tonnes)



Estimated potential production
(tonnes)



Estimated poppy cultivation
(hectares)



Note: The estimates presented are up to 2013; more recent EU figures are available but have not been used for the purposes of comparability. For the most up-to-date European data, please refer to Table 4.1.

Source: UNODC, World Drug Reports. EMCDDA, 2015a.

Global overview

Opium poppies are grown illicitly in three main regions:

- South-West Asia (Afghanistan, Pakistan and India);
- South-East Asia (Myanmar and Laos);
- the Americas (especially Colombia, Mexico and Guatemala).

There are emerging reports of poppy cultivation and heroin production in the Middle East, but there are no estimates of the scope of this phenomenon (EMCDDA–Europol, 2013; Council of the European Union, 2015b). The majority of the global detected illicit opium output still comes from Afghanistan (85 % of the total of more than 7 500 tonnes in 2014), although recent data indicate that the Afghan opium

crop decreased by almost 50 %, to 3 300 tonnes, in 2015 (UNODC, 2015a,b).

Global quantities of opium seized increased to 634 tonnes in 2013, approaching the peak level of 668 tonnes recorded in 2009 (UNODC, 2015a). Iran seized 69 % of the total in 2013 and, although not a significant producer of opium, has traditionally been the country reporting the largest quantities of opium seized in the world (UNODC, 2011b, 2015a).

Global illicit production of heroin was estimated at 526 tonnes in 2014. It is too early to assess the impact that the drop in Afghan opium production in 2015 will have on heroin production estimates.

In 2013 ⁽¹⁶⁾, quantities of heroin and morphine seized worldwide decreased, to 116 tonnes. Large quantities of heroin and morphine were seized on the historical Balkan route, along which opiates have traditionally been trafficked from Afghanistan to western Europe (UNODC, 2015a).

It is estimated that, in 2013, there were about 32 million users of opioids worldwide, most of whom, it is thought, live in North America, Oceania, South-West Asia, eastern Europe, including Russia, and South-East Europe. About half are thought to be using opiates, mainly heroin (UNODC, 2014b). Although some western heroin consumer markets, such as the EU, now appear to be shrinking, the level of illicit opium production in Asia in 2014 was amongst the highest ever recorded. If most of the opium harvested in Asia does not end up as heroin on western markets, where does it go? This issue will be considered further below.

Consumer market for opioids in Europe

The extent and nature of use

The main opioid sold on the illicit market in Europe is heroin. Most individuals using heroin are dependent users, often living on the margins of society and highly stigmatised. In contrast to most other drugs, there appear to be very few occasional users of heroin (Trautmann and McSweeney, 2013). This makes estimation of the size of the heroin-using population difficult, as heroin users are unlikely to be included in surveys of the general population. Nevertheless, national estimates obtained by a variety of indirect estimation techniques based on administrative data sources are available in many countries. These suggest an average annual prevalence rate for high-risk opioid use among adults aged 15–64 of 0.4 % (4 per 1 000 population), the equivalent of 1.3 million problem opioid users in Europe (EMCDDA, 2015a).

A third of people entering drug treatment in 2014 in Europe (150 000 clients) said that heroin was their primary problem drug. However, less than one-sixth (14 %) of those entering treatment for the first time (24 000 clients) cited heroin as their principal drug, less than half the number doing so in 2007, suggesting that recruitment into heroin use is declining.

Heroin comes in different forms (see box on page 75) and may be smoked, snorted or injected. There is no consistent

data collection on patterns of use within EU countries, but it is clear from both treatment data and research studies that the preferred mode of use varies from country to country. For example, among first-time treatment entrants reporting heroin as their primary drug in 2013, the proportion reporting injecting as their main route of administration ranged from 8 % in the Netherlands to 100 % in Lithuania (EMCDDA, 2015a). Similarly, a three-country research study found that injecting was the main mode of use in Italy, while smoking was the main mode of use for the vast majority of participants in the Netherlands and just over half of those in England. Snorting heroin was less common (Trautmann and Frijns, 2013).

The same study also found variation between countries in the locations where heroin is most often consumed, which has implications for the level of harm associated with use. Consumption in the user's own home or in someone else's home were the locations most commonly mentioned, but in Italy two-thirds of participants mentioned using in the street or park (67 %), while in the Netherlands a significant proportion mentioned using a drug consumption room (40 %) (Trautmann and Frijns, 2013). These differences may be associated with differences in services (e.g. the availability of drug consumption rooms), but also factors associated with the markets and enforcement activity that might affect whether or not an open drug scene exists.

The size of the market for heroin

It is estimated that the quantity of heroin used in the EU in 2013 was at least 138 tonnes (121–162 tonnes) with a total value of approximately EUR 6.8 billion (EUR 6.0–7.8 billion). This makes it the second largest retail drug market in the EU.

These estimates have been calculated from national estimates of the number of problem opiate users, adjusted on the basis of treatment data to take account of the proportion likely to be users of opioids other than heroin. These estimates have also taken account of the fact that quite a large proportion of heroin users are in receipt of drug treatment, particularly opiate substitution treatment, and that when retained in treatment their drug use diminishes substantially.

A number of limitations affect the accuracy of these estimates (see box on page 28), and further details of the estimation methods are given in the technical paper published alongside this report (EMCDDA, 2016a). It is particularly difficult to estimate the number of users of heroin, which is fundamental to any estimate of market size, and hence the above figures must be viewed as

⁽¹⁶⁾ The last year for which global seizure data are currently available.

preliminary estimates that will be improved in the future by the incorporation of new sources of data. Even less information is available about the use of other opioids, and so estimation of the value of the markets for these substances has not been attempted here.

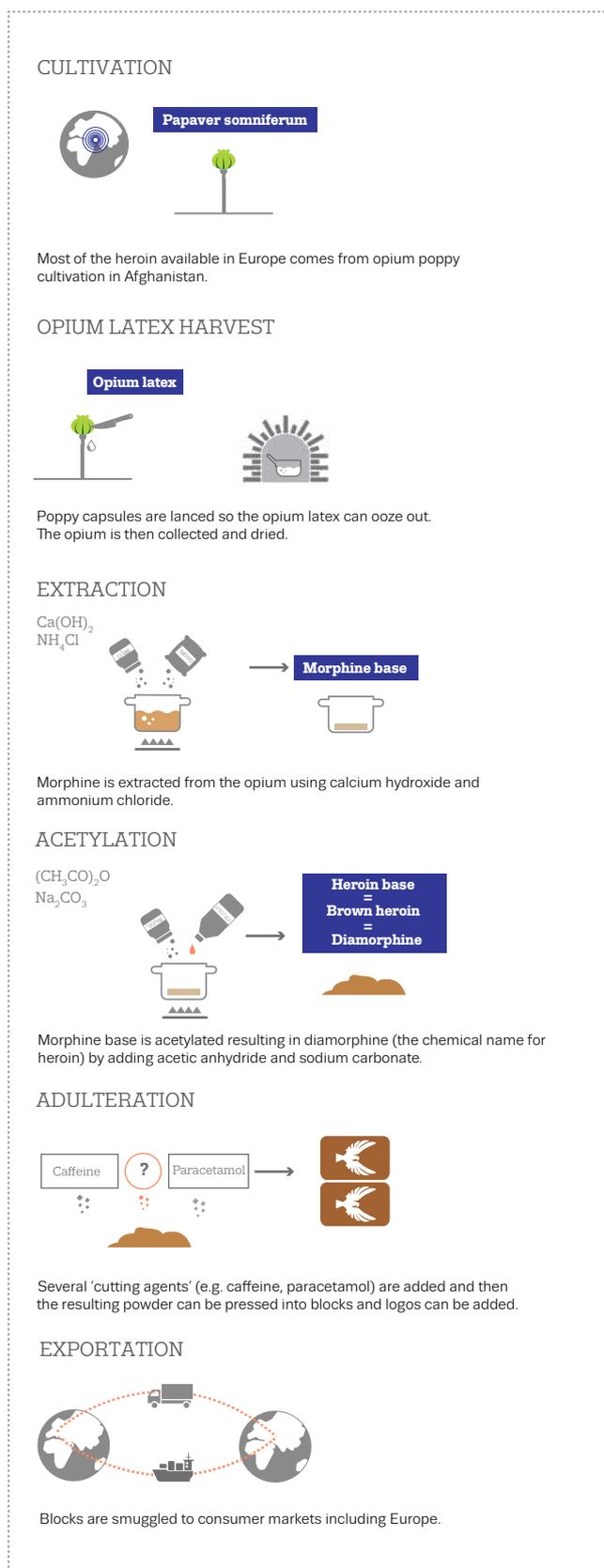
Diversification of opioids being used

While the incidence of heroin use in Europe appears to be declining, the data on those presenting for treatment suggest an increasingly diversified market in opioids. Although the majority of those entering treatment for opioid use problems still cite heroin as their primary problem drug, in 2013 one in 12 (8 %) clients entering treatment cited other opioids. The most commonly reported other opioids are methadone (which accounted for 60 % of those entering treatment for use of other opioids in 2013), buprenorphine (30 % of new presentations) and fentanyl. In just over one-third of European countries (11), more than 10 % of all opioid clients entering specialised services in 2013 were treated for problems primarily related to opioids other than heroin. In some countries, other opioids represent the most common form of problem opioid use. In Estonia, for example, the majority of treatment entrants reporting an opioid as their primary drug were using illicit fentanyl, while in Finland most opioid clients are reported to be primary misusers of buprenorphine (EMCDDA, 2015a). Thus, although heroin still predominates, the opioid market appears to be more dynamic and complex than in the past, with more substances available to consumers. Transitions between heroin and other opioids, such as fentanyl and substitution medicines, have been observed. Prescription medicines and new synthetic opioids, which can be purchased online, are also appearing and are likely to have increasing importance for both public health and law enforcement, with the potential for a growing problem of use of opioid-based medicines, as has been seen in the United States and Australia (see also Chapter 7).

Production and precursors

The process by which opiates are produced from the opium harvested from poppies is illustrated in Figure 4.1.

FIGURE 4.1
The heroin production process



Note: This illustration is intended to provide an indicative schematic overview of selected stages of a production process. It must be noted that alternative methods, chemicals and procedures may be used.

Source: EMCDDA.

Trends in opium production

As mentioned earlier, Afghanistan is by far the world’s largest illicit producer of opium, the raw material for heroin, and Europe’s main supplier, although some heroin from South-East Asia may also be found in Europe. In 2014, global opium production was estimated to be 7 162 tonnes, second only to the 8 091 tonnes produced in 2007 (UNODC, 2015a).

For the last decade, Afghanistan has been the world’s largest producer of opium, never accounting for less than three-quarters of global production, although with marked fluctuations. In the period 1995–2005, global production was fairly stable but with Afghanistan becoming increasingly dominant, except in 2001, when production decreased abruptly to less than 200 tonnes following the ban on poppy cultivation imposed by the Taliban, then controlling the country. After the fall of the Taliban regime, the opium harvest immediately recovered to a level comparable to the years prior to 2001.

Since 2005, estimated opium production in Afghanistan has averaged over 5 000 tonnes annually, compared with less than 3 000 tonnes in the previous decade, although in some years, such as 2010 and 2012, harvests were comparatively poor owing to poppy blight and unfavourable weather conditions (UNODC, 2014c). It is estimated that Afghanistan produced 6 400 tonnes of opium in 2014, a 16 % increase compared with the already high estimate of 5 500 tonnes in 2013 (see Figure 4.3). The latest data from UNODC (2015b) suggest that the 2015 Afghan

FIGURE 4.2
Opium farming in Afghanistan

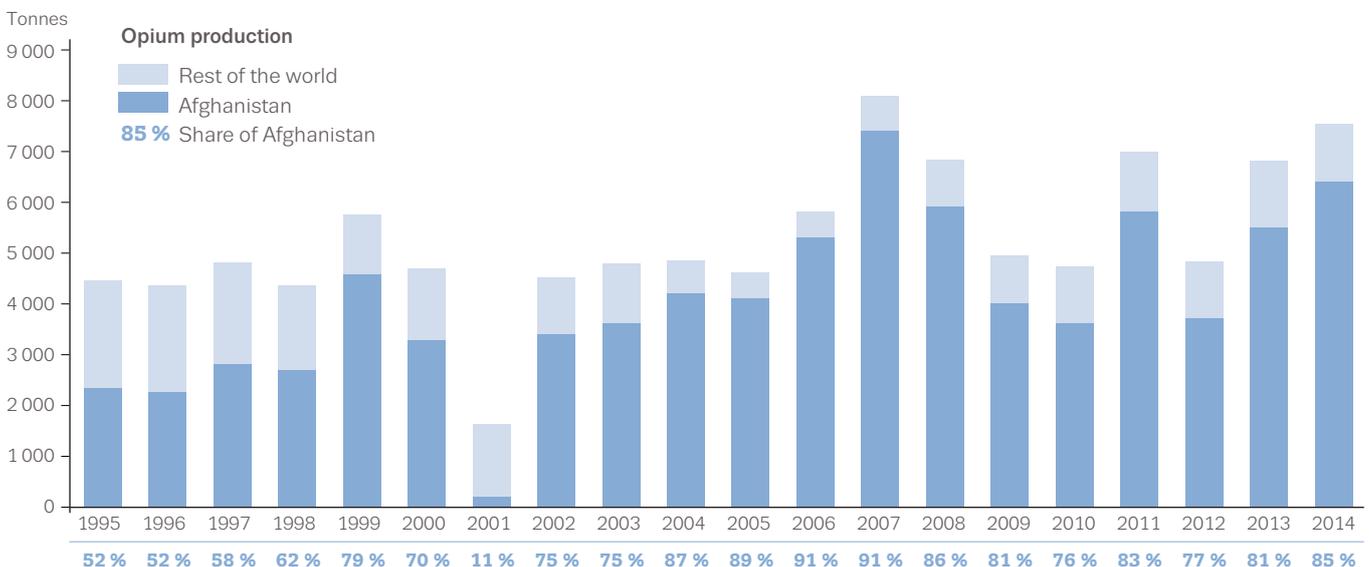


Children harvesting a failed poppy crop in Chaghcharan district, Ghor province, Afghanistan, July 2008.

Photo © David Mansfield

opium crop is likely to be around 48 % lower, at 3 300 tonnes, continuing the pattern of yearly fluctuations. The reasons for this drop include a reduction in the area under poppy cultivation (19 % less than in 2014 after a period of expansion between 2003 and 2013) and, to an even greater extent, falling opium yields. It is estimated that in 2015 the average yield fell by a remarkable 36 %, attributed largely to water supply problems and to poppy disease in the desert areas into which much cultivation has shifted (Mansfield, 2015; UNODC, 2015b). The failure of many poppy crops in the desert areas of southern Afghanistan,

FIGURE 4.3
Estimated global illicit opium production and share of Afghanistan, 1995–2014



Sources: UNODC, World Drug Reports.

and the absence of alternatives to opium production as a livelihood for the hundreds of thousands of settlers that live there, could eventually result in increasing migration out of the country (Mansfield, 2015).

In the second largest opiate-producing region of the world, South-East Asia, estimated opiate production in 2014 decreased to 762 tonnes, from a peak of 893 tonnes in 2013. Nevertheless, detected illicit opium production in South-East Asia remains at a fairly high level, especially when compared with the mid-2000s (UNODC, 2014d).

Heroin production

It is extremely difficult to estimate the production of heroin, both the agricultural raw material, opium, and, even more so, the finished product, and improvements in technology and changes in methodology can have a big impact on these estimates. The UNODC stresses that its figures are best considered rough estimates giving an indication of the order of magnitude, rather than as accurate measurements (UNODC, 2014c). There have been three changes in UNODC methodology vis-à-vis Afghan opiates since 2010, some of which have occurred since the 2013 EU markets report (EMCDDA–Europol, 2013). This has led to the revision of a number of estimates from previous years; hence the figures presented here may vary from those presented in the previous report. These methodological changes, taken together, have resulted in marked reductions in the estimates of heroin production.

The changes relate to uncertainties arising from gaps in information about key factors, which remain even in Afghanistan, the opioid producer country for which the most information is available. Areas about which we have only sketchy information include heroin laboratory efficiency, which may be very variable (UNODC, 2014c); the morphine content of poppies; and the proportion of the opium crop that is processed into heroin. Thus, there is a need to develop a better understanding of the dynamics of opiate production in Afghanistan, especially the proportion of the crop that is transformed into morphine and then exported out of the country as well as the fate of the opium exported to neighbouring countries.

In order to reflect recent methodological changes and remaining uncertainties, the UNODC (2014c) published four estimates of the amount of heroin potentially produced from the Afghan opium harvest of 2014 (Table 4.2).

Most of the heroin consumed in Europe is manufactured from Afghan opium, but relatively little information is available on where this manufacturing takes place.

TABLE 4.2
Estimated amounts of heroin potentially produced from opium harvested in Afghanistan in 2014

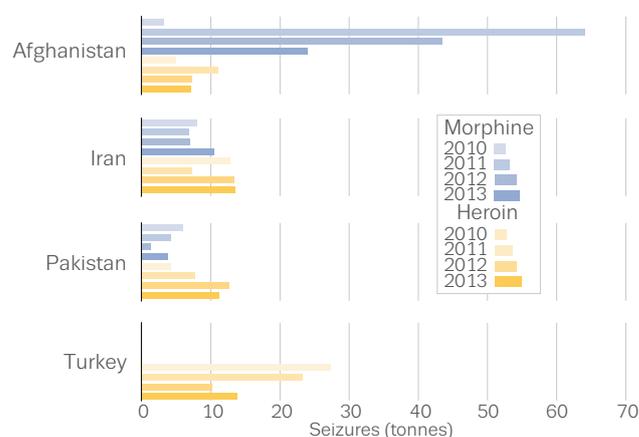
	If 62 % of Afghan opium crop is processed (tonnes)	If total Afghan opium crop is processed (tonnes)
Pure heroin base	210	350
Heroin of export quality (52 % purity)	410	670

Source: UNODC (2014c).

Historically, Afghanistan has been the main country reporting seizures of opiate laboratories, indicating that large quantities of opium are processed into heroin in Afghanistan (UNODC, 2011c).

However, there is evidence to suggest that opiate production also takes place elsewhere. In addition to seizures of opiate-processing laboratories, seizures of illicit morphine (which is an intermediary in the heroin production process) may be viewed as an indicator of opiate-processing activities. For the last 3 years, Afghanistan has seized the largest quantities of morphine in the world, more than 60 % of the global total, and comparatively much less heroin. In contrast, in Iran, Turkey and Pakistan heroin seizures dominate, although in Iran, and to a lesser extent Pakistan, significant quantities of morphine are also seized (see Figure 4.4). In the period 2011–13 almost 132 tonnes of illicit morphine was seized in Afghanistan, 24 tonnes in Iran and 9 tonnes in Pakistan. During the same period, seizures of opium totalled 289 tonnes in Afghanistan, 1 198 tonnes in Iran

FIGURE 4.4
Morphine and heroin seizures in Afghanistan, Iran, Pakistan and Turkey, 2011–13



Source: UNODC, 2015a.

and 87 tonnes in Pakistan. This provides confirmation that some of Afghanistan's opium crop is not processed into heroin in the country, and that there are markets for opium and morphine outside Afghanistan. Although fairly large quantities of opium are consumed in Pakistan and, even more so, in Iran, the amounts seized suggest that some opium may also be used to manufacture opiate products in these countries.

A number of hypotheses as to the possible uses for the large amounts of opium and morphine seized in the region may be put forward. A proportion of the opium and morphine may be used to manufacture heroin in Pakistan and Iran, and probably in other countries further afield. Alternatively, or in addition, a proportion may be used to licitly or illicitly manufacture medicinal products, including injectable morphine and codeine-based cough syrups, in Pakistan and Iran. It is likely that large amounts of these products are sold in these countries. For instance, there are

large numbers of unregulated pharmacies and stores in Pakistan, where controlled drugs, including morphine, can be bought without a prescription (UNODC, 2013c). These products may also be exported to neighbouring countries.

Recently, following the establishment of a new system for reporting information on dismantled laboratories by Europol and the EMCDDA, there have been a number of reports that the manufacture of a range of opioids from a variety of precursors is occurring in Europe (see box 'Opiate production in Europe'). This is a new development that needs to be kept under review.

Precursor — acetic anhydride

Acetic anhydride is used as an acetylation agent to process morphine into heroin and is subject to international control because of its critical role in the manufacture of

Opiate production in Europe

The normal picture of the European opioid market is one of large-scale production of heroin in far-away regions that is then smuggled into Europe by OCGs. However, old and new evidence suggests that this picture is too simplistic and markets are fluid and adaptable.

Heroin

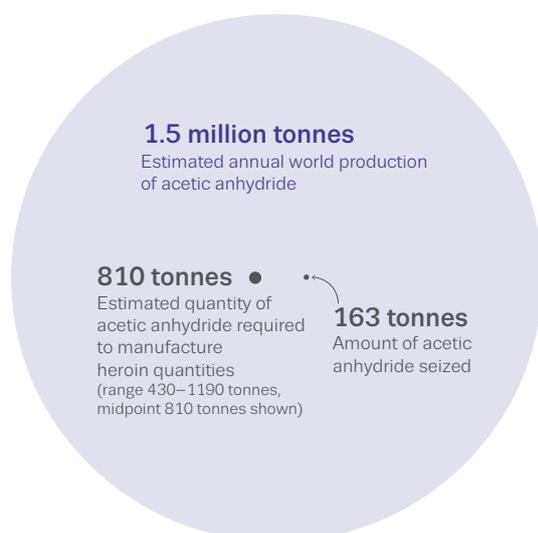
At the end of 2013, for the first time, the Spanish National Police dismantled a laboratory producing heroin from morphine; 20 kg of heroin, 20 kg of morphine and 75 kg of precursors were seized. At the time, it was the largest ever seizure of morphine recorded in Spain. In early 2014, this was surpassed when a second production facility was found, again producing heroin from morphine. The quantities of drugs and chemicals seized indicate that the laboratories were operating on a reasonable scale; the chemist in charge of the conversion activities was Turkish, and in total nine persons, born in various countries (Turkey, Paraguay, Honduras, Spain) but residing locally, were arrested. Furthermore, the Czech Republic has recently reported the seizure of several laboratories producing opiates. These include facilities undertaking the production of morphine from poppy straw, the production of hydrocodone and the production of heroin from morphine extracted from tablets of Vendal retard (morphine hydrochloride), a pharmaceutical product available in some EU countries (Hrachovec et al., 2015).

Although morphine is produced from poppies grown in Europe, the process is strictly controlled, making it unlikely that European-made morphine could be diverted to illicit heroin manufacture. However, the very large quantities of opium and morphine produced in Asia, combined with modern transportation and distribution options and the existence of well-connected criminal organisations in Europe, may be making heroin production in Europe a more attractive option.

Other products

Crude opioid products have been made in Europe for many years, such as *braun*, a home-made codeine-based preparation produced in the Czech Republic in the 1980s. However, the main crude preparations are currently made from poppies or 'poppy straw', the dried stalks, leaves and seed capsules of opium poppies, which contain residual opium alkaloids. The active chemicals may be simply extracted using water or other solvents and the resultant liquors can then be taken orally or injected, a practice found in several eastern European countries, such as Estonia, Hungary, Latvia and Lithuania. A more sophisticated home brew is *kompot*, which is exclusively produced in Poland. *Kompot* is a crude preparation of heroin that emerged in the 1970s and which produces effects similar to, but generally weaker than, heroin. It is produced from poppy straw and several chemical reagents, and contains heroin, morphine, codeine and other opium alkaloids in variable concentrations (Wodowski, 2004). It is a brownish liquid and is normally injected.

FIGURE 4.5
Estimating acetic anhydride requirements for heroin manufacture, 2013



Source: INCB, 2015a.

heroin⁽¹⁷⁾. However, it has many licit uses, particularly in the pharmaceutical industry (e.g. to manufacture aspirin), but also in the manufacture of paints, plastics, polymers, cellulose (for cigarette filters) and explosives. As a result, the global legitimate manufacture and trade in acetic anhydride is large and expanding, and this, combined with the fact that comparatively small amounts are required in heroin manufacture, makes preventing diversion for illicit purposes a challenging task (see Figure 4.5).

Estimates of annual licit global production of acetic anhydride vary, but the latest estimate from the International Narcotics Control Board (INCB) puts it close to 1.5 million tonnes per year (INCB, 2014). Set against this, the INCB estimates that the requirement for illicit heroin manufacture is between 400 000 and 1.1 million litres (or approximately 430–1 190 tonnes, midpoint 810 tonnes) (INCB, 2015a), i.e. less than 0.1 % of licit production. In 2012, global licit exports were reported to be 397 000 tonnes and imports 414 000 tonnes (UNODC, 2014b). However, licit imports into South-West Asia in 2012 were very small: none was imported into Afghanistan and only 14 kg into Pakistan. This suggests that the source of the acetic anhydride used in clandestine heroin production in the region is the diversion of licit supplies outside the area.

⁽¹⁷⁾ Acetic anhydride may also be used in the illicit manufacture of amphetamines. It is believed that the increase in seizures in some parts of the world, e.g. Mexico, is largely related to its use in methamphetamine production (INCB, 2015a, para. 180) although it may also indicate increasing heroin manufacture targeted at the American market.

Efforts to prevent the diversion of acetic anhydride for illicit drug production include the pre-export notification of shipments leading to stopped or suspended shipments in addition to seizures. In December 2013, the EU strengthened its precursor legislation, by implementing a number of measures, such as a requirement for the registration of end users of acetic anhydride, which seek to reduce diversion (see box in Chapter 8 on precursor control, page 163). These measures have led to large shipments to both Iraq and Iran being stopped. For example, one shipment of 2 200 litres being sent from Spain to Iraq was stopped in July 2014 as the importer was not authorised to import the substance (INCB, 2015a, para. 183). Although the number of countries providing pre-export notifications is increasing, there are fewer controls on supply within countries, and it is believed that most of the acetic anhydride diverted to illicit drug production is obtained from domestic diversion. Nevertheless, the above-mentioned entry into force of the mandatory end-user registration for acetic anhydride in the EU as of 1 July 2015 should further enhance the prevention of diversion.

The largest amounts of illicit acetic anhydride are seized in Afghanistan and surrounding countries, with West Asia accounting for about one-third or more of global seizures annually since 2009. Interpreting the data on trends in seizures is complicated by the sporadic nature of seizures. Nevertheless, the INCB reports that global seizures in the 5 years after 2009 were higher than in the previous 5 years (INCB, 2015a). However, its most recent estimate is that seizures account for less than 17 % of the acetic anhydride diverted for illicit heroin manufacture annually (INCB, 2015a, quoting its 2012 report).

In Europe, diversion of acetic anhydride still occurs despite stringent controls. Reported seizures and stopped shipments in the EU are sporadic, being reported by between two and four countries in each year between 2009 and 2014. They are mainly small scale (less than 50 litres) but occasionally larger quantities are involved, such as in Spain in 2013, when 9 498 litres were intercepted as a result of seven stopped shipments and one small seizure; in Poland in 2012 (1 755 litres); and in Slovakia in 2011 (6 020 litres) (INCB, 2015a). Seizures in Spain, which in 2014 also reported intercepting 4 942 litres, including 110 litres seized, may be linked to the recently reported seizures of laboratories for heroin manufacture and associated storage facilities (see box on page 82 'Opiate production in Europe').

Europol has established a subproject to support Member States in response to the problem of acetic anhydride trafficking, which aims to identify the role of OCGs in the trafficking of acetic anhydride from the EU. The OCGs

involved in transporting heroin from Afghanistan into Europe are likely to be well placed to facilitate shipments of the precursor in the opposite direction. It cannot be excluded that acetic anhydride is diverted from the EU to Afghanistan along the same Balkan route used to transport heroin to the EU, sometimes in exchange for heroin, the so-called 'reverse' Balkan route. OCGs use their own front companies or infiltrate existing businesses to order acetic anhydride from companies registered in the EU. Although fluctuating over the years, Turkey has consistently reported significant seizures (INCB, 2015a), and, in December 2013, 14 tonnes of acetic anhydride originating from the EU was seized in Turkey, providing evidence supporting the use of this route. As indicated above, suspect shipments to Iraq continue to be identified and stopped, and continued vigilance and cooperation is needed. Overall, there is a need for additional evidence to understand the significance of the 'reverse' Balkan route.

Given the record poppy crop in Afghanistan, it is probable that there will be increased demand for the chemical. Hence, attempts to smuggle acetic anhydride to Afghanistan from the EU are likely to continue so vigilance remains important. However, other sources are likely to be of significant importance. For example, China reported increased seizures in 2013 and also in that year there was a large seizure reported by Iran at the border with Afghanistan of a shipment that was traced back to China (INCB, 2015a).

The price of acetic anhydride on the illicit market in Afghanistan, although still higher than on the international licit market, has fallen in recent years. The price varies depending on perceived quality, but average prices in 2012, 2013 and 2014 (first 10 months) were below about EUR 150 (USD 200) per litre, compared with over EUR 264 (USD 350) per litre in 2008, 2009 and 2010 (in 2013 US dollars). This suggests that the accessibility of the substance has increased despite efforts to control diversion.

Adulterants

The production and processing of drugs may result in contamination with a range of sometimes harmful substances. However, in addition, mainly for reasons of profitability, intentional adulteration is common practice with all powdered drugs. In the case of heroin, the most commonly used adulterants are paracetamol and caffeine, and pre-mixed bags of brown paracetamol/caffeine powder have been seized by law enforcement. When heroin is in short supply, the extent of adulteration increases further to satisfy market demand. Adulteration (or 'cutting') may

occur at all stages of the supply chain including at the point of production. For instance, UNODC estimates that in Afghanistan heroin of 'export quality' is 52 % pure (UNODC, 2014c).

Environmental impact

Although not well documented in the scientific literature, the mono-cropping of poppies and the manufacture of heroin will have an environmental impact. Deforestation and slash-and-burn methods for poppy cultivation, leading to erosion and soil depletion, are likely to be an issue in tropical areas of South-East Asia, particularly Myanmar (Chouvy, 2003), but also elsewhere. Indiscriminate use of agricultural chemicals, such as fertilisers, herbicides and pesticides, in producer countries is likely to have a negative impact on rivers and underground water deposits. Finally, toxic chemicals, which include acetic anhydride, solvents such as ethyl ether and acetone, and hydrochloric acid, are needed to transform opium into heroin. The waste resulting from heroin production may simply be spilled on the ground or in streams and rivers in the areas, and, although scientific evidence as to the exact impact of this process on the environment is lacking, it is probable that thousands of tonnes of hazardous waste from heroin production is released into the environment each year (UNODC, 2006a).

Trafficking and supply

Since illicit heroin production takes place a long way from the main consumer markets, there is a long supply chain, which involves many different groups. Considerable effort is put into interrupting this supply, so the modes of transport and the routes taken may vary accordingly. While seizures by enforcement agencies are inevitably to some extent a reflection of their level of activity, they do also provide a useful indication of trafficking routes and methods.

Heroin trafficking to Europe

Two major developments affecting the supply of heroin from source countries to Europe have occurred since the last EU drug markets report was drafted. Firstly, there has been an unprecedented increase in the size of individual shipments sent along the heroin routes to Europe, with consignments of 100 kg or more, and occasional amounts measured in tonnes, being seized with increasing frequency (see Figure 4.7). As a result, record-breaking heroin seizures have taken place since 2013 in many EU countries, including Belgium (864 kg), the Czech Republic

FIGURE 4.6

A very large seizure of heroin



More than 2 tonnes of heroin seized near Athens, Greece, June 2015.

Photos © Drug Enforcement Department, Drug and Contraband Enforcement Directorate, Hellenic Coast Guard Headquarters



(157 kg), Germany (330 kg) and the Netherlands (1.2 tonnes), along with a major operation resulting in the seizure of over 2 tonnes in Greece in June 2014. In fact, the 6.4 tonnes confiscated in the EU in 2014 solely from seizures of more than 100 kg is even greater than the total of just under 6 tonnes of heroin seized in the EU in 2013 (5.6 tonnes). While there are signs that the trend may be levelling off, large seizures have continued into 2015; five seizures of over 100 kg were reported in the EU and two on the borders, in the first quarter of 2015. Although these are notable successes, the size of bulk shipments means that relatively few non-intercepted consignments could have a significant impact on availability. It suggests the need for on-going review of the relative importance of different trafficking routes and a particular focus on maritime trafficking.

Secondly, heroin routes seem to be diversifying. In the past, most of the heroin trafficked to Europe from Afghanistan came overland via what has become known as the Balkan route. However, although the Balkan route probably remains the main heroin trafficking route into the EU, there is evidence of an increase in the diversity of routes and modes of transport being used (Figure 4.8; EMCDDA, 2015b).

The traditional Balkan route

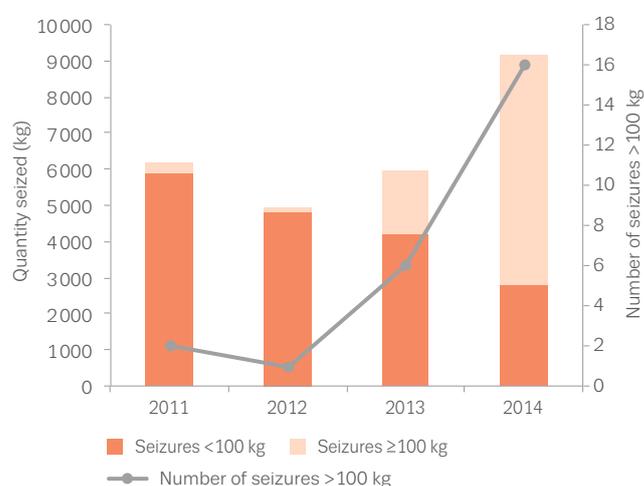
A route linking Afghanistan to Iran then through Turkey represents the shortest distance and most direct land route to European consumer markets. This route has been used to traffic heroin into the EU since the 1980s, and possibly earlier. Turkey is crucial to the Balkan route, and Istanbul is a key location to arrange heroin transports to the EU. From

Turkey, heroin may be shipped overland, by sea or by air. Three branches of the Balkan route depart from Turkey and lead into western Europe:

- the southern branch runs through Greece, Albania and Italy, mostly by sea (ferries);
- the central branch runs through Bulgaria, the former Yugoslav Republic of Macedonia, Serbia, Montenegro, Bosnia and Herzegovina, Croatia and Slovenia, and into Italy or Austria, essentially by land;
- the northern branch runs from Bulgaria and Romania to Hungary, Austria, the Czech Republic, Poland or Germany, essentially by land.

FIGURE 4.7

Trend in large seizures of heroin and their contribution to total seized in the EU, 2011–14



Sources: Europol, EMCDDA/Reitox national focal points.

Heroin is also trafficked from Turkey to multiple destinations in Europe by air (UNODC, 2014b). In 2013, Turkey intercepted more than three times as much heroin as the entire EU; for comparison, in 2001, the quantity seized in Turkey was only one-third of that seized in the EU.

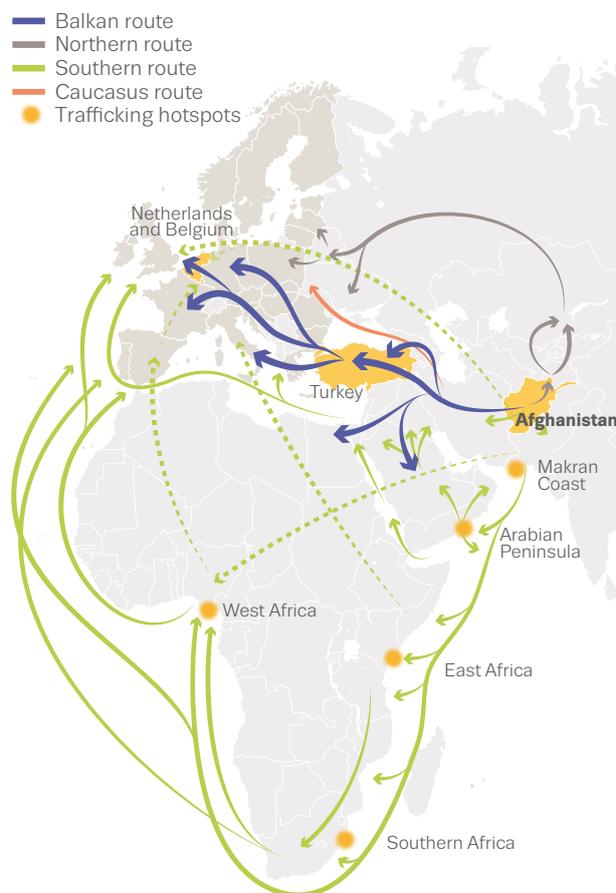
Heroin may reach Turkey via a number of routes. A branch of the Balkan route seems to have developed through Iraq and Syria in recent years. It should be noted that Iraq is also used as a transit or destination country for shipments of acetic anhydride (see above). Similarly, another branch of the Balkan route goes through Iran, and possibly Central Asian countries such as Turkmenistan, by land or through the Caspian Sea, to the countries of the Caucasus (Armenia, Azerbaijan and Georgia).

Europol intelligence suggests that Turkish OCGs are the main importers and facilitators of distribution of heroin in key regions of Europe. They maintain control over various elements of the supply chain, including links to heroin suppliers and processors. They have an established presence and legitimate businesses facilitate their activities in key locations along the trafficking route, in Bulgaria, Romania, Hungary, the western Balkans, Germany, the Netherlands and the United Kingdom. Turkish OCGs rely on the support of other OCGs in their activities, such as Albanian-speaking, Serbian, Bulgarian and Romanian groups. They have also adapted to the heroin market's new dynamics. Some Turkish criminals previously based in the United Kingdom, the Netherlands and Turkey have relocated to South Africa or travel there to broker the supply of heroin to the EU from Pakistan via southern Africa.

Albanian-speaking OCGs from different countries in the western Balkans play a secondary distribution role, linking Turkish heroin suppliers and OCGs in destination markets, and control an important share of the heroin market. Traffickers increasingly collaborate across ethnic lines, for example with shipping and other transportation arrangements and the sharing of assets. Generally, the organisational arrangements are such that it is the local OCGs that undertake the transport of the drugs and are thus at greatest risk of arrest. The main markets for heroin remain in the EU Member States, but the internal market in the western Balkans is expanding. It is also quite common for western Balkan OCGs to traffic multiple drugs.

The traditional method of transporting heroin via the Balkan route continues to be concealment in lorries, buses and, especially, cars. However, recently, sea containers have been used, especially through Turkish ports. This heroin traffic by maritime containers could help explain the increase in the number of very large heroin seizures in Turkey and elsewhere on the Balkan route.

FIGURE 4.8
Heroin trafficking routes into Europe



Note: The trafficking routes represented are a synthesis of a number of information sources and should be considered indicative rather than accurate descriptions of the main trafficking routes.

Source: Europol and EMCDDA.

The Southern route

In recent years, large heroin consignments, of the order of hundreds of kilograms, shipped from ports on the coast of Iran and Pakistan on the Gulf of Oman and the Persian Gulf (the Makran Coast), have attracted international attention, and some of this heroin is destined for Europe. This Southern route to Europe entails several modes of transport and transshipment points that may be combined in different ways.

The heroin exported by boat from the Makran Coast seems to be of relatively high purity, according to data released by the Combined Maritime Forces (CMF), a US-led multinational naval task force that carries out random searches on vessels sailing between the Makran Coast, the Arabian Peninsula and the coast of East Africa (CMF, 2015).

The heroin shipped on the Southern route first reaches countries of the Arabian Peninsula and East Africa. Some

Case study 10: Heroin trafficking by western Balkan OCGs

At the end of 2014, a long-running international investigation ended in several days of action during which almost 400 suspects were arrested and 100 kg of heroin was seized, along with quantities of cocaine, cannabis and cash. Notably, 4 tonnes of drug-cutting agents was also seized, indicating the significant scale of the network's operation. The criminal gang involved, operating from bases in Austria, Germany and the former Yugoslav Republic of Macedonia, brought heroin into the EU along the Balkan route and distributed it across several European countries.

The investigation focused on a number of OCGs working in concert and operating out of the former Yugoslav Republic of Macedonia. Their aims were to distribute high-quality heroin in Europe at very low prices and carry out large-scale drug trafficking, especially in Austria and Germany. Each member of the gangs worked in a specific area of operation, and the whole organisation was rigidly structured and hierarchical, with gang members lower down the hierarchy knowing very few other members of the group, and none of its principals.

Source: Europol.

may travel further north into the Red Sea as far as Egypt. A proportion of this heroin supplies local consumer markets in Africa and the Middle East, which appear to be growing (UNODC, 2014b). The heroin trade also seems to have destabilising effects in East Africa, with drug profits reportedly being used to fund armed groups in Kenya and possibly Somalia. However, significant and reportedly growing amounts are trafficked onward from East Africa and the Arabian Peninsula to other destinations, including Europe. Thus, heroin shipments may be broken down into smaller batches and sent by air to Europe directly or via southern and West Africa. Alternatively, some consignments are trafficked to South Africa, especially by sea but also by land (rail), before onward shipment to Europe.

Criminal organisations from several European countries, such as the Netherlands, the United Kingdom and Ireland, have used South Africa as a departure and transshipment point for drug consignments for some time. Recently, as already mentioned, Turkish traffickers have become active in South Africa. Other criminal organisations active here include West African, especially Nigerian, and East African OCGs, as well as criminal organisations from Pakistan. There are indications that West African (Nigerian) OCGs control much of the heroin trafficking activity through East Africa and are the main receivers of the considerable cash profit derived. For example, Europol has noted that they trade with OCGs based in source countries, such as Pakistan, to obtain heroin and traffic it to Europe, relying primarily on couriers. They are also active in the intra-EU distribution of heroin and use the presence of Nigerian diaspora communities in many Member States to their advantage.

Pakistani OCGs, composed of Pakistani nationals as well as EU nationals of Pakistani origin, also appear to be

playing an increasingly important role in facilitating heroin shipment to the EU. They have established businesses both in Pakistan and the EU, which they use as fronts for heroin operations. They have developed the capacity to traffic large quantities of high-purity drugs, using a wide variety of transportation methods, including containers, couriers and postal parcels, adapting to changes in demand and to law enforcement efforts.

Seizure data suggest that ports in Belgium, the Netherlands and the United Kingdom are the main targets for heroin shipped in containers from the Makran Coast. In the case of Belgium and the Netherlands, it is probable that the heroin is destined for distribution to other European countries, such as France and Germany. Large maritime heroin shipments may also be destined for southern Europe, as is illustrated by the 2.3 tonnes seized in Athens in June 2014 mentioned earlier.

Finally, the Southern route also involves smaller amounts of heroin shipped by air couriers and freight, as well as postal parcels, from Pakistan directly to Europe, especially the United Kingdom.

The Northern route

The heroin trafficked on the Northern route is exported by land from Afghanistan's northern borders and appears to be essentially destined for the consumer markets in Central Asia, Russia, Ukraine and Belarus, which have been expanding over the last 10 years. Most consignments cross from Afghanistan into Tajikistan and then are trafficked northwards through Kyrgyzstan or Uzbekistan to Kazakhstan before entering Russia. The fact that three of these four Central Asian countries and Russia rank among the top 26 countries seizing the largest quantities of heroin at world

level confirms that significant quantities of the opiate are shipped along the Northern route (UNODC, 2014b). A proportion of heroin shipped on the Northern route may eventually enter the EU via the eastern borders of Poland and the Baltic countries. Some heroin seized in Ukraine and Belarus in the last few years was reported to originate from Central Asia and was intended for western European markets. In addition, large amounts have been intercepted on either side of the Ukraine–Poland border, for instance 150 kg was seized in Medyka, Poland, in April 2014.

The Southern Caucasus route

As can be seen from the above, the so-called ‘trafficking routes’ are very flexible and fluid, as are the methods of transportation and concealment used. An example of this is the emergence of a new Southern Caucasus route. On this route, opiates produced in the Golden Crescent are trafficked from Iran to Ukraine or Moldova via Armenia, Azerbaijan and Georgia. This route came to attention as a result of three remarkable seizures carried out in the countries of the Southern Caucasus (Armenia, Azerbaijan and Georgia) in 2014. The most spectacular of these came in July 2014 in the port city of Batumi, Georgia, with the seizure of 2 500 litres of an unusual liquid mixture containing acetic anhydride, 589 kg of heroin, 12 kg of morphine and 2 kg of codeine from a lorry that had come from Iran via Azerbaijan. The drugs were reported to be destined for the Ukraine and Moldova.

This suggests that the Caucasus is now being used to smuggle large amounts of opiates from Iran to northern Europe. The ferries that cross the Black Sea from Georgia to Ukraine and Moldova are likely to be used to that end. From Ukraine or Moldova it is possible to reach both lucrative western European markets and the large Russian market by a variety of overland routes.

Turkish OCGs are known to cooperate with Iranian and Georgian OCGs and individual facilitators in organising and controlling heroin trafficking from source countries through this region to the retail markets for heroin in western Europe. Turkish OCGs are known to have an established presence in legal businesses in key locations along this trafficking route, such as transport companies. Areas of conflict in the Southern Caucasus region provide OCGs with opportunities for the trafficking of heroin to the EU with a reduced risk of detection. The purity of heroin intercepted along the Southern Caucasus route is reportedly high.

In addition to security problems in many countries along these trafficking routes, the use of heroin within these countries can result in severe health and social problems,

including HIV infections. In addition to the negative impacts on development in these regions it raises the issue of potential spill-over effects in neighbouring EU countries or as a result of migration to Europe.

Trafficking within the EU

Within the EU, trafficking is mainly organised by Turkish, Pakistani and Albanian-speaking OCGs with links to a wide range of local OCGs. Heroin is transported onward from the area of production by land, sea and air to the destination market. The major container ports of Rotterdam and Antwerp form an important hub, while Pakistani shipments to the United Kingdom and Spain (Barcelona) then flow to Portugal, France and Italy. The involvement of Turkish OCGs in the heroin trade in the Netherlands is illustrated by the extensive media coverage of a series of linked assassinations of members of Turkish heroin OCGs and Dutch-Turkish criminals in the Netherlands (Amsterdam) and in Istanbul in 2014 and 2015 (see Case study 5 in Chapter 1).

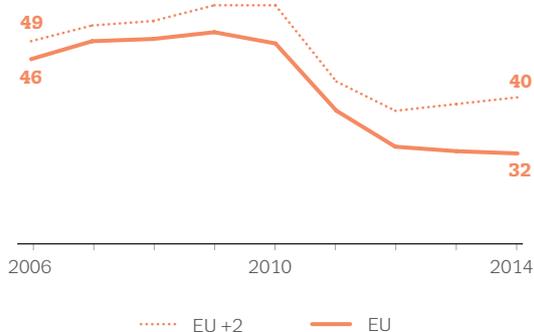
In the period immediately following 2010, there was a marked decline in the number of heroin seizures in Europe, after a period during which the number of seizures was fairly stable (see Figure 4.9). However, more recent data show this decline levelling off, with the number of seizures reported in the EU and Norway stabilising at a little over 33 000 between 2012 and 2014, compared with over 51 000 in 2009. However, in Turkey the number of seizures generally increased over the same period. In terms of the quantity seized in the EU and Norway, the figures fluctuate more; nevertheless, the total quantity seized in the region declined from over 8 tonnes in 2009 to 5.6 tonnes in 2013, but then in 2014 increased markedly to 8.9 tonnes. In Turkey, the quantity seized, although fluctuating year on year, has been fairly stable overall at around 13 tonnes per year since 2007. In 2014, there were just over 7 000 seizures in Turkey, yielding a total of just under 12.8 tonnes.

These overall seizure figures encompass small seizures, often of low-purity heroin taken from users or dealers arrested on the street by police, as well as large seizures of higher-purity heroin intercepted in transit or at borders by customs agencies and destined to be subdivided and moved down the supply chain. Looking at the average size of seizures may give some indication of the level of the market where most activity is taking place. The average seizure size in the EU countries⁽¹⁸⁾ in 2014 was 0.24 kg. Countries that had an average seizure size of over 1 kg, suggesting a

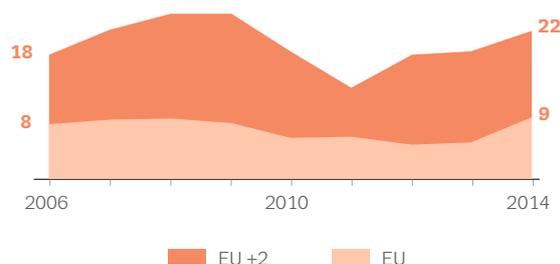
⁽¹⁸⁾ France, the Netherlands and Poland do not report numbers of seizures so they are not included in this calculation.

FIGURE 4.9
Seizures of heroin reported in Europe, 2006–14

Number of seizures (thousands)



Quantities seized (tonnes)



Note: Some data for 2014 are not available and the most recent data have been used instead, except for the number of seizures for the Netherlands, France and Poland where no recent data is available so they are not included.
Source: EMCDDA/Reitox national focal points.

greater proportion of seizures relating to wholesale or middle market level, were Bulgaria, the Czech Republic, Hungary and Greece. On the other hand, those countries with an average seizure size of less than 50 g, suggesting that most seizures occur at the retail level, were mainly countries also reporting fewer seizures, such as the Scandinavian countries, the Baltic states, Cyprus, Luxembourg, Slovenia and Slovakia, but also Spain. As part of a programme of development of the seizure statistics reported to EMCDDA, some countries have started to break down seizures into three market levels based on the size of seizure, as well as providing more information about individual large seizures, which will enhance our understanding of law enforcement activity and trafficking routes.

As part of this development programme, the collection of information on seizures of other opioids has also been instituted. In 2014, 18 EU countries as well as Norway and Turkey reported seizures of at least one opioid other than heroin (Table 4.3). Other opioids

TABLE 4.3
Seizures of other opioids in the EU, Norway and Turkey, 2014

	No of countries	No of seizures	Quantity seized
Methadone	14	1666	29 kg
Buprenorphine	13	2312	65 588 tablets
Tramadol	11	583	287 095 tablets
Codeine	7	321	0.5 kg
Fentanyl and analogues	8	249	33 kg
Morphine	12	975	82 kg
Opium	13	357	342 kg
Poppy (straw and plants)	5	46	393 kg and 94 plants

included the pharmaceutical products methadone, buprenorphine, tramadol and codeine, as well as fentanyl and its analogues, and morphine. In addition, 13 countries reported seizures of opium and five reported seizing poppy straw or plants.

Less information is currently available about the source of the increasing variety of opioids other than heroin that are increasingly being seen on the black market in Europe. As discussed in the section 'Falsified, counterfeit, substandard and unauthorised medicines' in Chapter 1, there are a number of ways in which these substances may appear on the black market. In Finland, buprenorphine dominates the opioid market, and evidence from seizures suggests that it is increasingly smuggled from France via Sweden, although large seizures are still made on the traditional shipping route between Tallinn and Helsinki (Finland: Reitox, 2015). It is reported that, in France, buprenorphine reaches the black market in two main ways. In the first way, which is organised, significant quantities are obtained by falsifying prescriptions or by obtaining multiple prescriptions for individuals who are not opiate dependent. The second way is by individual users in receipt of opioid substitution treatment selling some of their prescription (France: Reitox, 2015); similar small-scale misuse of various types of opioid substitution therapy are reported by other countries but, when compared with the quantities prescribed, the amounts reaching the black market are quite low (Austria: Reitox, 2014). Nevertheless, in some countries there is a concern about the numbers of drug-related deaths in which opioid substitution medication, such as methadone, is mentioned. In Estonia, fentanyl is the most commonly used opioid and is reported to enter the country from Russia (Estonia: Reitox, 2015). Monitoring the illicit supply of opioid medication is an area that needs to be developed in the future.

The retail market for heroin and other opioids

Information on how and where heroin users obtain their supplies is not widely available. Since heroin users are not well represented in general population surveys, these surveys are not able to provide much information on the heroin market, except that in general heroin is seen as less accessible than other drugs (TNS Political and Social, 2014). More information can be obtained from special studies of heroin users. However, the samples for such studies may not be representative of all users as they are often snowball or convenience samples, such as people attending needle exchanges or entering treatment.

Most heroin users buy their drugs, and there is less sharing or gifting than is the case with other substances. A recent study of drug users in three European countries, Italy, the Netherlands and England, found that the vast majority of respondents (97 %) usually paid for their heroin. About one in five said that they sometimes were given it while about 1 in 10 said that they sometimes got it on credit and a similar proportion reported that they got it fronted to sell (Trautmann and Frijns, 2013). In many countries it is common for heroin users to engage in street-level dealing to finance their drug use. Such users are very vulnerable to arrest and effectively act as a buffer between the higher-level dealers and traffickers and law enforcement.

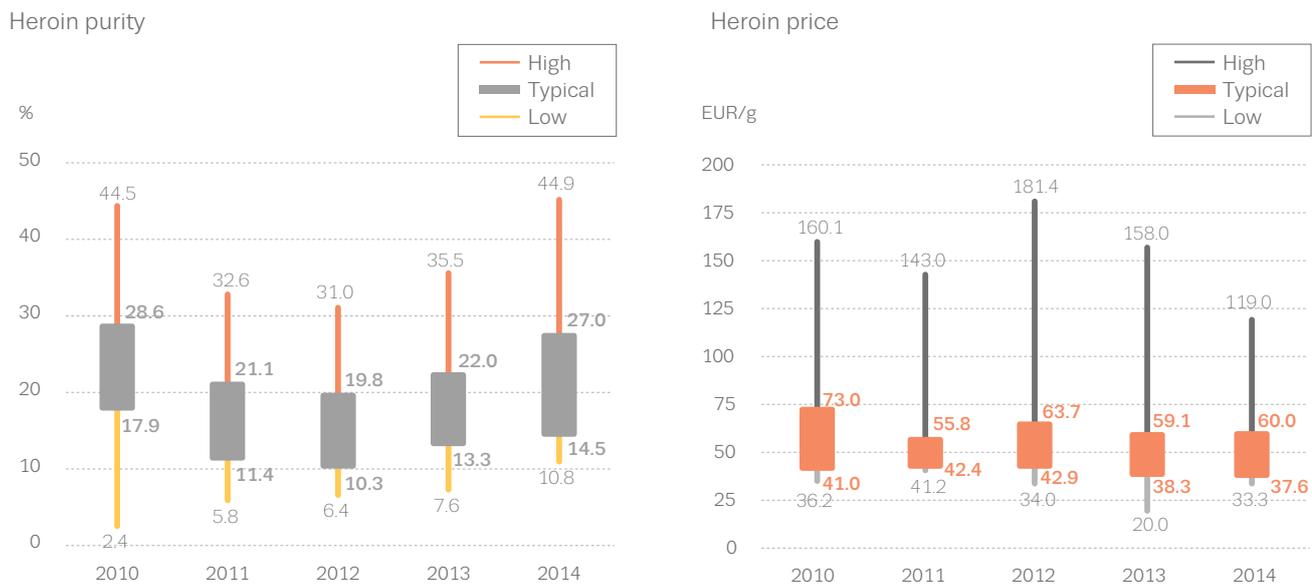
There is considerable variation across Europe in how the heroin market operates. In some countries, street dealing of

heroin appears to be the most important type of retailing. In the above study, half of respondents said that they usually bought heroin on the street or in a park. However, in some countries more closed markets are in operation, with dealing taking place in premises and telephones being used to arrange pick-ups or deliveries. In England, over half the respondents in the recent study said they usually obtain their heroin through a delivery service (Trautmann and Frijns, 2013).

The retail price of heroin can be viewed as a marker of availability relative to demand and has been declining steadily over the last decade, in real terms (EMCDDA, 2015a). However, prices vary widely both within and between countries (Figure 4.10). The trend in purity presents a more complex picture, having been increasing but then showing a marked dip in 2010–11 when several EU countries reported heroin shortages (EMCDDA, 2015a). Since the low in 2012, purity has been increasing again and in 2014 was back to 2010 levels. Hence it appears that the market response to the heroin shortage was to reduce purity rather than price.

It has been suggested that the increased use of other opioids in some countries in previous years was partly in response to the reduced quality of the heroin on the market. This suggests users will revert to heroin now that purity has improved, a trend that is likely to continue given the recent record Afghan poppy crops.

FIGURE 4.10
Trends in heroin purity and retail price in the EU, 2010–14



Note: Trends are based only on data from those EU countries that have submitted data consistently since 2010. Prices have not been adjusted for inflation. Typical values shown are the interquartile range (IQR) of the country average values, with high and low values showing the range.

Source: EMCDDA/Reitox national focal points.

Action points

Improving responses to the market for heroin and other opioids

1. Investment in evidence-based approaches to demand, supply and harm reduction interventions needs to be strengthened given that the retail market for heroin remains the second largest drug market in Europe and the most significant contributor to public health and social harms.
2. There is a need to strengthen capacity to identify signals and respond to new outbreaks of heroin or other opioid use or use among new subgroups.

Targeting key production issues

3. Monitoring of opiate production remains essential and needs to target information gaps in relation to the quantities of heroin produced globally and where heroin production occurs. There is a need to better understand the destination of the opium and morphine exported out of Afghanistan, as well as the dynamics of renewed heroin production in the EU.
4. Forensic profiling of heroin seizures is of great value for strategic purposes and needs to be supported. A mechanism for sharing the results of analysis among stakeholders at national and European level in a timely manner would be beneficial.
5. Prevention of the diversion of acetic anhydride is a key component of a robust control framework. Additionally, information on diversion cases or attempts has value for signalling changes in opiate production. The systematic collection and sharing of additional information pertaining to seizures and stopped shipments of acetic anhydride in Europe, especially the results of backtracking investigations, should be strengthened. This would facilitate targeting of OCGs specialising in the diversion of precursor chemicals in the EU.

Responding to change in trafficking methods and routes

6. The threats posed by interaction between the heroin market and the markets for synthetic drugs and cocaine identified in this report need to be better understood at a strategic level. This is likely to require more efforts in information sharing and analysis between the operational and strategic levels at both national and European level.
7. Active monitoring, forensic analysis and timely information sharing on large seizures at major entry points in Europe is strategically and operationally important and should be encouraged and supported to improve our understanding of the evolving criminal networks and routes.
8. Tackling maritime trafficking of heroin needs greater attention drawing on lessons from cocaine interdiction measures. This should encompass both bulk consignments at sea and targeting containers at key departure and transit points, especially ports in Africa, Pakistan and Iran, in addition to landing points in Europe.

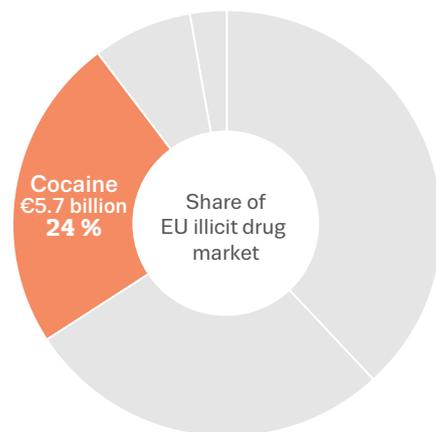
Engaging with Turkey and understanding the Balkan route's Middle Eastern connections

9. Cooperation between the countries along the Balkan route, including destination and transit countries, especially Turkey, has proven successful and should be continued and reinforced with new partnerships where possible. This should include intelligence sharing to develop the understanding of the continued diversification and extension of the Balkan route as well as support to develop demand reduction activities in the countries affected by heroin trafficking.
10. Continuous assessment and monitoring of the implications for heroin trafficking of the current instability in the Middle East and associated migration through Balkan countries is required.

Closing information gaps on opioid-containing medicines and new synthetic opioids

11. Tools are needed to better monitor and prevent the diversion and misuse of medicines containing opioids both at the population level and within risk groups. This needs to include methods for early signal detection as well as the development and propagation of proven effective responses.
12. The identification of source countries, the extent of production within the EU and online sales remain important information gaps for synthetic opioids.

5



CHAPTER 5

Cocaine

Key issues

The European cocaine market

With a retail market estimated to be worth at least EUR 5.7 billion per year (range EUR 4.5 to 7 billion), cocaine is Europe's most commonly used stimulant, although a high prevalence of use is largely restricted to some western and southern Member States. While most cocaine consumption is recreational use of cocaine powder, small populations of marginalised crack cocaine users are present in a few countries.

Stable demand but signs of increased availability

Indicators of demand suggest generally stable or even slightly declining use and seizure data show stability since the high point reached in the mid-2000s. However, recent data suggest that availability may be increasing; the retail price appears to be relatively stable or falling slightly overall and retail purity, though generally still below 50 %, has recovered to the levels seen 10 years ago. Interpreting these trends is difficult because there are significant gaps in our knowledge of how the cocaine supply chain operates.

Understanding cocaine production

Coca bush cultivation is restricted to Colombia, Peru and Bolivia, and appears to be increasing after a period of decline. However, there is considerable uncertainty about how much cocaine is produced and where this occurs. It is difficult to reconcile, for example, the only available global estimate of cocaine production (about 700 tonnes annually) with that of seizures (687 tonnes in 2013).

Precursor control

Most seizures of potassium permanganate occur in South America, where it is likely to be illicitly manufactured in the region from potassium manganate. Occasional seizures of potassium permanganate are reported in Europe, as well as larger stopped shipments. Therefore, efforts to prevent diversion from licit channels continue to be important.

Trafficking routes

Both sea and air are used for trafficking cocaine to Europe, with Colombia, Brazil and Venezuela being key departure points. The Caribbean and West Africa (mainland and nearby islands) act as important transit areas and Central America appears to be becoming more important in this respect. In the Caribbean, the Dominican Republic and Jamaica are considered to be the main hubs, although some displacement of trafficking activities to eastern Caribbean countries has been observed. Cocaine trafficked via routes established for other drugs is a growing concern, such as routes used to traffic cannabis in North Africa (Morocco and Algeria) and heroin in East Africa (Tanzania).

Important trafficking methods

A variety of methods are used to smuggle cocaine into Europe, including air couriers, fast parcels and postal services, private yachts and jets. The use of maritime containers is of increasing concern, with seizures increasing since the mid-2000s. Major European ports, such as Rotterdam and Antwerp, are important landing points for such cocaine shipments, although other large western European ports are also targeted by organised crime. A diverse and continually evolving array of concealment methods is used and the importation of cocaine in forms that require chemical extraction in Europe continues to be a concern.

Organised crime

The range of criminal organisations involved in cocaine trafficking is wider than ever before, although Colombian and Italian OCGs continue to dominate the supply to Europe. Within Europe, they cooperate with other groups such as Dutch, British and Spanish OCGs, which are important brokers, while the Netherlands and Spain are key distribution hubs. West African, especially Nigerian, groups are particularly active in transporting cocaine from Africa to Europe often using air couriers. In this diverse arena, other trafficking organisations, such as groups from the Balkan region, are reportedly emerging as an additional significant threat.

Introduction

Cocaine is Europe's most commonly used illicit stimulant drug, but most consumption is found in the south and west of Europe. Cocaine is used in two main forms (see box). Cocaine powder is primarily sniffed or snorted, but is also sometimes injected, while crack cocaine is usually smoked. Most use is of cocaine powder and is comparatively infrequent, but a small proportion use more frequently and may experience problems. There are also a few countries in which there are small groups of people who use crack cocaine in a more harmful way, often in conjunction with heroin use.

Most recent survey data suggest that in several countries rates of cocaine use may have stabilised or started to decline. These patterns are also reflected in data on people entering treatment; the number of treatment entrants for cocaine has stabilised at a level significantly below the peak in 2008.

The health harms associated with regular cocaine use include dependence, heart and mental health problems, and a heightened risk of accidents. Harms may be exacerbated when cocaine is used in conjunction with alcohol. Cocaine injection and the use of crack cocaine are associated with the greatest health risks. Although deaths associated with cocaine are likely to be underestimated, for example being attributed to heart conditions, over 800 deaths associated with cocaine use were reported in 2013. Most of these were attributed to drug overdose, with other substances also being detected in many cases, primarily opioids.

Cocaine is trafficked to Europe from the producer countries of South America by both air and sea using

Cocaine

Cocaine is a natural product extracted from the leaves of *Erythroxylum coca* Lamarck and *Erythroxylum novogranatense* (coca leaves). These tropical shrubs are cultivated widely in the Andean–Amazonian region, and are the only known natural source of cocaine ⁽¹⁾, which is produced almost exclusively in Bolivia, Colombia and Peru.

In Europe, cocaine is available in two forms, the more common of which is cocaine powder (a hydrochloride (HCl) salt). Less commonly available is crack cocaine, a smokeable (free base) form of the drug. The crack cocaine available in Europe is typically manufactured from cocaine hydrochloride near where it is retailled and used and, therefore, cocaine in crack form generates very little cross-border or long-distance trafficking.

⁽¹⁾ It is possible to obtain synthetic cocaine through various methods, but this is rare and is less economical than the extraction of the natural product.

a range of methods and routes. The most common appear to involve transit through the Caribbean or West Africa, including the islands off the coast of West Africa. Trafficking of cocaine into Europe appears to mainly take place through western and southern countries, with Spain, Belgium, the Netherlands, France and Italy together estimated to account for over 80 % of the 61.6 tonnes seized in the EU in 2014.

TABLE 5.1

COCAINE IN EUROPE AT A GLANCE			
Estimated market size (2013)	Best estimate (low–high)	Value (billion EUR) 5.7 (4.5–7.0)	Quantity (metric tonnes) 91 (72–110)
Consumption ⁽¹⁾	Age group (years)	Estimated number of users (million)	% of EU population (range between countries)
Lifetime	15–64	17.1	5.1 (0.5–10.3)
	15–34	8.3	6.7 (1.0–12.8)
Last year	15–64	3.6	1.1 (0.1–2.4)
	15–34	2.4	1.9 (0.2–4.2)
Last month	15–64	1.4	0.4 (0.0–1.0)
	15–34	0.8	0.7 (0.0–1.7)
Drug treatment ⁽²⁾ (2014)		Number (% of admissions for all drugs)	Trends
	All admissions	60 000 (13 %)	
	First admissions	27 000 (16 %)	
Drug law offences (2014)		Number (% of offences for all drugs)	Trends
	All offences	99 000 (9 %)	
	Offences for drug use/ possession for use	70 000 (8 %)	
	Offences for drug supply	29 000 (12 %)	
Seizures ⁽³⁾ (2014)		Quantity (tonnes)	Trends
	EU	61.6	
	EU plus Norway and Turkey	62.1	
		Number	
	EU	78 000	
	EU plus Norway and Turkey	80 000	
Mean retail price (2014)	Range (IQR) ⁽⁴⁾	EUR/gram 46–91 (52–72)	
Mean purity (2014)	Range (IQR) ⁽⁴⁾	% in EU 26–64 (36–50)	

Notes:

(1) EU estimates are computed from national estimates weighted by the population of the relevant age group in each country. They are based on surveys conducted between 2004 and 2014/15 and therefore do not refer to a single year.

(2) Drug users entering treatment for cocaine problems. Units coverage may vary across countries.

(3) The 2014 figures should be considered as estimates; where not available, most recent data were used in place of 2014 data, except for the number of seizures for the Netherlands, France and Poland where no recent data is available so they are not included. An additional 4.2 kg of coca paste (26 seizures), 35 kg of coca leaves (33 seizures) and 70 kg of crack (5 600 seizures) were seized in the EU, in 2014.

(4) IQR: interquartile range, or range of the middle half of the reported data.

Data presented are for the EU unless stated otherwise. All trend lines shown in this table cover a 5-year period, 2010–14. All trends reflect absolute numbers except for trends on price and on potency which reflect averages of mean values. In the case of treatment, price and purity, trends are based only on data from those EU countries that have consistently submitted data since 2010.

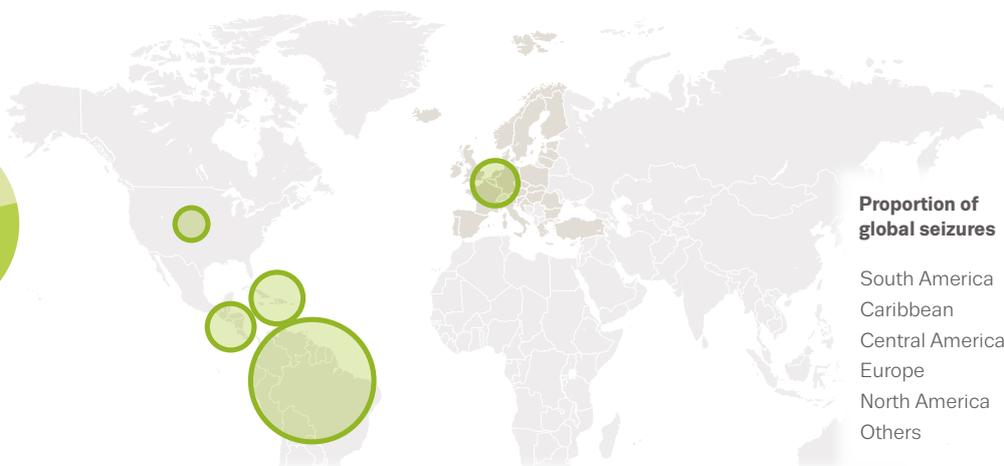
Source: EMCDDA/Reitox national focal points.

GLOBAL OVERVIEW – COCAINE

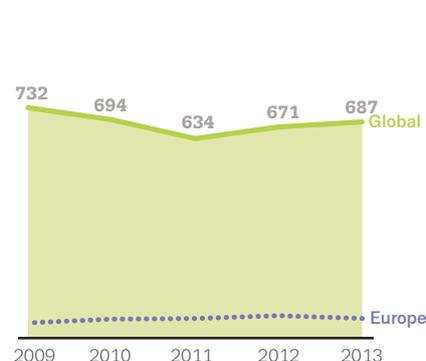
Estimated users
Past year,
aged 15–64



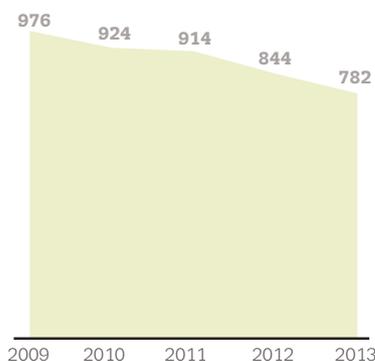
Main seizing regions



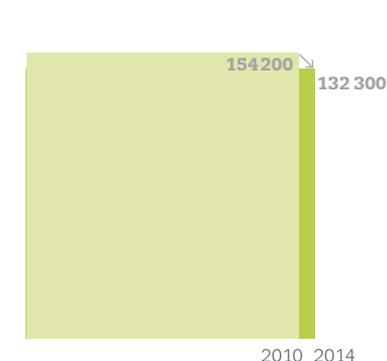
Quantities seized (tonnes)



Estimated potential production (tonnes)



Estimated coca cultivation (hectares of coca bush)



Note: The estimates presented are up to 2013; more recent EU figures are available but have not been used for the purposes of comparability. For the most up-to-date European data, please refer to Table 5.1.

Source: UNODC, World Drug Reports. EMCDDA, 2015a.

Global overview

In the three countries in which coca cultivation is almost exclusively concentrated, Bolivia, Colombia and Peru, the leaves play a significant cultural role. In Bolivia and Peru, some growing of coca is permitted to supply licit domestic consumer markets for coca leaves and to supply de-cocainised flavouring agents to international manufacturers of soft drinks, which complicates efforts to control cocaine production.

The extraction of cocaine alkaloids from the coca leaves also takes place almost exclusively in the three producer countries, which also account for the majority of the global production of cocaine hydrochloride. However, some cocaine processing laboratories have been detected in other South American countries and elsewhere, including

Europe, and globally over 9 000 cocaine-type laboratories were dismantled in 2013 (UNODC, 2015a).

The majority of cocaine users are found in North and South America and western and central Europe. Although prevalence rates have been declining in North America (especially in the United States) and in western and central Europe, the number of people using cocaine in South America and in Australia has been increasing; in Asia prevalence rates are generally low (UNODC, 2015a).

Global seizures of cocaine reported by UNODC totalled 687 tonnes in 2013, a figure very similar to that for 2012 (UNODC, 2015a).

Consumer market for cocaine in Europe

Extent and nature of cocaine use

In general, among users of cocaine a broad distinction can be made between more socially integrated consumers, who often sniff powder cocaine in a recreational context, and marginalised users, who inject cocaine or smoke crack, often alongside the use of opioids.

It is estimated that, in the EU in 2014, 1 % of the general population and about 2 % of young adults used cocaine in the last year. This equates to about 3.6 million adults aged 15–64, including about 2.4 million aged 15–34. However, the vast majority consume the drug only rarely; even in surveys that focus on drug users, no more than 10 % of respondents report using once a week or more (Frijns and van Laar, 2013; Winstock, 2015). Most cocaine users consume the drug recreationally, with use highest during weekends and holidays (EMCDDA, 2015c).

There are also considerable differences between countries in the prevalence of cocaine use; in some countries amphetamines dominate the stimulant market and cocaine use is low. Only a few countries report last-year prevalence of cocaine use among young adults of more than 3 %, and in the two most prominent, the United Kingdom and Spain, the rates have been stable or decreasing in recent years.

The prevalence of problematic forms of cocaine use in Europe is difficult to gauge as only five countries have recent estimates and, for methodological reasons, these are not easy to compare. The limited figures available suggest that in those countries with higher rates of cocaine use the proportion of adults experiencing problems from cocaine use is in the region of between 2 and 6 per 1 000 of the population.

Cocaine was cited as the primary drug for 13 % of all those entering drug treatment in 2014 (60 000), with the majority being reported by only three countries (Spain, Italy, United Kingdom). The number of cocaine clients entering treatment for the first time has now stabilised and was 29 000 in 2014, substantially below the peak in 2008. Far fewer clients entering treatment in Europe reported crack cocaine as the main drug they use (5 500 in 2014), with the United Kingdom accounting for more than half of these, and Spain, France and the Netherlands accounting for most of the remainder.

The size of the market for cocaine

The estimated value of the retail market for cocaine in the EU is at least EUR 5.7 billion (range EUR 4.5–7 billion). This represents a little less than one-quarter of the total illicit market in drugs and makes it the third largest, after cannabis and heroin. Our estimates of amounts used suggest that in 2013 about 91 tonnes of cocaine was consumed, with a likely range of 72 to 110 tonnes.

In reaching these estimates we have used information on numbers of cocaine powder users from the general population surveys conducted in most countries but, recognising that some groups of drug users are unlikely to be represented in these surveys, we have supplemented these with estimates of cocaine use by problem users in the few countries in which these exist. However, this almost certainly underestimates problem use, especially as, because of a paucity of data about numbers of users and use patterns, no attempt was made to undertake estimates of crack use. There are a number of other limitations to these estimates (see box on page 28) and further details of the estimation methods are given in the technical report published alongside this report (EMCDDA, 2016a).

Production issues

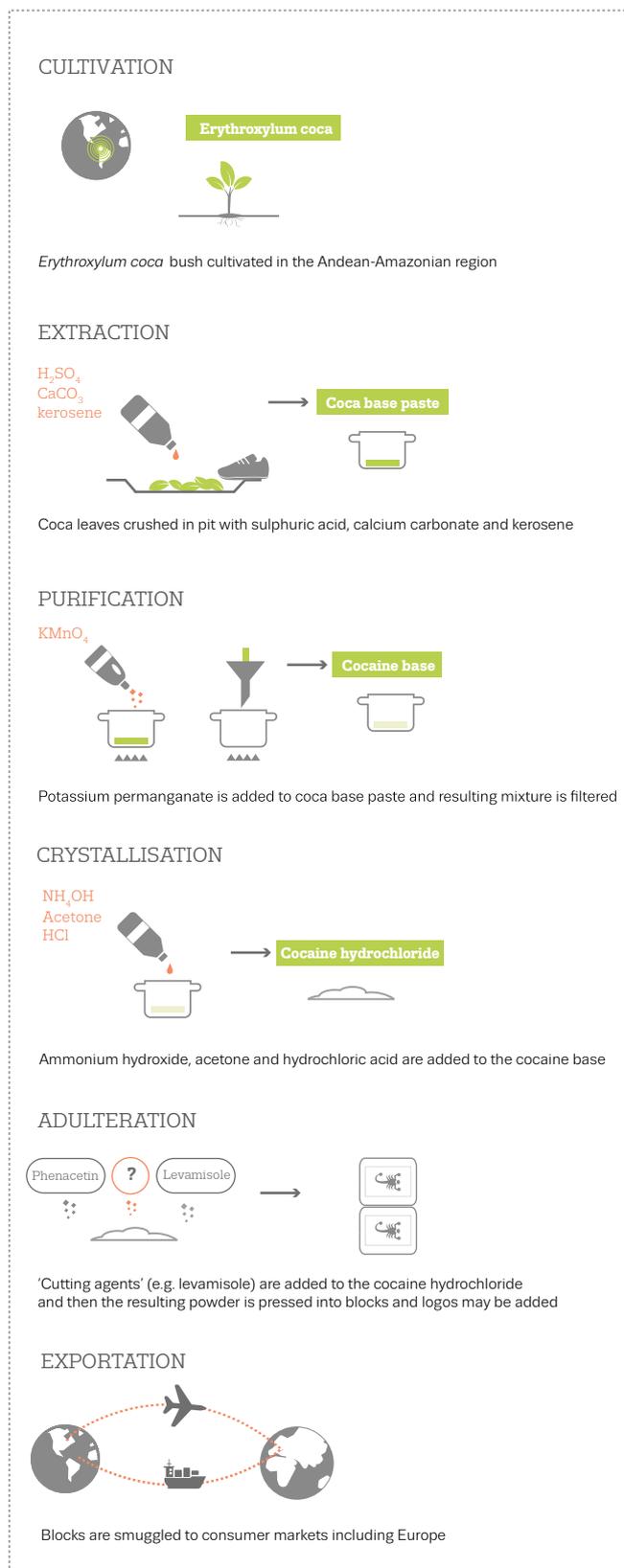
Although the cultivation of coca and the production of cocaine occur almost exclusively in Colombia, Bolivia and Peru, there is considerable uncertainty about the amounts of both produced, not least because in countries such as Bolivia a large proportion of the coca grown is consumed as leaves, tea or other coca products. There are two sources of estimates of coca cultivation and cocaine production within these countries, the UNODC and the US Office of Drug Control Policy, and there are some significant differences between these. These will be reviewed and, where possible, some general conclusions on recent trends drawn.

Recent trends in coca cultivation and cocaine production

In the period 2010–14, the South American cocaine supply chains witnessed some change, particularly with respect to (a) the estimated areas under coca bush cultivation and (b) the organisation and governance of the illegal business and the constellation of actors involved in it.

The available data suggest that in 2014, after several years of decline, the surface area under coca cultivation in the Andes increased again slightly to between 132 000

FIGURE 5.1
The cocaine production process



Note: This illustration is intended to provide an indicative schematic overview of selected stages of a production process. It must be noted that alternative methods, chemicals and procedures may be used.

Source: EMCDDA.

TABLE 5.2
Estimates of area under coca bush cultivation in hectares, 2010–14

Country	Source	Year				
		2010	2011	2012	2013	2014
Bolivia	UNODC (1) (2)	31 000	27 200	25 300	23 000	20 400
	US government (3)	29 000	25 500	25 000	n/a	35 000
Colombia	UNODC (1) (4)	62 000	64 000	48 000	48 000	69 000
	US government (3)	100 000	83 000	78 000	80 500	112 000
Peru	UNODC (1) (5) (6)	61 200	62 500	60 400	49 800	42 900
	US government (3)	53 000	49 500	50 500	59 500	46 500
Total	UNODC (1) (7)	154 200	153 700	133 700	120 800	132 300
	US government (3)	182 000	158 000	153 500	n/a	190 000

Notes:

(1) Source: UNODC (2015a), Annex 1; UNODC crop monitoring surveys.

(2) Source: UNODC (2015c).

(3) Source: Office of National Drug Control Policy (2015).

(4) Source: UNODC (2015d).

(5) Source: UNODC (2015e).

(6) The estimate for 2010 is based on satellite imagery and is not directly comparable to later estimates for Peru (in 2011 the estimate based on satellite imagery was higher than the one quoted here, at 64 400 ha).

(7) The estimate for 2011 differs from that in the UNODC (2015a) report because it used the estimate shown here for Peru to be comparable with 2012 and 2013 estimates. The 2010 estimate will therefore not be directly comparable with the later estimates.

n/a, not available.

and 190 000 ha. This rise was mostly due to a significant increase in the coca acreage in Colombia, with the country regaining its rank as the world's largest illicit producer of coca, ahead of Peru (Table 5.2).

Fewer data are available on cocaine production, but what data there are suggest that, as with coca cultivation, cocaine production has probably started to increase again following a period of decline (Table 5.3). However, the data are both incomplete and show considerable differences between the UNODC and US government sources. The estimates use different methodologies and both are associated with considerable uncertainties (19); and it is very difficult to reconcile the estimate of global cocaine production of about 700 tonnes annually with total seizures (687 tonnes in 2013) (UNODC, 2015a). This makes it very difficult to assess trends in cocaine hydrochloride production in the Andes.

(19) For example, the US Department of State 'International Control Strategy Report, 2014' states that: 'The U.S. government estimates for coca leaf, cocaine, marijuana, opium, and heroin production are potential estimates; that is, it is assumed that all of the coca, marijuana, and poppy grown is harvested and processed into illicit drugs. This is a reasonable assumption for coca leaf in Colombia. In Bolivia and Peru, however, the US government potential cocaine production estimates are overestimated to some unknown extent since significant amounts of coca leaf are locally chewed and used in products such as coca tea.'

TABLE 5.3
Comparison of potential cocaine hydrochloride production estimates, in tonnes, 2010–14

Country	Source	Year				
		2010	2011	2012	2013	2014
Bolivia	US government ⁽¹⁾	160	175	145	n/a	210
Colombia	UNODC ⁽²⁾ ⁽³⁾	424	384	333	290	442
	US government ⁽¹⁾	240	180	165	185	245
Peru	US government ⁽¹⁾	325	305	290	305	285
Total	US government ⁽¹⁾	740	685	620	n/a	740

Notes:

⁽¹⁾ Source: Office of National Drug Control Policy (2015).

⁽²⁾ Source: UNODC (2015a), Annex 1.

⁽³⁾ Source: UNODC (2015d).

Cocaine precursors

Potassium permanganate is an essential chemical in the illicit manufacture of cocaine. It is mostly used to turn coca paste into cocaine base, a process that seems to be carried out mainly in Bolivia, Colombia and Peru but probably also in neighbouring countries on a more limited scale. Potassium permanganate is listed in Table I of the United Nations Convention against Illicit Traffic in Narcotic Drugs and Psychotropic Substances, 1988 ⁽²⁰⁾.

Efforts to control trafficking in potassium permanganate are complicated by the fact that it is a chemical used extensively by industries throughout the world, for instance in drinking water treatment, and the INCB received reports of 1 630 shipments totalling 27 500 tonnes in the 2013–14 reporting period, of which imports to the three main coca-producing countries accounted for less than 1 %. The INCB estimates that at least 180 tonnes of potassium permanganate is required annually for illicit cocaine manufacture.

Global seizures of illicit potassium permanganate, which have in the past been dominated by seizures in Colombia, fell markedly in 2008 and have generally remained at a lower level since then. This is probably because of an increase in the manufacturing of potassium permanganate in clandestine laboratories in the cocaine-producing countries, especially Colombia, from 'pre-precursors' such as potassium manganate (INCB, 2015a). However, in recent years seizures have also been reported by a wider range of countries; in 2013, a total of 58 tonnes was seized

in 17 different countries, 80 % of which was in South America. Countries elsewhere reporting total seizures or stopped shipments of over 1 tonne included Spain (5.9 tonnes). This large quantity was unusual and was made up of 19 stopped shipments and a single small seizure, and it represented 99 % of the total for Europe in 2013. The other European country reporting significant quantities seized in that year was the Netherlands (one seizure of 80 kg), while Poland, Germany, Austria and Slovenia reported a combined total of 7.8 kg (INCB, 2015a, and European Commission, DG TAXUD (Directorate-General for Taxation and Customs Union, unpublished data).

A number of other substances, such as acids and solvents, are used in the production of cocaine, and seizures of these are also reported to the INCB. There is evidence of a general decrease in quantities being seized over the last decade. It has been suggested that this is partly because there is more recycling of these substances and also because developments in processes are reducing solvent requirements (INCB, 2015a).

Cocaine laboratories

As indicated above, it appears that most cocaine manufacture takes place in Bolivia, Colombia and Peru, as together these countries are responsible for the majority of the dismantled cocaine laboratories reported to the UNODC. However, there is evidence that some cocaine hydrochloride is refined elsewhere in South America, further along the trafficking routes, and also in Europe.

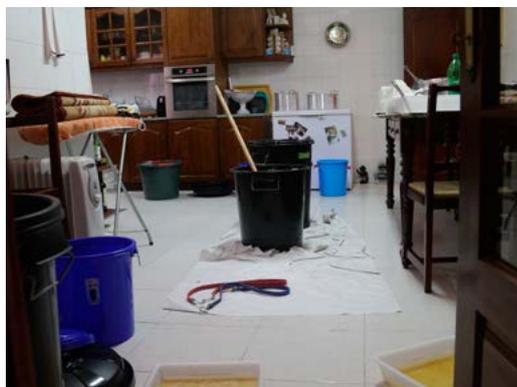
Cocaine traffickers make use of sophisticated concealment methods, including incorporating cocaine in various materials, in order to smuggle it into the EU undetected. Cocaine can be incorporated into a wide range of materials, including beeswax, fertilisers, coffee, cocoa, plastic, clothing, liquids, foods, fuels and paper. In some cases, this enables drug shipments to remain undetected even by common drug tests. Cocaine is recovered using a secondary extraction process; however, little information is available about the use of this process in the EU. This lack of intelligence gives rise to concerns that such methods are being used successfully by cocaine traffickers to smuggle large amounts of cocaine into the EU undetected. Secondary extraction laboratories have been identified in recent years in Spain, the Netherlands, Portugal and Poland (Figure 5.2).

Efforts have been undertaken at European level to improve the data collection on secondary extraction facilities such as those described above. Under the auspices of the European Multidisciplinary Platform Against Criminal

⁽²⁰⁾ The corresponding EU legislation is set out in Council Regulation (EEC) no 3677/90 (as later amended), which governs trade between the EU and third countries.

FIGURE 5.2

A cocaine secondary extraction site dismantled in Portugal, September 2015



Photos © UNCTE-Polícia Judiciária, Portugal

Threats (EMPACT) cocaine priority, Europol and the EMCDDA have developed a reporting tool for the Member States, the European reporting instrument on cocaine secondary extraction sites (ERICES). As a result, since 2015, Member States have been able to report data on this particular smuggling modus operandi to Europol in a systematic way that will allow a more comprehensive analysis in the years to come and improve our understanding of cocaine trafficking routes and methods.

Environmental effects of cocaine production

Two categories of environmental harms derive from cocaine production: those due to the agricultural production of the coca plant and those caused by the chemical extraction of the cocaine alkaloid from coca leaves. The coca plant is often cultivated as a single crop over large patches of land, which need to be prepared for cultivation. The first harm caused here is deforestation, which is the most researched, at least in the Colombian case. Removing the vegetation from a patch of land in order to cultivate a single plant obviously harms biodiversity, which is often very rich in the tropical forest areas where much coca is cultivated in South America. It has been estimated that about 290 000 ha of forest, including primary forest, was lost as a direct consequence of the clearing of land ahead of coca cultivation in Colombia alone between 2001 and 2013. Since 2008, deforestation for coca cultivation is reported to be increasing in Colombia even though coca cultivation itself has tended to decrease (UNODC 2013d, 2015d).

The slash-and-burn practice that often follows the clearing of land so that crops benefit from the nutrients contained in the ashes removes all protective vegetal cover from the soil, which then becomes much more vulnerable to erosion. Erosion is another harm caused by coca production. It occurs as a result of the action of the wind and, especially, the rain and leads to soil depletion. This is particularly pronounced in areas with heavy rainfalls, such as tropical forest ecosystems, and is especially severe when the affected land is on slopes, which is the case for much coca cultivation in South America (Chouvy, 2003; UNODC, 2015d).

Soil depletion due to erosion, as well as the drive to maximise yields, even on non-depleted soils, of what are essentially cash crops, often leads to use of chemical fertilisers, herbicides and pesticides in order to increase production. In the context of drug production, where no counselling from agriculturalists is available to farmers, this is likely to be done with little regard to dosage, further polluting already degraded soils and spreading to rivers and underground water deposits. An estimated 81 000 tonnes of often toxic fertilisers, pesticides and herbicides was used for coca cultivation in Colombia in 2005 according to the UNODC (Chouvy, 2003; UNODC, 2006b, 2015d). In addition, aerial spraying of herbicides to eradicate coca plantations may also pose a threat to the environment.

Many of the chemicals used to process coca leaves into cocaine hydrochloride, including potassium permanganate and solvents such as acetone, toluene, kerosene, acids, to mention only a few, are toxic. The waste product resulting

from cocaine production if these chemicals are used is often simply dumped on the ground or in streams and rivers in the areas where drug laboratories are located, which are often host to fragile ecosystems and human populations. Although scientific evidence as to the exact impact of this process on the environment is lacking, each year it is probable that millions of tonnes of hazardous waste resulting from cocaine production is released into the environment (UNODC, 2006b, 2015d).

Trafficking and supply

Wholesale supply activities

Much of our knowledge about trafficking routes results from law enforcement activity and intelligence. Information on quantities of drugs seized and information on the origin and destination of shipments can give an indication of the main routes and modes of transport. However, such information is also affected by many factors, including law enforcement strategies, resources and priorities, as well as changes to routes and practices in response to interdiction efforts or new opportunities. Hence, care is needed in interpreting these data. While the information below highlights the main known trafficking routes, these are not set in stone and the picture is constantly changing in response to new markets, technological developments and law enforcement activity.

Overview of recent changes to routes into Europe

Departure points

Cocaine is shipped from Latin America to Europe in vessels departing from Brazil and other countries such as Ecuador and Venezuela. The increasing use of Brazil as a departure point reflects the growing importance of Bolivia and Peru as the source of cocaine shipped to Europe. Venezuela has become more important in recent years as trafficking organisations move Colombian cocaine overland across a porous border and take advantage of the busy maritime traffic between the coast and the islands of the Caribbean. However, cocaine is also trafficked from Venezuela to Europe by air, either directly or via the Caribbean and Africa. In addition, although UNODC data suggest that Colombia has declined in importance as a direct departure point for cocaine heading to Europe over recent years, large seizures continue to be made on the Caribbean coast, including a 7-tonne shipment destined for the Netherlands seized in Cartagena in April 2014. This and the recent upturn

in production suggest that Colombia is likely to remain an important departure point for maritime shipments of cocaine. Cocaine is also shipped through the southern cone of Latin America, particularly Argentina (Eventon and Bewley-Taylor, 2016).

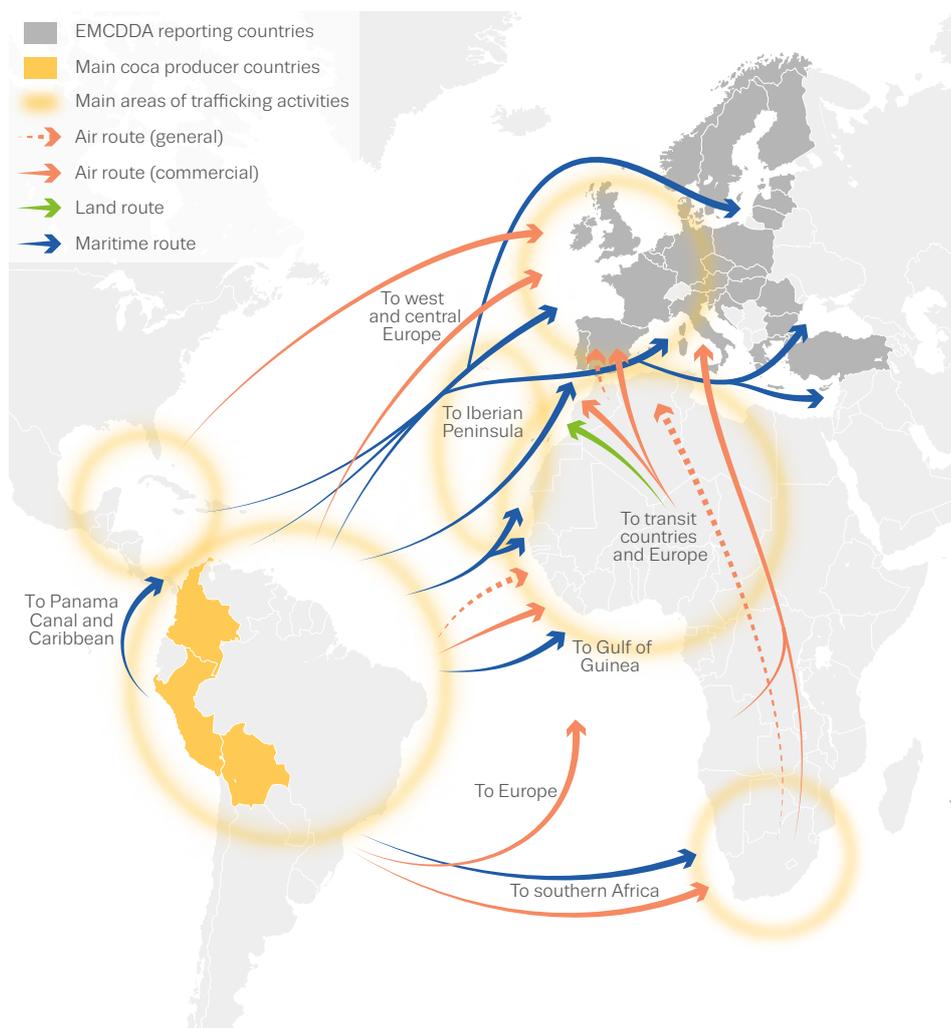
Transit areas

There are two main areas through which cocaine shipments transit en route to Europe. The first is the Caribbean, where the Dominican Republic and Jamaica are considered the main hubs, although operations elsewhere appear to have pushed some trafficking through the eastern Caribbean. Central America and the Caribbean was the only region in which cocaine seizures rose in 2013, almost doubling to 162 tonnes, from 78 tonnes in 2012; much of this increase is attributable to a ninefold increase in the amount seized in the Dominican Republic (86 tonnes) (UNODC, 2015a). This apparent increase in the use of the Caribbean route may be a reflection of recent crackdowns in Mexico and Central America (Eventon and Bewley-Taylor, 2016). From the Caribbean, the cocaine is generally shipped by sea via the Azores or by air, either on direct flights or a variety of different transfer points.

The other major transit area can be subdivided into the West African mainland and neighbouring islands, Cape Verde, Madeira and the Canary Islands. The Bight of Benin, which runs from Ghana to Nigeria, while no doubt a trafficking route and storage location, may have decreased in importance in recent years following a marked rise in seizures between 2004 and 2007. In 2013, seizures were reported by Nigeria (290 kg), Ghana (901 kg) and Ivory Coast (27 kg) (UNODC, 2015a). From West Africa, the cocaine is transported onward to Europe by air, sea or land routes. Transport through North Africa taking advantage of pre-existing cannabis routes was recognised as a concern when the West African route was growing in importance (UNODC, 2007). Seizures of cocaine in Morocco have reduced following the decrease in the use of the West African route. However, some occasional large seizures are still made, e.g. 226 kg was found aboard a lorry in September 2014 (AFP, 2014), and it appears that routes through the region are changeable in response to law enforcement activity or other changes to conditions on the ground (there was a spike in seizures in Algeria in 2012, for example) (AMERIPOL, 2013).

An increase in seizures in East Africa between 2010 and 2012, particularly in Tanzania, might signal the emergence of a new cocaine trafficking route in a region heavily affected by the heroin trade (see Chapter 4). In addition, the enlargement of the Panama Canal may lead to an increase in cocaine trafficking via this route. Modifications in European waters and harbours, enabling

FIGURE 5.3
Main trafficking flows of cocaine to Europe



Note: The flows represented are a synthesis of a number of information sources and should be considered indicative rather than accurate descriptions of the main trafficking flows.

Source: Europol and EMCDDA.

them to receive larger ships, may also lead to shifts in trafficking routes.

Modes of transport

As indicated above, cocaine traffickers make use of a wide range of trafficking methods that are used flexibly and evolve over time in response to enforcement efforts. Maritime transport allows the transportation of large quantities at one time, and over two-thirds of EU seizures in the period 2011–13 involved this form of transportation (Europol, 2014b). The nature of international commercial maritime traffic means that a vast number of routes can and will be used. In addition, smaller, private boats are able to bring in large quantities of cocaine in single shipments, entering Europe at many points; in September 2014, for

example, a private yacht carrying a tonne of cocaine, which had been picked up in Venezuela, was intercepted off the coast of Ireland (Roche, 2015).

An important development has been an increase in the use of containers on commercial vessels to ship cocaine, making detection more difficult. Since 2006, maritime seizures that involve containers have increased sixfold, with a particularly steep increase since 2010. At the same time, the number of seizures from vessels, which was much higher than from containers at the start of the period, decreased from 2006 to 2010 and has since stabilised at about one-third of the level seen at the start of this period. Container seizures made up three-quarters of maritime seizures in 2012 and 2013, compared with one-tenth in

Case study 11: Cocaine trafficking to Europe

In 2014, Hungarian police investigated an OCG previously involved in synthetic drug production in the Netherlands and large-scale polydrug trafficking within the EU and beyond. It was discovered that the group was regularly sending 20-kg shipments of cocaine in containers coming from Panama to Europe. The cocaine was hidden among vehicle parts in false-bottomed crates in partially loaded crates known as 'less than container loads'. Cooperation between Hungary and Germany, the Czech Republic and Slovakia resulted in the three key members of the OCG being arrested after receiving 23 parcels each containing approximately 25 kg of cocaine.

2006 (Europol, 2014b). The largest seaports in Europe are in Rotterdam, the Netherlands (the eighth busiest shipping port in the world) and Antwerp, Belgium, and they are key points for this type of trafficking. After around 10 000 kg of cocaine was seized in Rotterdam over the course of 2013, Dutch police estimated that 25–50 % of the cocaine reaching Europe now enters via the port, which handles around 11 million containers a year, only 50 000 of which are scanned (DutchNews, 2014, quoted in Eventon and Bewley-Taylor, 2016). However, Spain also reports a large number of container seizures coming through Algeciras and Valencia, as does Germany, especially in the port of Hamburg.

The methods used for container trafficking also evolve. For example, there has been a shift from concealment within the container or cargo to the rip-on/rip-off method (see box on page 106), which accounts for an increasing proportion of seizures (32 % in 2010, rising to 57 % in 2011 and 70 % in 2012) (Europol, 2014b). Corrupt officials and port employees facilitate this form of trafficking, and there are concerns that the OCGs involved in cocaine trafficking may be making systematic efforts to corrupt workers in all major ports to facilitate shifting of routes as necessary. Staff involved in the aviation industry can also be vulnerable in this regard. An example of this was the case of a crew member of the Nigerian airline Arik Air who was arrested at Heathrow Airport in London on the suspicion of possession of cocaine in August 2015. The arrest came 2 years after two crew members of the same airline were arrested, also in London, for the same offence.

Cocaine is also trafficked by air, which involves individual couriers and air freight aboard commercial flights as well as the use of private aeroplanes, including jets. Aside from direct flights from Latin America, recognised stop-off points

are in the Caribbean, Cape Verde, the Canary Islands and West Africa. However, compared with maritime shipments, the quantity transported by air appears to be smaller, with seizures at airports making up about one-eighth of the total amount of cocaine seized in Europe between 2011 and 2013 (Europol, 2014b). However, although the size of each shipment is comparatively small, the number of seizures of cocaine transported in this way is high, and this mode of transport does have the effect of spreading the risk for traffickers. Couriers transport cocaine on commercial flights, either internally (swallowed or stuffed), in their baggage, or, less frequently, on their body. The average

Rip-on/rip-off method of cocaine smuggling

The so-called 'rip-on/rip-off' method involves loading the consignment in the port of departure and recovering it in the port of arrival. The use of one or more corrupt employees at both ends is therefore a key element.

A suitable container must be identified in South America with a legitimate cargo destined for Europe. The drugs are usually loaded in the dock area, so the 'rip-on' team must be able to get the drugs into the container terminal and to locate the container, which must be in an accessible position. In most cases the security seal needs to be replaced with a duplicate to avoid obvious signs of tampering.

At the port of arrival, the drugs need to be retrieved, which can be achieved in a variety of ways. The drugs can be removed from the container by corrupt port workers or by external teams who gain access to the terminal. After the 'rip-off' is complete, the container is either left open or resealed with another false/duplicate seal. The success of the rip-off depends on knowing the location of the container within what is often a very large container terminal with tens of thousands of containers. However, just knowing the container number is usually not enough. It must also be accessible, which again usually requires a corrupt port or company worker to manipulate the position of the container.

In December 2014, a joint customs–police team in Berlin examined a container transporting coffee. The container had left Santos, Brazil, and had arrived at Bremerhaven port, from where it would have been delivered to a coffee roaster in Berlin. Immediately after the container was opened, a sports bag and an unused container security seal were found. Inside the sports bag, 30 individual packages were found each containing 1 kg of cocaine marked with a 'horseshoe' logo.

amounts of cocaine transported in this way in 2012–13 were 4.3 kg in luggage, 0.7 kg in the body or 1.72 kg on the body (Europol, 2014c).

Some concealment methods, such as the use of cocaine incorporated into breast implants, involve surgical procedures on cocaine couriers and pose significant risks to the lives of couriers.

The ingestion by smugglers of numerous packages of cocaine is well documented and poses serious health risks, including death if a package ruptures whilst the courier is in transit. Cocaine smuggled in this way, up until recently, was always in powder form; however, there has been a switch by the smugglers to use cocaine in liquid form, presumably in an attempt to avoid scanning equipment now in use at several airports.

Numerous other concealment methods have been identified. Concealing the drugs within shipments of perishable goods is a common tactic as there are procedures to allow these to pass through ports more quickly. An example of this is shown in Figure 5.4.

Importation to and distribution within Europe

Cocaine is the second most seized drug in Europe, after cannabis. In 2014, about 78 000 seizures of cocaine were reported in the EU, amounting to 61.6 tonnes of the drug. The situation has been relatively stable since 2010, although both the number of seizures and the volume seized are at levels considerably lower than the peak values reached in the mid- to late 2000s (Figure 5.6). Spain and Portugal in the south, and ports in the Netherlands and Belgium in the north, are the most important entry points for South American cocaine reaching the European market. The countries that seized the most cocaine over the period 2011–14 were Spain (accounting for about 50 % of all seizures) and Belgium, followed by France, Italy, the United Kingdom and Portugal (data are not available for the Netherlands).

In the past few years, as highlighted in the last EU drugs market report (EMCDDA–Europol, 2013), seizure data have suggested some use of south-eastern Europe as an entry point, spurring talk of an emerging Balkan route, and even a ‘Balkan cartel’ for cocaine, overlapping the established heroin route. Some seizures in Baltic countries have also led to discussion of another possible passage for cocaine. However, the data suggest, first, that, to date, use of these ‘routes’ appears to be sporadic and, secondly, that they remain of minor importance compared with established primary routes. The total amount seized in the 10 countries

FIGURE 5.4
Cocaine concealed in a shipment of perishable goods



A seizure of about 300 kg of cocaine concealed in a shipment of fresh bananas from Colombia discovered in a shop in Berlin, Germany, May 2015.

Photo © epa/Soeren Stache

located on the eastern border of Europe ⁽²¹⁾ remained at 2 % of all seizures throughout the period 2011–14. Nevertheless, this may indicate a spread of the cocaine market eastward, where traditionally other stimulants have predominated, and in particular for a growing market in the Russian Federation (UNODC, 2015a). It is important that there is continued monitoring of this so that any escalation of the problem is detected quickly.

Based on data provided from 14 countries ⁽²²⁾, a Europol report found that the European countries reporting the greatest number of interceptions of air couriers in 2013 were the Netherlands and Spain, followed by France and Portugal, and then the United Kingdom, Italy, Germany and Belgium. However, it needs to be borne in mind that the number of interceptions is to some extent a reflection of the resources directed towards such interceptions. While in 2012 and 2013 the cocaine couriers that were intercepted were of over 100 different nationalities, in general, nationals of the intercepting country were predominant among the couriers identified. As a result, European nationals make up the majority of intercepted couriers (Europol, 2014c).

A recently observed discrepancy between the availability of cocaine and estimated cocaine use rates has led to speculations that Europe may be growing in prominence as a transit stop en route, it has been assumed, to markets in Russia, China, India, the Middle East and perhaps also the Oceania region. The Netherlands, Germany and the United Kingdom have been identified, based on

⁽²¹⁾ Estonia, Latvia, Lithuania, Poland, Bulgaria, Hungary, Romania, Greece, Slovakia and Turkey.

⁽²²⁾ Belgium, Bulgaria, Colombia, the Czech Republic, France, Germany, Hungary, Ireland, Italy, Portugal, Spain, Sweden, the Netherlands and the United Kingdom.

FIGURE 5.5
Branding on imported blocks of cocaine



A label and an embossed logo found on cocaine bricks belonging to different wholesale shipments seized in Portugal in recent years.
Photos © MAOC-N, courtesy of UNCTE-Polícia Judiciária, Portugal

seizures in Australia, as primary transit points in Europe (UNODC, 2014b). Time and relevant data will add better understanding and suggest whether or not in fact the speculations are accurate.

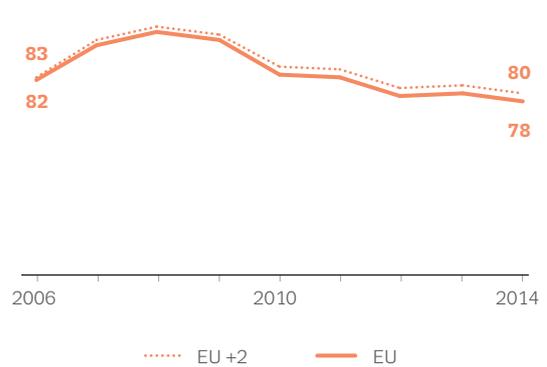
Although crack cocaine is predominantly produced in Europe close to consumer markets, it is worth considering the data on seizures of crack, significant numbers of which are reported only by the United Kingdom, where, since 2009, the number has stabilised at about 5 000 per year after declining from a peak of 7 578 in 2007. Much smaller numbers of seizures are reported by Germany and Spain (268 and 359, respectively, in 2014). When amounts of crack cocaine seized are considered, the United Kingdom (England and Wales) again stands out, with 33 kg seized in 2014 (down from 48 kg in 2013) (Hargreaves and Smith, 2015), with France and Italy in second and third places, reporting, respectively, amounts of 19 kg and 2 kg seized (all other countries that provided data reported seizing less than 1 kg).

The changing face of cocaine production and supply

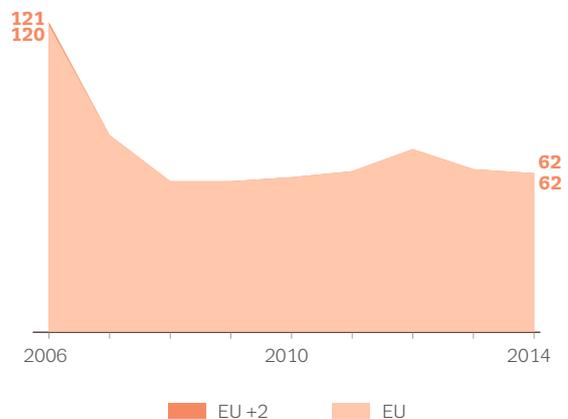
In the past, the production and trafficking of cocaine to the EU was largely organised by non-EU criminals, but this picture has been changing for several years, as discussed in the 2013 EU drug markets report (EMCDDA–Europol, 2013). With respect to the actors involved in cocaine trafficking from South America to Europe, there appears to be a trend towards the further fragmentation, horizontalisation and expansion of the cocaine production and trafficking networks; some of the larger Colombian and Mexican trafficking outfits are effectively employing

FIGURE 5.6
Seizures of cocaine reported in Europe, 2006–14

Number of seizures (thousands)



Quantities seized (tonnes)



Note: Some data for 2014 are not available and the most recent data have been used instead, except for the number of seizures for the Netherlands, France and Poland where no recent data is available so they are not included.
Source: EMCDDA/Reitox national focal points.

a 'franchise model', whereby they sell their 'brand names' and 'operating licences' to smaller criminal groups and even individuals that are not part of their organisations. Mexican traffickers seem to have made inroads into the Andean cocaine supply markets, expanding their local networks with the aim of cutting out intermediaries. While they are also striving to expand their activities in Europe, particularly in Spain, some European OCGs appear to be building a more permanent presence in South America, possibly aiming to enhance their strategic position in what is an ever more crowded and competitive illicit market (Schultze-Kraft, 2016).

OCGs involved in the trafficking of cocaine are often highly innovative and are using increasingly sophisticated smuggling techniques and countermeasures to avoid the detection of cocaine shipments. In order to ensure the successful delivery of cocaine shipments, OCGs attempt to gain control over the entire chain of transportation from departure to arrival at the final destination in the EU. OCGs are thought to engage in the systematic recruitment of corrupt workers at all major (air)ports in the EU in order to enhance their flexibility and ability to shift between (air)ports when required. Certain ports are particularly vulnerable to this method because of a lack of personnel screening, poor working conditions or weak terminal security. Businesses operating in maritime transportation and related sectors are also targeted for infiltration by OCGs.

OCGs are adept at exploiting available technologies, such as encrypted communication devices, satellite mobile phones, dark net services for online communication, cloud services or GPS beacons, to track containers and to recover cocaine consignments thrown overboard for later recovery. In some cases, OCGs have been found to use frequency inhibitors.

Some distinct criminal networks continue to play key roles in the importation of cocaine into the EU.

Latin American and Caribbean organised crime groups

These are mainly composed of nationals of Colombia, Brazil, the Dominican Republic and Venezuela, and traffic cocaine to the EU in large quantities.

The influence of Colombian groups in the supply of cocaine has decreased as law enforcement authorities have made a concerted effort to dismantle the major cartels. Mexican groups have taken advantage of this and have increased their activities throughout South America ⁽²³⁾. However,

there are no indications of increased activity of Mexican cartels in the EU. Despite a relative decline in influence, Colombian groups continue to play a key role in the supply of cocaine to the European market. They have settled in the EU to organise and facilitate their operations, and cooperate with many European groups, including Italian and Spanish criminal organisations.

West African organised crime groups

Mostly composed of Nigerian nationals, West African OCGs continue to feature prominently as organisers of cocaine trafficking using air couriers. Nigerian groups, in particular, have consolidated their involvement in the cocaine trade and are now on par with Latin American groups in their ability to source, finance and transport bulk quantities of cocaine from Latin America to Africa, Europe and elsewhere. Part of the profits of the drug trade is laundered by building houses and hotels in Nigeria. Nigerians also have a significant presence in many EU countries, including Austria, Spain, France, Italy and Germany.

EU organised crime groups

EU OCGs have benefited from the more open cocaine market that has resulted from the fragmentation of Colombian organised crime and increased involvement of other Latin American groups with access to cocaine sources. Some Dutch, British, Italian and Spanish OCGs are important brokers for cocaine trafficking to the EU and work directly with suppliers based in South America. British OCGs supply the large United Kingdom market with cocaine sourced from the Netherlands and Spain where they meet brokers capable of facilitating bulk importation. British OCGs maintain an important presence in Spain to facilitate their involvement in the secondary wholesale distribution of cocaine to the United Kingdom and other western European countries. Direct importations from Central America into Ireland and the United Kingdom indicate connections between Irish and British OCGs and drug cartels in South and Central America.

The retail market for cocaine

As mentioned above, cocaine powder is generally used recreationally, and most people use it relatively infrequently. On the other hand, most crack cocaine users are problematic users who may use crack alongside other drugs such as heroin. The retail markets for these drugs are therefore likely to be rather different. Crack cocaine use is less prevalent than cocaine powder use so more information is available about the retail market for powder.

Cocaine use in a recreational setting will often involve sharing of supplies, so not everyone who uses cocaine

⁽²³⁾ According to open sources, the Mexican Sinaloa cartel currently controls 35 % of the cocaine exported from Colombia, representing about 100 tonnes of drugs a year (*El Tiempo*, 21/07/2015).

will buy it. In fact, an online survey of drug users in six European countries (the Czech Republic, Italy, the Netherlands, Portugal, Sweden, and England and Wales) found that about three-quarters of respondents bought cocaine at least occasionally (about half of these said they sometimes bought it and sometimes shared or were given it). Respondents were also asked about where they bought cocaine, and the most common responses were at the seller's home, at someone else's home and on the street or in a park. In Italy and Sweden only, some respondents said they bought cocaine at school, college or university (Frijn and van Laar, 2013). Only in Sweden did anyone mention obtaining cocaine via the internet, and then it was only 2 % of respondents. The Global Drug Survey (Winstock, 2015), another online survey that also specifically targets drug users, found that the small sample of respondents from Sweden were the most likely to report having bought drugs online using the dark net. It also found that cocaine was mentioned as one of the substances being purchased through dark net markets. Nevertheless, it seems that most users still buy their cocaine from dealers.

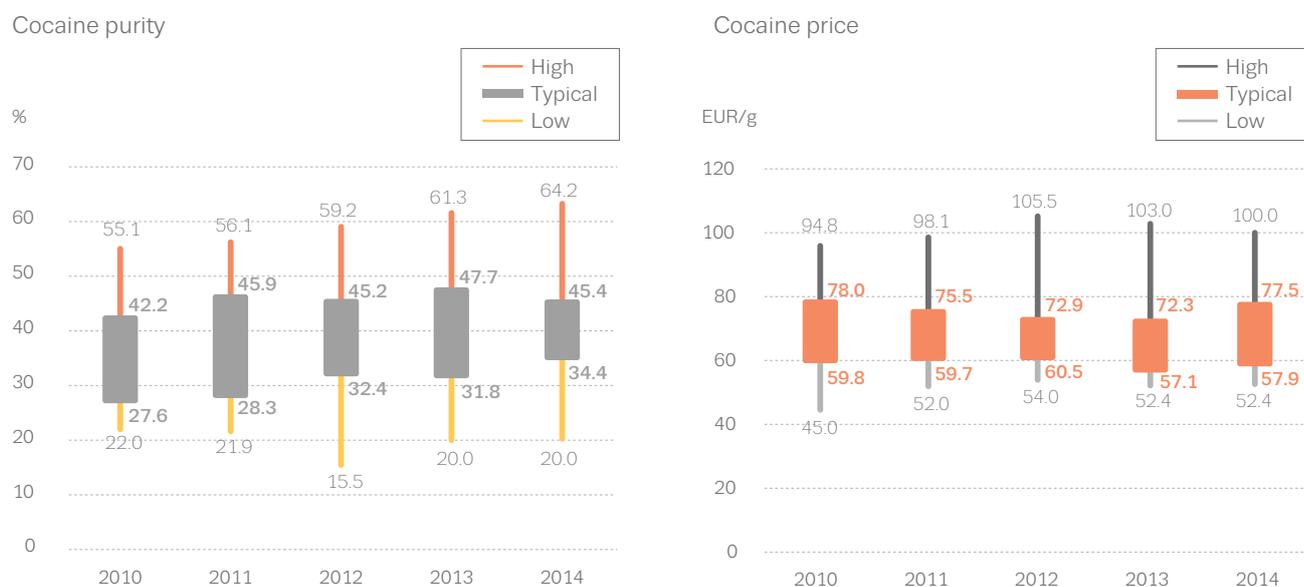
As with other substances, retail markets evolve in response to technological developments and law enforcement. This is illustrated by developments in France, where, as a reaction to enhanced law enforcement in some areas where structured drug retailing organisations were operating 'points of sale', retail cocaine and crack sales now increasingly tend to take place 'by appointment' in different and constantly changing locations agreed by mobile phone (Cadet-Tairou et al., 2015).

Trends for cocaine-related offences show an increase from 2006 to 2008/9 but have since decreased. Supply offences increased at the start of the period and then decreased only slowly until 2014; use or possession offences also increased until 2009, after which they declined more rapidly. About 30 % of cocaine drug law offences are supply related.

The reported retail price of cocaine varies considerably between countries in Europe, ranging from EUR 46 to EUR 91 per gram with an interquartile range of EUR 52–72 in 2014 (or most recent year available). Purity is similarly variable but is generally 64 % or less (Table 5.1). Not all countries are able to provide price and purity data every year so when considering trends the data presented come from a smaller group of countries who consistently provide data. These data show that the average purity of cocaine powder has been increasing from a low of 34 % in 2009, although now appears to have stabilised at about 40 % (see Figure 5.7) (EMCDDA, 2015a). It has been suggested that the low point in purity in 2009, which occurred at the same time as a dip in the purity of ecstasy in many countries, may

have fuelled the increased interest in new psychoactive substances (NPS). In the United Kingdom, it is reported to have led to the development of a two-tier market in cocaine, with higher-quality cocaine being available at a premium, something that seems to have continued (ACMD, 2015a). In France, a second market has also been observed, with lower quantities sold at more affordable prices (France: Reitox, 2014). While the decrease in purity might be seen as indicative of a reduction in availability, the reported price has remained relatively stable. This, together with the decline in reported cocaine use in several countries, suggests that people may have turned away from using the drug. It remains to be seen whether or not the recent upturn in purity alongside the increased cultivation being reported in Colombia leads to a resurgence in use. In a telephone survey of young people aged 15–24 across Europe carried out in 2014, 25 % of those interviewed said that it would be fairly or very easy to obtain cocaine within 24 hours, a slight increase from 22 % in the 2011 survey and a similar proportion to that for new psychoactive substances and ecstasy (TNS Political & Social, 2014).

FIGURE 5.7
Trends in cocaine purity and retail price in the EU, 2010–14



Note: Trends are based only on data from those EU countries that have submitted data consistently since 2010. Prices have not been adjusted for inflation. Typical values shown are the interquartile range (IQR) of the country average values, with high and low values showing the range.

Source: EMCDDA/Reitox national focal points.

Action points

Monitoring the dynamics of the European cocaine market

1. Monitoring of cocaine use in Europe needs to be configured to be more sensitive in order to detect early signals of changing patterns of use, diffusion to new countries or increased levels of harm, especially if availability increases.
2. There is a need to improve the collection of drug supply data, including data on seizures, purity, prices and secondary extraction sites, to enhance the knowledge of the operation of the cocaine supply chain. This will require greater cooperation at Member State level to facilitate access to data for strategic purposes.

Better understanding of cocaine production and export

3. Strategic partnerships in Latin America and the Caribbean, in the areas of both law enforcement and general drug information, should be further strengthened, taking advantage of existing resources such as EU Member State liaison officers in the region.
4. Chemical profiling of cocaine seizures is valuable for both strategic and operational purposes at all market levels and needs to be supported.

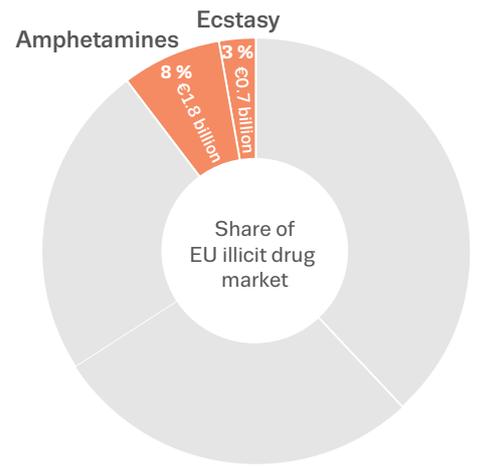
Tackling trafficking routes and methods

5. Efforts to inhibit maritime transportation of cocaine should remain a high priority; in particular, action at major container ports in northern and southern Europe should include:
 - providing support for innovation in control and profiling methods;
 - development of new approaches to improve port security, especially identifying and tackling the corruption of officials and port employees;
 - sharing good practice and provision of training.
6. Improve and share risk analysis and measures for intercepting internationally shipped parcels, exploring the potential of technology for this purpose.
7. Increase knowledge exchange on concealment methods to support interdiction efforts on both sides of the Atlantic.
8. Explore the potential of prevention programmes aimed at tackling courier recruitment in affected countries.

Focusing on organised crime; closing the information gaps

9. Given the emerging evidence of the interaction between cocaine and heroin trafficking, greater cooperation, information and intelligence exchange between specialised law enforcement teams focusing on criminal groups trafficking these different types of drugs should be facilitated to ensure there are no gaps in the strategic analysis and consequent law enforcement responses.

6



CHAPTER 6

Amphetamine, methamphetamine and MDMA

Key issues

The European market for synthetic stimulants

The market for stimulant drugs is dynamic and complex, with interactions found between the main synthetic stimulants, amphetamine, methamphetamine and MDMA, as well as with the market for cocaine and some new psychoactive substances (NPS), particularly the synthetic cathinones. Availability, price and perceived quality influence consumer choices, with these drugs appealing to both recreational and chronic and marginalised drug users. The market for these drugs is estimated to be at least EUR 1.8 billion per year (range EUR 1.2 to 2.5 billion) in the case of amphetamines and EUR 0.67 billion (range EUR 0.61 to 0.72 billion) for ecstasy.

Problems associated with use

The availability of high-dose products constitutes an emerging threat and a challenge for public health and safety. There are growing concerns about high-dose MDMA products and the increased use of methamphetamine, and changes in routes of administration, such as injecting and smoking. Stimulant drugs are also becoming more important in the chronic drug problem in some countries, and have displaced opioids in some locations while being associated with higher rates of both drug and sexual risk behaviours. A negative impact on public safety may also arise from drugged driving and elevated levels of aggressive and even violent behaviour.

Production areas

The Netherlands and Belgium are the most important areas for MDMA and amphetamine production in Europe, although amphetamine production also takes place in Poland, the Baltic states, Bulgaria and Germany. Methamphetamine production in the EU has traditionally been limited to central European countries, principally the Czech Republic. However, small-scale production also occurs in countries bordering the Czech Republic, and some recent evidence suggests significant production capacity exists in the Netherlands.

Changing business models

Production business models are becoming more sophisticated, as is evident in the sourcing and innovation in precursors; the use of a decentralised, on-demand model and customised equipment; automated production; and the increased scale of production batches. Increasing diversity in synthetic drug production methods may increase the risk of consumers being exposed to harmful impurities or by-products or other more harmful substances. Aggressive marketing and branding is becoming more apparent in the ecstasy market. An increasing variety of tablets with novel shapes, colours and logos have been introduced, suggesting competition between suppliers and more active targeting of specific groups of users.

Production and precursors

Precursor chemicals are essential for the production of synthetic drugs. A large number of different routes and chemicals are now used, with new methods emerging in response to control measures, increasing the resilience of the market. This makes precursor control more challenging and, overall, purity and availability data support the assertion that precursors and essential chemicals are relatively accessible to producers. Ephedrine/pseudoephedrine are precursors for methamphetamine that can be extracted from over-the-counter medicines or diverted in bulk from legitimate sources. National restrictions on the purchasing of these products have been imposed in some countries; however, these measures are not consistent across the EU.

Environmental impact

The disposal of hazardous and toxic waste from synthetic drug production poses substantial health risks and causes environmental damage, and the costs associated with the decontamination of dumping sites can be considerable. This is becoming more of an issue as a result of the diversification and increasing capacity of production methods as well as diffusion to previously unaffected countries.

Trafficking

Most synthetic drugs consumed in the EU are produced in the region, resulting in considerable intra-European trafficking. Some synthetic drugs produced in the EU are also exported to other regions, such as the Americas and Australia. The EU is also an important transit zone for methamphetamine produced in West Africa and Iran and occasionally elsewhere, with the potential threat that drugs in transit are diverted to European markets.

OCGs exploit opportunities provided by the global infrastructure that supports public transportation and commercial trade. Postal and parcel courier services are especially relevant to synthetic drug trafficking, as is the on-going development of online retail markets.

Organised crime and changing business models

Well-established Dutch, Belgian, German and British OCGs are particularly important for both MDMA and amphetamine trafficking for large consumer markets in western Europe. OMCGs remain important for synthetic drug trafficking and distribution to Nordic countries. In addition, OCGs operating from the Baltic Sea area, particularly from Lithuania and Poland, are important for the production and supply of amphetamine and methamphetamine in the Nordic countries.

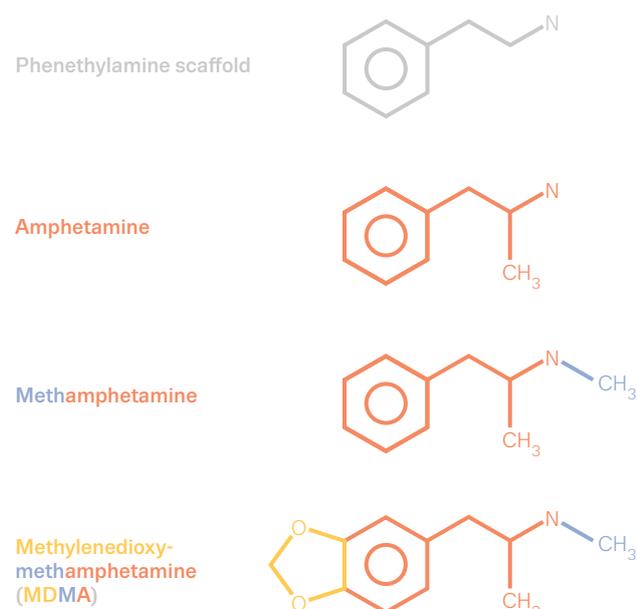
OCGs trafficking synthetic drugs are often involved with the supply of other substances, and it is important to recognise the crossover with other drugs. For example, groups supplying MDMA and amphetamine produced in the Netherlands and Belgium are involved in the cannabis and cocaine market, while Vietnamese OCGs in the Czech Republic diversified from producing cannabis to methamphetamine production.

Introduction

Amphetamine, methamphetamine and MDMA (methylenedioxy-methamphetamine, often known as 'ecstasy') are the most popular synthetic drugs in a crowded stimulant market in Europe, competing with cocaine and a range of new psychoactive substances (NPS). Although they have their own distinct patterns of use and profiles of users, they share a common chemistry, with the phenethylamine scaffold at their core (see Figure 6.1). The market is dominated by large producers with the ability to access the precursor chemicals, specialist equipment and, above all, the technical expertise needed to make these drugs. The market in these drugs is complex and volatile, with the availability of precursor chemicals being a key factor. In recent years, the gap between the supply and demand for these controlled synthetic stimulants created the opportunity for some new drugs, such as mephedrone and MDPV (methylenedioxypropylvalerone), to become established in some countries.

There are many similarities and overlaps with amphetamine and methamphetamine so they are sometimes grouped together as 'amphetamines' and therefore can be difficult to differentiate in some datasets. MDMA is normally reported

FIGURE 6.1
Synthetic drugs with phenethylamine at their core



Note: The phenethylamine scaffold comprises a six-carbon ring separated from a nitrogen atom (N) by a further two carbon atoms. 'O' represents oxygen and 'CH₃' represents a carbon bonded to three hydrogen atoms (a methyl group).

Source: EMCDDA.

Common forms

Amphetamine sulphate is a white or off-white powder that is soluble in water. Illicit products mostly consist of powders, usually mixed with other ingredients, such as lactose, dextrose or caffeine, but tablets containing amphetamine are also available and may carry logos similar to those seen on 'ecstasy' tablets. Captagon tablets containing amphetamine are produced and consumed in large numbers in south-eastern Europe. Amphetamine sulphate may be ingested, snorted and, less commonly, injected. Unlike the hydrochloride salt of methamphetamine, amphetamine sulphate is insufficiently volatile to be smoked.

Methamphetamine hydrochloride is a crystalline solid that is soluble in water. In illicit methamphetamine powder, as is the case of amphetamine sulphate, finely ground crystals are usually mixed with other ingredients, such as lactose, dextrose or caffeine. Large white or translucent crystals of methamphetamine hydrochloride suitable for smoking, known as 'ice' or 'crystal meth', can be produced from a starting material that has a high concentration of methamphetamine (base or salt). Methamphetamine hydrochloride may also be found as an ingredient of tablets sold as ecstasy or *yaba* in some regions of South-East Asia.

MDMA hydrochloride is a crystalline solid, soluble in water. Until recently, it was normally found in ecstasy tablets for oral consumption. Nowadays, as well as the tablet form, it is also found in crystal or crystalline powder form, also for taking orally.

separately from these. All three drugs can be produced relatively simply and exist in two chemical forms: base and salt. The pure bases are clear, colourless, volatile oils, insoluble in water, which can be readily converted into the most common salt forms: amphetamine sulphate, methamphetamine hydrochloride and MDMA hydrochloride.

Amphetamine and MDMA are much more common in Europe than methamphetamine, which is more popular in other regions of the world, although there are signs that methamphetamine use is gradually increasing. Europe is a producing region for these three drugs for the domestic market, but also for export of MDMA and methamphetamine; Europe also acts as a transit point for global trafficking, particularly of methamphetamine made outside Europe.

TABLE 6.1

AMPHETAMINES IN EUROPE AT A GLANCE					
Estimated market size (2013)	Best estimate (low–high)	Value (billion EUR) 1.8 (1.2–2.5)	Quantity (metric tonnes) 76 (52–102)		
Consumption (1)		Age group (years)	Estimated number of users (million)		
		15–64	12.0		
	Lifetime	15–34	5.9		
		15–64	1.6		
	Last year	15–34	1.3		
Drug treatment (2) (2014)		Number (% of admissions for all drugs)		Trends combined	
		Amphetamine	Methamphetamine		
	All admissions	23 000 (5 %)	9 000 (2 %)		
	First admissions	9 000 (5 %)	4 500 (3 %)		
Drug law offences (2014)		Number (% of offences for all drugs)		Trends	
		Amphetamine			
	All offences	79 000 (7 %)			
	Offences for drug use/ possession for use	60 000 (7 %)			
	Offences for drug supply	19 000 (8 %)			
		Methamphetamine			
	All offences	4 900 (0.4 %)			
	Offences for drug use/ possession for use	1 800 (0.2 %)			
	Offences for drug supply	2 900 (1.2 %)			
Seizures (3) (2014)		Amphetamine		Methamphetamine	
		Quantity (tonnes)	Trends	Quantity (tonnes)	Trends
	EU	7.1		0.5	
	EU plus Norway and Turkey	7.4		0.8	
		Number		Number	
EU	36 000		8 000		
EU plus Norway and Turkey	42 000		11 000		
Mean retail price (2014)	Range (IQR) (4)	EUR/gram		EUR/gram	
		7–37 (10–25)		7–116 (15–66)	Trend not available
Mean purity (2014)	Range (IQR) (4)	% in EU		% in EU	
		1–49 (12–27)		9–73 (28–67)	Trend not available

Notes:

(1) EU estimates are computed from national estimates weighted by the population of the relevant age group in each country. They are based on surveys conducted between 2004 and 2014/15 and therefore do not refer to a single year.

(2) Drug users entering treatment for amphetamine or methamphetamine problems. Units coverage may vary across countries. Trend data are given for amphetamine and methamphetamine combined as separated data are only available for the last 2 years.

(3) The 2014 figures should be considered as estimates; where not available, most recent data were used in place of 2014 data, except for the number of seizures for the Netherlands, France and Poland where no recent data is available so they are not included.

(4) IQR: interquartile range, or range of the middle half of the reported data.

Data presented are for the EU unless stated otherwise. All trend lines shown in this table cover a 5-year period, 2010–14. All trends reflect absolute numbers except for trends on price and on potency which reflect averages of mean values. In the case of treatment, price and purity, trends are based only on data from those EU countries that have consistently submitted data since 2010.

Source: EMCDDA/Reitox national focal points.

MDMA IN EUROPE AT A GLANCE

Estimated market size (2013)	Best estimate (low–high)	Value (billion EUR)	Quantity (million tablets)	
		0.67 (0.61–0.72)	87 (79–94)	
Consumption ⁽¹⁾		Age group (years)	Estimated number of users (million)	% of EU population (range between countries)
	Lifetime	15–64	13.0	3.9 (0.4–9.2)
		15–34	7.8	6.2 (0.6–12.8)
	Last year	15–64	2.5	0.8 (0.2–2.4)
		15–34	2.1	1.7 (0.3–5.5)
Drug treatment ⁽²⁾ (2014)		Number (% of admissions for all drugs)	Trends	
	All admissions	1 200 (0.3 %)		
	First admissions	700 (0.4 %)		
Drug law offences (2014)		Number (% of offences for all drugs)	Trends	
	All offences	18 000 (2 %)		
	Offences for drug use/possession for use	13 000 (1 %)		
	Offences for drug supply	5 000 (2 %)		
Seizures ⁽³⁾ (2014)		Quantity (million tablets)	Trends	
	EU	6.1		
	EU plus Norway and Turkey	9.8		
		Number		
	EU	17 000		
	EU plus Norway and Turkey	21 000		
Mean retail price (2014)		EUR/tablet	Trends	
	Range (IQR) ⁽⁴⁾	3–16 (5–9)		
Mean purity (2014)		mg/tablet in EU	Trends	
	Range (IQR) ⁽⁴⁾	18–131 (68–95)		

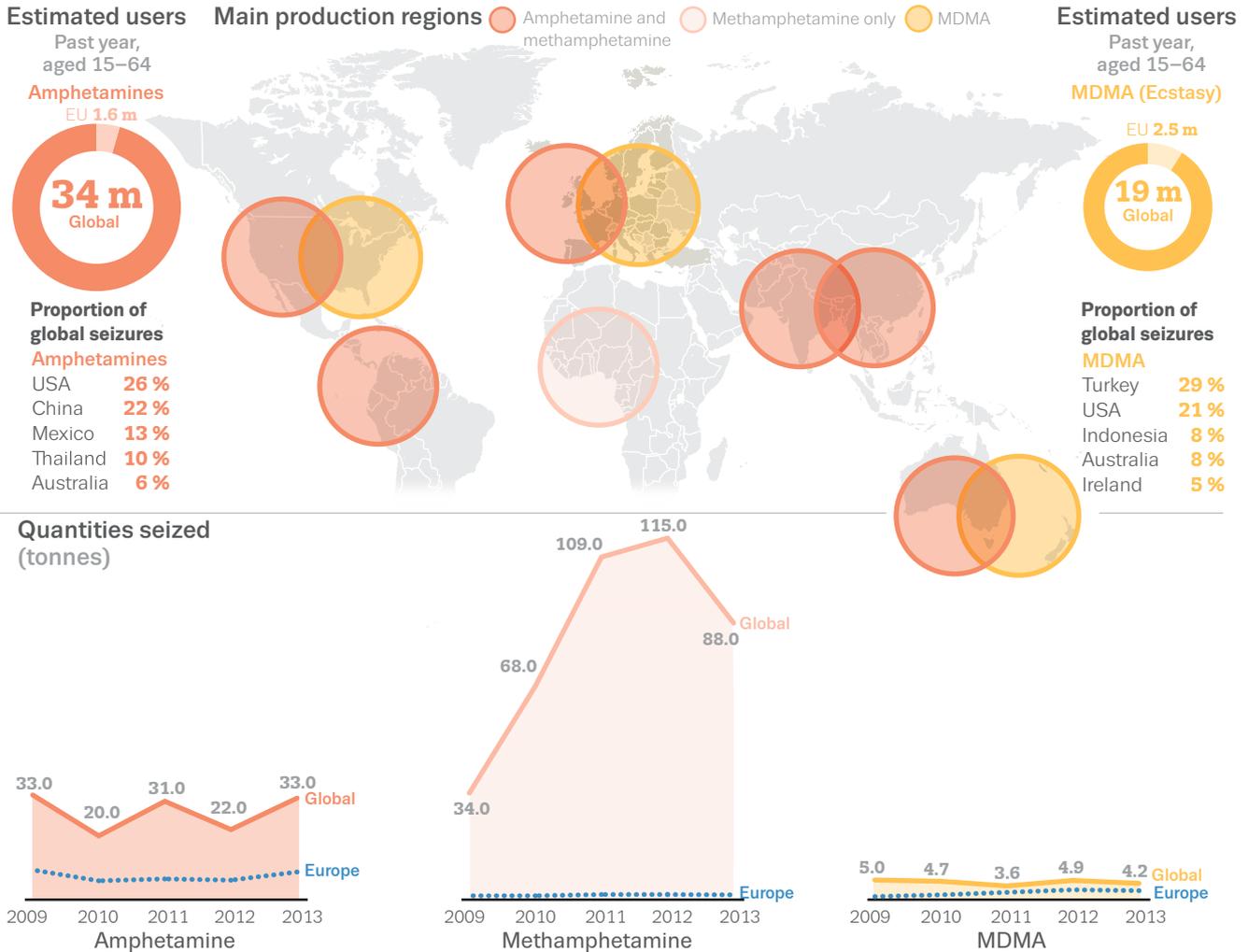
Notes:

- (1) European estimates are computed from national estimates weighted by the population of the relevant age group in each country. They are based on surveys conducted between 2004 and 2014/15 and therefore do not refer to a single year.
- (2) Drug users entering treatment for MDMA problems. Units coverage may vary across countries.
- (3) The 2014 figures should be considered as estimates; where not available, most recent data were used in place of 2014 data, except for the number of seizures for the Netherlands, France and Poland where no recent data is available so they are not included. An additional 220 kg of ecstasy was seized in the EU, in 2014.
- (4) IQR: interquartile range, or range of the middle half of the reported data.

Data presented are for the EU unless stated otherwise. All trend lines shown in this table cover a 5-year period, 2010–14. All trends reflect absolute numbers except for trends on price and on potency which reflect averages of mean values. In the case of treatment, price and purity, trends are based only on data from those EU countries that have consistently submitted data since 2010.

Source: EMCDDA/Reitox national focal points.

GLOBAL OVERVIEW – AMPHETAMINES AND MDMA/ECSTASY



Note: The estimates presented are up to 2013; more recent EU figures are available but have not been used for the purposes of comparability. For the most up-to-date European data, please refer to Table 6.1.

Source: UNODC, World Drug Reports. EMCDDA, 2015a.

In the north of Europe, amphetamine and methamphetamine are the stimulants of choice, whereas cocaine dominates in the south, and in some other countries, such as the United Kingdom. Methamphetamine use, which was once restricted to the Czech Republic and Slovakia, has been slowly spreading in recent times to neighbouring countries. This is an important and concerning development because some modes of methamphetamine use, such as injection, or the smoking of the crystalline form, present greater risks in terms of public health and societal harm. Pockets of high-risk methamphetamine use among some subpopulations, e.g. men who have sex with men, is also threatening the progress made in Europe in tackling the spread of HIV (human immunodeficiency virus) and infectious diseases.

While most users of amphetamine and methamphetamine take the drug only occasionally and experience few, if any, problems, a proportion may develop problematic patterns of use. Adverse health effects that may be associated with use of amphetamines include cardiovascular, pulmonary, neurological and mental health problems, and injection is associated with the risk of infectious disease. Although deaths associated with stimulant use can be difficult to identify, a few amphetamine-related deaths are recorded annually. In contrast, it is much less common for MDMA users to develop a pattern of problematic use.

Global overview

Synthetic drugs are produced mainly in North America, Asia, Europe and Oceania but also in other regions. MDMA is produced mainly in Europe and methamphetamine in the United States of America; however, as with amphetamine, it is difficult to assess the relative volumes produced with any certainty. According to the US Drug Enforcement Administration, the MDMA seized in the United States is primarily manufactured in clandestine laboratories in Europe, predominantly the Netherlands and Belgium, but another significant source is Canada (USDEA, 2013). There have been occasional seizures of methamphetamine laboratories in West Africa, which may be significant from a European perspective (UNODC, 2013e).

In global terms, much more methamphetamine is seized annually than amphetamine, while ecstasy⁽²⁴⁾ is seized in even smaller quantities (UNODC, 2015a). In contrast, in Europe sizeable amounts of amphetamine and MDMA are seized, but only relatively small accounts of methamphetamine.

The latest UNODC estimates suggest that there were between 14 million and 54 million users of amphetamines⁽²⁵⁾ worldwide in 2013, with prevalence of use in Oceania, Central America and North being higher than the global average (UNODC, 2015a). Recent estimates of prevalence for Africa and Asia are not generally available, but experts from these countries consider that the use of amphetamines is increasing (UNODC, 2014b) and Nigeria reported in 2012 that lifetime prevalence of use for amphetamine and methamphetamine was higher than most European countries (UNODC, 2014e).

The most recent estimate suggests that there were about 18.8 million users of ecstasy worldwide in 2013, although data on use are sparse in many countries. The main MDMA markets appear to be Europe, North America and Oceania. However, recent seizure data and expert perceptions suggest that a regional shift may be occurring, with markets emerging in South-East Asia (UNODC, 2015a). Furthermore, South America is an emerging market for MDMA; seizures more than tripled in the period 2008–12 and there are reports of European OCGs exchanging MDMA for cocaine in Brazil (UNODC, 2014b; EMCDDA, 2016b).

⁽²⁴⁾ The term 'ecstasy' includes MDA (methylenedioxyamphetamine), MDMA and other chemically related substances. It is normally used as a generic term for these substances when the specific molecule is not known.

⁽²⁵⁾ When the UNODC report refers to amphetamines in the plural, it means amphetamine, methamphetamine and related substances such as fenethylamine, methylphenidate, cathinone, etc., but not ecstasy or its relatives. The two groups together — amphetamines and the ecstasy family — are sometimes referred to as amphetamine-type stimulants (ATS).

Consumer market in Europe

As noted above, amphetamine, methamphetamine and MDMA are part of a wider market for stimulant drugs, in which there is variation in the 'stimulant of choice' between countries and user groups. In Europe, amphetamine and MDMA are used much more extensively than methamphetamine, but there is also evidence of polydrug use and shifts in established patterns. For example, amphetamine, methamphetamine and MDMA may be substituted for each other or replaced by other stimulants such as cocaine or new psychoactive substances, in particular synthetic cathinones, which are closely chemically related to amphetamines.

There are two main groups of amphetamine and methamphetamine users: those who are considered casual users, who use the drug in a recreational environment or to improve performance; and those who would be considered high-risk users, who may inject or smoke the drug and may eventually seek treatment. The most recent estimates indicate that about 12 million Europeans have tried amphetamines at some point in their lifetime, and an estimated 1.3 million 15- to 34-year-olds have used the drug at least once in the last year. Prevalence rates for last-year use in most countries in Europe have remained fairly stable since about 2000. Exceptions are Spain and the United Kingdom, where there has been a statistically significant decrease in prevalence since 2000 (EMCDDA, 2015a).

Patterns of use vary between countries, although in general most recreational users use infrequently. Recreational use is mainly in a social context; an online study of drug users in six EU countries found that in the Czech Republic and Sweden users most often consumed amphetamines in their own home, whereas in Bulgaria, Italy, the Netherlands and the United Kingdom (England and Wales) use was most commonly at a music concert or festival or other place of entertainment (Frijns and van Laar, 2013).

Problems relating to long-term, chronic and injecting amphetamine use have historically mostly been observed in northern European countries. In contrast, long-term methamphetamine problems have been most apparent in the Czech Republic and Slovakia. In the Czech Republic, a marked increase in the estimated number of people with problem or high-risk use of amphetamines, mainly by injection, was observed between 2007 to 2013 (from around 20 000 to over 34 000) (Czech Republic: Reitox, 2015). Very few other countries have identified significant numbers of problem methamphetamine users, although a recent trend of injecting use of methamphetamine among

small groups of men who have sex with men in large cities such as London and Paris has also been noted (EMCDDA, 2014b).

Consumers may have difficulty in distinguishing between amphetamine and methamphetamine. There is some evidence from seizures to suggest that there may be increasing amounts of methamphetamine on the retail market in some Nordic countries, resulting in users 'switching' from amphetamine, perhaps unwittingly, to methamphetamine. For example, whilst methamphetamine seizure figures clearly indicate the drug's presence in the market in Norway, there are still very few, if any, indications that it is particularly sought after. It appears that at present the two drugs are sold interchangeably and users do not necessarily know what they are getting (Norway: Reitox, 2015).

Ecstasy use has historically been linked to the electronic dance music scene, and in most countries its use is concentrated among young adults, particularly young males. A web survey of drug users in six European countries found that almost half (46 %) of users said that they usually used ecstasy at a music concert or festival and one-third (34 %) said they used it at another place of entertainment (Frijns and van Laar, 2013). Use is generally relatively infrequent; this same survey found that only 5 % of respondents reported using ecstasy once a week or more.

The diversification of the drug markets described earlier in this report and in Chapter 7 also extends to amphetamines. Although most NPS appear to be quite transient, it is possible that some may have effects that meet particular user needs and they may then become established on the market, as may be the case for 4-fluoroamphetamine (4-FA), which has reportedly taken a share of the amphetamine and MDMA market in the Netherlands (Linsen et al., 2015; see Case study 12, Chapter 7).

Market size estimates

The estimated annual value of the retail market for amphetamines in the EU is at least EUR 1.8 billion, with a range of EUR 1.2–2.5 billion, while the estimate for ecstasy is at least EUR 0.67 billion (range EUR 0.61–0.72 billion). Together they make up about one-tenth of the total illicit market in drugs. Our estimates of amounts used suggest that in 2013 about 76 tonnes of amphetamines (likely range 52 to 102 tonnes) and 87 million tablets (79 to 94 million tablets) of ecstasy were consumed.

In reaching these estimates we have used information on numbers of users from the general population surveys

conducted in most countries but, recognising that some groups of drug users are unlikely to be represented in these surveys, we have supplemented these with estimates of the use of amphetamines by problem users. However, this almost certainly underestimates problem use. There are a number of other limitations to these estimates (see box on page 28) and further details of the estimation methods are given in the technical report published alongside this report (EMCDDA, 2016a).

Production and precursors

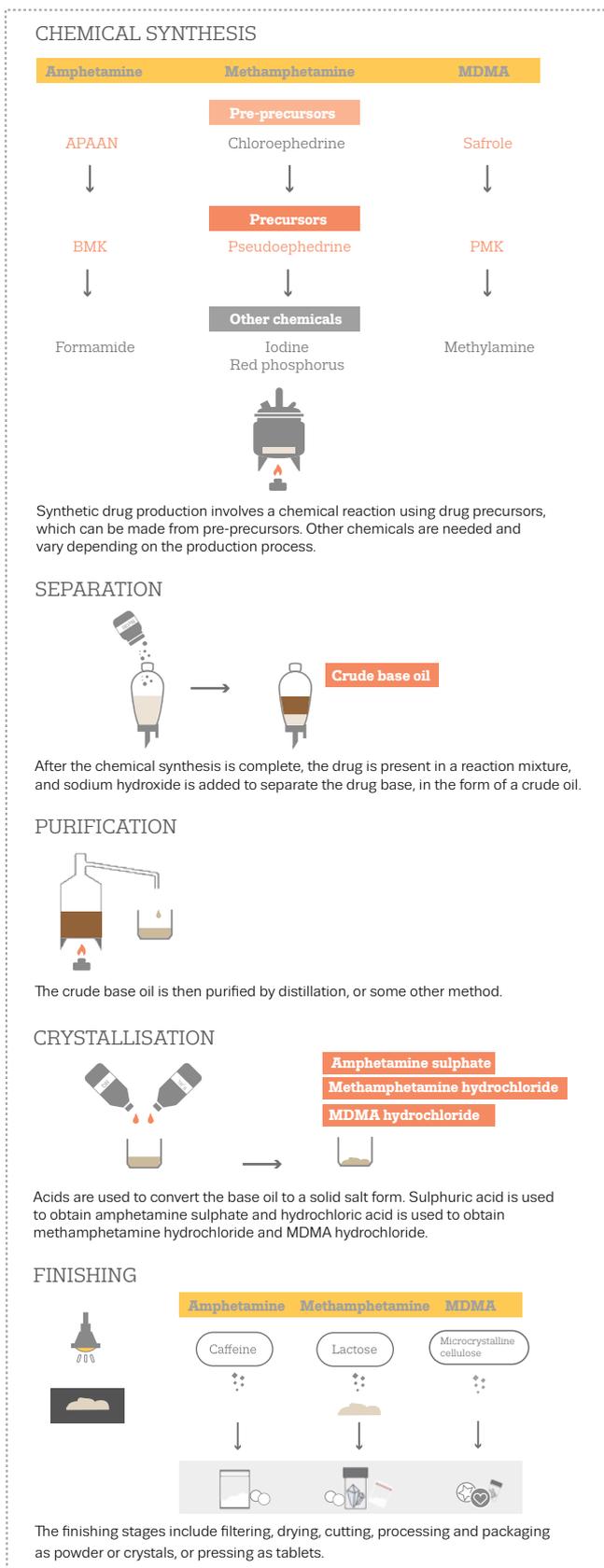
Synthetic drugs can be produced using a number of different production techniques, involving a range of different chemical precursor substances. The precursors needed to make amphetamine and methamphetamine overlap significantly, but are distinct from the precursors used to make MDMA. In Europe, and indeed globally, amphetamine is most frequently synthesised from benzyl methyl ketone (BMK) ⁽²⁶⁾. To make methamphetamine, although BMK may also be used, ephedrine and pseudoephedrine are more common. MDMA is primarily produced from piperonyl methyl ketone (PMK), which can also be produced from safrole (or oils rich in safrole) and piperonal (see Figure 6.2).

Several methods can be used to produce each drug, and these may vary depending on precursor availability. Precursors are evidently a precious commodity; the fact that no excess precursors are seized during raids on illicit production sites suggests that the exact volumes of precursors required are provided 'on demand' for each production batch (EMCDDA, 2016b). All methods also involve the use of additional chemicals and processes that are inherently dangerous. Furthermore, the waste generated by the production process is often disposed of unsafely, causing environmental harm (see box 'Environmental impact') and risk to public health and safety. For example, in August 2015, four children were taken to hospital with chemical burns after cycling through a pool of liquid caustic waste from a synthetic drug production site in Belgium (media report ⁽²⁷⁾ and Belgian Federal Police, personal communication).

⁽²⁶⁾ BMK is also known as also known as 1-phenyl-2-propanone (P-2-P), or phenylacetone, and PMK is also known as also known as 3,4-methylene-dioxyphenyl-2-propanone (MDP-2-P).

⁽²⁷⁾ <http://www.demorgen.be/binnenland/drugslabo-gedumpt-in-limburgs-bos-4-fietsende-kinderen-zwaargewond-a2419039/>

FIGURE 6.2
The synthetic drugs production process



Note: This illustration is intended to provide an indicative schematic overview of selected stages of a production process. It must be noted that alternative methods, chemicals and procedures may be used.

Source: EMCDDA.

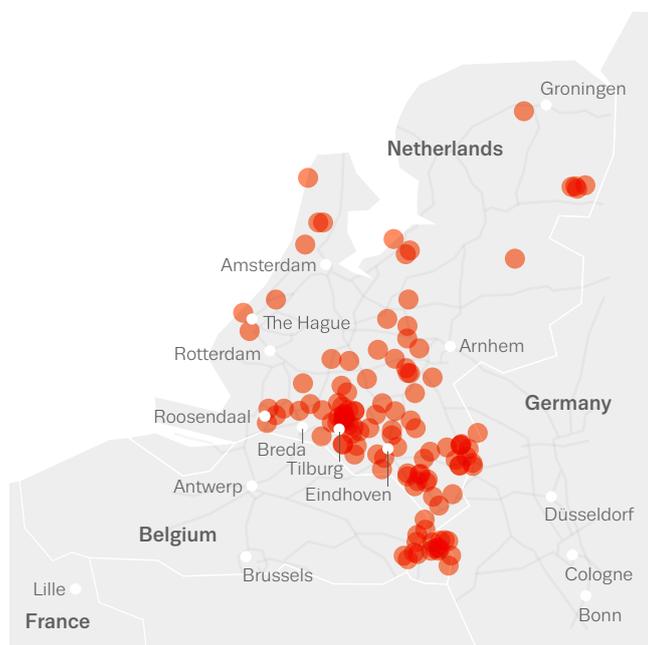
Environmental impact

Hazardous waste is generated when synthetic drugs are produced, which takes place on a fairly large scale in the EU, particularly in Belgium and the Netherlands. The chemicals used include solvents (acetone, ether, methanol, etc.), precursors and a range of other substances such as formamide, methylamine, acids, etc. It is estimated that production of 1 kg of MDMA by reductive amination results in 6–10 kg of toxic waste while the manufacture of 1 kg of amphetamine by Leuckart synthesis produces 20–30 kg of waste. To illustrate the scale of the phenomenon in Europe, it can be very roughly calculated that the production of the 6.7 tonnes of amphetamine reported seized in the EU in 2013 would have generated between 134 and 201 tonnes of toxic waste. This waste is disposed of in environmentally harmful ways, such as poured down the sink or toilet, although this is a risky option. Containers of the waste product may be dumped in a forest or field, or left in an abandoned apartment, or loaded in stolen vehicles, especially vans and lorry trailers (that are sometimes set on fire), as well as buried underground. Alternative elaborate methods include the use of a specially fitted van equipped with barrels, pumps and a hose through which the waste is drained on the road as the vehicle is moving (making detection difficult). There are also reports of synthetic drugs production waste being mixed with industrial waste and disposed of at sea. In the Netherlands, where 157 dump sites were found by the authorities in 2014, the average quantity of waste dumped at each site in 2013 was 800 kg (see Figure 6.3).

Production can be undertaken in facilities ranging in size from small-scale 'kitchen labs' to sophisticated industrial-scale operations. As well as being flexible in the use of different precursors and production methods, laboratories can be set up quickly to fulfil a specific order and dismantled rapidly to avoid detection and transported easily to an alternative location. This variability and flexibility challenges efforts to reduce production (Figure 6.4).

A now well-established feature of synthetic drug production that demonstrates the innovation and ingenuity of the producers is the production of internationally controlled precursors using so-called 'pre-precursor' chemicals that are not subject to such strict controls. This situation parallels the cat-and-mouse game observed in the NPS field (see Chapter 7), and several examples are given below.

FIGURE 6.3
Dump sites of waste from synthetic drugs
production in the Netherlands and Belgium,
2013–14



Note: Data reported to Europol by national authorities using the ERISSP (European Reporting Instrument on Sites related to Synthetic Production) tool.

Source: Europol.

The extent and nature of production in Europe

It is currently believed that the amphetamine, methamphetamine and MDMA consumed in the EU is almost exclusively produced in the EU (UNODC, 2015a). While Europe is a main global production centre of MDMA, the amphetamine and methamphetamine manufactured in Europe are primarily for domestic use, although some is exported, principally to the Middle East, the Far East and Australia. Europe also seems to be an important transit hub for methamphetamine being trafficked from Africa and Iran, again to the Far East and Australia.

A large proportion of EU Member States note only very limited or no production of synthetic drugs on their territories. Data available indicate that in Europe MDMA production is centred around the Netherlands and Belgium and, although large-scale amphetamine production also takes place in these countries, amphetamine is also made in Poland, the Baltic states, Bulgaria and, to a lesser extent, Germany and Turkey (see Figure 6.5).

Methamphetamine production is concentrated in central Europe, particularly the Czech Republic, the Baltic states and

occasionally the Netherlands; Bulgaria is also reporting an increase in the number of laboratories detected. Two recent large seizures of synthetic drugs trafficked from Europe to Australia indicate that significant export capacity exists. One case resulted in the seizure of more than 800 kg of methamphetamine and almost 2 tonnes of MDMA, while in the other over 100 kg of MDMA was seized (see box below).

Production methods depend considerably on the availability of precursors and the know-how of the producers. According to data reported to Europol, in 2013–14 BMK was the precursor used in 77 % (48 out of 62 cases) of amphetamine production sites where the synthetic route was known, of which 32 were in the Netherlands and eight were in Poland.

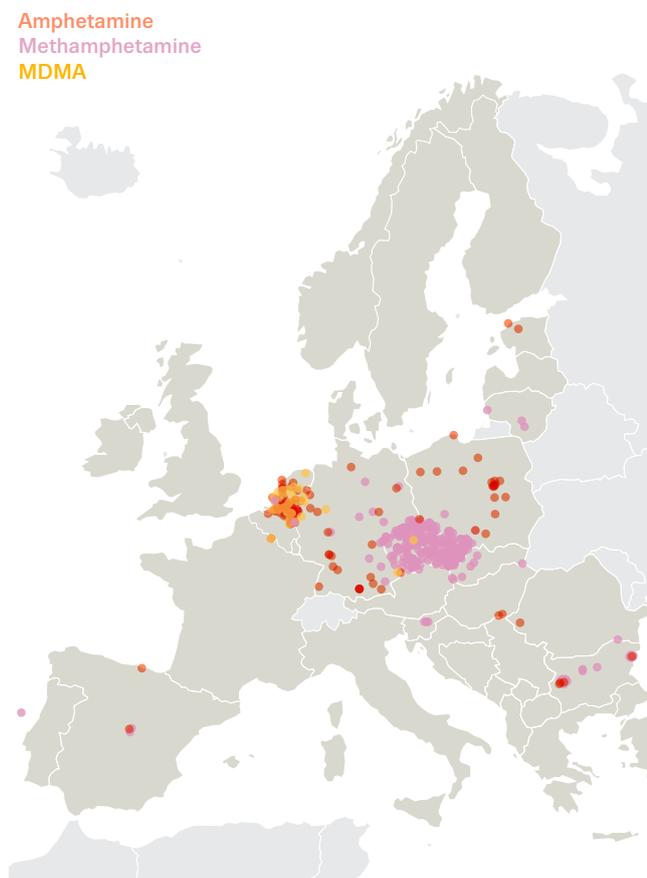
The Czech Republic accounts for most of the methamphetamine production laboratories in Europe where ephedrine or pseudoephedrine is the precursor used, normally extracted from medicines. Although there is no clear EU-wide trend to indicate a notable spread of methamphetamine production, some Member States, including Germany and Austria, are experiencing an increase in the number of seizures, the quantities seized and the number of small-scale 'kitchen' methamphetamine laboratories. Although the scale and production potential is not routinely reported, between 2009 and 2013 a significant number of laboratories manufacturing methamphetamine were dismantled in the EU, most notably in the Czech Republic (1 483), Germany (61) and Austria (21) (UNODC, 2014b, 2015). It is also worth noting that in Bulgaria, 53 small-scale production facilities were detected between 2011 and 2013, with 35 of these dismantled in 2013. The synthetic route was reported for 17 of the laboratories found in 2013–14: 14 were based on ephedrine/pseudoephedrine and three used BMK.

Europe as a global supplier of synthetic drugs

In March 2013, the Australian Federal Police arrested a 32-year-old woman in Melbourne and a 38-year-old man in Sydney, seizing 117 kg of MDMA base and dismantling an international organised crime syndicate spanning Australia, the United Kingdom, Spain, Belgium and the Netherlands. The complex 18-month investigation resulted in three arrests in Australia and one in the United Kingdom. It was estimated that the amount of seized MDMA base was sufficient to manufacture up to 1.37 million ecstasy tablets with a potential street value of up to EUR 41 million (AUD 52 million).

Source: <http://www.afp.gov.au/policing/drug-crime/mdma>

FIGURE 6.4
Amphetamine, methamphetamine and MDMA
production sites in the EU, 2013–15



Note: Data reported to Europol by national authorities using the ERISPP tool.
Source: Europol.

Some of the methamphetamine produced in the Czech Republic is in the form of crystals of high-purity methamphetamine ('crystal meth'). The quantities produced have typically been low, the output of 'kitchen-type' laboratories; however, although there has been a gradual decrease in the number of laboratories detected, there has been a noticeable trend towards increasing production volumes within a single production cycle of the laboratories being dismantled (Czech Republic: Reitox, 2015). This is achieved by connecting several smaller reaction vessels in parallel to increase production output. The use of novel uncontrolled precursors is another innovation.

In the Netherlands, Belgium and Germany, the professionalism of production facilities is continuously improving. For example, production volumes have been rising and, in some MDMA production sites, custom-built reaction vessels with a capacity of 750 litres have been found (EMCDDA, 2016b). Some facilities feature a level of automation that allows the producer to leave the site

FIGURE 6.5
The production of MDMA tablets



Two steel reaction vessels found at a clandestine MDMA production facility dismantled in Someren, the Netherlands, in 2015.



Bulk freshly produced MDMA crystals seized in the Netherlands in 2015.



A professional tableting site dismantled in Dronten, the Netherlands, in 2014 (note tableting machine on left-hand side of picture).



Drying closet for coloured tableting powders containing MDMA, pigments and excipients seized in Dronten in 2014.



Yellow MDMA tableting powder and 'gold bar' ecstasy tablet seized in the Netherlands in 2014.

Photos © Dutch National Police/LFO

once the synthesis process has been initiated and to return only upon completion of the production cycle. Dedicated tableting sites are also becoming more sophisticated, with brightly coloured pre-mixed excipients supplied ready to be combined with the MDMA and pressed into tablets in high-output industrial machines. The tablets themselves are now increasingly produced with novel shapes, colours and logos, suggesting competition among suppliers and more active targeting of specific groups of users. Some designs are even produced for individual events, for example music festivals (see Figure 6.6).

Certain production stages also seem to be increasingly spread over various locations. Several countries, including Germany, Spain, the United Kingdom and Norway, have reported amphetamine base oil from the Netherlands being converted to amphetamine sulphate on their territories, and this activity is associated with risks of fire, explosion, intoxication and waste dumping (NCA, 2015c).

FIGURE 6.6
MDMA tablets made for specific music events



Ecstasy tablet made for the Tomorrowland electronic music festival (Belgium). This tablet was analysed in Switzerland in 2015 and found to contain a dangerously high level of MDMA (more than 200 mg).

Photo © Pharmaceutical Control Laboratory, Office of the Cantonal Pharmacist, Bern, Switzerland



Ecstasy tablet made for the Amsterdam Dance Event (ADE) electronic music festival, also found to contain dangerously high levels of MDMA (2015).

Photo © DIMS, Trimbos Institute, the Netherlands.

The Netherlands is one, but probably not the only, source of amphetamine base oil. In 2013, Estonian law enforcement dismantled a laboratory where amphetamine powder was being produced from base oil from Russia (Estonia: Reitox, 2015). A problem with this development (and the use of pre-precursors) is the increased potential for the production of unwanted by-products and impurities resulting from the use of inexperienced 'cooks' or poor-quality chemicals, or from unfinished chemical reactions. This hypothesis is supported by analytical data pointing to greater levels of impurities found in MDMA tablets, obtained from a pill-testing programme in 2014 (EMCDDA, 2016b) and the forensic analysis of seized amphetamine (Power et al., 2014).

Dutch and Belgian criminal groups remain the most important producers and traffickers of synthetic drugs in the EU. The large-scale production of synthetic drugs appears to be linked to a small number of interconnected OCGs, which share and exchange knowledge, resources and expertise. Dutch and Belgian criminal organisations possess the most advanced production capabilities. Investigations have shown that prominent criminal groups are involved in the production of several drugs, typically MDMA, amphetamine and, less frequently, methamphetamine. Since 2000, OCGs have been active in the Belgian–Dutch border region, setting up synthetic laboratories, sometimes combined with cannabis cultivation (Belgium: Reitox, 2015, quoting Smet et al., 2013). Some of the Dutch OCGs producing synthetic drugs have also established themselves as important suppliers on the online market. The methamphetamine produced by Dutch OCGs is mainly intended for export to Australia and New Zealand. MDMA is also trafficked in large quantities to these destinations. Furthermore, it is known that Dutch OCGs have provided expertise on methamphetamine synthesis to OCGs in India.

The involvement of Dutch OCGs is also evident in the production of synthetic drugs in other countries, often making use of the services of local criminals. For example, Dutch and Belgian OCGs often rely on Polish criminals, and/or legitimate businesses based mainly in Poland, for the provision of essential chemicals and pre-precursors for synthetic drug production. It has also been noted that the pre-precursor alpha-phenylacetoacetonitrile (APAAN) is often converted into BMK in Poland, because the chemicals needed for this conversion are easily obtained there. In addition, Lithuanian OCGs are suspected of producing methamphetamine for domestic consumption as well as for export to other Member States. Members of Lithuanian OCGs, known to be involved in the production and trafficking of synthetic drugs, travel on a regular basis to Scandinavian countries. It is suspected that they may be

involved in the conversion of amphetamine oil into the final product in these countries.

Precursors

Clearly, synthetic drugs cannot be produced without precursors; hence the restriction of access to precursors is critical to efforts to control illicit production. The main precursors are under international control and are listed in Table I of the 1988 United Nations Convention; however, the current reality is characterised by the emergence of novel precursors and pre-precursors that challenge the global control regime. Scientific investigation is the key to understanding these developments, and critical information about precursors and production methods comes from forensic profiling of seizures and samples from dismantled production sites. For example, specific markers have been identified that show when amphetamine has been made with BMK produced from APAAN (Power et al., 2014). Such forensic methods are an extremely useful, but perhaps underutilised, tool for understanding changes in synthetic drug production.

Precursors for amphetamine and methamphetamine

BMK and its pre-precursors

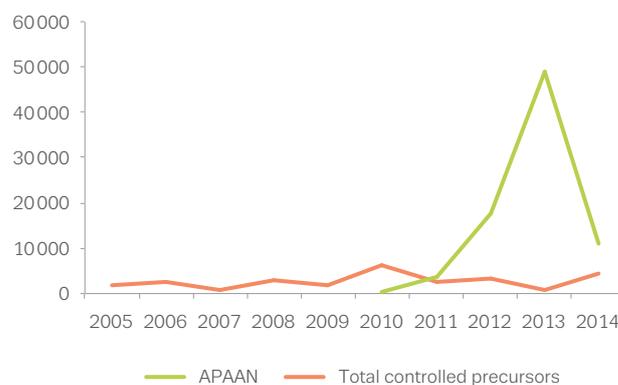
Seizures of BMK decreased steadily from 2010 to 2013. In response to strict controls preventing the diversion of BMK, resourceful producers have, for a number of years, been making BMK from other substances — the so-called ‘pre-precursors’. Despite these developments, there are recent indications that BMK may be re-emerging as a significant precursor in its own right. China reported the seizure of almost 5 500 litres of BMK in 2013, despite it having been absent from the market for some years previously, and it is believed that the BMK seized was destined for Spain (INCB, 2015a). In addition, at the end of March 2015, Polish law enforcement authorities discovered 7 000 litres of BMK in Warsaw which had been shipped from China to Poland via Germany, with the declared destination being a company in the Czech Republic. In the subsequent investigation, links with an amphetamine production site in the Netherlands were established (Europol, 2015e).

BMK can be made from other chemicals, e.g. from phenylacetic acid (PAA) and either acetic acid or acetic anhydride (Krawczyk et al., 2009), and by the so-called ‘nitropropene route’, using benzaldehyde and nitroethane (Krawczyk et al., 2005); and in the past large quantities of a white powder known as ‘BMK bisulphite adduct’, sourced from Russia, have been seized (Europol, 2009).

One of the most important developments in the story of BMK was the discovery that it can be produced from alpha-phenylacetoacetonitrile (APAAN), an innovation that was probably driven by erratic availability of other precursors. Since this development was first identified in 2009, APAAN has become an increasingly important pre-precursor and is imported into Europe primarily from China (on some occasions misdeclared as other products or substances) and converted into BMK using large quantities of acids, often in dedicated conversion laboratories. In 2013, large seizures of APAAN were made in Europe, notably 36 tonnes in the Netherlands and 5.4 tonnes in Belgium. In Poland, a laboratory for the conversion of APAAN to BMK was found and 1.4 tonnes of APAAN was seized (INCB, 2015a). In December 2013, APAAN was scheduled as a precursor under European legislation, and international control followed in October 2014. Despite these control measures, APAAN continues to be seized; in March 2014, Bulgarian authorities seized almost 1 tonne of APAAN that had arrived on a truck from Turkey, misdeclared as ‘soluble dyes’ (INCB, 2015a). Seizure data suggest that large quantities of APAAN were stockpiled in Europe prior to controls being introduced and, consequently, BMK made from APAAN continues to be used by OCGs for the large-scale production of amphetamines (see Figure 6.7).

The control of APAAN, however, has prompted further chemical innovations in the precursor market. The finding of 3-oxo-2-phenylbutanamide, a substance that can be readily converted to APAAN, in a Dutch amphetamine laboratory in 2013, indicates that criminal groups have managed to circumvent controls on APAAN. This would appear to be the first example of a substance used to make a synthetic drug

FIGURE 6.7
European seizures of controlled precursors used in the production of amphetamine and methamphetamine (2005–14), and of APAAN (2010–14)



Note: APAAN was scheduled as a precursor in the EU in December 2013 and at international level in October 2014.

Sources: INCB Precursors reports (controlled precursors) and European Commission (APAAN).

pre-precursor. In addition, in the first half of 2015, more than 600 kg of alpha-phenylacetamide (APAA, closely related to APAAN) was seized in Poland and Germany. This substance is reported to be easily sourced online and may be converted to BMK using methods similar to those using APAAN.

Pseudoephedrine and ephedrine

Ephedrine and pseudoephedrine are produced and traded globally for legitimate ends and therefore are easily targeted for diversion, whereas BMK has few legitimate applications. Global seizures of ephedrine and pseudoephedrine in bulk and pharmaceutical preparations peaked at almost 97 tonnes in 2009, when special international operations were mounted (INCB, 2015a). Since then, seizures have consistently been significantly lower, with West Africa, Iran and South-East Asia identified as areas of concern. The 1988 UN Convention does not require countries to monitor trade in the ephedra plant, although it is the raw material for ephedrine and pseudoephedrine which may constitute a weak point for diversion. The last seizures of ephedra reported to the INCB were in 2011; however, Chinese authorities report 'a continuously worsening situation', despite strict controls.

Pseudoephedrine and ephedrine are the main precursors used for production of methamphetamine in the Czech Republic, Slovakia, Germany and a number of other EU Member States. They can be extracted from medicines sold over the counter in pharmacies, but also may be trafficked in bulk powder form. Against a background of gradually decreasing amounts of BMK, the amount of bulk ephedrine and pseudoephedrine seized in 2012 indicates an increased demand around that time. In 2013, although the amount of ephedrine preparations seized increased, the amount of bulk material decreased significantly, perhaps indicating problems with the supply chain.

Ephedrine- and pseudoephedrine-containing medicines are trafficked within Europe to producing countries, particularly the Czech Republic, notably from Poland and Turkey. Bulgarian criminal groups are known to be involved in these trafficking operations, and Bulgarian authorities have been seizing considerable quantities of these medicines. In addition, Vietnamese OCGs also use their networks to procure medicines containing pseudoephedrine for the production of methamphetamine. Associates of Vietnamese OCGs buy the medicines in multiple pharmacies in Member States not typically associated with methamphetamine production and traffic them back to the Czech Republic, on occasion exploiting legitimate business structures, such as pharmacies, for this purpose.

Currently, the size and numbers of the packages of medicines containing pseudoephedrine sold in a single transaction are not regulated by EU legislation. Some EU Member States, such as the United Kingdom, the Czech Republic and Germany, have implemented national restrictions on their sale, limiting purchases to small packet sizes and only under the supervision of a pharmacist. However, since sales are not restricted in all Member States, trafficking of such medicines takes place from Member States with less restrictive regimes to countries where methamphetamine is produced. Internationally, some countries, such as Australia, China and Russia, have also amended their legislations to monitor this more closely (UNODC, 2014e).

Precursors for MDMA

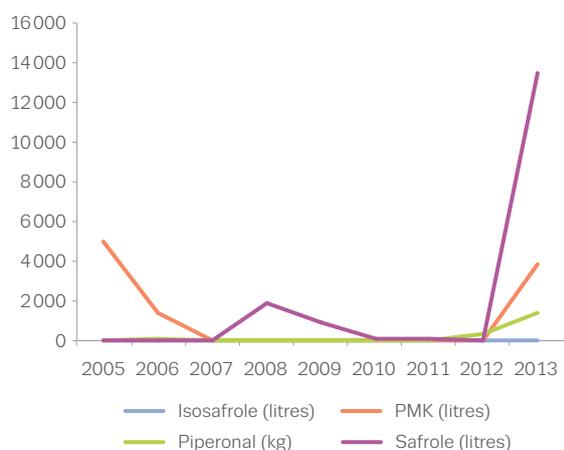
PMK and its pre-precursors

MDMA is produced primarily from PMK, which itself can be produced from piperonal and safrole (and safrole-rich oils). The global licit trade in PMK is almost non-existent, whereas legitimate trade of piperonal is significant, amounting to almost 2 400 tonnes in 2013. The licit trade in safrole/safrole-rich oils is considerably less, at approximately 4 500 litres per annum (INCB, 2015a).

According to the INCB, in 2013, five countries reported seizures of PMK: Austria, Belgium, China, the Netherlands and Slovenia. China would appear to be a source country, with two of the three Belgian seizures as well as the Slovenian seizure originating there. Spain accounted for 1 400 kg of the 1 405 kg of seized piperonal reported to the INCB from Europe in 2013 (INCB, 2015a). Seizures of safrole/safrole-rich oils decreased considerably between 2008 and 2012, a period that coincided with the reduced availability of MDMA in Europe. This was followed by a dramatic increase in seizures in 2013, with 13 838 litres seized, mostly in the Netherlands, once again underlining Europe's global importance as a producer of MDMA (see Figure 6.8).

However, analogous to the situation for APAAN, PMK may be produced from other chemicals, such as PMK glycidate/PMK glycidide, and their salts. Seizures of such chemicals were first reported in 2013, perhaps as a result of the poor availability of safrole in the preceding years. Seizures of safrole decreased again in 2014 whilst seizures of piperonal and PMK glycidate/PMK glycidide and their salts steadily increased, perhaps indicating that PMK itself is in short supply. Thus, it seems that most MDMA production in Europe now includes a step in which PMK is produced from other substances.

FIGURE 6.8
European seizures of controlled precursors used in the production of MDMA (2005–13)



Note: Other ecstasy drugs, e.g. MDA and MDEA (methylenedioxyethylamphetamine), may also be produced using these precursors; however, MDMA is the most common at present.

Sources: INCB Precursors reports (controlled precursors) and European Commission (derivatives of PMK glycidic acid).

In 2014, during a survey by the INCB on the use of precursor materials, several governments mentioned a substance called 'Helional' (2-methyl-3-(3,4-methylenedioxyphenyl)propanal), a novel precursor for MDA and possibly MDMA. In May 2014, Dutch authorities reported a seizure of 800 litres of Helional at a 'clandestine warehouse'; more than 500 kg of APAAN was also seized from the same site (INCB, 2015a), indicating that precursor developments continue to evolve and must be carefully and continuously monitored.

Other chemicals of interest

Other chemicals play a role in the production of amphetamine, methamphetamine and MDMA depending on the process, and disrupting the supply of these may have an impact on production. Formamide is an important chemical used in the synthesis of amphetamine from BMK by the Leuckart synthesis method. In 2013, over 15 tonnes of formamide was seized in the EU in the Netherlands (over 14 tonnes) and Poland (846 kg). As formamide is to the production of amphetamine, (mono)methylamine is a key chemical for the manufacture of methamphetamine from BMK and MDMA from PMK (as well as some of the new synthetic cathinones). Notably, in 2013, 46 tonnes of (mono)methylamine was seized in Belgium, in the container port of Antwerp from a ship that had originated in China and routed via Guatemala (INCB, 2015a). The Netherlands also reported seizing 1.2 tonnes, and Germany reported having stopped two shipments with a total quantity of almost 1.2 tonnes. Another chemical

worthy of attention is red phosphorus, which is used in the production of methamphetamine by the method commonly used in so-called kitchen laboratories in the Czech Republic.

Recent experience has shown that producers of amphetamine, methamphetamine and MDMA are resourceful and resilient, and likely to innovate and identify additional precursors and production methods if the traditional precursors become unavailable or prohibitively expensive. As will be discussed later, they appear to now also be experimenting with the production of new psychoactive substances. A growing European methamphetamine market or increased demand for synthetic drugs from outside the EU, particularly for MDMA, may prompt OCGs to increase their outputs and is also likely to further stimulate innovation in the production process.

Trafficking and supply

Wholesale supply activities

As indicated earlier, most of the amphetamine, methamphetamine and MDMA consumed in the EU is produced in Europe. However, most countries do not produce significant amounts, so intra-European trafficking occurs, mainly using the road and rail networks. Postal services are increasingly used to traffic all types of drugs not just at retail level, but at wholesale level also.

The role of organised crime

Dutch, German, British and Belgian OCGs traffic large consignments of amphetamine and MDMA to the United Kingdom, Germany, Spain and other countries with large consumer markets. Generally, OCGs tend to cooperate with each other and use their common capacities for drug production and share supply channels. EU-based OCGs with strong links to Lithuania are involved in the trafficking of methamphetamine to the Nordic states, Ireland, the United Kingdom and neighbouring states, including Estonia, Latvia and Poland. Lithuanian OCGs cooperate with domestic OCGs and criminals in these countries to traffic their product to these markets. Norway is emerging as a particularly significant market for methamphetamine thought to originate from Lithuania, although information on production in Lithuania is limited.

OCGs from the Baltic states and OMCs appear to dominate the wholesale distribution of synthetic drugs in

Nordic countries, while Vietnamese groups are of rising importance in methamphetamine trafficking.

OMCGs maintain chapters across Europe and are involved in polydrug trafficking, especially in the Nordic countries, where it is likely that OMCGs are involved in the distribution of methamphetamine procured from OCGs involved in trafficking, such as Lithuanian OCGs, and then distributing the drugs in their domestic markets. The OMCGs most frequently mentioned in relation to drug trafficking are the Bandidos MC and the Hells Angels MC. Satudarah MC, infamous for threats of violence if debts are not paid, seems to play a significant role in the Netherlands where members are believed to source drugs for distribution in the Nordic countries. Germany seems to be an important strategic 'in-between' point, where meetings take place to arrange drug deals. In addition, some OMCG members also have contacts and travel regularly to South American countries (i.e. Venezuela and Argentina), suggesting links to the cocaine trade.

Vietnamese OCGs, as well playing a prominent role in the production and distribution of methamphetamine in the Czech Republic, are involved in the trafficking and distribution of methamphetamine in several Member States as well as a range of other criminal activities, including cannabis production, the facilitation of illegal immigration and human trafficking. Their trafficking activities often rely on links between the Vietnamese groups in the main countries of production and contacts among the Vietnamese diaspora communities in consumer countries. For instance, criminals of Vietnamese origin in France have been found to be involved in the smuggling of methamphetamine from the Czech Republic to France, where the drug is distributed among the Vietnamese and Philippine diaspora communities. Vietnamese groups have also been found to be involved in the trade in methamphetamine in Poland, Slovakia and the Nordic countries. In addition, OCGs in the former Yugoslav Republic of Macedonia have also started collaborating with Bulgarian and Vietnamese nationals in the distribution of cannabis and methamphetamine (Czech Republic: Reitox, 2015).

The number of groups dealing exclusively with synthetic drugs is small. In most cases, OCGs have diversified their activities to include other drugs, such as cocaine and cannabis, and to a lesser extent heroin. There is also evidence of wider diversification, for example an exchange of precursors for amphetamines between Poland and the Netherlands. Other illicit goods may also be involved; it is reported that a Polish OCG smuggling cigarettes to the United Kingdom collects amphetamine in the Netherlands on the return journey.

The EU as a transit region

With respect to synthetic drugs, Europe appears to be evolving from a producer and consumer region only, to one of transit and export also. This globalisation of the drugs market has been facilitated by the exploitation of the EU logistical infrastructure by international criminal syndicates. The reason is clear: synthetic drugs are highly profitable. As an example, the production cost of MDMA is between EUR 0.25 and 0.40 per tablet, but the cost to the European consumer is normally between EUR 5 and 10 per tablet. The price depends on location, but, in principle, the further from the production location, the more expensive the tablets become.

Some methamphetamine transits Europe en route from Africa, mainly West Africa, to other markets, notably Japan (UNODC, 2015a). However, while West Africa is the most prominent region of origin of methamphetamine trafficked via Europe, EU Member States have also intercepted couriers departing from other regions in Africa, including East Africa (Kenya) and South Africa. Nigerian OCGs are probably among the most prolific groups involved in the trafficking of methamphetamine on a global scale. These groups often rely on the recruitment and use of non-Nigerian couriers in order to avoid checks based on risk profiles. Over the past years, Europol has consistently noted an increase in the number of methamphetamine couriers originating from the EU arrested in lucrative destination markets, particularly Japan.

In addition to West Africa, Iran is also a region of origin for methamphetamine smuggled via Europe to the East. In 2011, Bulgarian law enforcement intercepted a large quantity of methamphetamine routed from Iran via Turkey, Bulgaria and Romania and which was destined for Japan. Mexico is a major producer of methamphetamine, and it is likely that some trafficking occurs from Latin America on a regular basis via the EU to destination markets in Asia and Australia. Germany has reported the interception of a courier attempting to smuggle a significant quantity of methamphetamine via Argentina and Germany to Japan. The methamphetamine, which was of high purity (96.9 %), is thought to have originated in Mexico. However, seizures at airports indicate this to be a much less significant phenomenon than the trafficking of methamphetamine originating in West Africa or Iran.

Trends in synthetic drug seizures

Seizures of drugs can occur at many different stages of the supply chain and can vary enormously in size. Large seizures are often made at borders when large shipments

are intercepted or a large laboratory is dismantled. At the other end of the chain, action against street dealers and users may result in a large number of small seizures. This variability, and the lack of data from key countries such as the Netherlands and Poland, complicates the interpretation of the data although, clearly, both the number of seizures and the amount seized give an indication of the importance of the market for that drug in countries reporting data.

A further complication is that amphetamine and methamphetamine are not separately identified in some datasets. Of the two drugs, amphetamine has historically been much more common in Europe, and this is reflected in the seizures data. Seizures of amphetamine in the EU have remained relatively stable for a number of years, in terms of both the number of seizures (approximately 30 000–35 000 seizures per year) and the amount seized (around 6–8 tonnes per year). However, three significant countries — France, the Netherlands and Poland — do not report the number of seizures, which limits this analysis. In 2014, EU Member States reported 36 000 seizures of amphetamine, totalling 7.1 tonnes. The quantity seized was slightly higher than in the immediately preceding years, and Germany, the Netherlands and the United Kingdom accounted for more than half of the total.

In contrast, total seizures of methamphetamine in the EU increased between 2006 and 2012 but since then appear to be stabilising, at around 7 000 seizures and 0.5 tonnes seized per year. In 2014, Germany reported 3 900 seizures, and, as in the Czech Republic, France, and Poland, although fluctuating from year to year the quantities of methamphetamine seized have tended to increase over the last few years. In contrast, in some other Member States, such as Sweden, Latvia, Lithuania and Finland, quantities of seized methamphetamine have generally declined. Norway also seizes significant amounts of methamphetamine; between 2008 and 2013, methamphetamine was seized more frequently than amphetamine; however, this trend reversed in 2014 when the number of methamphetamine seizures reduced from 4 200 seizures in 2013 to 2 700, while seizures of amphetamine increased from 3 000 to 5 400 (Figure 6.9).

Determining recent trends in MDMA seizures is difficult because of the absence of data from some countries that are likely to make important contributions to this total. The information available (contents of tablets sold as ecstasy; number of seizures and quantities of MDMA seized; and number of production facilities dismantled) suggests that MDMA availability dropped sharply in Europe in 2008, reaching a low point in 2009. At this time, MDMA virtually disappeared from some markets and tablets sold as ecstasy often contained other synthetic substances.

It seems likely that the relative 'drought' of MDMA on European markets in 2008–09 was caused by successful international cooperation and law enforcement efforts in both Europe and Asia that targeted the suppliers of the main ecstasy precursor, PMK. Indicators now suggest that this trend has reversed, and that MDMA availability, since 2010, has increased again, and has almost reached pre-shortage levels (Figure 6.9). No data at all are available from the Netherlands for 2013 and 2014, and the number of seizures for that year is not available for France or Poland. Assuming that the Netherlands seized the same amount of MDMA in 2014 as in 2012, it can be estimated that 6.1 million MDMA tablets were seized in the EU in that year. Seizure data suggest that Turkey, which was a strong market for amphetamine in the mid-2000s, with 4 tonnes seized in 2006, is now more focused on other stimulants, particularly MDMA; 3.6 million MDMA tablets were seized in Turkey in 2014 (Turkey: Reitox, 2015). It has been reported that ecstasy is trafficked to Turkey by the same criminal groups that are trafficking heroin from Turkey to western Europe, and by the same routes, mainly using motor vehicles, the couriers being of Bulgarian, Turkish and Dutch origins (Bulgaria: Reitox, 2014).

A recent upturn is also evident in trends of MDMA-related offences. Among those countries reporting consistently, trends also point to increases in MDMA content since 2010, and the availability of high-MDMA-content products prompted joint alerts from Europol and the EMCDDA in 2014. Taken together, these indicators of the MDMA market all point to recovery from a low reached about 6 years ago.

Retail supply

The way in which consumers obtain amphetamines and ecstasy reflects the largely recreational nature of most use, and there is evidence of a significant amount of sharing. In a web survey in six European countries, 17 % of users said that they were usually given amphetamines by someone else for free and 42 % reported that they sometimes bought and were sometimes given amphetamines. In the case of ecstasy, 9 % of respondents said their supply was usually free, while 33 % said they sometimes bought it and were sometimes given it.

Overall, the most commonly reported usual place of purchase of amphetamines was the seller's home or someone else's home (mentioned by about one-quarter of respondents), with the street or park mentioned by more than 1 in 10 respondents. The responses obtained for the usual place of purchase of ecstasy were similar, although in addition about 1 in 10 respondents said that they usually bought their ecstasy at an 'other place of entertainment'.

Purchase through the internet was mentioned by only 1 % of respondents for both amphetamines and ecstasy. The majority of respondents said that the reason for choosing to buy from their usual location was related to purchase from personal contacts (Frijns and van Laar, 2013).

These drugs appear to be quite readily available. About half of the ecstasy and amphetamine users in the survey said that they were able to obtain these drugs within an hour, although times to obtain the drugs were slightly longer in Sweden than in the other countries (Bulgaria, the Czech Republic, Italy, the Netherlands and the United Kingdom). In all countries except the Netherlands, over one-third of ecstasy and amphetamine users said that there had been times when they had been unable to buy any of these drugs even though they had the cash to do so. The most commonly cited reasons for not being able to do so was that sellers were not available or had no supplies (Frijn and van Laar, 2013).

Although data on price and purity are not collected consistently across the EU, particularly in the case of methamphetamine, some broad comparisons between amphetamine and methamphetamine can be made. In general, the average purity of methamphetamine is higher than that of amphetamine, probably because the purity of crystal meth tends to be high, bringing the average up. Interestingly, it would appear that crystal meth adulterated with piracetam or dimethylsulphone (see box below) is present in the Czech Republic (Institute of Criminalistics, Prague, personal communication, July 2015). Despite recent increases in the purity of amphetamine (Figure 6.10), in 2014 the interquartile range (IQR) of mean amphetamine purities reported to EMCDDA was 12–27 %, compared with 28–67 % for methamphetamine (Table 6.1).

Adulteration of crystal meth

Many believe that crystal meth is always a pure form of the drug, and often it is. However, it is possible that those large seemingly pure crystals of methamphetamine are in fact adulterated with a substance called methylsulphonylmethane (MSM), also known as methylsulphone or dimethylsulphone. Pure MSM is an odourless, white, crystalline powder that is highly soluble and mixes readily with most substances without leaving a residue. It is usually added to methamphetamine during the final stages of production. This substance is ideally suited for cutting crystal meth because, after the chemicals are combined and the mixture cools, the MSM and meth recrystallise, resembling pure methamphetamine.

Source: <http://www.justice.gov/archive/ndic/pubs1/1837/index.htm>

The reported price of amphetamine has been stable or increasing slightly over the last few years (Figure 6.10), although after adjusting for inflation is likely to be stable or decreasing in real terms. In general, amphetamine tends to be cheaper than methamphetamine; in 2014, the IQR of the average amphetamine prices reported to EMCDDA was EUR 10–25 per gram while that for methamphetamine was EUR 15–66 per gram (Table 6.1).

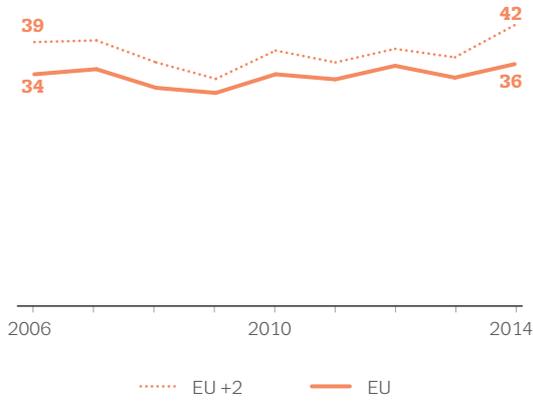
EMCDDA data collection suggests the typical MDMA content of tablets in 2014 was between 68 and 95 mg (Table 6.1). Trend data based on a smaller group of countries that regularly submit data and which excludes several key countries indicates that after a period in which the majority of ecstasy tablets sold in Europe contained low concentrations of MDMA or alternative substances, such as new psychoactive substances, more recently purity has been increasing (Figure 6.11).

Large numbers of users take MDMA but relatively few seek treatment; 0.3 % of treatment admissions in the EU are related to ecstasy. Most of the harms associated with the use of ecstasy are the result of dangerously high levels of MDMA in a tablet or the presence of something other than MDMA, such as para-methoxymethamphetamine (PMMA). The latter is thought to be related to the use of certain precursors, as the adulteration of PMK with 4-methoxy-BMK gives rise to the subsequent production of MDMA adulterated with PMMA (EMCDDA, 2016b). The Dutch Drug Information and Monitoring System (DIMS) has detected the harmful substance PMMA in an increasing number of tablets sold as ecstasy, rising from less than 30 in 2011 and 2012 (1.3 and 1.4 % of ecstasy tablets tested in those years) to 47 tablets (2.5 % of tablets) in 2013 and 40 tablets (1.9 %) in 2014 (Netherlands: Reitox, 2016). MDMA, in addition to being found in ecstasy tablets, is available in powder and crystal forms, although injecting and smoking have rarely been reported. The emergence of the crystalline form is possibly a reaction of the market to the low quality of ecstasy tablets that have been available.

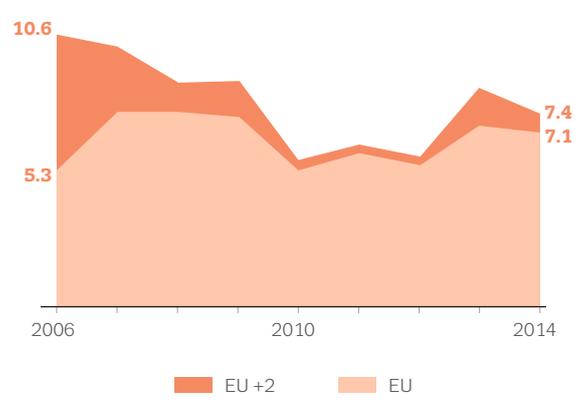
Another trend to emerge recently has been an increase in the MDMA content of tablets. In 2014, the Dutch Reitox national focal point reported that the average MDMA content of tablets sold as ecstasy was at an all-time high. The highest MDMA content recorded that year was 366 mg, compared with an average content of 66 mg in 2009, suggesting that the shortage of MDMA precursors had been resolved. Indeed in 2014, over half (11 out of 17) of the countries that provided data reported maximum MDMA contents of greater than 200 mg. In March 2014, the EMCDDA and Europol released an early-warning notification that tablets containing dangerously high levels of MDMA had been found in the Netherlands, Belgium,

FIGURE 6.9
Seizures of amphetamine, methamphetamine and MDMA reported in Europe, 2006–14

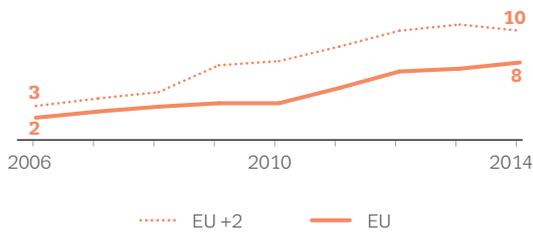
Amphetamine: Number of seizures (thousands)



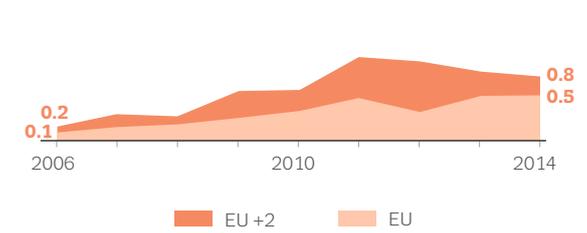
Amphetamine: Quantities seized (tonnes)



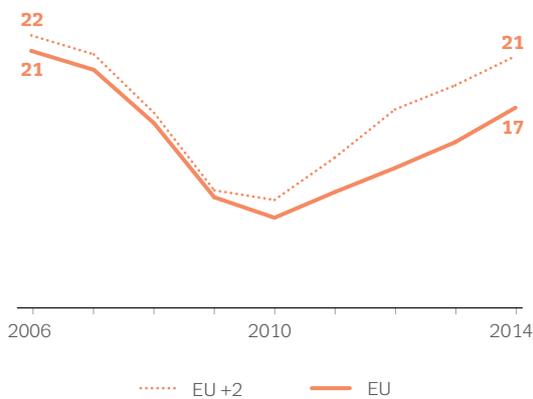
Methamphetamine: Number of seizures (thousands)



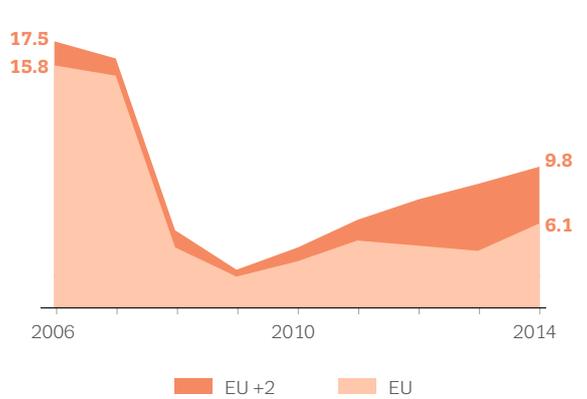
Methamphetamine: Quantities seized (tonnes)



MDMA: Number of seizures (thousands)



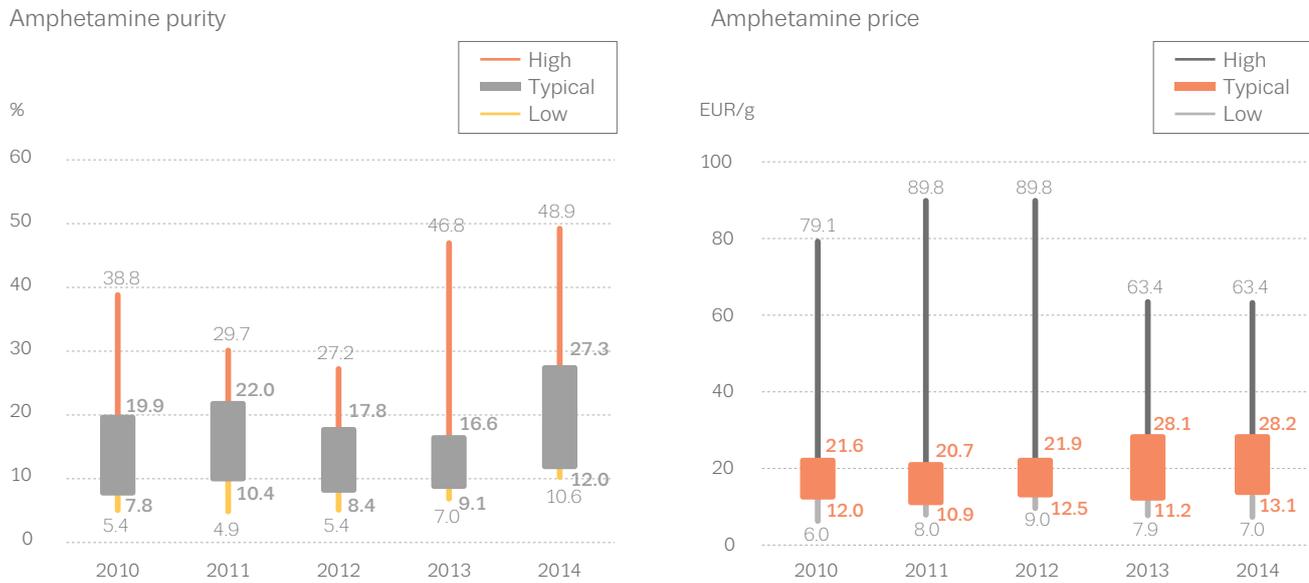
MDMA: Quantities seized (million tablets)



Note: Some data for 2014 is not available and the most recent data has been used instead, except for the number of seizures for the Netherlands, France and Poland where no recent data is available so they are not included.

Source: EMCDDA/Reitox national focal points.

FIGURE 6.10
Trends in amphetamine purity and retail price in the EU, 2010–14

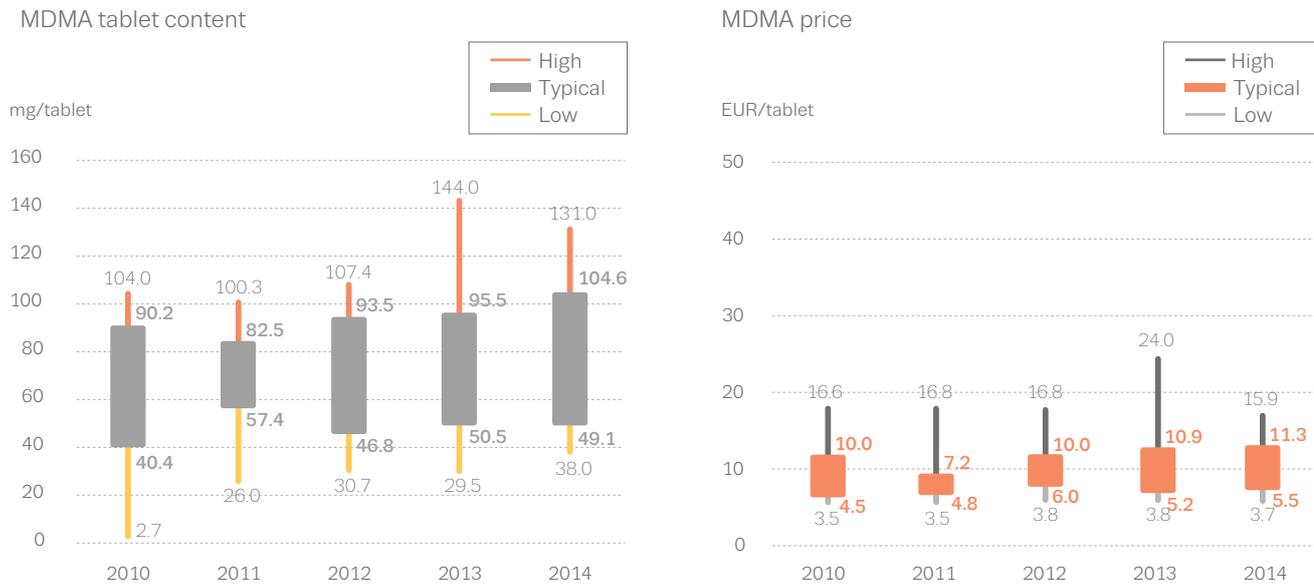


Note: Trends are based only on data from those EU countries that have submitted data consistently since 2010. Trends are not available for methamphetamine. Typical values shown are the interquartile range (IQR) of the country average values, with high and low values showing the range.
Source: EMCDDA/Reitox national focal points.

Switzerland and the United Kingdom. Data from the DIMS of the Trimbos Institute show this trend to be continuing, with more than half of all MDMA tablets tested in 2015 containing more than 140 mg (Figure 6.12). The Swiss

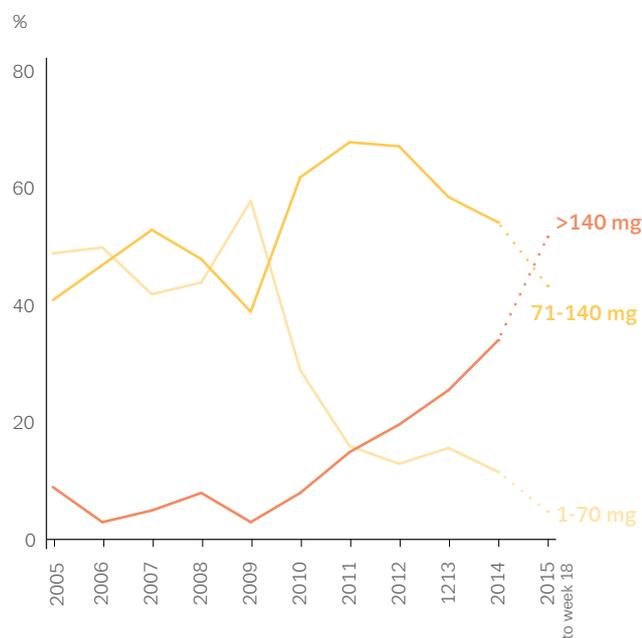
NGO SaferParty which runs a pill-testing scheme, advises users that the maximum safe dose is 1.5 mg/kg for a man and 1.3 mg/kg for a woman. In the EU, the average adult male weight is around 80 kg and the average female weight

FIGURE 6.11
Trends in MDMA tablet content and retail price in the EU, 2010–14



Note: Trends are based only on data from those EU countries that have submitted data consistently since 2010. Typical values shown are the interquartile range (IQR) of the country average values, with high and low values showing the range.
Source: EMCDDA/Reitox national focal points.

FIGURE 6.12
MDMA content of tablets tested in a pill testing
scheme in the Netherlands, 2005–15



Note: Tested by the Drug identification and Monitoring System of the Trimbos Institute in the Netherlands.

Source: DIMS, Trimbos Institute, the Netherlands.

is 65 kg⁽²⁸⁾, so tablets containing more than 140 mg of MDMA present a risk to many users, but particularly women. Anecdotal reports indicate that MDMA mortality rates have been slowly increasing; however, the time taken to report death data in national statistics makes this difficult to quantify.

It would appear that some consumers of MDMA may not favour the higher-strength MDMA tablets or the crystal substance, and as a result the use of alternative substances, such as 4-FA, has emerged (Linsen et al., 2015). A danger with a high-purity crystalline product is the difficulty in estimating the dose, which may lead to users taking more than the desired amount of MDMA. This has led to awareness campaigns such as 'crush–dab–wait' in the United Kingdom, designed to minimise harm when MDMA is used in this way.

Other synthetic drugs of importance

The focus of this chapter has been on the main synthetic stimulant drugs used in the EU, but there are other drugs that, although they appeal to a smaller number of users, are worthy of note.

Ketamine, which is not currently controlled internationally, is a drug used in veterinary medicine and in human medicine, mostly in anaesthesia, in some 62 countries worldwide. It has been misused by some subgroups of users for many years because of its dissociative properties. Almost all Member States have reported seizures of ketamine through the EU Early Warning System on new psychoactive substances, and an EU-level risk assessment was carried out in 2001. There is growing recognition of ketamine-related non-acute health effects, such as bladder and urinary tract symptoms, among chronic or heavy users. Since 2009, around 2 000 seizures have been reported each year; however, in 2014, this figure fell to less than 1 000, perhaps as a result of the emergence of alternative new psychoactive substances with similar effects, such as methoxetamine, which was marketed as a 'bladder-friendly' alternative to ketamine. Seizure data suggest that Spain and the United Kingdom are particularly affected, together reporting more than 90 % of the total quantity of ketamine seized in 2014.

In 2014, the Expert Committee on Drug Dependence of the World Health Organization recommended that gamma-hydroxybutyrate (GHB) be moved into Schedule II of the UN Convention on Psychotropic Substances 1971, on the basis that its abuse liability was substantial whereas its therapeutic usefulness was little to moderate. GHB and its precursor, gamma-butyrolactone (GBL), sometimes called 'liquid ecstasy' or simply 'G', are used by certain subgroups of users in the EU, mainly in recreational environments. GHB has a steep dose–response curve, meaning that even a small increase in dose can cause serious toxic effects, including impaired consciousness and coma. According to recent data collected by the EMCDDA and Europol, Belgium and Norway appear to be particularly affected, with both countries reporting in excess of 400 seizures of GHB/GBL, while large-scale production appears to be concentrated in the Netherlands, occasionally occurring in the same place as the production of other synthetic drugs such as amphetamine and MDMA.

The prevalence of the hallucinogenic semisynthetic drug LSD (lysergic acid diethylamide) is described as low and stable, as few people are interested in the type of effects it provides. Seizures of LSD reached a low point in the early 2000s, and remained fairly stable at below 1 000 seizures per year until 2012, when seizures started to show modest increases. In 2014, just under 1 900 seizures were reported in the EU and Norway, with Germany, Norway, Spain, Sweden and the United Kingdom all reporting more than 100 seizures in 2014, as did Finland in 2013⁽²⁹⁾.

⁽²⁸⁾ Based on surveys in Germany, Sweden and the United Kingdom (Wales).

⁽²⁹⁾ Final data on number of seizures in Finland in 2014 were not available at the time of writing.

A significant overlap between the LSD market and the market for new psychoactive substances emerged in 2012 during the risk assessment for the psychoactive substance 25I-NBOMe. It was found that 25I-NBOMe was being sold on the illicit drug market as LSD, in the form of 'blotters', and was also touted online as a legal replacement for

LSD. Although they share some hallucinogenic properties, 25I-NBOMe is associated with some severe adverse health effects, probably attributable to its fundamental chemistry — like amphetamine, methamphetamine and MDMA, it belongs to the phenethylamine family and has stimulant properties.

Action points

Targeting the key threats

1. There is a need to continue to focus on and support actions in the important geographical centres for synthetic drug production, prioritising the Netherlands and Belgium, as well as the Czech Republic, Lithuania, Poland and Bulgaria.
2. Improved analysis and information sharing is needed on new modi operandi of intra-European trafficking in synthetic drugs, such as the smuggling of liquid amphetamine oil, in order to improve capacity for interdiction.
3. There is a need to share information and analysis on seizures of synthetic drugs exported from, or transiting through, the EU. This should include improved profiling and risk analysis of couriers transporting methamphetamine via EU international airports, as well as exports from Europe to markets such as the Americas, Oceania and Asia.

Improving responses to a growing problem

4. Prevention, treatment and harm reduction interventions, as well as policing strategies, need to be more sensitive to the growing importance of synthetic stimulants and the specific public health and safety challenges posed by the misuse of this group of substances.
5. Targeted monitoring is required for the early detection of new patterns of use, particularly the smoking and injection of methamphetamine, with particular attention given to potentially harmful transitions between other substances such as heroin and new psychoactive substances.

Better understanding of production processes: implications for enforcement and health

6. Systematic forensic profiling of seizures would deliver key strategic and operational insights, and identify intervention opportunities. For this reason, a mechanism for sharing the results of analysis among stakeholders at national and European level in a timely manner would be beneficial.
7. Forensic information is also useful to identify health risks, including those posed by high-potency products or the synthesis of particularly harmful compounds that can arise from new production processes. Existing mechanisms, such as the EU Early Warning System on new psychoactive substances, may be used to rapidly exchange information and develop effective early-warning activities to protect public health.

Building capacity to respond to production in the EU and associated environmental harms

8. There is a need to strengthen and support training and knowledge transfer on the dismantling of illicit production facilities, giving particular attention to the needs of countries beginning to detect synthetic drug production on their territories.
9. Data should be collected systematically using standardised tools such as the ERISSP and the Europol Illicit Laboratory Comparison System (EILCS).
10. There is a need to systematically collect data on chemical waste dump sites in order to better understand the environmental costs and health risks associated with synthetic drug production in the EU. Best practice in approaches to address this issue should be shared in order to protect public safety and the environment.

7

CHAPTER 7

New psychoactive substances

Key issues

The European market

Available indicators suggest there are no signs of a slowdown in the number, type or availability of new substances. A large number of substances are now sold openly as 'legal' replacements for illicit drugs such as cannabis, methamphetamine, cocaine, MDMA, heroin and benzodiazepines. The EU Early Warning System currently monitors more than 560 substances, which is more than double the number of drugs controlled under UN conventions. The market supplies both recreational and, increasingly, chronic and marginalised drug users. A characteristic of this market is that producers are adept at reacting to and even anticipating legal and regulatory controls by rapidly developing and introducing new substances.

Production and distribution

Globalised supply chains and the internet play a major role in driving the availability of new substances in Europe. Underpinning this growth is the ability to order bulk quantities of new substances from companies in China and to transport them rapidly to Europe by air or sea. Actors in the EU then package and market them either on the open market or directly on the illicit drug market. Given the large profits and low risk of operating in this area, it is possible that criminal organisations will become even more active. In this respect, there are signals suggesting an increase in the production of a range of new substances in Europe.

Marketing and retail supply

Entrepreneurs have developed sophisticated and aggressive marketing techniques related to new substances. This includes the development of distinct but overlapping markets such as 'legal highs', 'research chemicals' and 'dietary supplements'. Bricks-and-mortar shops and online shops are important sources of supply.

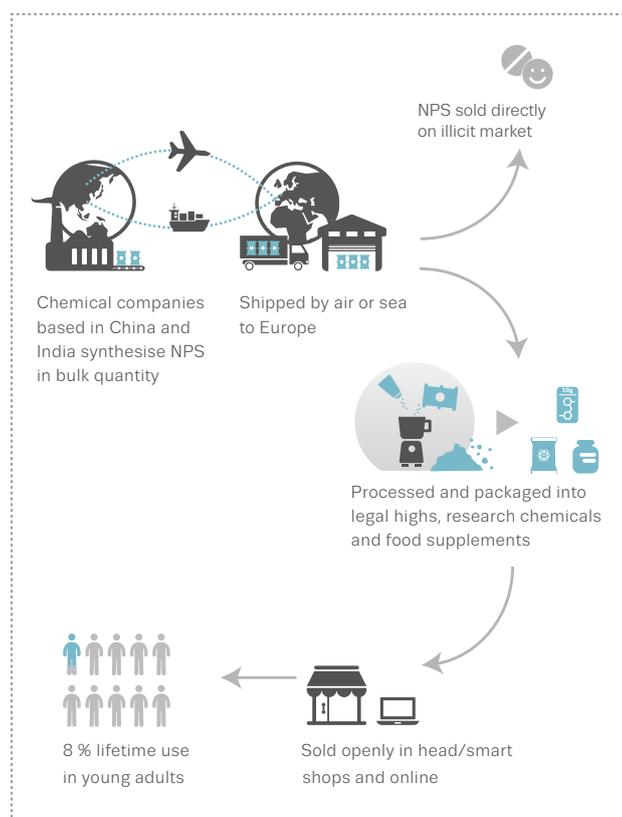
New substances: greater risks?

As the availability of new substances has increased there has also been an increase in serious harms, particularly acute poisonings, sometimes resulting in death; they also include broader public health and social harms, such as those caused by chronic and marginalised drug users switching from injecting heroin to synthetic cathinones. Some new substances can pose an immediate and pronounced threat to public health, causing outbreaks of mass poisonings. Others may cause outbreaks of blood-borne viruses and bacterial infections. In the past couple of years, the EU has experienced such outbreaks caused by synthetic cannabinoids and synthetic opioids.

Introduction

Over the last decade, and particularly in the last 5 years, an increasing number of new substances have been detected on the European market, with two new substances detected every week. Under EU law, these drugs are known as new psychoactive substances (NPS) and they constitute a broad group⁽³⁰⁾. The increase in the number of these substances is the result of a significant shift in the way that drugs can now be manufactured, marketed and sold, which is driven by rapid changes in both technology and globalisation (Figure 7.1). The availability of potent new substances is no longer limited to clandestine production or the diversion of medicines, although these remain an important part of the overall market. Now, a huge range of substances can be made on a large scale by legitimate chemical companies half-way around the world, rapidly shipped to Europe, and then packaged into products — ‘legal highs’, ‘research chemicals’ and ‘food supplements’ — and sold off the shelf in the high street and on the web, as well as directly on the illicit drug market.

FIGURE 7.1
From synthesis to consumer



Source: EMCDDA.

Many of the NPS on the market in Europe today are sold openly as ‘legal’ replacements for cannabis, heroin, cocaine, amphetamines, MDMA, benzodiazepines and LSD. Entrepreneurs and, increasingly, crime groups recognise that new substances often sit in a legal grey area, check drug laws to ensure the substances are not controlled and sometimes even go as far as to seek expert legal advice. They have also embraced mainstream marketing techniques so that potent drugs have effectively become ‘ordinary commodities’ with the result that, as well as an increase in the number of these substances, a wider range of substances are increasingly available to European citizens.

Since the first edition of this report (EMCDDA–Europol, 2013), our understanding of the market in NPS has improved significantly. However, the market is still young, and there remains a great deal to learn and understand about this highly dynamic threat and its likely impact on the health and security of Europe as a whole. Notwithstanding these limitations, many of the data discussed below, which are largely based on the analysis of signals identified from the EU Early Warning System, give serious cause for concern. The market apparently continues to grow; consumer groups are no longer limited to experimental users such as psychonauts and clubbers, but also include broader groups of recreational users, people who self-medicate, prisoners, people looking to improve their performance or how they look, as well as chronic and marginalised drug users; while the number of harms being reported is also increasing.

⁽³⁰⁾ Council (Decision (EC) No 2005/387/JHA of 10 May 2005 on the information exchange, risk-assessment and control of new psychoactive substances, OJEU L 127, 20.05.2005, p. 32.

TABLE 7.1

NEW PSYCHOACTIVE SUBSTANCES IN EUROPE AT A GLANCE			
Numbers reported (2015)	New psychoactive substances reported for the first time		100
Numbers monitored (2015)	Substances currently monitored by the EMCDDA		>560
Seizures (2014)	Total	Number 48 437	Quantity almost 4 tonnes
	Synthetic cannabinoids	29 395	>1.3 tonnes
	Synthetic cathinones	8 343	>1 tonne
Health alerts	Public health alerts issued in the past two years		34
Risk assessments	Risk assessments carried out in the past two years		7

Note: Data presented are for the EU plus Norway and Turkey.

Source: EMCDDA.

Understanding the market for new psychoactive substances in Europe

Much of what is known about NPS in Europe comes from the EU Early Warning System. This system is the cornerstone of Europe's response to new substances, and allows the Member States to directly report data to the EMCDDA and Europol on events such as law enforcement seizures, acute poisonings and deaths. The two agencies then analyse and assess the data to detect signals of harm, allowing the agencies and the Member States to react in a timely manner in order to reduce that harm. Such measures include public health alerts, law enforcement operations and risk assessments; in some cases, control measures across the EU may be applied by the Council of the European Union (EMCDDA, 2015d).

Because of the highly diverse and dynamic nature of the market, many of the existing epidemiological indicators of drug use are poorly suited or configured to measure and monitor new substances. In addition, the seizure data collected on new substances which are used in this report should be regarded as minimum estimates because of the lack of standardised reporting in this area. These data are not directly comparable to the data on established illicit

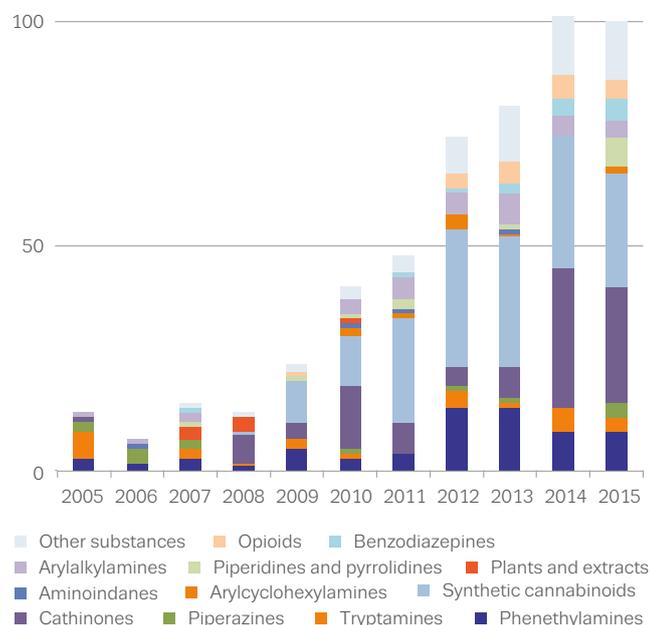
drugs. Nevertheless, they provide useful information on the nature and extent of use of these substances.

Substances and seizures

The EMCDDA monitors a broad range of new psychoactive substances that have been reported through the EU Early Warning System. These include 'synthetic cannabinoids' (mainly synthetic cannabinoid receptor agonists), synthetic cathinones, phenethylamines, opioids, tryptamines, benzodiazepines, arylalkylamines and a range of other substances. In 2015, 100 new substances were detected for the first time, bringing the total number of new substances monitored to more than 560 — with more than 380 (70 %) of these detected in the last 5 years alone (Figure 7.2). There are now more than twice as many new substances on the market as drugs controlled under international drug control conventions.

Seizure data from law enforcement agencies also serve to confirm the growth and importance of this drug market. In 2014, almost 50 000 seizures of new substances, amounting to almost 4 tonnes, were made across Europe — many of these substances are vastly more potent than their controlled counterparts (Figure 7.3). Synthetic

FIGURE 7.2
Number of new psychoactive substances reported to the EU Early Warning System for the first time, 2005–15

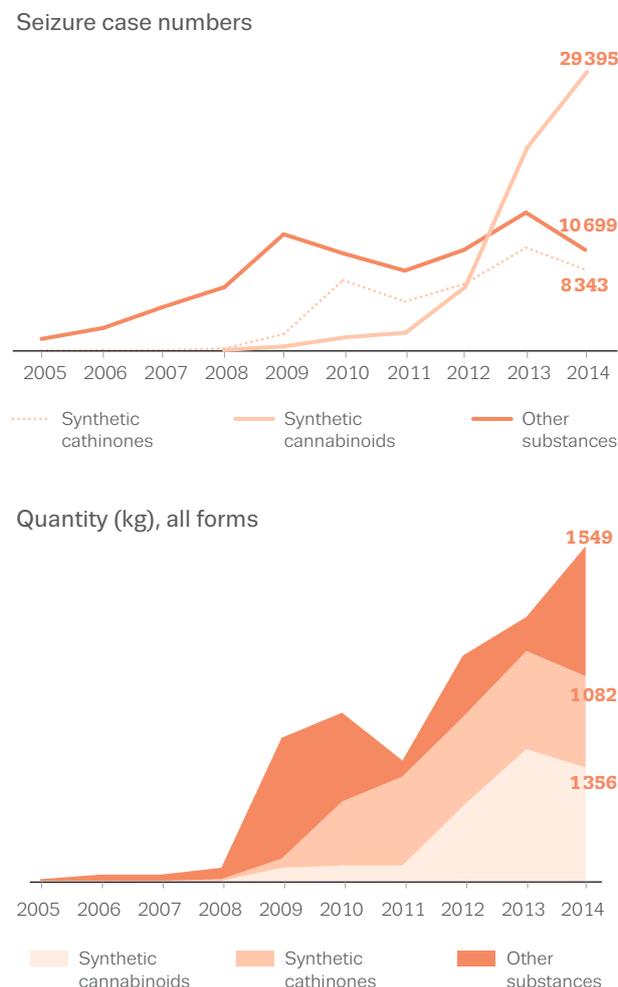


Source: EMCDDA.

cannabinoids, which are sold as replacements for cannabis, accounted for the majority of these seizures, almost 30 000, and weighing more than 1.3 tonnes. Synthetic cathinones, which are sold as replacements for stimulants, such as amphetamine, MDMA and cocaine, were the second largest group, with more than 8 000 seizures with a combined weight of more than 1 tonne. Together, synthetic cannabinoids and cathinones accounted for almost 80 % of the total number of seizures and over 60 % of the weight seized during 2014. However, the other groups, while smaller in number, also reflect important changes in the drug market. This includes the benzodiazepines and exceptionally potent narcotic analgesics — such as fentanyl — which may be sold as heroin.

The availability of new substances to European consumers through the internet as well as bricks-and-mortar shops in some countries is also high. In 2013, 651 web shops were identified on the surface net; and recent targeted snapshots and test purchasing show that new substances continue to enjoy high availability on the surface web. In addition, data from the monitoring of anonymous marketplaces on dark nets suggest that such sites may also be an important supply route, although further study is required (Abouchdid et al., 2015; EMCDDA, 2015d,e; Ho et al., 2015a,b). In addition, and apparently benefiting from the economies of scale that this expanding market

FIGURE 7.3
Seizures of new psychoactive substances reported in Europe, 2005–14



Note: Data on new psychoactive substances reported to the EU Early Warning System are drawn from case reports rather than routine monitoring systems, therefore estimates represent a minimum and are not comparable to other seizure data.

The figures supplied for cannabinoid and cathinone seizure case numbers and quantity below are the figures reported for all forms of those substances seized, e.g. including powders, plant material, blotters, etc., for both categories of new psychoactive substances.

Source: EMCDDA.

brings, new substances are also increasingly sold on the illicit drug market, where they are specifically sold and sought either by name, or passed off as illicit drugs such as amphetamine, cocaine, heroin, 'ecstasy' or genuine medicines.

TABLE 7.2
Major groups of new psychoactive substances monitored by the EMCDDA

Group	Number monitored	Examples
Synthetic cannabinoids	160	JWH-018 (†), AM-2201(†), 5F-AKB48, UR-144
Synthetic cathinones	103	Mephedrone (†), alpha-PVP, pentedrone, 3-MMC, methylone (†)
Phenethylamines	86	2-PEA, 4-FMA, 4-MA, 25I-NBOMe (†), DOPR, 4-CMA
Benzodiazepines	15	Pyrazolam, diclazepam, nifoxipam
Arylcyclohexylamines	11	Methoxetamine, 3-MeO-PCP, deschloroketamine
Arylalkylamines	32	Bromo-dragonfly, 5-APB, 5-APDI, 5-IT, 2-EAPB
Piperidines and pyrrolidines	12	2-DPMP, desoxy-D2PM, HDMP-28, ethylphenidate
Indolalkylamines (tryptamines)	37	AMT, DMT, 5-MeO-MiPT, DiPT, MET, AL-LAD
Piperazines	17	BZP (†), mCPP, 2C-B-BZP, NSI-189, 2,3-XP, DB-MDBP
Opioids	18	Acetylfentanyl, ocfentanil, W-15, W-18
Plants and extracts	8	Kratom, kava, arecoline
Aminoindanes	5	MDAI, N-methyl-2-aminoindane
Other	64	Etaqualone, pregabalin, DMAA, iso-ethcathinone, 5-HTP, LSZ

(†) Now controlled internationally under the UN system.

Prevalence

Estimating the prevalence of use of NPS is often a challenge, especially in general population surveys; because of the rapidly changing nature of the substances on offer and the fact that the same brand name may be used to market completely different substances, people often do not know what they are consuming. Such surveys, if they do seek to elicit information on NPS use, often ask about the use of 'legal highs' and 'research chemicals'. Some may also ask about the use of groups of products such as smoking mixtures containing synthetic cannabinoids or groups of substances, such as the synthetic cathinones.

One insight into the use of new substances in Europe is provided by the 2014 Flash Eurobarometer, a survey of just over 13 000 young adults aged 15–24 in the Member States, which asked about the use of new types of products

such as 'legal highs' and 'research chemicals'. It was found that 8 % of respondents had used such a substance at least once, with 3 % using them in the last year. The highest levels of use in the last year were in Ireland (9 %), Spain, France (both 8 %) and Slovenia (7 %), with the lowest reported by Malta and Cyprus (0 %). Most respondents who had used such substances in the last year either bought them from, or were given them by, a friend (68 %). Just over a quarter (27 %) bought them from a drug dealer, while 10 % purchased them from a specialised shop, such as a 'head shop' or 'smart shop', and 3 % bought them on the internet (multiple answers were possible).

In the case of some new substances that are sold directly on the illicit market, the user groups will reflect, to some degree, the existing markets for controlled drugs such as amphetamine; this is the case for 4-methylamphetamine and 4-FA. In the case of 'legal highs', most surveys have examined use in targeted groups, such as dance music fans, night club patrons and psychonauts. These groups tend to comprise larger numbers of 'early adopters' of new substances. These findings are not representative outside the survey population. However, the use of new substances in these populations can be very high and may provide early signals of the potential harms associated with a drug, as well as an indication of substances that may be attractive to other users and which could become more widespread. In addition, new substances are increasingly being used in some countries by chronic, marginalised drug users such as opioid and stimulant injectors, which are under-represented in general population surveys.

Harms

New psychoactive substances pose a range of challenges to health, as well as for law enforcement and policy. Some of these challenges are the same as those posed by controlled drugs; others are unique to the substances themselves and the market. The market rapidly adapts to, or may even pre-empt, legal and regulatory attempts to control it.

Despite the limitations to the available data, there is now strong evidence that new substances are causing a wide range of serious harms in Europe. These include an increase in the number of serious acute poisonings, including deaths, as well as harms arising from changes in the patterns of drug injection, as injecting drug users switch to new substances. This is particularly evident with stimulant drugs such as mephedrone, α -PVP, MDPV, pentedrone, and ethylphenidate. These changes have been linked to drug-related infectious disease, such as HIV and hepatitis C, as well as bacterial infections (Péterfi et al., 2014; ACMD,

Risk assessment of new substances at European level

The EMCDDA, through its Scientific Committee, is responsible for the risk assessment of new psychoactive substances. The risk assessment takes into account all factors that, according to the 1961 United Nations Single Convention on Narcotic Drugs or the 1971 United Nations Convention on Psychotropic Substances, would warrant the placing of a substance under international control. This ensures an evidence-based assessment. Reflecting the growth in the market, over the past two years, seven new substances — 25I-NBOMe, AH-7921, methoxetamine, MDPV, 4,4'-DMAR, MT-45 and α -PVP — required risk assessment by the EMCDDA's Scientific Committee.

2015b; Giese et al., 2015; Néfau et al., 2015; Public Health England et al., 2015; Rácz et al., 2015). In some cases the harms arising from new substances have manifested as outbreaks of mass poisonings or infections, which can place substantial demands on health care systems. Over the past two years, serious harms such as those that required urgent attention led to 34 public health alerts being issued by the EMCDDA, while seven risk assessments were conducted (see box above).

Production

The blueprints and recipes for many of the NPS that have been detected on the European drug market, and thousands more, are catalogued in the scientific and patent literature. In fact, many originate from the good intentions of pharma and academia: some were either once used as medicines or are currently used as medicines; while many were intended as new medicines but were never commercialised because they did not work as expected, or they caused adverse effects, or they were not commercially viable; while others were used in studies to get a better understanding of how our bodies work, and in the hope of developing better medicines or diagnostic imaging. In other cases, a totally new substance may emerge having been specifically designed either for curiosity by an amateur chemist or specifically for the new substances market. Often the inspiration for these comes from the original endeavours of pharma and academia. This was the case for methoxetamine, which was sold as a legal replacement for ketamine; 4,4'-dimethylaminorex which, using the brand name Serotoni, was pitched as a legal replacement for MDMA; as well as a range of synthetic cannabinoids

(Morris, 2011; EMCDDA–Europol, 2014). Sometimes, new substances also emerge as a result of a switch in the chemical precursors used in illicit laboratories that produce drugs such as amphetamine and MDMA.

Until about a decade ago, only a handful of new substances were seen each year in Europe. Some were produced in small amounts in amateur laboratories or on a commercial scale in clandestine laboratories by OCGs. These were mostly sold on the illicit drug market, where they would be passed off as amphetamine or ecstasy; some were specifically sold and sought after by name; others were sold as a new type of ecstasy. These types of new substances were often called 'designer drugs' — a nod to the fact that they appeared to have been specifically designed to circumvent drug control legislation. Sometimes new substances were also sourced from legitimate chemical companies. Another important section of the market at the time was the diversion of medicines from the legitimate supply chain.

Today, the so-called 'designer drugs' and medicines remain an important part of Europe's market in new substances. In the former case, they usually appear as a result of the activities of organised crime. Sometimes this is because a non-controlled precursor chemical may be used during the synthesis of a substance, which results in a new substance being produced either accidentally or deliberately. This issue with precursors has led to recurring problems in Europe. As mentioned briefly in Chapter 6, in some cases, MDMA manufacturers have instead made PMMA, which in 2014 and 2015 caused clusters of deaths across Europe after high-strength tablets were sold as ecstasy to unsuspecting users. Amphetamine production has also been affected; in the late 2000s, there was a shortage of precursors, which led to two new substances being sold as amphetamine on the European drug market: in 2007, 4-FA was detected on the market because of the use of the precursor 4-fluoro-BMK (see Case study 12), which was followed in 2009 by 4-methylamphetamine, which arose from the use of the precursor 4-methyl-BMK (EMCDDA, 2014c). The reason behind a switch to a non-controlled precursor may be the limited availability of a controlled precursor, or a chemical supplier may deliberately substitute a precursor for another — unbeknownst to a producer; in other cases it may be because a non-controlled precursor is cheaper to buy and/or easier to traffic. In the case of both 4-FA and 4-methylamphetamine, the substances were sold as amphetamine and produced by crime groups involved in the supply of amphetamine. At other times, crime groups have sourced new substances from chemical suppliers in Europe as well as China in order to plug a gap in the availability of substances such as MDMA; such substances include *m*CPP, BZP

Case study 12: 4-Fluoroamphetamine (4-FA)

Of note is that 4-FA is specifically sought after by some party-goers in the Netherlands and Belgium because they perceive its effects to be 'milder' and between those of MDMA and amphetamine. One large study of Dutch users was used to investigate the emergence of the new drug and found a prevalence of use similar to that for GHB and ketamine. Interestingly, it has been suggested that some users have also switched to this drug in order to avoid the high-strength MDMA tablets currently present on the European market. Helping drive the use of this substance is the increase in its availability through its open sale in bricks-and-mortar shops and on the web (Brunt et al., 2011; Goossens et al., 2013; Linsen et al., 2015).

and mephedrone. There are also increasing signs that crime groups are interested in producing a range of new substances in Europe. These are discussed below.

Notwithstanding the importance of so-called 'designer drugs' and medicines to the market, what is responsible for the huge growth in the contemporary market in new psychoactive substances — in terms of the increase in their number, type and availability — is globalisation. The convergence between modern transport networks, the internet, payment systems, low labour costs and the large growth — and increasing dominance — of the Chinese chemical and pharmaceutical industries that has occurred over the last few years has allowed a new market to flourish (Levinson, 2006; Smil, 2010; Morris, 2011; Stearns, 2011; Halford, 2015).

The internet, and particularly the web, is now a part of everyday life, and, coupled with cheap, efficient and reliable shipping, has allowed China to become the chemical and pharmaceutical wholesaler and retailer to the world while, to a lesser extent, companies in India are also important suppliers, particularly with respect to medicines. Many new substances — such as the synthetic cannabinoids, cathinones, opioids and benzodiazepines — are produced by legitimate companies in these countries that appear to be operating lawfully; some not so legitimate companies are also involved. The companies advertise their catalogue of substances on major online business-to-consumer and business-to-business marketplaces and through their own websites. If a particular substance is not in their catalogue, then it can often be made to order. They accept payment by major credit and debit cards, online payment services or direct bank transfers. Escrow services and online reputation

systems — similar to those used by ecommerce giants Amazon and eBay — may also be used, which decreases risk and increases trust between buyer and seller, helping secure trade (Masum and Tovey, 2012). Some suppliers also guarantee to replace the substance or issue a refund if the shipment is intercepted by customs agencies. The amounts offered range from a few milligrams to tens or even hundreds of kilograms; the purity is often claimed to be high. The reach of these companies is global.

Once sold, the substances are then shipped to Europe using express mail and delivery companies; the cost can be as little as EUR 50 or less, and the substances discretely delivered directly to the purchaser's door in as little as two days — an attractive feature for distributors, retailers and consumers alike. The packages easily blend in among the thousands of small packages shipped from China to Europe each day. Larger amounts are shipped by air or sea cargo. Once in Europe they are processed and packaged into a range of products; the other required materials, packaging and equipment can be sourced from lawfully operating suppliers in China as well in Europe. To get an idea of the potential impact of these developments, it costs around EUR 100 to express ship 1 kg of a new substance from a manufacturer in China to Europe. In the case of some of the fentanyl and synthetic cannabinoids that have been detected, this amount could equate to tens of thousands of doses. The low cost of delivery facilitates the importation of the substances into Europe and their movement across Europe, and small letters and packages can easily be disguised. As the number of items transported by express mail, courier, and air and sea cargo increases (express mail increased by 20 % in 2015), the chances of detection are likely to decrease.

Given the grey nature of much of the trade in NPS, it appears that suppliers and importers have less need to resort to the high-tech smuggling techniques used to transport controlled drugs. Despite this, investigations by law enforcement have identified some practices designed to conceal the true nature of the substances and businesses. For example, customs agencies report that consignments containing new substances are often misdeclared as common chemical products and/or of a low value in order to conceal their true nature and avoid suspicion by law enforcement. Recent seizures of the potent opioid acetylfentanyl (which was linked to 32 deaths in 2015 in Europe) originating from China were misdeclared as 'hot melt powder', the suppliers attempting to conceal the drug as a commonly used adhesive. In addition, suppliers and importers may deliberately route substances to specific European air and sea ports in countries where the substance is not controlled in order to reduce the chance of interception. Once imported, the

substances can then be freely moved around much of Europe.

In addition to supplying new substances, chemical companies may also sell the precursor chemicals that are needed to produce new substances. These are offered on the surface web as well as in anonymous marketplaces. Recent seizures by police of illicit laboratories in Europe operated by OCGs suggest that there may be increasing interest in producing NPS closer to home, where the profits may be higher, and, for some, the risks may be lower. This seems to be the case particularly for substances targeting the lucrative stimulant and opioid markets. The analysis of materials seized at these illicit laboratories confirms that in Europe there is both the capability and the capacity to produce a range of new substances — from cathinones, such as mephedrone and α -PVP, to fentanyl derivatives such as butyrfentanyl (see Case study 13). It will be important to closely monitor these developments, and to be alert to signals that suggest that the range of substances being produced in Europe has diversified and expanded beyond the illicit substances.

Similar to new substances, shipments of precursors may be misdeclared on custom declaration forms in an attempt to avoid detection by authorities. In 2015, customs seized a multi-kilogram shipment of the precursor 2-bromo-4-methylpropiofenone, which was being imported into Europe and which can be used to produce synthetic cathinones such as mephedrone. The precursor was misdeclared as 'butadiene acrylonitrile rubber' — which

Case study 13: α -PVP production in Europe

α -PVP is a synthetic cathinone that was risk assessed by the EMCDDA in 2015, after signals of serious harms were detected from data reported to the EU Early Warning System. The risk assessment found that most α -PVP originates from companies in China, including a single seizure of almost 260 kg made at a European airport in 2015. In addition, in 2013 and 2014, two illicit production sites were seized in Poland, where multi-kilogram quantities of α -PVP were synthesised. The synthesis was supervised by trained chemists, and the laboratories were supported by suppliers, producers and distributors of chemicals. The companies involved operated their own websites selling and distributing α -PVP across Poland. In addition, Hungary reported two tablet manufacturing sites that were dismantled in 2013 and in 2014, and it appears that the operators of the sites intended to produce α -PVP tablets.

is an oil-resistant synthetic rubber used to produce a range of components for the automotive and aeronautical industries. Interestingly, also in 2015, the same precursor was seized in two clandestine laboratories in Europe producing mephedrone.

It is unclear if Europe is an important hub either for bulk quantities of new substances or as a supplier of finished products to third countries. Reports from law enforcement in both Europe and the United States suggest that both these activities take place, but, at this time, it is not possible to estimate their overall importance.

Impurities and adulterants

Information on the impurities in new substances and the products that contain them is severely limited. However, based on knowledge of known chemical synthesis pathways and experience, it is clear that some impurities arising from the production of new substances can cause serious health risks to users. Two examples of impurities leading to serious harms are relevant for the markets in cathinones and opioids. They relate to the synthesis of methcathinone and MPPP, impurities in both of which have been linked to brain damage that mimics Parkinson's disease.

Similarly, there are limited data on the risks posed by other chemicals used in the manufacture of products containing new substances. In the case of some products, the new substance is dissolved in a solvent and then is sprayed on, or mixed with, plant materials. In addition, other substances used as excipients, such as microcrystalline cellulose (refined wood pulp), which is commonly used as an excipient/diluent in tablets, can cause serious injuries if injected. Chemical analysis of products also commonly finds a number of other active substances, not only new substances, but also illicit drugs and 'cutting agents', that may themselves pose risks or potentiate risk through interactions.

It appears that in some cases new substances are produced by companies that also produce a range of pharmacologically active substances — including other new substances and medicines — as well as other chemicals. This gives rise to important concerns about quality control with respect to cleaning procedures to prevent cross-contamination or carryover of potentially toxic residues.

Little is currently known about the potential for genotoxicity and carcinogenicity of new substances, or about the impurities and the adulterants they contain.

Given that most NPS are produced by companies outside the EU, it is difficult to gauge the potential impact on the environment. The new substances that are produced in Europe appear to be made by the same OCGs involved in the production of amphetamine and MDMA, so it is likely that the chemical waste is dumped in a similar way.

Marketing and supply

The retail market

Using market segmentation techniques, suppliers and vendors target specific user groups with so-called 'legal highs', 'research chemicals' and 'dietary supplements'. This includes the use of sophisticated modern mainstream marketing and branding techniques (Figure 7.4).

Food, medicine and consumer protection laws may be circumvented by labelling products as 'not for human consumption', 'for research only' or as 'novelty items', with enforcement action leading to rapid adaptive responses by the market (see Case study 14). In some cases, substances are marketed as 'natural' or 'herbal' extracts in order to deceive regulators and consumers as to the true nature of the product, and exploit the common belief that natural products are better. In other cases, it is made very explicit that the content of the product is a 'powerful' synthetic drug. The marketing approach taken depends on the specific product and the intended audience. This includes packaging that is symbolic of controlled drugs or the use of street names or names that allude to controlled drugs — such as 'doves', which is a street name for a type of ecstasy tablets — or the effects that the products will have.

Other mainstream marketing techniques that are used include giving free samples or early access to new products to loyal customers or in exchange for reviews on user websites. Although it is not clear what extent such techniques increase sales, these are all commonly used marketing techniques that appear to work for other types of consumer goods. In this respect it is interesting to note that some vendors reportedly use 'sock puppets' — tricksters who pose as genuine customers — to entice and encourage consumers.

FIGURE 7.4
The branding of new psychoactive substances



Source: EMCDDA.

These finished products then compete with controlled drugs but with the added advantage of being sold openly in shops — known as head shops or smart shops — as well as in fast food outlets, adult shops, fuelling stations and on the web: 'legal' replacements for cannabis, amphetamine, MDMA, cocaine and heroin can be found on the physical and virtual shelves of shops across Europe (Figure 7.5).

FIGURE 7.5
Deschloroetizolam sold as a research chemical



Photo © Karolinska Institute, Sweden

Case study 14: Redefining organised crime?

The authorities in Hungary were surprised when they noticed that a website selling new substances that had been shut down had re-opened even though the previous operator was in prison. On investigation they found that another group had cloned the original site as it had a well-established client base. Actively avoiding controlled substances, the group sold EUR 35 000–40 000 of products per week; when one substance was banned, they quickly sold off the remaining stock and ordered new uncontrolled analogues from China. Members of the group were arrested after their products were linked to the hospitalisation of more than 20 people over a short period.

Despite the pseudo-legal status of the business, those involved in this enterprise showed some of the classic features of a traditional OCGs. The group had a hierarchical structure, with the boss using street dealers and web distribution methods with lower-level operatives receiving the substances and producing the products. They attempted to avoid law enforcement by communicating using Viber and SMS messaging and moving their internet servers to another country. They used false details on orders. They also used well-recognised methods for laundering their profits, such as establishing fake companies in other countries and using offshore bank accounts. Although it did not use violence, the group showed a lack of regard for the safety of the users, being blasé about the serious acute health effects of its products.

Retail outlets

Recognising that access to new substances needs to be convenient for consumers, distributors and retailers have developed a range of sales channels. The two most important are specialised bricks-and-mortar shops and web shops on the surface web.

It appears that vendors on the surface web may also be an important source of new substances for consumers — particularly for so-called 'legal highs', research chemicals and food supplements. Some bricks-and-mortar shops also have web-based front ends that extend their customer base; other retailers only have web presences. In 2013, the EMCDDA identified 651 shops on the surface web that were selling legal highs, research chemicals and food supplements to European consumers. Recent targeted snapshots and test purchasing show that new substances continue to enjoy high availability on the surface web, and this includes a large range of psychoactive medicines.

Over the last few years, bricks-and-mortar shops have been important sources of new substances to chronic, marginalised users in some areas. These include stimulants such as ethylphenidate, which mimics the effects of the stimulant medicine methylphenidate and has been linked with a range of harms, including an outbreak of soft-tissue infections (ACMD, 2015b; Public Health England, 2015).

Retailers accept a range of payment methods, including credit and debit cards, and cash payments. Payment in cash extends the customer base for 'legal high' products to young or marginalised people who may not have access to other modes of payment.

New substances — here to stay?

It is too early to tell what the fate will be for many new substances. In part this is because they have only recently appeared on the market; societies and their (sub)cultures also change and, as they do, so do their tastes and demands. In addition, at least initially, it can be difficult to distinguish a longer-term adoption of a substance from what is merely a passing fad. The latter may be driven, in part, by the fact that a new substance is more readily available than an illicit drug. Interestingly, it appears that controlling such a substance may lead to its disappearance from the market and hence a reduction in use simply because there is no specific demand for it. Overall, making broad predictions about NPS as a whole group is difficult and could be potentially misleading. Nonetheless, case studies of different new substances suggest that they are

disrupting the illicit market and creating new markets as well as helping support the illicit market.

In some cases, new substances are used as temporary replacements for illicit drugs. They may also displace — either temporarily or more permanently — illicit drugs. In some countries, shortages of heroin coupled with increased availability of synthetic cathinones have led to a general shift towards the latter. In addition, recent data from the Netherlands suggests that while initially most new substance use was unintentional, being related to their use to adulterate illicit drugs, in the past few years there has been an increase in the use of some new substances in their own right (Hondebrink et al., 2015). It will be important to follow these developments carefully.

Some new substances pose a challenge as a group, such as the synthetic cannabinoids. In this case, suppliers care less about a specific substance and more about mimicking, broadly speaking, the pharmacological effects of cannabis. In essence each synthetic cannabinoid is disposable: as soon as a substance is controlled, or even before, manufacturers can have one or more replacement substances ready for sale, while suppliers and retailers can have ‘legal’ replacement products on the shelves.

Since the late 1960s, only a relatively small number of drugs have emerged beyond small-scale experimental use by psychonauts, gained a foothold on the market and diffused to broader sections of the population. Ketamine, GHB, and particularly MDMA are prominent examples of such substances. However, the diffusion of these substances was not the speedy affair that was portrayed by much of the popular media. As an example, although MDMA was first detected on the illicit drug market in the 1970s, broader use only occurred some 10–15 years later. The same also appears to be true for some new psychoactive substances, and in many cases it may simply be too early to predict what will happen to many of them. One possible substance that appears to have created a specific demand and carve its own distinct market share is mephedrone (see Case study 15).

Finally, given the nature of the market and the continuous stream of new substances, it is unfeasible that all of them can be controlled. In October 2015, the Chinese government controlled 116 new substances — which is just over the number currently identified each year in Europe. It is unlikely that any regulatory system can be designed to sufficiently limit the stream of new substances being manufactured without resorting to a ban on a huge range of chemicals.

Case study 15: Mephedrone — once a temporary replacement for MDMA, now more than that?

In the late 2000s, first *mCPP*, then BZP and finally mephedrone were new substances used by OCGs to plug the gap in the availability of MDMA in Europe that resulted from the reduced availability of precursor chemicals. For a time ecstasy tablets containing MDMA in the Netherlands became increasingly less common, and most tablets contained new substances. Similar situations were seen in other European countries (Vogels et al., 2009; EMCDDA, 2011; Brunt et al., 2011, 2012a,b). In the case of mephedrone the rationale for its use was quite obvious: multi-kilogram quantities of the substance could be bought relatively cheaply from China, and easily imported in to Europe. In addition, most users found its effects were acceptable — certainly in comparison with *mCPP* and BZP, whose effects made them unacceptable substitutes for MDMA (Brunt et al., 2012b). Since then, it appears that mephedrone is specifically sought by some user groups, including chronic and marginalised drug users (Public Health England, 2015). It is tempting to speculate that the pharmacology of mephedrone — with some similarities with MDMA, cocaine and methamphetamine — is one of the reasons for this.

Action points

European new substances market

1. In order to reduce the harm caused by new psychoactive substances and protect public health, there is a recognised need to strengthen the EU Early Warning System and the national systems that support it in order to keep pace with the challenges posed by this rapidly developing market.
2. Suitable epidemiological indicators should be developed in order to allow the collection of more reliable information across Europe on the use of new psychoactive substances.

Production and distribution

3. The capacity of law enforcement agencies, in particular customs authorities, should be strengthened by providing training and sharing best practice for detecting shipments of new substances and precursors at European borders and within the postal, transport and logistic services.
4. The capacity of forensic science laboratories to identify new substances and precursors should be increased. This should include mechanisms to allow analytical data, reference materials and expertise to be shared.
5. There is a need to systematically monitor online market places, particularly those selling wholesale quantities on the surface web and anonymous marketplaces, and to develop partnerships with industry to restrict illegal activities.
6. An improved understanding of the production of new substances within Europe, the involvement of crime groups and the interaction between the new substances market and the established market in controlled drugs is urgently required and could be achieved through intelligence sharing, research and monitoring, and threat assessment.

Marketing and retail supply

7. Greater knowledge of the methods used by those involved in the retail market is needed, as is research on the marketing strategies used, in order to develop more effective supply and demand reduction interventions.
8. There is a need to improve intelligence on bricks-and-mortar shops as well as retail surface web vendors and anonymous marketplaces selling new substances to develop effective interventions, e.g. developing partnerships with industry to restrict illegal activities.

New substances — greater risks?

9. The capacity to identify and report serious adverse events associated with new substances should be increased, including the monitoring of open source information. This will facilitate the timely identification of emerging toxicological problems and support an earlier response at national and EU level.
10. Forensic toxicology laboratories engaged in identifying new substances in biological samples associated with serious harms must be supported. This should include mechanisms to allow analytical data, reference samples and expertise to be shared.
11. EU-level and national initiatives should be developed to strengthen cooperation between public health and law enforcement agencies in order to rapidly identify and remove substances causing immediate and pronounced threat to public health from the market.

12. Research into the pharmacology and toxicology of new substances should be prioritised according to signals identified by the EU Early Warning System.

13. Evidence-based responses to use should be developed, including appropriate harm reduction services tailored for the broad range of user groups.

III

PART III

Tackling the illicit drug market

CHAPTER 8

**Drug supply reduction policies and
responses**

8

CHAPTER 8

Drug supply reduction policies and responses

Drug supply reduction is part of several policy areas at the EU level and a core component of the drug strategies and responses of Member States. This section of the report looks at the main EU policies and strategies addressing drug supply reduction, the supporting institutional arrangements, and some of the operational actions undertaken by the EU, Member States and international partners.

Relevant EU strategic actions

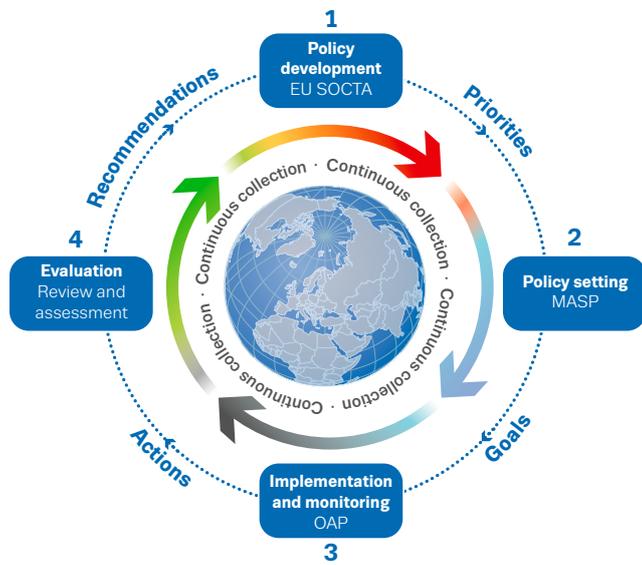
The EU drugs strategy (2013–20) and action plan (2013–16) provide a framework for addressing illicit drugs in the EU, complementing Member States' national strategies and supporting joint actions. In the area of supply reduction, the framework reflects the challenges identified earlier in this report. These include the dynamic nature of illicit drug markets, changes in trafficking routes and the role of cross-border organised crime and new technologies in the trafficking of illicit drugs and new psychoactive substances (NPS). It also notes the importance of preventing the diversion of drug precursors and cutting agents from licit industries that can be used in the production of illicit drugs (Council of the European Union, 2012a).

The overarching objective of the EU drugs strategy (2013–20) in the area of supply reduction is a measurable reduction of the availability of illicit drugs, through:

- the disruption of illicit drug trafficking;
- the dismantling of OCGs that are involved in drug production and trafficking;
- efficient use of the criminal justice system;
- effective intelligence-led law enforcement and increased intelligence sharing;
- an EU-level emphasis on large-scale, cross-border and organised drug-related crime.

Tackling groups involved in the illicit drug trade is an important element in the EU policy cycle for organised and serious international crime (the policy cycle), through which EU Member States coordinate common priorities and operational action. The policy cycle consists of four main steps: (1) policy development, (2) priority setting, (3) implementation and monitoring, and (4) evaluation of the current policy cycle and definition of the next one. The process involves the Presidency of the Council, the Standing Committee on Operational Cooperation on Internal Security (COSI) and the European Commission developing a policy advisory document, based on the SOCTA produced by Europol (see Figure 8.1). This document is then used by the Council of the EU to agree conclusions, drafted by COSI, which define the crime priorities in the policy cycle — it is the Council's responsibility to make political decisions in the justice and home affairs area. Subsequently, multi-annual strategic plans are established and implemented through operational action plans (OAPs), both of which are developed by the Member States, the Commission and the EU agencies under COSI's coordination. Following this, project groups are established to manage each OAP. EMPACT functions as the coordination platform for the EU Member States and institutions to implement operational law enforcement actions and to develop and manage actions supporting the policy cycle. Amongst the priorities in the 2014–17 policy cycle, two specifically concern drugs: disrupting the production and trafficking of synthetic drugs in the EU, including NPS; and disrupting the cocaine and heroin trafficking into, and their distribution within, the EU.

FIGURE 8.1
The policy cycle on organised and serious crime



Source: Europol.

The production and trafficking of drugs are key issues in the EU's renewed internal security strategy, 'the European Agenda on Security 2015–20' (Council of the European Union, 2015c). Drug smuggling has been identified as one of the activities contributing to organised cross-border crime. It challenges border control and the movement of people and goods and is a financing tool for terrorist and OCGs. These activities undermine the area of freedom, security and justice created by the EU. The European Agenda on Security notes the dynamic nature of drug markets, in particular the production of NPS within and outside of the EU. It also underlines the key role played by the EU policy cycle on organised and serious international crime against drug trafficking in the internal and external security policy nexus ⁽³¹⁾.

The European Agenda on Security recognises the importance of the European Maritime Security Strategy in addressing drug trafficking as a security issue. This includes, for example, the use of coordinated patrol actions and the establishment of interoperable information systems. Similarly, it supports the approach taken in the European Agenda on Migration, given the links between OCGs involved in the trafficking of drugs and the facilitation of illegal migration (Council of the European Union, 2015c).

The global nature of drug production and supply activities highlighted throughout this report makes the international responses an essential component of any EU action to

tackle drug markets. The EU engages in political dialogues with third countries in its immediate geographical neighbourhood and other parts of the world through EU delegations and the European External Action Service. This involves working with other regions and countries to achieve common goals, such as strengthening democracy and the rule of law, supporting trade, and promoting sustainable and alternative development. Drug issues often feature in these political conversations and as part of EU-level policy documents including drugs-specific and broader strategies, regional programmes, and political declarations and agreements.

Institutional, legal and financial arrangements

The multifaceted impact of drug markets means that a wide range of EU institutions are involved, alongside the Member States, in designing and implementing different aspects of the EU's drug policy. Alongside these are the financial instruments and legislation that support the action taken to address the illicit drug phenomenon within the EU.

The main institutions, bodies and other structures involved in responding to illicit drug supply in Europe are highlighted in Figure 8.2, together with the main roles they undertake.

EU institutions and working groups

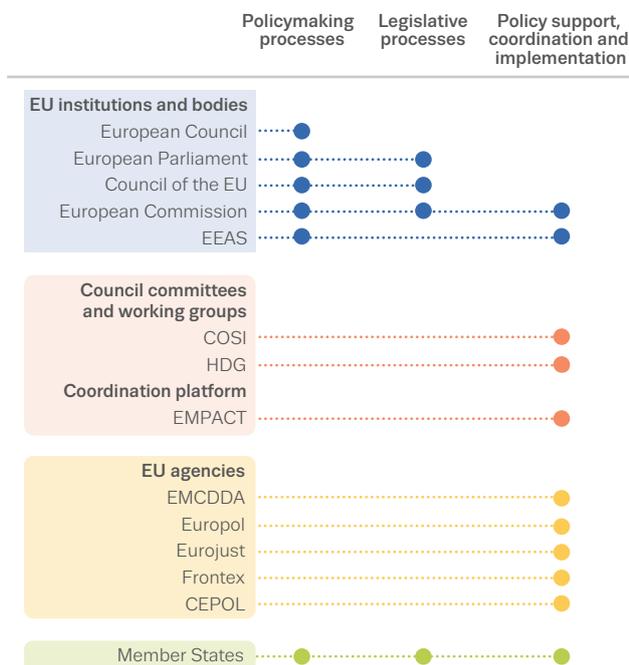
The EU consists of several institutions ⁽³²⁾. Alongside the Member States, these institutions are tasked with designing and implementing different aspects of the EU's drug policy through the different priorities and actions set out in strategic planning documents.

The EU institutions have different roles with respect to policymaking and implementation, and establishing any necessary legislation to implement policies. The European Parliament's functions include passing laws, approving the EU budget and discussing EU policies (European Parliament, 2013). Drug issues arise in different areas of the Parliament's work when, for example, it considers internal security matters or relations with non-EU countries (third countries).

⁽³¹⁾ Detailed descriptions of the EU's internal security policies as they relate to drug supply reduction are the subject of an EMCDDA report: <http://www.emcdda.europa.eu/publications/emcdda-papers/sr-internal-security>

⁽³²⁾ The European Parliament, the European Council, the Council of the European Union (the Council), the European Commission, the Court of Justice of the European Union, the European Central Bank and the European Court of Auditors.

FIGURE 8.2
Main EU structures addressing drug supply reduction issues



Source: EMCDDA.

The Council of the EU (the Council) adopts legislation (often in conjunction with the European Parliament), plays a policy coordination role for the Member States, devises the EU Common Foreign and Security Policy (CFSP), signs off on agreements between the EU and third countries, and adopts the EU's annual budget (Council of the European Union, 2013a). The Council also has a number of committees and working groups that are involved in drug policy implementation, in particular COSI and the Horizontal Working Party on Drugs (HDG). COSI plays a leading role in defining, implementing, monitoring and evaluating EU activities in the policy cycle (Council of the European Union, 2010). The HDG plays a central role in the development of EU drugs strategies and action plans and its purview encompasses all areas of drug demand reduction and drug supply reduction (Council of the European Union, 1999). A number of other Council working groups also play an important role in drug policy including, for example, the Customs Cooperation Working Party, the Working Party on Customs Union and the Coordinating Committee in the area of police and judicial cooperation in criminal matters.

The European Commission proposes new legislation, and is responsible for ensuring that Member States correctly implement EU laws (European Commission, 2015a). Alongside drafting the EU's annual budget and overseeing how funds are used, it undertakes international negotiations on behalf of the EU. It consists of 33

Directorates-General (DGs). Because of their cross-cutting nature, drug supply reduction issues arise in a number of different areas of its work, but mainly within DG Migration and Home Affairs, and DG Justice. The Commission addresses all aspects of drug control policy, including the reduction of drug use and the prevention of drug-related crime and drug trafficking. It also proposes measures for the control of NPS and ensures the implementation of EU laws designed to prevent the diversion of chemical precursors for illicit drug production. Finally, it promotes European cooperation in addressing drug problems through the provision of financial assistance.

In addressing the EU's capacity to deal with external action, the Lisbon Treaty (Treaty on European Union, TEU) called for the establishment of the post of High Representative of the Union for Foreign Affairs and Security Policy (TEU article 15) and the European External Action Service (EEAS) (TEU article 27) (Council of the European Union, 2012b). The High Representative is in charge of the EEAS and is responsible for, among other things, conducting the EU's CFSP, developing policy proposals and chairing the Foreign Affairs configuration of the Council. Assisting the High Representative, the EEAS develops policy proposals and implements after approval from the Parliament and the Council (European External Action Service, 2015). The EEAS oversees the EU delegations in more than 130 countries, coordinates the EU's external action and is the permanent chair of the Council's Political and Security Committee, which is responsible for the CFSP. The EEAS also carries out the strategic programming for EU external assistance, which is then implemented by EuropeAid.

EU specialised agencies' role against drug trafficking

Much of the implementation of the EU drug policy is undertaken by specialised EU agencies, in particular the two agencies that have produced this report, in collaboration with Member States.

European Monitoring Centre for Drugs and Drug Addiction

The EMCDDA provides the EU and its Member States with factual, objective, reliable and comparable information at European level concerning drugs and drug addiction and their consequences (EMCDDA, 2010). It collects data from its Reitox national focal points on a range of drug supply reduction and demand reduction issues. This includes information about drug law offences, drug seizures, drug purity and potency, as well as retail prices

FIGURE 8.3
Europol supporting national authorities



Europol officer at work in Palermo, Italy, during a 10-tonne cannabis resin seizure in June 2015.

Photo © Europol

for drugs (EMCDDA–Europol, 2013). It also operates the Early Warning System (EWS) on NPS in conjunction with Europol and the European Police Office, and conducts risk assessments.

Europol

Europol is the EU's law enforcement agency, which supports law enforcement authorities through the exchange and analysis of criminal intelligence. As a result of Europol's mandate, countering drug production, drug trafficking and money laundering is amongst the organisation's recurring priorities (Figure 8.3). Evidence of this is that in the last decade almost 25 % of all messages exchanged via Europol relate to drugs. The recurring objective is to contribute to a measurable reduction of the availability of illicit drugs by providing strategic and operational services to law enforcement agencies. In the drugs supply reduction area, customised products and support services include operational analysis, technical and forensic expertise, on-the-spot support including dismantling of laboratories/cultivation sites, technical and comparison reports on chemicals and equipment seized in illegal synthetic drug production/storage locations and waste dump sites, operational meetings, participation in joint investigation teams (JITs), execution of asset tracing requests and training events (e.g. dismantling illicit synthetic drugs laboratories). Europol also carries out threat assessments and produces the SOCTA and the EU Terrorism Situation and Trend Report, which inform policymaking and planning processes, such as the policy cycle. It works with EU Member States through Europol national units and functions as a specialist information hub, supporting policing operations throughout the EU and beyond. It operates the Europol Criminal Assets

Bureau and the Europol Cyber Crime Centre. Europol provides secretariat services for the Camden Asset Recovery Inter-Agency Network (CARIN). It facilitates action under the EU policy cycle through its specialised information services and supports EMPACT, through which coordinated operational actions are implemented. Europol hosts a wide Liaison Officer (LO) network from all Member States of the EU and from other countries with which Europol has concluded an operational agreement. The major national law enforcement agencies are also represented, therefore, in addition to having access to LOs of nearly 40 different countries, Member States have access to a large panel of law enforcement expertise.

Eurojust

Eurojust is the EU judicial cooperation unit, which facilitates and coordinates cooperation in cross-border serious crime cases, helping Member States to collaborate and synchronise their investigations and prosecutions. Its work covers the activities of OCGs, such as drug trafficking and money laundering. Eurojust can ask Member States to investigate or prosecute a crime, to work together and to establish a JIT and, for example, works with EU Member States on the use and coordination of controlled deliveries of illicit drugs (Eurojust, 2015a). It works closely with the European Judicial Network and Europol, and assists national authorities with the use of mutual legal assistance and mutual recognition legal tools (e.g. European arrest warrants).

Drug trafficking continues to be one of the most common criminal offences dealt with by Eurojust. Between January 2013 and December 2014, Eurojust registered 527 high-level drug trafficking cases, a slight increase from 512 in 2011–12 and 484 in 2009–10. It also organised 11 coordination meetings with prosecutors and investigators in the same period, while 21 JIT agreements were signed, up from 10 in the 2-year period 2010–11 (Figure 8.4).

The geographic distribution of cases referred to Eurojust has not changed much in recent years. The Member States most involved in these types of cases, as indicated by requesting and being asked for judicial cooperation in 2013–14, were Spain (178 cases; 46 requests made and 132 requests received) and the Netherlands (142 cases; 15 requests made and 127 received), followed by Italy (99 cases in total), France (84), Germany (84), Belgium (75) and the United Kingdom (70). More detailed analysis of these interactions between countries reveals the central role played by Spain and France, closely followed by the Netherlands, Italy, Belgium and Germany, in Eurojust casework (see Figure 8.4). In 2015, based on the analysis

FIGURE 8.5
Technical equipment used for chemical identification



Handheld chemical identification analyser devices used on a synthetic drug manufacturing site in Belgium in 2015.

Photos © Europol

by Italian authorities, from a Turkish cargo ship coming from Morocco, in June 2015 in the Strait of Sicily, within the operational area of Joint Operation Triton. This case illustrates the emergence of Moroccan resin trafficking routes towards the eastern Mediterranean as highlighted in Chapter 3 of this report.

CEPOL

CEPOL, the European Police College, is involved in building police cooperation across the EU. It provides a wide range of training courses relevant to different aspects of supply reduction and security activities, for example, a training course on dismantling illicit synthetic drug laboratories (Figure 8.5) (CEPOL, 2015). In conjunction with Europol

and the EMCDDA, it provides training to national law enforcement officers on a range of topics, influenced by the findings of the previous EU drug markets report (EMCDDA–Europol, 2013). Training is delivered in a range of different formats, including residential courses, webinars and exchange programmes, which together had a total of 1 390 participants in 2013 and 2014 (Table 8.1). Although the majority of participants come from EU Member States, others were from candidate and acceding countries, EU bodies and networks, and other countries and organisations.

EU legislation

The EU has adopted legislative tools designed to discourage and disrupt drug smuggling, bringing OCGs

TABLE 8.1
CEPOL drugs and drug-related course information, 2013–15

	2013			2014			2015			Grand total 2013–15
	Residential	Webinars	Total	Residential	Webinars	Total	Residential	Webinars	Total	
Drug-specific	30	56	86	151	345	496	134	403	537	1 119
JIT-related	81	196	277	84	86	170	119	85	204	651
Financial investigations	54	0	54	29	91	120	89	339	428	602
Other drug-related	148	320	468	124	66	190	142	238	380	1 038
European Police Exchange Programme			18			30			31	79
Total by year			903			1 006			1 580	3 489

Source: CEPOL, 2015.

to justice and depriving them of the proceeds from their activities (Table A.1 in Annex). The trade in drug precursors has been regulated to prevent diversion to illicit drug production (see box 'Combating the supply of illegal drugs at the source — drug precursors control in the EU' on page 163), and provision has been made for the movement of samples of controlled drugs during investigations (Council of the European Union, 2001, 2005a; European Parliament and the Council of the European Union, 2004). A response to the emergence of NPS involving a three-step process of information exchange, risk assessment and control has been implemented, resulting in EU-wide bans on certain drugs (Council of the European Union, 2005b, 2014a).

Financial instruments

As part of its comprehensive drug supply reduction approach, the EU finances a wide range of activities within and outside the EU. Financial instruments with a broad focus are used to implement the drug supply reduction, international cooperation and other objectives of the EU drugs strategy (2013–20) and its action plan (2013–16) (see table A.2 in Annex). These instruments fall into four categories: framework programmes (e.g. the Internal Security Fund); programmes for EU candidate and potential candidate countries (e.g. Instrument for Pre-accession Assistance); geographic or regional programmes (e.g. European Neighbourhood Policy); and specific programmes that complement geographic ones (e.g. Instrument contributing to Peace and Stability). The tools are funded through the EU budget and in cooperation with consortiums of Member States and international partners.

Operational actions and initiatives

The supply reduction objectives of the policy and legislative frameworks outlined above are addressed through a range of different activities and initiatives, which target different aspects of drug markets that may be grouped into three broad categories. First are those that directly target the drug markets and those engaged in production and supply activities. The second category target the facilitators of drug supply activities, for example the large sums of money and the professionals who assist in various ways. Finally, other activities seek to address those factors that underpin engagement in drug production and trafficking, the poverty and other conditions that make people participate in production and dealing as a survival strategy, and the weak and unstable states that facilitate criminal activities.

Conceptualising responses at the EU and international levels on the basis of these categories together with the main types of response, i.e. coordination, capacity building and information sharing, provides a useful way of getting an overview of activity. The resulting typology is set out in the matrix in Table A.3 in Annex, with some examples of international activities provided without aiming at an exhaustive list. Some of the main programmes are described in more detail below to provide some insight into the wide range of initiatives being undertaken to tackle drugs in Europe.

Interventions targeting drug markets

The international nature of drug trafficking and its widespread ramifications means there are many organisations at national and international levels addressing the problem, and some examples demonstrating the range of programmes and international organisations involved are described here. Effective coordination mechanisms for the EU and its Member States and the development of intelligence-led policing are central to the EU's approach to tackling organised crime. Europol's intelligence reports and threat assessments are used as priority-setting tools for the Council's working groups in defining what crime areas need to be urgently addressed. EMPACT is a coordination platform for the EU Member States and institutions to implement operational law enforcement actions, supporting defined EU-level crime priorities from the policy cycle. Bringing together representatives from the Member States, EU agencies, public and private organisations, and third countries, it is multidisciplinary in nature. It is here that the crime priorities agreed by the Member State representatives of COSI are implemented by National EMPACT Coordinators (NECs).

OCGs move large shipments of illicit drugs by sea, either on their own ships or using legitimate commercial vessels that carry cargo containers. Because of the large quantities that can be transported in this way, this mode of transport is becoming increasingly important. The European Agenda on Security (2015–20), the EU drugs strategy (2013–20) and the European Maritime Security Strategy seek to target maritime drug trafficking through intelligence sharing (Council of the European Union, 2012a, 2014b; European Commission, 2015b). Similarly, Eurosur is designed to enhance situational awareness and reaction capabilities at the EU's external borders. National Coordination Centres (NCCs) bring together national authorities responsible for border security in one team, sharing information with Member States and Frontex. Eurosur allows the intelligence resources and interception capabilities of EU

Member States and Schengen countries to be used in a complementary way to interdict illicit drug smugglers (European Commission, 2014b).

When bulk shipments of illicit drugs are interdicted, OCGs suffer heavy financial losses, so targeting these is important. The MAOC-N is an operational platform for Member States and third countries and agencies set up principally to tackle the transatlantic flow of cocaine from South America to Europe. It was established in 2007 by seven EU Member States (Ireland, Spain, France, Italy, the Netherlands, Portugal and the United Kingdom) and is funded by the European Commission. Its operation relies on the physical co-location of Member State liaison officers/experts from police and customs, and naval attachés, who are joined by the United States Drugs Enforcement Administration and the Joint Inter-Agency Task Force (SOUTH). This facilitates coordination, development and fusion of actionable intelligence and access to military and naval assets. The MAOC-N is further supported by, and collaborates with, a wide range of other EU and international agencies as well as other countries. This collaboration and intelligence sharing resulted in the seizure of more than 22 tonnes of cocaine and 63 tonnes of cannabis from a total of 29 successful interdictions between 1 October 2014 and 30 September 2015, with an estimated value of EUR 2 billion. The international nature of drug trafficking is illustrated by the fact that the 163 primary arrests made involved prisoners from 26 different countries. The importance of this high level of collaboration, a one-team approach, is illustrated by the fact that in 58 % of the interdictions, the Member State that made the intervention was different from that providing the primary intelligence. The growing reach of the MAOC-N is shown in recent seizures, in places ranging from Queensland, Australia (100 kg in June 2015), to the United Kingdom (3.2 tonnes in April 2015) (MAOC-N, 2015a,b).

The Cocaine Route Programme focuses on capacity building in countries along the cocaine supply route, establishing links between countries in West Africa, South America and the Caribbean. The programme seeks to support regional and transregional law enforcement and judicial cooperation in countries on the cocaine trafficking route. It does this through eight projects that address drug interdiction, targeting the proceeds of crime and enhancing information exchange (European Commission, 2015d). The programme commenced in 2009 and involves the European Commission collaborating with a range of international partners. Through the Instrument contributing to Stability and Peace (IcSP), the Commission has contributed roughly EUR 50 million to the programme, supporting the implementation of projects in over 40 countries.

Phase II of the 'Fight against trafficking and organised crime on the Heroin Routes' programme targets the trafficking of heroin from Afghanistan to Europe, which poses a range of shared security challenges for the EU and the countries on smuggling routes. With funding from the IcSP, the programme was established to counter the threat posed by OCGs. Through it the EU works in partnership with different organisations and governments impacted by the smuggling routes that pass through Afghanistan, Pakistan, the Central Asian countries, the Caucasus, the Black Sea Basin and the western Balkans. Its projects have focused on developing the capacity of regional agencies, implementing information systems, halting the flow of drugs and chemical precursors, developing Port Control Units (PCUs) and detecting drug trafficking (European Commission, 2014b).

The Container Control Programme (CCP) is an example of a direct intervention again targeting maritime shipping. The CCP is a capacity-building joint initiative operated by the UNODC and the World Customs Organization (WCO). Currently 40 countries participate. Through the programme, PCUs are established close to container terminals. From its establishment in 2004 up to 2014 some 100 tonnes of cocaine, almost 3 tonnes of heroin, 60 tonnes of cannabis and 1 275 tonnes of precursor chemicals were seized by PCUs. In 2014, some 19 428 kg of cocaine (67 seizures), 466 kg of heroin (15 seizures), 4 593 kg of cannabis (30 seizures) and 34 000 litres of precursor chemicals (two seizures) were seized (UNODC and WCO, 2015).

The operation of modern border controls lies at the heart of maintaining reliable trade routes and safe and secure societies. The Border Management Programme in Central Asia contributes to the security of Central Asian countries (Kazakhstan, Kyrgyzstan, Tajikistan, Turkmenistan and Uzbekistan). It implements integrated border management, enhancing the management of the movement of people and goods at border crossing points and developing the capacity of border agencies. The programme receives funding through the EU's Development and Cooperation Instrument (DCI) and was allocated EUR 33.6 million between 2003 and 2014. Phase 9 of the programme, between 2014 and 2017, has a contribution of EUR 5.5 million from the EU and a consortium of EU Member States (EEAS, 2014; European Commission, 2015e).

Globally, amphetamine-type stimulants (ATS) are, after cannabis, the second most consumed illicit drugs, and the market for them is interlinked with the use of NPS. One response to the rapidly changing marketplace for these drugs is UNODC's 'Global Synthetics Monitoring: Analyses, Reporting and Trends' (SMART) programme. It

is focused on capacity building in East and South-East Asia, the Pacific, the Near and Middle East, Latin America and Africa. It seeks to build capacity through the provision of technical support to Member States to help them collect and manage data on synthetic drugs, such as information from law enforcement. The programme aims to increase understanding of drug problems by reporting and providing early warning on emerging data. It also supports the development of evidence-based drug policies by developing policy-relevant information (UNODC, 2014f,g).

Interventions targeting the facilitators of drug production and supply

Factors that facilitate drug production and supply include the availability of money to buy drugs and pay those involved in the business, professional services to both help with the drug supply activities and to assist with laundering and concealing the proceeds of crime, as well as access to precursors and logistical support. Some of these facilitators are specific to drugs but others are similar to other crime areas and so are covered by wider programmes.

In addition to the action by the EU and Member States to tackle the availability of chemical precursors used to manufacture illicit drugs (see box below), the INCB monitors the global trade in these substances and helps to foster collaboration. It operates several information systems in conjunction with national governments to facilitate transaction visibility, monitoring of importers and exporters, and the exchange of operational information (INCB, 2015a). Two on-going INCB projects function as platforms for monitoring licit trade, preventing diversions and launching time-bound operations. Project Cohesion targets chemicals used in the illicit manufacture of heroin (acetic anhydride) and cocaine (potassium permanganate), while Project Prism addresses chemicals used to produce amphetamine-type stimulants (phenylacetic acid, ephedrine and pseudoephedrine). Additionally, the INCB's Project ION (International Operations on New Psychoactive Substances) is an international operational initiative to support national authorities' efforts to prevent non-controlled new substances from reaching consumer markets. A specific focus is on synthetic substances with little or no known medical, scientific or industrial uses. Project ION activities are primarily engaged in the coordination, collection and communication of strategic and operational information related to suspicious

Combating the supply of illegal drugs at the source — drug precursors control in the EU

Drug precursors, chemicals needed to manufacture illicit drugs, have primarily large and varied legitimate uses such as in the production of plastics, medicinal products, cosmetics, detergents and aromas. Because many uses are legitimate, trade in drug precursors cannot be prohibited but, instead, their licit trade needs to be monitored to ensure they are not 'diverted' to illicit uses. Preventing the diversion of drug precursors can be an effective and efficient way of limiting the supply of illegal drugs and is therefore an important part of the EU drugs strategy.

The EU legislation on drug precursors implements Article 12 of the 1988 United Nations Convention against the Illicit Traffic in Narcotic Drugs and Psychotropic Substances via two basic regulations:

- Regulation (EC) No 111/2005 on trade in drug precursors between EU and third countries, amended by Regulation (EU) No 1259/2013;
- Regulation (EC) No 273/2004, on trade in drug precursors within the EU, amended by Regulation (EU) No 1258/2013.

The amendments to both regulations in 2013 significantly strengthened powers to control the export of medicinal products containing ephedrine or pseudoephedrine (precursors for methamphetamine), and the use of acetic anhydride (precursor for heroin) in the EU and the use of so-called 'non-scheduled substances' in illegal drug manufacture. Additionally, it is now possible to react more quickly to new diversion trends and add new chemicals to the lists of scheduled substances through a fast-track procedure.

Seizures and stopped shipments of drug precursors are useful indicators of the scale and type of illegal drug manufacture. For instance, during the period 2012–13 the seizures of PMK (a precursor for ecstasy) increased significantly, suggesting that the illegal manufacture of ecstasy in the EU was increasing again after a period of lower production. The European Commission, the EU Member States and the EMCDDA are currently working on improving the data collection and analysis of seizures and stopped shipments of drug precursors, and the Database on Drug Precursors has been established for the collection and processing of statistics on seizures and stopped shipments on a quarterly basis.

shipments of, trafficking in, or manufacture or production of, new substances. Real-time communication of such incidents is shared using a secure online communication platform known as the Project ION Incident Communication System (INCB, 2015b).

A directive on preventing financial systems being used for money laundering or terrorist financing, and a regulation on information accompanying fund transfers were adopted in 2015 (European Parliament and the Council of the European Union, 2015a,b). The European Commission works with different organisations to develop and implement anti-money laundering responses and is a member of the international Financial Action Task Force (FATF). Europol provides support to CARIN, which covers over 50 jurisdictions and includes EU Member States. It addresses all stages of the process of asset recovery including asset tracing, freezing and seizing, management, confiscation/forfeiture, and sharing (Europol, 2013).

The Egmont Group of Financial Investigation Units is a world-wide entity whose aim is to facilitate the enquiries of inter-financial investigation units across borders. It provides a forum for national financial intelligence units and their cooperation, particularly in the areas of information exchange, training and the sharing of expertise. Presently the Group comprises 151 member financial intelligence units.

Interventions tackling the conditions enabling drug supply

Factors that enable drug supply are often social factors that require a local response. Hence, many of the interventions tackling these are local in nature. At the EU and international levels, as is the case for direct interventions, the focus is on sharing best practice, coordination and intelligence sharing.

The overlap between drug trafficking and human trafficking and exploitation, which itself overlaps with illegal immigration issues, is discussed in Chapter 1. The wider efforts to tackle illegal immigration are therefore of relevance to drug control efforts. Each Member State is represented in non-Member States by an immigration liaison officer (ILO), who facilitates the measures taken by the EU to combat illegal immigration and maintains contacts with the authorities in the host country in order to improve exchanges of information concerning, *inter alia*, the routes followed by flows of immigrants and the existence of criminal organisations involved in the smuggling of immigrants. The network of the ILOs pools

the actions taken by the officers and enables them to liaise with one another.

A number of Member States also use multi-institutional approaches to combat human trafficking, whether for sexual or labour exploitation, as well as organised crime in general. Such approaches try to go beyond the boundaries of traditional criminal investigation by police and the judicial authorities, with administrative and law enforcement agencies working together and contributing their specialist knowledge and competences in combating and preventing crime (Bundeskriminalamt, 2012). The 'multi-institutional approach' is based on the so-called 'barrier model', which involves the identification of suitable agencies or areas where barriers can be set up to impede the activities of criminals. In the Netherlands, for example, such barriers are being established in the following areas: access (smuggling, border crossing); accommodation (prostitution precinct, illegal housing); identity (forged papers, forged social security documents); work (exploiters, violence, exploitation); and finance (money laundering, investments). This 'barrier model' aims to identify providers of illegal services as well as illegal activities at all five stages of the model. The model simultaneously relies on the training and on the intensive exchange of information between government agencies involved in the fight against human trafficking. Financial investigations also form an integral part of the model.

Another concern in many countries is the rise of gang violence in disadvantaged communities, which is often linked to drug dealings at a number of different levels. The European Platform for Gang Expert Virtual Community is an exchange platform for national experts on motorcycle gang-related crime and current developments with relevance to the wider European network. A number of Member States have programmes that seek to prevent disadvantaged young people becoming involved in gangs, for example the 'Ending Gang and Youth Violence' programme in the United Kingdom (HM Government, 2015).

The EU and its Member States are involved in many international actions with different organisations and countries. Both the EU drugs strategy (2013–20) and its action plan (2013–16) designate international cooperation as an important cross-cutting issue. The EU contributes to action against the production and trafficking of drugs through, for example, its financial support provided by the European Commission for the UNODC.

Alternative development in countries impacted by the cultivation, production and trafficking of illicit drugs is a core part of international cooperation. Action 32 of the EU drugs action plan (2013–16) calls for alternative

development to be integrated into EU programming and external assistance through projects in source and transit countries. The European Commission and the EEAS operate funding instruments that finance projects in different countries. For example, the EU is actively involved in helping Afghanistan recover from conflict and provides financial support through the DCI. In the 2014–20 Multi-annual Indicative Plan for Afghanistan, the level of indicated EU funding for the country amounts to EUR 1.4 billion (European Commission and European External Action Service, 2014a). Similarly, the EU supports alternative development in the countries where most cocaine is produced (Bolivia, Colombia and Peru), and

in Latin America generally, through the European Union and the Community of Latin American and Caribbean States (EU-CELAC) Action Plan (2013–15) (Council of the European Union, 2013b, 2015c). Under the DCI, indicative financing for 2014–20 in the region is EUR 805 million for Latin America and EUR 120 million for subregional cooperation with Central America. Drug issues are, for example, part of the programming covering the Security-Development Nexus, with indicative funding of EUR 70 million (European Commission and European External Action Service, 2014b).

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Abbreviations

APAAN	alpha-phenylacetonitrile
ATS	amphetamine-type stimulants
BHO	butane hash/honey oil
BMK	benzyl methyl ketone
CARIN	Camden Asset Recovery Inter-Agency Network
CBD	cannabidiol
CCP	Container Control Programme
CEPOL	European Police College
CFSP	Common Foreign and Security Policy
CMF	Combined Maritime Forces
COSI	Standing Committee on Operational Cooperation on Internal Security
DCI	Development and Cooperation Instrument
DG	Directorate-General
DIMS	Dutch Drug Information and Monitoring System
EACN	European Contact-point Network against corruption
EDF	European Development Fund
EEAS	European External Action Service
EIDHR	European Instrument for Democracy and Human Rights
EILCS	Europol Illicit Laboratory Comparison System
EMCDDA	European Monitoring Centre for Drugs and Drug Addiction
EMPACT	European Multidisciplinary Platform against Criminal Threats
ENI	European Neighbourhood Instrument
ENP	European Neighbourhood Policy
EPAC	European Partners Against Corruption
ERISSP	European Reporting Instrument on Sites related to Synthetic Production
EU	European Union
EU-CELAC	European Union and the Community of Latin American and Caribbean States
Eurosur	European Border Surveillance System
EWS	Early Warning System
4-FA	4-fluoroamphetamine
FATF	Financial Action Task Force
Frontex	European Agency for the Management of Operational Cooperation at the External Borders of the Member States of the European Union
GBL	gamma-butyrolactone
GHB	gamma-hydroxybutyrate
HDG	Horizontal Working Party on Drugs
IcPS	Instrument contributing to Stability and Peace
ILO	immigration liaison officer
INCB	International Narcotics Control Board
ION	International Operations on New Psychoactive Substances

IPA II	Instrument for Pre-accession Assistance
IQR	interquartile range
ISF	Internal Security Fund
JIT	joint investigation team
LSD	lysergic acid diethylamide
MAOC-N	Maritime Analysis and Operations Centre – Narcotics
MDA	methylenedioxyamphetamine
MDMA	3,4-methylenedioxyamphetamine
MDPV	methylenedioxypropylvalerone
MSM	methylsulphonylmethane
NCC	National Coordination Centre
NGO	non-governmental organisation
NPS	new psychoactive substance(s)
OAP	operational action plan
OCG	organised crime group
OMCG	outlaw motor cycle gang
PAA	phenylacetic acid
PCU	Port Control Unit
PMK	piperonyl methyl ketone
PMMA	para-methoxymethamphetamine
SMART	Synthetics Monitoring: Analyses, Reporting and Trends
SOCTA	Serious and Organised Crime Threat Assessment
StAR	Stolen asset Recovery Initiative
TEU	Treaty on European Union (Lisbon Treaty)
THC	tetrahydrocannabinol
Tor	the Onion Router
UNODC	United Nations Office of Drugs and Crime
WCO	World Customs Organization

Annex

TABLE A.1

Principal EU legislation linked to drug supply reduction

Drug precursors

Regulation (EC) No 273/2004 of the European Parliament and of the Council of 11 February 2004 on drug precursors

Council Regulation (EC) No 111/2005 of 22 December 2004 laying down rules for the monitoring of trade between the Community and third countries in drug precursors

Commission Delegated Regulation (EU) 2015/1011 of 24 April 2015 supplementing Regulation (EC) No 273/2004 of the European Parliament and of the Council on drug precursors

Commission Implementing Regulation (EU) 2015/1013 of 25 June 2015 laying down rules in respect of Regulation (EC) No 273/2004 of the European Parliament and of the Council on drug precursors and of Council Regulation (EC) No 111/2005 laying down rules for the monitoring of trade between the Union and third countries in drug precursors

Risk assessment and control of new psychoactive substances

Council Decision 2005/387/JHA of 10 May 2005 on the information exchange, risk-assessment and control of new psychoactive substances

Council Implementing Decision of 25 September 2014 on subjecting 4-iodo-2,5-dimethoxy-N-(2-methoxybenzyl)phenethylamine (25I-NBOMe), 3,4-dichloro-N-[[1-(dimethylamino)cyclohexyl]methyl]benzamide (AH-7921), 3,4-methylenedioxypyrovalerone (MDPV) and 2-(3-methoxyphenyl)-2-(ethylamino)cyclohexanone (methoxetamine) to control measures ⁽¹⁾

Forensic analysis and criminal investigation

Council Decision of 28 May 2001 on the transmission of samples of controlled substances (2001/419/JHA)

Council Recommendation of 30 March 2004 regarding guidelines for taking samples of seized drugs (2004/C 86/04)

Information exchange

Council Framework Decision 2006/960/JHA of 18 December 2006 on simplifying the exchange of information and intelligence between law enforcement authorities of the Member States of the European Union ('the Swedish initiative')

Council Decision 2008/615/JHA of 23 June 2008 on the stepping up of cross-border cooperation, particularly in combating terrorism and cross-border crime ('Prüm Decision')

Judicial and police cooperation in criminal matters

Council Act of 29 May 2000 establishing in accordance with Article 34 of the Treaty on European Union the Convention on Mutual Assistance in Criminal Matters between the Member States of the European Union (2000/C 197/01)

Council Framework Decision of 13 June 2002 on joint investigation teams (2002/465/JHA)

Council Framework Decision of 13 June 2002 on the European arrest warrant and the surrender procedures between Member States (2002/584/JHA)

Council Framework Decision 2004/757/JHA of 25 October 2004 laying down minimum provisions on the constituent elements of criminal acts and penalties in the field of illicit drug trafficking

Council Framework Decision 2008/841/JHA of 24 October 2008 on the fight against organised crime

Council Framework Decision 2008/978/JHA of 18 December 2008 on the European evidence warrant for the purpose of obtaining objects, documents and data for use in proceedings in criminal matters

Proceeds of crime

Council Decision of 17 October 2000 concerning arrangements for cooperation between financial intelligence units of the Member States in respect of exchanging information

Council Framework Decision of 26 June 2001 on money laundering, the identification, tracing, freezing, seizing and confiscation of instrumentalities and the proceeds of crime (2001/500/JHA)

Council Framework Decision 2005/212/JHA of 24 February 2005 on confiscation of crime-related proceeds, instrumentalities and property

Council Decision 2007/845/JHA of 6 December 2007 concerning cooperation between asset recovery offices of the Member States in the field of tracing and identification of proceeds from, or other property related to, crime

Regulation (EU) 2015/847 of the European Parliament and of the Council of 20 May 2015 on information accompanying transfers of funds and repealing Regulation (EC) No 1781/2006

Directive (EU) 2015/849 of the European Parliament and of the Council of 20 May 2015 on the prevention of the use of the financial system for the purposes of money laundering or terrorist financing

(1) Similar legislation exists for a number of other substances.

TABLE A.2
Financial instruments supporting drug supply reduction

EU internal action
The Internal Security Fund (ISF) – ISF Borders and Visa – ISF Police The Justice Programme The EU Health Programme Horizon 2020
EU external action
Instrument contributing to Peace and Stability (IcPS)
Instrument for Pre-accession Assistance (IPA II)
European Neighbourhood Policy (ENP) – European Neighbourhood Instrument (ENI) – TAIEX (Technical Assistance and Information Exchange)
Development and Cooperation Instrument (DCI)
European Development Fund (EDF)
European Instrument for Democracy and Human Rights (EIDHR)

TABLE A.3
EU and international supply reduction interventions — matrix of examples

Target → Intervention type↓	Drug markets	Facilitation of supply	Conditions enabling supply
Coordination	<ul style="list-style-type: none"> ■ EMPACT Working Groups and OAPs on heroin, cocaine and synthetic drugs ■ Europol National Units (ENUs): coordination of national contacts and operations ■ MAOC-N and CeCLAD-M EU/international coordination of maritime anti-smuggling operations ■ Southeast European Law Enforcement Center (SELEC) Regional Centre for EU/international coordination of law enforcement (LE) anti-drugs operations in the Balkan Region ■ BSTF for EU/international regional coordination of LE anti-drugs operations in the Baltic Sea Region ■ CARICC regional coordination of LE anti-drugs operations in the Central Asian Region ■ Joint Investigation Teams (JITs) 	<ul style="list-style-type: none"> ■ INCB projects 'Prism' and 'Cohesion' and 'ION': targeting precursors ■ Prevention of the diversion of drugs precursors in the Latin American and Caribbean region (PRELAC) ■ Camden Asset Recovery Inter-Agency Network (CARIN) 	<ul style="list-style-type: none"> ■ The Network of the Immigration Liaison Officers ■ West African Police Information System (WAPIS)
Capacity building	<ul style="list-style-type: none"> ■ Cocaine Routes Programme Airport Communication Programme (AIRCOP), the Seaport Cooperation Programme (SEACOP) ■ Heroin Routes Programme ■ Border Management Programme in Central Asia (BOMCA) ■ Central Asia Drug Action Programme (CADAP) ■ Container Control Programme ■ Global SMART programme ■ The Paris Pact ■ Europol training on dismantling illicit synthetic drug laboratories ■ Heroin route I — fight against trafficking from and to Afghanistan ■ Heroin route II — container control along the heroin route 	<ul style="list-style-type: none"> ■ The Financial Action Task Force (FATF) ■ Supporting Anti-Money Laundering and Financial Crime Initiatives in Latin America (GAFILAT-EU) ■ CEPOL training courses ■ Supporting Anti-Money Laundering and Financial Crime Initiatives in West Africa (AML-WA) ■ Stolen asset Recovery Initiative (StAR) 	<ul style="list-style-type: none"> ■ EU-funded Alternative Development and Sustainable Development support ■ Generalised Scheme of Preferences (GSP) on exports to EU ■ World Bank programmes under Governance and Anti-corruption Strategy
Intelligence gathering and exchange	<ul style="list-style-type: none"> ■ Europol Focal Points with contribution of LE intelligence from EU Member States and international operational partners ■ SIENA network secure communication of intelligence between EU Member States and international operational partners ■ MAOC-N and CeCLAD-M intelligence gathering on maritime anti-smuggling operations ■ INTERPOL's I-24/7 secure police communication system ■ Heroin route II — information networks along the heroin route 	<ul style="list-style-type: none"> ■ The Egmont Group of Financial Investigation Units 	<ul style="list-style-type: none"> ■ Europol Platform for Gang Experts (EPGE) (virtual Community) ■ Network of Immigration Liaison Officers ■ Strengthening cooperation of law enforcement, judicial and prosecuting authorities in Latin America and the Caribbean (AMERIPOL-EU)

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The EU Drug Markets Report 2016 is the second comprehensive overview of illicit drug markets in the European Union by the EMCDDA and Europol. The analysis presented in this report spans numerous topics such as the links between drugs and other crimes, the licit economy and society more generally as well as the processes and players involved in the trade from production and trafficking to distribution. Taking an evidence-based approach, the report reviews the markets for heroin, cocaine, cannabis, amphetamine, methamphetamine, MDMA and new psychoactive substances. It also provides concrete action points to inform policy development at EU and national level.

This publication is an essential reference for law enforcement professionals, policymakers, the academic community and indeed for anyone seeking up-to-date information and analysis on drug markets in Europe.

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The European Monitoring Centre for Drugs and Drug Addiction (EMCDDA) is the central source and confirmed authority on drug-related issues in Europe. For over 20 years, it has been collecting, analysing and disseminating scientifically sound information on drugs and drug addiction and their consequences, providing its audiences with an evidence-based picture of the drug phenomenon at European level. Based in Lisbon, the EMCDDA is one of the decentralised agencies of the European Union.

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