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R E P O R T



Understanding illicit drug markets, supply- reduction efforts, and drug-related crime in the European Union

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Prepared for the European Commission, DG Justice, Freedom and Security

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Introduction

Considerable efforts have been made to collect useful information about the demand and supply of illegal drugs at the international, national and sub-national levels in Europe. However, given the difficulty in developing reliable indicators of supply for an illegal market, most of the successes have been in developing measures of demand and the harms associated with consumption. The contributions made by the European Monitoring Centre for Drugs and Drug Addiction (EMCDDA) in the development of accurate and standardised information across the 27 Member States stand out as exemplary and essential. The demand-side data collected by the EMCDDA provide policymakers with invaluable information that can be used to evaluate the effectiveness of a plethora of policies and programmes intended to reduce drug use and related harms throughout Europe.

The development of measures capturing dimensions of the supply of different illicit substances has been considerably slower, but they now form an emerging field of study in the EU. The EMCDDA is leading many of these efforts and has made significant progress in assembling aggregated data on the retail price and purity of illicit substances. Although various law enforcement agencies frequently report information on seizures, arrests and, less frequently, purity and price, current data collection efforts are insufficient to support careful analyses of these markets in a manner that would enable one to understand the effect of specific supply-side strategies. To advance these efforts, the European Commission DG Justice, Freedom and Security commissioned RAND Europe to recommend indicators for improving the understanding of illicit drug markets, supply-reduction efforts, and drug-related crime in the EU.

The insights and recommendations presented in this report were informed by international meetings with scientific and policy experts; key informant interviews; detailed case studies; results from a survey of forensic labs; RAND's previous work on drug markets and drug-related crime in third countries; and a review of the academic and grey literatures. The number of conferences held and reports published in this field have proliferated in the past year and there appears to be more publications coming soon.

The key insights that emerge from our review of the literature, our own work and our conversations with European experts, include the following:

1. More coordinated efforts to collect information about purity-adjusted prices is critical for understanding the efficacy of supply-reduction strategies.
2. There are at least two approaches that could be used within the EU to improve the collection of purity-adjusted price information.
3. Member States would be better served by adopting a common protocol for reporting seizure data.
4. It is difficult to generate reliable estimates of the crime burden associated with the supply and use of prohibited drugs.

Based on these key insights and a conceptual framework for thinking about the supply chain for drugs, we developed some immediate-term, near-term and long-term recommendations to assist the European Commission in their goal of monitoring drug markets and drug-related crime. We will now describe in greater detail the key insights and then discuss the recommendations that are shaped by them.

Key insights

Insight 1. More coordinated effort to collect information about purity-adjusted prices is critical for understanding the efficacy of supply-reduction strategies, particularly the impact of specific law enforcement activities

When thinking about the relationship between demand and supply of an illegal drug like cocaine, heroin or methamphetamine, it is important to distinguish between two types of prices: raw prices and purity-adjusted prices. If someone purchases a 1g bag of heroin on the street for €75, the raw-price per gram is €75. However, we know that heroin purchased at the retail level is usually diluted by dealers trying to expand their profit margin and dealers often do not necessarily know the precise purity of what they are selling. Thus, it would not be unusual if a gram of heroin purchased for €75 in one part of the city was 20 percent pure and in another place it was 30 percent pure. In this example, the purity-adjusted prices would be €375 per pure gram of heroin ($€75/0.2$) and €250 per pure gram of heroin ($€75/0.3$), respectively.

To truly understand what is being traded and to appropriately monitor and analyse these markets, one needs to know not just the amount traded and the raw (gross) amount paid, but also the purity of the drug that was traded. If law enforcement agencies successfully reduce supply in a region, drug-dealers actually have two potential responses depending on the drug being sold: 1) they could respond by raising their monetary prices for the same drug they were selling before to account for the fact that there is now a shortage in supply, or 2) they could maintain their current price and dilute the product that they sell. Building on the example from above, the dealer who sold €75 one-gram bags at 30 percent purity could add diluents to account for the reduced supply and now sell it at 20 percent. In this case the purity-adjusted retail price will increase by 50 percent (from €250 to €375). However, if law enforcement simply examined the raw-price per gram, it will look as if the law enforcement intervention had absolutely no effect.

Most law enforcement agencies within Europe provide information on raw prices to EMCDDA and UNODC. Not surprisingly, because of the rigid nature of nominal prices

for drugs exchanged in drug markets, there usually is not much variation in the reported price from year to year. Agencies are far less likely to report information on purity-adjusted prices, yet purity is the attribute of drugs that changes quite demonstratively across locations and time (Caulkins, 1994; Arkes *et al.*, 2004). Thus, purity-adjusted prices, which normalise nominal prices of a drug by the average purity of the drug contained in that package, provide a lot more information regarding how drug markets react and respond to shocks.

Throughout the report we reference studies conducted by analysts that use the variation in purity-adjusted prices to understand whether and how law enforcement influences the supply of drugs in particular markets and/or drug consumption. An important lesson learned from these studies is that markets can and do rebound quickly, even from major supply shocks. Thus, purity-adjusted price data collected and/or reported in infrequent intervals (for example, annually) may not be terribly useful for identifying the effects of supply strategies on markets. However, annual data are much better than no data.

Insight 2. There are at least two approaches that could be used within the EU to improve the collection of purity-adjusted price information

While a growing number of surveys across the world inquire about how much users paid for illegal drugs (especially for cannabis) for a specific quantity of the good (such as a gram or an ounce), this information is only of limited value since these surveys do not ask about the purity of the purchase. The actual value of the drug is a function of quantity purchased, price paid and the purity of the drug. But even if surveys did inquire about purity, this information would likely be limited as most sellers and users do not know the precise quality of what they are exchanging (Caulkins, 1994; Caulkins *et al.*, 2004; Ben Lakhdar, 2009). Thus, information on purity-adjusted prices cannot come solely from self-reported surveys. That being said, self-reported information about price per *raw gram* is now being used in very innovative ways to generate information about purity-adjusted prices (see Appendix A).

The most common approach currently used by law enforcement and policymakers to obtain information on purity-adjusted prices is to obtain transaction-level information from law enforcement agencies. In some jurisdictions, law enforcement agencies will not only record the price paid and total quantity purchased during an undercover drug operation, but will also send the seized drug to a lab for purity testing. In addition, some jurisdictions will send undercover law enforcement officials to several different places and see how much of a drug they can purchase for a fixed price, with no intention of making an arrest. This product will then be sent to the laboratory for purity testing and often for signature testing to determine where the product came from.

In both of these cases, we can use the transaction level data to calculate the purity-adjusted price:

$$(1) \quad \text{Price per pure gram} = (\text{Total price paid}) / (\text{Number of grams} * \text{Purity})^\beta$$

where β measures the extent of quantity discounts in the market (Caulkins and Padman, 1993). But if we want to create a price series that more accurately captures the prices faced by users, then we need to account for the fact that users usually do not know the purity of what they are buying – they make their decisions based on the expected purity. RAND

developed a method for using these transaction-level data to generate a price series that accounts for expected purity (Caulkins *et al.*, 2004). This approach has since been adopted by other researchers (Institute for Defense Analyses, 2008).

While transaction-level information from law enforcement agencies is preferable for generating purity-adjusted prices, it may not be feasible for some Member States to collect this information, especially in the short run. In some countries there are economic barriers, legal barriers, or both. In these cases we must consider alternative measures. A second strategy proposed within this report (presented fully in Appendix A by Caulkins and colleagues) is to merge available high frequency purity information from seized drugs examined in forensic laboratories and self-reported raw price information and construct purity adjusted prices. Since many EU countries submit seized drugs to labs for purity testing and some surveys already inquire about self-reported prices, acquiring this data would not require a tremendous outlay of resources.

While some countries can obtain this from forensic lab tests of seizures, there are alternative methods for obtaining purity data. For example, pill testing has been available at dance parties across Europe for more than a decade (Kriener *et al.*, 2001). As for other drugs, the French Monitoring Centre for Drugs and Drug Addiction conducted a study where they interviewed heavy cannabis users and then asked respondents to ‘donate’ a small amount of their cannabis so it could be sent to a lab and tested (Ben Lakhdar, 2009). While this provides ‘proof of concept’ for obtaining purity information from non-law enforcement efforts, it is critical to remember that the purity data must be collected frequently if they are to be used to understand markets and law-enforcement efforts.

A critical issue to consider when using forensic data to develop a purity series is the method through which the observations are acquired (that is, undercover purchases versus seizures). If forensic data only come through seizure information made at entry points into the EU or a given Member State, then it might not actually reflect the range of purities available at the street level. Evidence from the System To Retrieve Information from Drug Evidence (STRIDE) database, which includes both seizure observations as well as transactions involving money, shows this to be true in the US data. In work that RAND conducted for the Office of National Drug Control Policy, we examined purity data based only on purchase transactions and found that the expected purity of the exchange varied substantially depending on the level of the market in which the transaction was made (Arkes *et al.*, 2004; Caulkins *et al.*, 2004).

Keeping that point in mind, the value of collecting purity information through acquisitions that make it to a forensic lab for analysis would be an important starting point for generating a time series in any location. When purity information is coupled with semi-regular information on raw price paid, which could be obtained through local population surveys, interviews with injection drug users, or even through questionnaires administered at the intake to treatment, one could construct information on purity-adjusted prices for specific areas at relatively low cost. Regardless of the approach, it is preferable to collect this

price information at multiple points (for example monthly or quarterly) throughout the year.¹

Insight 3. Member States would be better served by adopting a common protocol for reporting seizure data

As described in greater detail in Chapter 4, law enforcement seizures of illicit drugs serve at least four purposes, they:

1. increase the deterrent effect on transporting drugs (product loss and identification of people to prosecute)
2. impose costs on suppliers, which is believed to increase price (and hence reduce demand)
3. generate information about the geographic flow of drugs into markets and the participants²
4. provide a performance measure for law enforcement agencies.

With respect to the amount of illegal drugs actually seized by law enforcement:

the quantity seized is a function of at least three factors: (1) the quantity shipped, (2) the relative skill of the interdictors, and (3) the care taken by smugglers (Reuter, 1995).

These factors provide an insight into how a change in seizures over time can relate to the actions of interdictors. A decrease in seizures over time can occur either because the enforcement agency becomes *more effective* and deters suppliers from trafficking drugs in their jurisdiction or because the enforcement agency has become *less effective* and is unable to interdict the same number of shipments.

The utility of this information for policy purposes, however, can be greatly enhanced depending on how much information is collected about each seizure and how this information is maintained in databases. Types of information that are particularly useful for quantitative analyses include: date of seizure; location of seizure; reason for seizure (e.g. discovered during arrest or undercover purchase, passive or targeted); method and mode of transportation; number and nationality of persons arrested; origination of drug; expected destination of drug; type of drug; weight, number of packages (e.g. 1 kilo or 100 bags of crack) and, as previously mentioned, purity (if sent to a lab); and a type of identification code that would make it easier to link related seizures. With this information, a variety of indicators could be created that can be used to better track changes in drug markets, including:

- total number of seizures
- total weight seized
- expected and actual average purity, by source country, time and market level

¹ The sample sizes required for these calculations will depend on the measure being examined, the size of the difference the analyst would like to detect, and the desired level of precision. See Chapter 3 for more details.

² One could also obtain this type of information if there was a database of shipments that were not seized (e.g. from wire tap information). We thank Jon Caulkins for this insight.

- distribution of seizure weights (minimum, maximum, average, mode, variance) by country, drug, time and market level
- share of seizures coming from different countries, and regions (would be more accurate if there is a signature programme)
- drugs and possibly other illicit goods that get moved/distributed together.

Learning about the number of different types of drugs or illicit goods obtained in a seizure can help law enforcement understand when certain trafficking routes are being used for multiple purposes or if specific traffickers are moving into new lines of business. Additionally, information on the distribution of seizures (min, max, median, mean, and variance as well as actual number of seizures on specific dates) in a specific location over time provides information regarding the relative importance of specific routes and whether there is seasonality in transporting of drugs through specific routes. Beyond collecting purity information, obtaining signature information about where the drugs are coming from can help determine whether average purity is changing in response to a shortage or excess supply, or if purity is changing because the source of the drug has changed and the new source has a different purity (implying a change of purity that is independent of domestic market enforcement activities). Law enforcement can also benefit from forensic analyses that attempt to link individual seizures and/or delivery mechanisms (e.g. false-bottom suitcases).³

Unfortunately, no common protocol for reporting seizure data among the Member States currently exists. Most countries report information about the total number of seizures and the total weight to international organisations such as the EMCDDA or the United Nations Office on Drugs and Crime (UNODC). Some countries do report seizure-specific data to the UNODC on a biannual basis, but no information is available on the purity of these seizures. While it is encouraging that the Pompidou Group has recommended that seizure-level data reported to Customs be made available for analysis by those in the Liaison offices (Personal communication with EMCDDA officials), Member States should come to an agreement on a protocol so that more of this information can be incorporated into EMCDDA's annual statistical bulletin and made available for analysis.

Insight 4. It is difficult to generate reliable estimates of the crime burden associated with the supply and use of prohibited drugs

Drug-related crime encompasses violations associated with prohibition and any illicit activity caused by consumption or participation in the supply of these prohibited substances. Thus, it is useful to think about this construct in terms of drug law *offences* and the *consequences* of drug consumption (e.g. acquisitive crime) and drug-trafficking (e.g. corruption of border officials). While it is important to make sure that definitions of drug-related crime are not too exclusive (e.g. it should consider the corruption that is often caused by the trafficking organisation), the focus should be to generate measures that help us better understand the magnitude of the burden imposed by drug-related crime.

To better understand the crime burden associated with prohibited drugs, RAND developed a model that considers each stage of the drug supply chain, how they are related

³ The Serious Organized Crime Agency incorporated this into Project Endorse, the new seizure UK database program. See Chapter 6 for more details.

to types of crime, and the actors involved. The conceptualisation and categorisation of crimes presented in Figure S.1 are based broadly on a growing understanding of drug markets and how they operate in particular parts of the world.⁴ Supply-side, drug-related crime involves illegal activities in the support of the cultivation, processing, manufacturing, distributing, transporting or delivery of a drug to a market and/or consumer. This would include, in addition to the activities just mentioned, the forgery and falsification of documents; bribery; money laundering; use of coercive force or threat to support the cultivation, production, manufacturing, shipment or delivery of a drug; hiding of a product or intermediate products; manufacturing of precursor chemicals or other intermediary products used in the production or manufacturing of drugs; and the shipment/transportation of drugs within a country, region or across international borders. This would also include the violence sometimes associated with acquiring drugs or money, enforcing contracts or collusion, and deterring new suppliers from entering the market. These crimes are especially important when considering advanced models that do not assume perfect competition.

The user-related drug crimes most commonly studied by researchers are at the bottom of Figure S.1. Researchers analyse these crimes, because Member States are able to better track many of these forms of crimes. The demand-side, drug-related crime comprises activities that support the acquisition of an illegal substance, support the consumption of illegal substances, or is caused by the use of that drug (both perpetuated crimes and victimisation). This includes, but is not limited to, the purchase of drug paraphernalia, property crime, physical assault and prostitution. It also includes activities that result from being under the influence of a drug, such as sexual or physical assault, driving a car or other heavy machinery under its influence, domestic violence or intimate partner violence, and child abuse or neglect.

A simple examination of Figure S.1 provides insights into the difficulties of trying to construct indicators of drug-related crime in any jurisdiction. While much attention is given to offences associated with prohibition (e.g. possession and sales), those associated with generating revenue to obtain drugs (e.g. property crime, prostitution) and violence among dealers, there are a number of offences associated with the different levels of the supply chain (e.g. diversion of legal precursors, bribery, corruption of border guards) that also need to be considered and are not nearly as well understood. Furthermore, countries will have different portfolios of drug-related crimes and there could be changes in criminal activities within countries over time. Several have suggested the construction of a composite indicator of drug-related crime that can be computed and compared across all jurisdictions. One approach for constructing this indicator is to place a monetary value on specific crimes and then generate the economic cost of drug-related crime for a jurisdiction. This figure could be denominated by gross domestic product (GDP) to create a measure that is comparable across jurisdictions.

⁴ This framework led us to define drug-related crime as “Any illicit activity that is (at least partially) caused by the production, delivery, acquisition or consumption of drugs.” See Chapter 5 for a detailed discussion of this framework, definition, and the related literature.

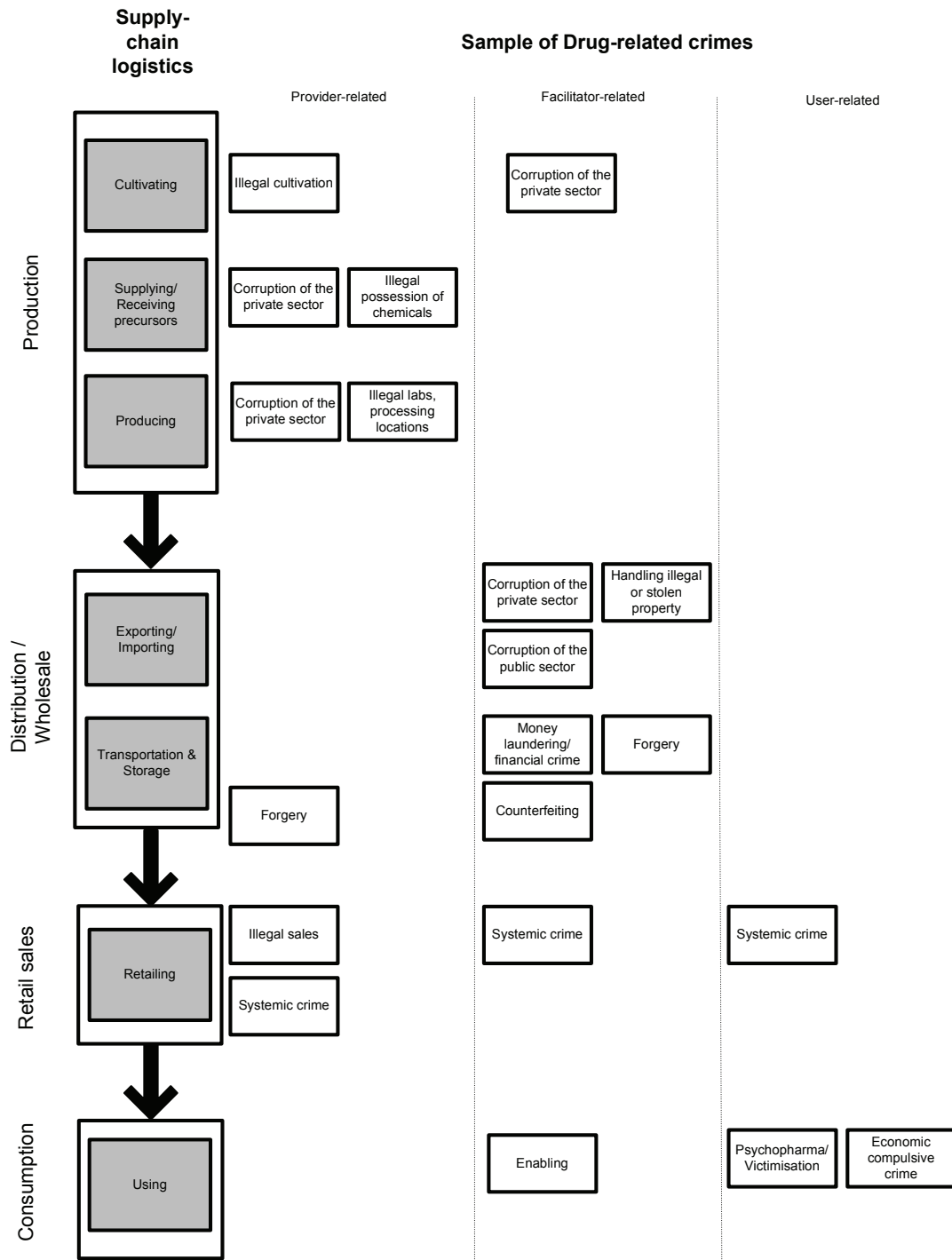
While development of a composite measure of drug-related crime may be appealing, there are at least two reasons why this approach is infeasible. First, calculating the cost of specific crimes to society and the share of offences that can be attributed to drug production, trafficking or consumption are not trivial tasks. Calculating the cost of crime is a growing field in the EU and new techniques are being generated for other countries (e.g. French *et al.*, under review). However, it is very difficult to estimate the criminal justice costs associated with drug law offences. Thus, it is expected to take a long time before Member States will be able to generate comparable cost estimates of these costs (Pacula *et al.*, 2009).

Second, it is unrealistic to think that a singular measure of drug-related crime can be consistently constructed and monitored for all Member States (MSs) for the simple reason that not all MSs define the same behaviours as crimes. Two relevant examples in the case of illicit drugs are drug possession offences (which are not criminal offences in Portugal, Spain and Italy) and prostitution. Similarly, a specific behaviour (e.g. violence) can be related to drug use or dealing or trafficking in one country, while it is not in another. MSs do not consistently define these behaviours as crimes, and hence monitoring them in a consistent fashion across countries would be extremely difficult.

Using administrative data on reported crimes or survey-based victimisation rates provides us with the possibility of estimating regression models to determine whether changes in consumption correspond with changes in crime or victimisation rates, while accounting for several other community-level factors that may also influence crime. While it is relatively easy to obtain high-frequency crime data at sub-national levels, it is much more difficult to obtain sub-national information on drug use and victimisation. Additionally, there is an endogeneity issue with respect to crime and drugs: in other words, it is not clear if an increase in drug use in a community leads to more crime or vice versa. If advanced statistical techniques are not used to address this possibility, the resulting analysis may yield biased estimates of the effect of drug use on crime. In cases like this, researchers seek alternative variables that are correlated with drug use but not crime (instrumental variables). For property crime, purity-adjusted price is a plausible instrument, but is less so for violent crime since changes in drug prices could generate violence among competing gangs. Drug laws are also used, but this assumes that proxies for expected sanction influence consumption. This may not be the case in all Member States.

In conclusion, attempts to generate comparable EU-level indicators for drug-related crime will likely have to focus on drug law offences. Knowing how the number of high-level trafficking arrests for a specific drug changes over time in a particular region can be useful for understanding changes in trafficking routes as well as the effectiveness of MSs and multinational interventions. While some countries do collect information on drug-specific trafficking offences, many do not. Another issue surrounding drug-trafficking offences is that there are noticeable differences between the EMCDDA and Eurostat estimates and the differences are inconsistent across countries. Finally, as noted in the seizure discussion above, it is difficult to interpret changes in arrests rates over time without the appropriate denominator (e.g. enforcement spending, number of police officers). That being said, if there remains pressure on the EC to collect information about drug-related crime, this seems like a logical starting point.

Figure S.1: A framework for thinking about drug-related crime



Notes: The grey boxes represent drug law offences. This is not an exhaustive list of the crimes associated with each level of the market and in many cases the crimes listed could be applied to multiple levels of the supply chain. The specific crimes will vary according to the type of drug being considered.

Recommendations

In light of these insights and to help prioritise the limited resources available for developing indicators, we offer the following recommendations to the European Commission, Member States, and other European institutions. Since some MSs are much further along in the development of data systems that can be used to generate the indicators, we present recommendations for three general time horizons from the EC's perspective: immediate-short-term, near-term, and long-term. Recommendations for the immediate short term can be implemented almost immediately and do not require large expenditures. Others will likely require more coordination and expenditure.

Immediate short-term recommendations

- Obtain and analyse existing forensic purity information for illicit substances at the national and sub-national levels. Some law enforcement agencies in MSs send all of their seizures to labs for testing while others only submit samples if requested by the prosecutor. Results from our survey of European Network of Forensic Science Institutes suggest that a majority of responding institutes have computer databases with purity information, with about half going back to the year 2000 or earlier. Given the importance of this information for understanding drug markets and supply-reduction efforts, we strongly encourage analysis of the existing data collected by these labs to inform understanding of what is available. While tabulating the number of samples available for each month and drug (preferably by sub-national unit) is a useful first step, Chapter 3 and Appendix A demonstrate that more can be learned from advanced statistical analyses that take advantage of regional and temporal variation in the data and external validity checks. This will, of course, require the cooperation of the labs; our survey results suggest that the majority of responding institutes would in fact be willing to share this information for research purposes.
- Commission the EMCDDA to streamline the data reporting requirements for Member States. It is clear from our conversations and meetings with policy experts that there is a lot of overlap in the data reporting requirements for MSs to local, national, and international organisations, especially with respect to seizures and precursor substances. If this process could be streamlined it may free up time and resources for MSs to entertain new data collection efforts. Given its infrastructure and experience in this field, the EMCDDA is well-positioned and equipped to identify these overlaps and streamline these processes. With respect to precursors, the EMCDDA should work closely with the EU Working Group on Drugs Precursors.
- Create a formal network of researchers, law enforcement officials, forensic scientists and policymakers to regularly discuss advances and challenges in evaluating supply-side enforcement strategies and creating a pan-European database with detailed information about drug seizures. For purity-adjusted prices data to advance understanding of supply-reduction and crime, they will have to be collected for an extended period of time so that trends can be detected and statistically analysed. To maintain interest in these efforts and build the relationships necessary for exchanging data, it would be useful to organise annual or bi-annual meetings that would bring together members of this network. Since the EMCDDA, as well as other European institutions, have working groups and ongoing activities related to some supply-side

issues, it will be critical to make sure that this network does not duplicate previous or existing efforts. In fact, one of the goals of this network can be to regularly identify all of the groups and activities in Europe related to collecting information about the supply side of the market to help reduce redundancies and maximize resources.

- Recommend to Member States that they decide whether they want to measure drug-related crime in their country, and if so, which crimes. To understand the true burden associated with illicit drugs, it is necessary to understand the extent to which drugs *cause* crime. There are several types of offences that can be considered when attempting to measure the level of drug-related crime in a jurisdiction. While much attention is given to offences associated with prohibition (e.g. possession and sales), those associated with generating revenue to obtain drugs (e.g. property crime, prostitution) and violence among dealers, there are a number of offences associated with the different levels of the supply chain (See Chapter 5). Bribery, document forgery, money laundering, and extortion associated with drug-trafficking are also types of drug-related crime that could be considered. The level of drug activity in a country (e.g. are they primarily a ‘consumer’ or ‘trafficker’ of illicit drugs?), will likely determine the types of crime considered and the subsequent methods required to measure this relationship. While this information may be useful for Member States, they should consider the opportunity costs associated with developing these attribution factors. This is not an easy task and it may be better to focus analytic resources and data system development on other indicators.

Near-term recommendations

- Combine forensic lab and police case info in a way that allows operational analysis (by police) and strategic analysis (by police and policy analysts). Some law enforcement agencies do not keep detailed information about the circumstances of individual seizures in a computer database – including purity information. Since many labs already maintain databases of all samples analysed, it might be possible to build these databases to retain more useful information about seizures for analytic purposes. For example, law enforcement agencies could be asked to submit a simple information sheet pertaining to the circumstances of the seizure (e.g. date, location, time of day, weight, method of detection, type of container, etc.). While law enforcement agencies may be limited with respect to the information that they can actually share with the labs, basic information, such as the total weight and location of seizures, would be useful. This effort would likely require a formal agreement between the law enforcement agencies and the labs, especially with respect to which institution(s) would be able to access these data and use them for analytic purposes. Finally, the labs would need to be compensated for collecting and distributing these data.
- Record and analyse information about undercover drug purchases in countries where this occurs. One approach to generating purity-adjusted prices is to use the transaction-level information obtained about the price, weight and purity of drugs found in, and the circumstances of, undercover drug busts. ‘Buy and busts’ occur in a number of European countries (Fijnaut, 1993; Nadelmann, 1993; 1995; Veen, 1999) and it would be useful to use this information (possibly along with information about the purity of seizures) and apply RAND’s methodology for generating price series (Caulkins *et al.*, 2004; IDA, 2008). The time and resources required for this effort

depend on how much of this information is currently available in electronic format. This could be very time- and resource-intensive if it requires creating a database from hard copies of investigation files. The United States' Drug Enforcement Agency's Domestic Monitoring Programme (DMP) operates in almost 30 cities and, throughout the year, involves law enforcement agents and their informants seeing how much heroin they can purchase and of what quality for \$100. Law enforcement or their informants make the purchase and then submit the entire package to the lab – there is no investigation of the seller and no strategic plan in terms of infiltrating a drug network. Given that it is not related to any strategic law enforcement activities, the purchases can be thought of as more random than the typical entry in a seizure database (although still not representative). From the perspective of data collection, we encourage other jurisdictions to at least consider this approach when deciding the best way to generate information about purity-adjusted prices. This approach could also be improved with the development of a strong sampling frame and/or weighting schemes to help generate samples that are more representative of typical transactions.

- Request Member States to report information about seizures to the EMCDDA by 'weight bins'. An important point made in this report is that information about the total number of seizures and the total grams seized is of limited value for understanding changes in drug markets and supply-side interventions. At a minimum, it would be useful to also include information about the median weight seized. This would make it possible to determine whether a few large seizures were having a large effect on the statistics. It would be preferable if information about the total number, total weight, median weight (and purity if possible) was reported for transactions at different levels of the market. The 'weight bins' (e.g. less than or equal to 1 gram, between 1 and 10 grams, between 10 and 200 grams, more than 200 grams) that generally capture the retail, mid-level retail and wholesale transactions will likely differ by country and substance. But reporting information for these bins will allow law enforcement officials to learn more about whether certain activities are influencing the distribution in typical trades made in the market. At the aggregate level, it is more difficult to detect changes in the size of transactions over time.
- Collect systematic data about what happens after someone is arrested for a drug offence or commits a drug violation while on probation. While arrests for drug possession and sales are important for assessing the costs associated with drug-related crime, this is only one aspect of the costs. The costs generated after arrest, such as adjudication or incarceration, should also be included if one wants to better understand the costs associated with these types of crimes. Additionally, this information is also important for understanding the expected sanction associated with these types of offences. While studies about the general deterrent effect of expected sanctions for drug offences are notoriously mixed, there is emerging evidence that swift, certain and small sanctions for probationers who test positive for drugs or miss appointments can have a strong specific deterrent threat. For analyses of different legal regimes or probation practices, it is important to focus on the probabilities of detection and punishment as well as the type of sanction typically imposed. Even in countries with good data systems, information about what happens after a drug violation is hard to obtain. Thus, this task will likely pose a special challenge for those

countries with less developed data systems. While part of this is simply a resource issue, there may also be local barriers with respect to tracking arrestees and probationers through the system that will have to be considered.⁵

Long-term recommendations

- Regularly collect information about drug prices and other topics from heavy drug users. To create a prices-series based on the methodology discussed in the Appendix, MSs will need to collect low-frequency price information. This information could be obtained in a variety of ways, including surveys with arrestees, treatment participants, or a convenience sample of heavy drug users. Since drug law-enforcement activities are often temporarily effective at best, it can be difficult to study these disruptions if price information is only collected on an annual basis. Annual information collection is a useful first step, but it would be preferable if this information were to be collected on a quarterly basis. Inquiring with users about the price paid at last transaction as well as other information about the transaction (e.g. “Did you purchase from your regular dealer?”) and the market (e.g. “Did you ever try to buy heroin in the past month and were you unsuccessful? If so, why?”) would be very useful. It is also important to note that these surveys can be used to obtain information about a variety of topics (e.g. crime, health, welfare) and can be developed to have rotating modules where some questions can be asked every quarter, some can be asked annually, and others can be asked only once.
- Collect information about typical quantity consumed by type of drug user. One of the major impediments to understanding the size of drug markets is the dearth of information about the typical quantities consumed on a use day. Earlier reviews of the quantity-consumed literature will serve as a useful starting point for researchers interested in this question; however, considerable work needs to be done in this area. While useful information about cannabis consumption can be obtained from records in general population and school-based surveys, in most countries insightful information about harder drugs will need to be obtained from other populations. If Member States are interested in learning more about the use patterns and drug market activities of heavy drug users who account for most consumption in mature markets, they should consider adding new questions and possibly new populations to their survey portfolios. As noted above, in some jurisdictions it makes sense to target arrestees, while in others it may make more sense to focus on those entering treatment or convenience samples of heavy users. Obtaining information about typical grams consumed on a use day by frequency of use (e.g. past month, past year) would be a valuable contribution; and focusing on other subgroups would be even better (e.g. by age, gender, race/ethnicity).
- At the EU level, standardise definitions of drug-trafficking offences then involve MSs in tracking these offences for specific drugs. The EMCDDA collects arrest information from the National Focal Points by type of drug and type of offence (i.e. possession and

⁵ As this report goes to press, the EMCDDA is about to release a Selected Issue on sanctions for drug offences. This will be a useful contribution to the field and it should make it easier for analysts to understand what happens after someone is convicted of a drug arrest.

sales), but not jointly. Thus, the Statistical Bulletin cannot be used, for example, to track how cocaine trafficking arrests have changed over time. Making international comparisons is also difficult since MSs report different types of trafficking information to the EMCDDA (e.g. arrests, convictions). Making intranational comparisons is also complicated by the fact that MSs report different information about the number of trafficking offences to the EMCDDA and Eurostat. There are large differences between these estimates and they are not consistent across countries. It will take significant resources and efforts to agree on common definitions and incorporate them into practice. Fortunately, there is a lot of discussion in Europe about harmonising criminal justice data systems (e.g. DG JLS), not just related to drugs. As these data collection efforts advance, it will be critical to make sure they include fields for specific drugs and specific offences. Additionally, these new data systems should include fields which allow law enforcement officers to estimate the weight of the drugs obtained (similar to that which is being done in the US with the new National Incidence Based Reporting System).

- Create a pan-European database with detailed information about specific seizures in Europe. The creation of such a database could improve understanding of trans-European drug flows and their response to Member States' and coordinated policy initiatives. While it would be ideal to capture information about every seizure, a programme such as the UK's Project ENDORSE is probably more realistic. This programme focuses on collecting detailed information on all seizures over 25 grams. This would be a long-term project as it would require MSs to create these databases, coordinate interoperability, have an international organisation to link them and regulate who would have access to this information. The first iteration could simply include the information that is currently collected by many of the forensic labs. Combining this with the seizure-level information that is reported to the UNODC by some MSs could be informative (see Table 4.2 for more information on these countries' reporting). If law enforcement agencies decide to share more information about the seizures with the lab, this information could also be added to the database. This recommendation is closely related to the harmonisation recommendations made in 2001 by the Council of the European Union (2001). Among other things, the Council recommendations suggested that these elements should be collected for all seizures: date of seizure; place of seizure; type of drug; appearance; amount; price; and purity. The recommendations were intended to be a guidance document and during our Policy Expert meeting in July 2009 questions were raised about why they were not implemented in most Member States. Understanding the barriers to implementing these 2001 recommendations will need to occur before there can be a serious discussion of creating a pan-European database.⁶ Thus, we consider this a long-term recommendation.

⁶ A good place to start is the UK Home Office's Review of Drug Seizure and Offender Statistics which was published in 2004 (Home Office 2004). See Chapter 4 for additional details.

Closing thoughts

During our meeting of policy experts, some law enforcement officials noted that while it would be ‘nice-to-know’ about many of the indicators and data systems, they wanted to make sure the focus was on the information that they ‘need-to-know’. This is a valid point as it speaks to the importance of acknowledging time and resource constraints as well as the fact that it may not be obvious to those who are burdened with new data collection and reporting tasks how this information is relevant to their department or agency. We have three responses.

First of all, none of our immediate-term recommendations involve law enforcement agencies, except for those officials who would attend our recommended group about the advances and challenges in developing supply-side indicators. We realise that many law enforcement agencies are already burdened with data collection and reporting requirements from local, national and international agencies and we hope the EMCDDA can help streamline these efforts in the future.

Second, forensic and statistical analyses of purity data can provide additional intelligence for ongoing investigations. While the purity information is important for creating indicators and helping prosecutors learn whether the substance was indeed illegal, forensic analysis can also be used to learn whether certain seizures are related (e.g. come from the same source, use the same type and ratio of cutting agents). An example of such an analysis project is the Collaborative Harmonised Amphetamine INitiative (CHAIN), which was terminated in 2008, and should have established a sustainable European amphetamine system. Currently, the Member States, Commission and Europol are examining the establishment of an EU-wide system for the forensic profiling in relation to drugs law enforcement of synthetic drugs and other drugs.⁷ Indeed, similar analyses can be conducted on the containers and packages in which the drugs are shipped. The UK’s Project ENDORSE is a good example of a comprehensive system for multiple substances (not just amphetamines), but many MSs and local jurisdictions may not have the resources to develop such a programme. As an alternative, agencies could submit readily available information to the labs when sending the samples and then this information could be entered into a computer by the lab (e.g. total size of the seizure, number of packages, nationality of the trafficker, location of the seizure, etc). The resulting database could be very useful for understanding patterns and making connections between cases. Indeed, some MSs already report this seizure-level information to the UN, but it does not include the forensic analysis.

Finally, the goal for creating these indicators and collecting additional information is to improve our understanding of markets and different supply-reduction efforts. The work that has been done by the EMCDDA and others to develop consistent demand-side indicators has made it easier to understand trends, make useful comparisons, and target scarce prevention and treatment resources. However, these efforts have taken several years and it would be surprising if it did not take as long to develop indicators of similar quality and consistency on the supply side – especially when considering the existing variation in MSs data systems. This does not mean that we cannot immediately improve our

⁷ This objective is reflected in Action 30 of the EU Drugs Action Plan (2009-2012).

understanding of drug markets and supply-reduction; rather, it suggests that there is information to be learned in both the short and long run. It will likely take many years before enough information is collected to be able to generate many of the insights that law enforcement agencies and policymakers 'need-to-know' about drug markets, supply-reduction, and drug-related crime in the EU.