



Contemporary Asian Drug Policy

Insights and Opportunities for Change

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Preface

Countries in Asia have typically addressed illicit drug supply and use with harsh punishments, including compulsory treatment and the death penalty. The region has long espoused the goal of creating a drug-free society, a goal that has been abandoned in other parts of the globe for being infeasible.

Like many other places in the world, there are emerging discussions in Asia about policies to reduce drug use and trafficking. This report aims to help inform policymakers and the public by describing the illicit drug situation for selected Association of Southeast Asian Nations + 3 countries (China, Japan, and South Korea). The authors present three case studies related to the shifting drug and drug policy landscape in Asia: (1) the violent crackdown on drug users and sellers in the Philippines, (2) Thailand's shift from a similar crackdown toward an alternative approach of reducing criminal sanctions for drug use and improving access to medication treatment and needle exchange, and (3) China's emergence as a major source of many new chemical precursors and drugs that are exported outside Asia.

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Summary

Changing patterns in drug use and supply can affect the well-being and development of Asian countries in myriad ways: The burden of disease from injection and/or frequent drug use, overreliance on the criminal justice system, and rising drug-related crime can impede economic, environmental, and social development (United Nations Office on Drugs and Crime, 2017b). Historically, countries in Asia have addressed illicit drug supply and use with harsh punishments, including compulsory treatment and the death penalty. The region has long espoused the goal of creating a drug-free society, a goal that has been abandoned in other parts of the globe for being infeasible.

Like many other places in the world, there are emerging discussions in Asia about policies to reduce drug use and trafficking. To help inform these discussions, this report describes the illicit drug policy landscape for selected Association of Southeast Asian Nations + 3 countries (China, Japan, and South Korea), which account for about 30 percent of the world's population. Specifically, we examine data on drug use, drug supply, the burden of disease associated with illegal drug use, and policy responses. These insights are based on published reports, peer-reviewed articles, media reports, and interviews with subject-matter experts.

This report also presents three case studies on the shifting drug and drug policy landscape in Asia: (1) the violent crackdown on drug users and sellers in the Philippines, (2) Thailand's move from a similar crackdown toward an alternative approach of reducing criminal sanctions for drug use and improving access to medication treatment and needle exchange, and (3) China's emergence as a major source of many new chemical precursors and drugs that are exported outside of Asia.

Key Findings

There is tremendous imprecision in the data available on the total amount of drugs consumed in Asia or the money spent on these substances. This information is critical for understanding the revenue generated by illicit drug traffickers, grasping the magnitude of drug-related crime, and putting the amount of illicit drugs seized into context. Furthermore, many Asian countries do not have the data infrastructure to generate reliable estimates of drug use, especially when it comes to substance use disorder. Most countries rely on surveys of self-reported behaviors to learn about substance use in the general population, and issues of underreporting might be more pronounced in Asia compared with other regions given greater stigmatization and harsh punitive responses.

The limited data available about the number of drug users suggest that opiates (e.g., opium and heroin) and amphetamine-type substances (e.g., methamphetamine and amphetamine) are of

greatest concern, although there are reports of rising trafficking and use of uncontrolled psychoactive substances, such as ketamine in China and synthetic cathinones in Southeast Asia.

Injection drug use is common in opiate- and methamphetamine-using populations, and several countries in the region have reported alarming rates of blood-borne illnesses among injection drug-using populations. This is a major contribution to Asia's burden of disease. The region traditionally has employed compulsory inpatient treatment, although many countries are starting to adopt voluntary outpatient medication therapies, especially for opiate users. Nonetheless, gaps in access remain and some countries have maintained restrictions on medication therapies.

The Philippines has embarked on a violent repression of drug distribution and use. According to human rights groups, the national police force and vigilante groups have committed thousands of extrajudicial killings since mid-2016 (Amnesty International, 2017). Hundreds of thousands of people have surrendered to authorities for suspected involvement with drugs, contributing to prison overcrowding and overwhelming treatment capacity. There seems to be no official effort to evaluate the effect of this crackdown on the drug market or to consider the broader costs to society. Nevertheless, other countries (e.g., Bangladesh and Indonesia) have indicated their intentions to adopt similar violent crackdowns in local drug markets.

Extrajudicial killings of illicit drug users and low-level sellers (many of whom also use drugs) are forbidden under multiple international conventions. This is a particularly dubious approach for improving health and safety outcomes related to illicit drug activity and could have unintended consequences for the broader market of people who use drugs (e.g., deterring those with substance use disorders from seeking health and psychosocial services).

The Thai government has shifted its drug policy rhetoric and orientation toward treatment and reduced punishment. The policy reversal in Thailand comes after a violent—but brief—crackdown on drug users and sellers in 2003–2004. Government rhetoric underscores that repressive policies failed to curtail the problem and that a more nuanced understanding of reducing drug demand and the harms from drug law enforcement could reduce the suffering associated with the drug phenomenon; however, challenges with implementation and public information remain. Thailand's efforts to allow for the licit cultivation and use of cannabis and kratom (a psychoactive plant native to Southeast Asia used for its stimulant and analgesic properties) will yield greater insight into the challenges and opportunities for drug law reform.

China is increasingly a leading source of many legitimate chemicals and pharmaceutical ingredients for global markets. However, lack of regulatory oversight and an abundance of chemical manufacturers create an environment that allows for the export of precursors and finished synthetic drugs, including potent opioids like fentanyl. China has taken some efforts to bring new chemicals under regulatory control, but producers are quick to adapt, impeding Chinese law enforcement's ability to stem the flow to global markets. Although China is a major source of fentanyl and other synthetic opioids, to date the country does not appear to have problems with synthetic opioid consumption.

Ideas for Improving Research and Policy

- National governments and regional organizations should improve their data-collection efforts to produce more-accurate and more-reliable estimates of drug consumption and expenditures. This could be done by utilizing new and advanced measurement techniques, such as wastewater testing, web surveys, and respondent-driven sampling.
- Policymakers and governments should expand evidence-based drug treatment (e.g., methadone and buprenorphine for opiate use disorders) and disease-prevention modalities (e.g., needle and syringe exchange programs) and evaluate new efforts that show promise in reducing problematic drug use and harm.
- Stakeholders should monitor and project the implications of shifting patterns in synthetic drug supply, including their impact on the cultivation of traditional plant-based drugs.
- Those condoning harsh drug law enforcement, including capital punishment, should reconsider this approach. In addition to potential unintended consequences, there is a growing body of research suggesting that the certainty and swiftness of a sanction matters more than severity in creating a deterrent effect. This raises important questions about the use of violent crackdowns and capital punishment for drug offenses in Asia.

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Abbreviations

2C-B	4-Bromo-2,5-dimethoxyphenethylamine
ANPP	anilino-N-phenethylpiperidine
APAIC	Asia and Pacific Amphetamine-Type Stimulants Information Centre
API	active pharmaceutical ingredient
ARQ	Annual Report Questionnaire
ASEAN	Association of Southeast Asian Nations
ATS	amphetamine-type stimulant
BADAC	Barangay Anti-Drug Abuse Council
BJMP	Bureau of Jail Management and Penology
CBP	U.S. Customs and Border Protection
CCDU	compulsory center for drug users
CCTV	closed-circuit television
CFDA	China Food and Drug Administration
DAINAP	Drug Abuse Information Network for Asia and the Pacific
DALY	disability-adjusted life year
DDB	Dangerous Drugs Board
DEA	U.S. Drug Enforcement Administration
DMT	N,N-Dimethyltryptamine
DOJ	U.S. Department of Justice
EMCDDA	European Monitoring Centre on Drugs and Drug Addiction
FPP	final pharmaceutical product
GMP	good manufacturing practices
GPS	general population survey
HBV	hepatitis B virus
HCV	hepatitis C virus
HIV	human immunodeficiency virus
ICRC	International Committee of the Red Cross
INCB	International Narcotics Control Board
LSD	Lysergic acid diethylamide
MDMA	3,4-Methylenedioxymethamphetamine
MT	methadone treatment
NCB	Narcotics Control Bureau (China)
NGO	nongovernmental organization
NPP	N-Phenethyl-4-piperidinone
NPS	new psychoactive substance

NSP	needle and syringe exchange program
ONCB	Office of the Narcotics Control Board
ONDCP	Office of National Drug Control Policy
P-2-P	1-phenyl-2-propanone
PDEA	Philippine Drug Enforcement Agency
PMMA	Poly(methyl methacrylate)
PNP	Philippine National Police
PWID	persons who inject drugs
QALY	quality-adjusted life year
TFMPP	3-Trifluoromethylphenylpiperazine
UN	United Nations
UNAIDS	Joint United Nations Programme on HIV/AIDS
UNODC	United Nations Office on Drugs and Crime
UN OHCHR	Office of the United Nations High Commissioner for Human Rights
WBE	wastewater-based epidemiology
WHO	World Health Organization

1. Introduction

Changing patterns in drug use can affect the well-being and development of Asian countries in myriad ways: The burden of disease from injection and/or frequent drug use, overreliance on the criminal justice system, and rising drug-related crime can impede economic, environmental, and social development (United Nations Office on Drugs and Crime [UNODC], 2017b). Countries in Asia have typically addressed illicit drug supply and use with harsh punishments, including compulsory treatment and capital punishment. The region has historically espoused the goal of creating a drug-free society, a goal that has been abandoned in other parts of the globe for being infeasible.

There are emerging discussions throughout Asia about policies to reduce drug use and trafficking. Some governments are redoubling their commitments to contain and eradicate the drug problem through harsh security and police measures. After years of enacting punitive policies, other governments are reforming national drug policies to soften the approach to drug law offenses.

Although the domestic drug landscape is shifting in Asian countries, the region remains an important source for many drugs that enter the global market, including the primary inputs to heroin and precursor chemicals for stimulants. Globalization has opened opportunities for some to exploit loopholes in drug control laws and gaps in regulatory oversight to manufacture and export wholly new synthetic drugs. Going forward, countries in the region will need to adapt to the new challenges and realities of a shifting drug landscape.

To inform these discussions, this report describes the illicit drug policy landscape for selected Association of Southeast Asian Nations (ASEAN) + 3 countries (China, Japan, and South Korea), which account for about 30 percent of the world's population.¹ Specifically, we examine data on drug use, drug supply, the burden of disease associated with illegal drug use, and policy responses. Data collection and analysis from the region lag by a few years, and in some cases recent figures might be more than a decade old. Improving data collection and analysis will become increasingly important in the years to come. The findings and recommendations in this report are based on the most recently available published reports, peer-reviewed articles, media reports, and interviews with subject-matter experts.

This report also presents three case studies on the evolving drug and drug policy landscape in Asia: (1) the violent crackdown on drug users and sellers in the Philippines, (2) Thailand's move from a similar crackdown toward an alternative approach of reducing criminal sanctions for drug use and improving access to medication treatment and needle exchange, and (3) China's

¹ This report does not address two legal substances that are accountable for a large share of morbidity and mortality in the region: tobacco and alcohol (Rehm, Taylor, and Boom, 2006).

emergence as a major source of many new chemical precursors and drugs that are exported to global markets.

Organization of This Report

In Chapter 2, we describe drug use and drug-related disease in our selected ASEAN + 3 countries, with an emphasis on the limits of the data. Chapter 3 highlights the development of drug and precursor production in the region, while Chapter 4 presents an overview of national drug policies in the region. Chapter 5 presents the in-depth case studies, and Chapter 6 concludes with ideas for improving research and policy.

2. Drug Use and Drug-Related Disease

In this chapter, we discuss various aspects of illegal drug use in countries in Southeast and East Asia and the contribution of drug consumption to a country's burden of disease. We address the limitations of the available data on the demand for illicit drugs and highlight recently reported figures from Asia. We also discuss the utility of measuring total drug consumption and expenditures in retail markets. Finally, we discuss how demand estimates can be used to calculate the share of drug use that contributes to the overall burden of disease in a country.

Drug Use Prevalence and Consumption

Estimating the total number of drug users in a region and how much they consume is important for several reasons. First, knowing the number of drug users and the subset of users with a substance use disorder is critical for estimating the magnitude of the drug market and its attendant problems. Such estimations can inform policy decisions about treatment availability and other interventions. Second, tracking these numbers over time can help policymakers understand how these figures are changing in response to policies or other factors. Third, the figures can be used to estimate total expenditures and better understand the revenues generated by illicit drug traffickers. Finally, knowing total consumption can be helpful for putting the amount of drugs seized into context.

Unfortunately, it is difficult to estimate the total number of drug users in a country, especially for substances that are used by a small percentage of the population. Many countries conduct general population surveys (GPS) of households to gauge the prevalence of drug use. Often, surveys report prevalence estimates in three categories: lifetime use, past-year use, and past-month use. Each of these three statistics provides insight into different policy questions.

However, self-reported prevalence data from GPS are subject to critiques. For example, respondents might not accurately report their drug use to a government agency, and heavy users who often lead erratic lives are unlikely to appear in household-based surveys (see, e.g., Kilmer et al., 2013, Appendix B). To put this in perspective, we consider the United States, which has one of the most established GPS in the world. For 2010, the GPS estimated that there were approximately 60,000 daily or near-daily heroin users, yet more-rigorous estimates—modeled using information from many data sets, including urinalysis of arrestees—put the figure closer to 1 million (Kilmer et al., 2014a; Kilmer et al., 2014b; Caulkins, Kilmer, et al., 2015).

As shown in the case of the United States' GPS, which excludes institutionalized individuals who are likely to use drugs at higher rates than the general population, the validity of prevalence rates depends on many factors, including survey design and sampling frame. That said, results from population surveys are often compared across countries, which assumes cross-comparability. Cross-national comparisons often ignore methodological differences between or

among surveys (Gowing et al., 2015; Kilmer, Reuter, and Giommoni, 2015; Mounteney et al., 2015). Some surveys might focus on a subset of the population (e.g., those age 12 or older versus those 18–65 years of age), while others might use different sampling instruments (phone versus mail surveys versus computer-assisted self-interviews; Giommoni, Reuter, and Kilmer, 2017). In any case, these design choices can produce different results, even in the same population. Furthermore, some countries administer a GPS with regular frequency, whereas other surveys are administered more sporadically. This complicates comparisons because illicit drug trends can change quickly. Some surveys only measure past-year drug use, while others also ask about use in the past month. These differences limit the interpretation of cross-national comparisons of drug use prevalence rates.

Some countries augment GPS estimates with data from treatment populations, especially for the use of such socially stigmatizing drugs as heroin or cocaine, but this approach can miss a large share of heavy drug users who are not in treatment (e.g., drug users who are incarcerated) and might double count individuals who enter treatment more than once each year. Advanced analyses of the total user population that combine insights from multiple data sources have been conducted in Canada, the United States, and several European countries, but to our knowledge most of these approaches have not been implemented in Asia. In some instances, countries in the region report the number of individuals remanded to compulsory treatment facilities in lieu of or in addition to voluntary admissions, which could introduce additional bias to total demand estimates (Fang et al., 2006; Kanato, Leyatikul, and Choomwattana, 2017). Additionally, punitive responses to drug use in the region could further depress self-reported incidence of drug use among segments of the population.

Data reported to the UNODC indicate that most countries in Asia irregularly report the results of household and school surveys. The ASEAN regional drug report states that many countries in the region do not regularly collect data (Kanato et al., 2016). The most recent household survey to take place in an ASEAN member country was in Indonesia in 2017 (Kanato et al., 2018). In some cases, when countries are unable to conduct a GPS, the UNODC estimates prevalence rates based on specialized population surveys (including Rapid Assessments) or from treatment data, extrapolating to the general population (Commission on Narcotic Drugs, 2018).

The UNODC publicly reports data on drug use indicators across the globe. Each year it administers the Annual Report Questionnaire (ARQ) to member states, asking about drug seizures, prevalence rates, treatment admissions, etc. The ARQ is used to improve the quality and standardization of data collection and measurement. However, the United Nations (UN) recognizes the shortcomings (e.g., lack of funds and technical capacity) that many members face when asked to conduct expensive, nationally representative surveys with regular frequency (UNODC, 2017a). Many countries do not report figures for all drug types to the UNODC. The Commission on Narcotic Drugs is working to improve member state capacity and strengthen national drug data-collection systems. Expert assessment of the ARQ's drug use prevalence indicators found that qualitative information is provided more frequently than quantitative

prevalence data and that in any given year some 20–25 countries provide updated prevalence data to the UN (UNODC, 2018a).

Given the limitations of data collection and reporting in the region, the drug demand estimates reported by countries and the UNODC that we have reproduced in Table 2.1 should be thought of as rough approximations. Readers should keep in mind that these figures provide a preliminary understanding of the type and magnitude of substances consumed in Asia in recent years. Nevertheless, we note from these estimates that cannabis appears to be the most commonly used illegal drug in many Asian countries. From our analysis of selected countries in the region, the Philippines reports the highest past-year prevalence of cannabis use, at 1.64 percent of respondents ages 15 to 64. Japan reported the lowest rate of cannabis use, at less than 0.3 percent.

Apart from cannabis, amphetamine and methamphetamine are the most commonly used substances in the region.² In Laos and Thailand, amphetamine and methamphetamine past-year use is more common than use of other drugs, including cannabis. Thailand reports the highest rate of amphetamine/methamphetamine use, with 1.4 percent of those ages 15 to 64 reporting past-year use. Indonesia reports that less than 0.1 percent of respondents' reported use of amphetamine or methamphetamine in the preceding year.

These data do not reflect the emerging trends regarding abuse of methamphetamine (in both tablet and crystalline form—known as “yaba” and “ice,” respectively) and other synthetic stimulants. The use of these synthetic stimulants has surpassed the use of more-traditional plant-based drugs, such as opiates. This is complicated by the fact that household drug surveys are conducted every three to five years, if at all (Kanato et al., 2018). Nonetheless, the most recent ASEAN Drug Monitoring Report notes that amphetamine-type stimulants (ATSs)—namely, methamphetamine—are a growing concern. According to that report, more than 50 percent of those entering treatment in 2017 were being treated for ATSs (Kanato et al., 2018). Those admissions were largely for crystalline methamphetamine in Cambodia, the Philippines, Malaysia, and Singapore, whereas in Thailand and Laos, admissions were for tablet methamphetamine.

For other countries analyzed, opiates are the third most commonly abused class of drugs. As shown in Table 2.1, Malaysia reports the highest rate of past-year use of opiates, at just under 1 percent. China reported some 168,000 opiate treatment admissions in 2015 and that 0.19 percent of those ages 15 to 64 used an opiate in the past year. Indonesia reported the lowest rate of past-year opiate use, at 0.014 percent.

² The amphetamine market in the region is significantly limited based on data on seizures and treatment admissions. Data reported under the amphetamine/methamphetamine group largely represents methamphetamine.

Table 2.1. Annual Prevalence Rates and Reported Treatment Admissions, by Drug and Country

Country	Population Ages 15 to 64 (millions)	Amphetamine/ Methamphetamine		Cannabis		Opiates		Ecstasy-Type Substance		Cocaine	Ketamine
		Prevalence Rate	Number Treated ^a (thousands)	Prevalence Rate	Number Treated (thousands)	Prevalence Rate	Number Treated (thousands)	Prevalence Rate	Number Treated (thousands)	Prevalence Rate	Prevalence Rate
China	996.0	—	269.0 ^k	—	1.80 ^k	0.190 ^j	167.6 ^l	—	—	—	4.30 ^m
Hong Kong	5.4	0.35 ^f	—	0.40 ^f	—	0.200 ^d	—	0.24 ^f	—	0.25 ^f	0.02 ^m
Indonesia	173.0	0.09 ^l	0.40 ^l	0.18 ^l	0.10 ^l	0.014 ^k	3.10 ^k	0.03 ^l	0.40 ^l	0.00 ^l	0.01 ^l
Japan	77.5	0.30 ⁱ	—	0.30 ⁱ	0.00 ^k	—	—	0.10 ^g	—	—	—
Laos	4.2	1.39 ^f	2.50 ^l	0.88 ^f	0.20 ^l	0.370 ^f	0.00 ^l	—	—	—	—
Malaysia	21.3	0.55 ^c	1.30 ^l	1.60 ^b	0.00 ^k	0.940 ^g	4.30 ^l	0.44 ^b	1.80 ^k	—	—
Myanmar	35.0	0.22 ^c	0.40 ^l	0.94 ^c	1.30 ^l	0.800 ^h	7.20 ^k	—	—	—	—
Philippines	64.3	1.10 ^m	5.20 ^l	1.64 ^m	0.10 ^k	0.040 ⁱ	0.00 ^k	0.02 ^j	0.00 ^l	0.07 ^m	—
Singapore	4.0	—	0.80 ^l	—	8.70 ^l	0.320 ^h	0.20 ^l	—	0.00 ^k	—	—
Thailand	49.0	1.40 ^e	101.40 ^l	1.20 ^e	—	0.200 ^e	7.40 ^l	0.30 ^e	0.20 ^l	0.05 ^e	—
Vietnam	65.7	0.22 ^b	—	—	—	0.530 ⁱ	—	0.22 ^b	—	—	—

SOURCES: UNODC data are from a personal communication with the authors and from UNODC (undated[b]). Other data are from the Asia and Pacific Amphetamine-Type Stimulants Information Centre (APAIC) synthetic drug national trends webpages (2014 and 2017). Population estimates are from World Bank data (2015).

NOTE: Cells with dashes denote that data were unavailable.

^a Treatment admissions are for methamphetamine only.

^b Data are from 2003.

^c Data are from 2005.

^d Data are from 2006.

^e Data are from 2007.

^f Data are from 2008.

^g Data are from 2009.

^h Data are from 2010.

ⁱ Data are from 2011.

^j Data are from 2012.

^k Data are from 2014.

^l Data are from 2015.

^m Data are from 2016.

Ecstasy-type substances were most commonly reported to be used in the past year by 0.74 percent of those ages 10 to 69 in the Philippines. The prevalence of cocaine use is infrequently reported to the UNODC. Most countries in the region did not report cocaine prevalence rates, and those that did reported that less than 0.25 percent of adults used cocaine in the past year. Use of ketamine—an emerging drug of abuse that is not controlled internationally—is reported in a few countries.³ China reports the highest past-year prevalence of use of ketamine, at 4.3 percent of those ages 15 to 64.

New psychoactive substances (NPSs)—often known in the market as “legal highs,” “herbal highs,” “bath salts,” and “research chemicals”—are becoming increasingly popular in the region. Regional bodies are aware of and concerned about these growing trends, given how little is known about the adverse health effects of NPSs (Kanato et al., 2018). East and Southeast Asia are at the heart of the global synthetic drug trade, which sometimes includes NPSs. Many new substances produced in the region are exported within the region and to other parts of the globe. Data on the prevalence of NPS use globally and in East and Southeast Asia are limited because of survey constructs and the high turnover of products (UNODC, 2017d; Lee et al., 2017). Thailand’s most recent household survey included questions about NPS use and found that past-year use of uncontrolled substances was reported by one-third of respondents. However, it is unclear how the term *uncontrolled substances* was defined to respondents; survey authors included kratom, unprescribed analgesics, cough syrup, antihistamines, ecstasy, and ketamine in the questions (Wonguppa and Kanato, 2018). When examining past-year use of specific substances, 28.1 percent reported using analgesics, 2.1 percent of respondents reported using kratom leaves, and 0.1 percent reported using ketamine (Wonguppa and Kanato, 2018).

³ Ketamine is a synthetic dissociative used as an anesthetic for surgery in many parts of the developing world. Although it is an important medical substance, it does have potential for abuse. See Box 2.1 for more information on psychoactive drugs under national and international control.

Box 2.1. Psychoactive Drugs Under Control

There are various types of psychoactive chemicals, precursors, and plants that international and national governments have deemed necessary to control in order to protect the health and well-being of society. Some of these substances have medical utility but warrant control because of their abuse potential.

The international drug control system, established by the Single Convention on Narcotic Drugs (1961), the Convention on Psychotropic Substances (1971), and the Convention Against Illicit Traffic in Narcotic Drugs and Psychotropic Substances (1988), requires signatories to adopt national laws that prohibit the unauthorized possession and supply of scheduled substances. Additionally, countries are free to schedule other substances as they see fit (for example, kratom is not controlled under international law but several countries in Southeast Asia have scheduled it under national law).

The UN framework initially focused on plant-based drugs and their derivatives, such as coca (cocaine), poppy (opium, morphine, heroin), and cannabis. With the development and proliferation of synthetic psychoactives, however, the Single Convention was supplemented with the Convention on Psychotropic Substances to control new chemicals, such as synthetic stimulants (methamphetamine, MDMA, etc.), depressants (barbiturates, benzodiazepines, etc.), and psychedelics (LSD, DMT, etc.).

Although the UN system controls some 300 chemicals and plants, it is not exhaustive. There are hundreds of NPSs that fall outside international and/or national control, most of which mimic the effects of stimulants or cannabis. The lack of control over these substances remains a challenge for national governments and international bodies (Reuter and Pardo, 2017).

Estimating Retail Markets

Although knowing the number of drug users in a population can be useful for monitoring and evaluation purposes, it is also important to know how much is being consumed. This is especially true because the distribution of drug and alcohol consumption often follows the Pareto law, in that a small minority of heavy users consume the vast majority of substances (Cook, 2007; Kilmer et al., 2014b).

Much less is known about the total amount of illegal substances used in Asia. In their study of the world heroin market, Paoli, Greenfield, and Reuter (2009) combined opiate prevalence data from the UNODC with an assumed value of annual consumption that was based on doubling the amount estimated for the United States circa 2001 (15 grams of pure heroin per user per year) because prices in the United States at that time were believed to be much higher than in other parts of the world.

Paoli, Greenfield, and Reuter (2009) acknowledge the limitations of using the UNODC data, but it is the best available source for multicountry comparisons. Indeed, the authors highlight the fragility of these estimates in the following passage:

Even though China has a low estimated prevalence rate, the UNODC figures show that it has more opiate users than all but one or two other nations, simply because of its huge population. (China recently increased its reported prevalence rate from 0.1 percent to 0.2 percent, resulting in an apparent doubling of opiate users, but more likely reflecting a change in data collection or measurement practices.)

Total consumption is calculated by multiplying prevalence by an estimated purity-adjusted average consumed per user-year. The UNODC has produced total market consumption estimates by type of drug for some countries. Again, these estimates rely on prevalence rates reported by member states through the ARQ or estimated by the UNODC in Rapid Assessments. The UNODC recognizes the challenges when estimating total consumption given that the majority of countries do not regularly collect or report prevalence data, let alone estimates of purity and prices (UNODC, 2010b). A 2011 review by the UNODC of data provided by Southeast Asian members shows that supply-side data, such as arrests and seizures, are reported with greater frequency, but that data on demand indicators, such as prevalence or intensity of consumption, are lacking (UNODC, 2012; Kanato et al., 2018).

The 2010 World Drug Report—the last annual report to feature total consumption broken down by country—notes that less is known about total demand than total supply. Apart from prevalence estimates reported in ARQs, figures sometimes relied on treatment multipliers to account for underreporting or undersampling of heavy users.⁴ To approximate regional differences in average opiate consumption per year, the UNODC uses an estimated purity-adjusted average consumed per user-year of pure heroin and cocaine by region (UNODC, 2005a). For East and Southeast Asia, this amount was estimated at 25.2 grams of pure heroin equivalent per user per year and 28 grams of pure cocaine per user per year.⁵ The UNODC notes that these estimates “are not based on direct research,” which is reflective of the lack of “any structured or organized data collection system to arrive at scientifically sound per capita consumption estimates” (UNODC, 2009). Supplementary methodology reports derive per capita use estimates, but note that they are “usually based on a very limited number of studies” and “can vary dramatically over the course of a drug epidemic” (UNODC, 2017c). Given that heavy users consume disproportionately more than casual users, it is possible that the UNODC’s purity-adjusted average consumed per user-year might be biased downward if drug user surveys

⁴ To account for sampling issues and underreporting of chronic drug users, the UNODC inflates prevalence estimates by a simple correction factor. For example, “If a survey among heroin addicts reveals, for instance, that one quarter of them were in treatment in the last year, the multiplication of the registered treatment population with a multiplier of four provides an estimate of the likely total number of problem heroin users in a country” (UNODC, 2005b).

⁵ To put these figures into context, the implied consumption per user per year at that time in North America was 17 grams of heroin equivalent and 44 grams of cocaine.

undersample chronic drug users who live on the periphery. Therefore, total consumption estimates reproduced in the following sections should be interpreted with caution.

In 2008, the UNODC estimated that the total global number of illicit opiate (e.g., opium and heroin) users was more than 15 million, one-quarter of whom consume some 1,100 metric tons of raw opium and with the rest consuming approximately 340 metric tons of heroin (adjusted for purity) per year.⁶ In total opium equivalents (using a conversion rate of 7.5 to 1 opium to heroin), this comes to an estimated 3,700 metric tons (UNODC, 2010b). Global potential opium production was estimated at more than double that number, at some 8,300 metric tons for 2008. Table 2.2 shows these estimated total consumption figures for selected countries in Asia from the 2010 World Drug Report.

Table 2.2. UN Estimates of Total Consumption of Heroin, Opium, and Cocaine in Asia

Country/Region	Number of Users (thousands)			Total Consumption (pure metric tons)			
	Heroin	Opium	Cocaine ^a	Heroin	Opium	Opium Equivalent	Cocaine ^a
Myanmar	66	67	—	1.3	7.0	20.1	—
China ^b	2,254	119	—	45.0	12.0	458.2	—
India	871	674	—	17.0	67.0	239.8	—
Oceania	33	52	—	2.0	5.0	23.4	—
Asia (except India, China, and Myanmar)	852	1,119	700	17.0	75.0	245.0	14
Total	4,076	2,031	700	82.3	166	986.5	14

SOURCE: UNODC, 2010b.

NOTE: Cells with dashes denote that data were unavailable.

^a Estimates for cocaine are for all of Asia.

^b Reported number of users estimated by Lu et al. (2006), which departs from the official reported number of registered opiate users in UNODC (2010b), which was 900,000 in 2009.

As of 2010, it was reported that there were some 6 million opiate users in Asia, almost 40 percent of whom were from China. In all, the UNODC estimated that these users consumed nearly 1,000 metric tons of opium equivalent, mostly in the form of heroin. Cocaine use is less prevalent, with some 700,000 users in Asia (except for China, India, and Myanmar) reported for 2010 consuming about 14 metric tons (UNODC, 2010b).

Estimating total consumption in this manner can provide insights into total illicit market retail expenditures, but this would require multiplying this information by a measure of retail price.⁷ To our knowledge, no country in the region systematically collects and publishes these

⁶ Heroin is derived from opium, which itself is derived from poppy. Raw opium refers to the dried latex scraped from the plant, which can be processed into heroin. The UN estimates “pure” heroin in terms of the amount of heroin consumed minus adulterants.

⁷ In this case, total pure grams consumed should not be multiplied by the average price per pure gram; rather, the amount consumed should be multiplied by the “average price paid per pure gram purchased.” For additional information about this measure, see Kilmer et al., 2014b.

price estimates; however, the UNODC does publish price data reported by countries⁸ and estimated total retail market revenues in the 2010 World Drug Report by region.

According to the UNODC's methodology, price and purity data are collected from ARQs, and supplemental data are from national governments and regional bodies, such as the European Monitoring Centre on Drugs and Drug Addiction (EMCDDA) and the Drug Abuse Information Network for Asia and the Pacific (DAINAP) (UNODC, 2010a). Absent price data, the UNODC calculates a midpoint estimate of "typical" prices, yet the UNODC admits that price figures might be unreliable. Additionally, these expenditure estimates extend from total consumption estimates, which are complicated by imprecise parameters for prevalence and average user-year consumption totals.

With these caveats, the UNODC reports that the total retail value of the global heroin/opium market in 2008 was estimated at U.S. \$65 billion. Of that, China's market is estimated at U.S. \$9 billion, or 12 percent of the global total, with South and Southeast Asia (excluding India) estimated to generate U.S. \$3.3 billion, or 5 percent of the global market (UNODC, 2010b). The UNODC also reported tentative estimates for the global cocaine market, calculating worldwide retail sales at U.S. \$88 billion for 2008, with the Asian market totaling U.S. \$3 billion (UNODC, 2010b).

In subsequent years, the UNODC produced regional estimates for the size and value of heroin and methamphetamine markets in the East Asia and Pacific region. These figures were based on ARQ responses and employed similar methodologies to those reported in the World Drug Report. The UNODC estimated that the total consumption of heroin in East and Southeast Asia in 2011 amounted to about 64.5 metric tons, valued at U.S. \$15.5 billion (See Table 2.3 for heroin numbers). The UNODC did not produce tabulated country estimates for methamphetamine but noted that the East Asia and Pacific region (which included Australia) had about 5 million crystal methamphetamine and 1.25 million yaba users who consumed 68 metric tons of crystal methamphetamine and 1.4 billion tablets annually. In terms of retail value, the UNODC estimated that the yaba market generated U.S. \$8.5 billion in 2011, while the crystal methamphetamine market generated U.S. \$6.5 billion (UNODC, 2013b). Apart from the figures of the size and value of regional drug markets reported in Table 2.2 and Table 2.3 from the UNODC, we are not aware of more-recent calculations for the region.

⁸ The UNODC notes that these price data often are not scientific estimates; rather, countries "are asked to provide minimum, maximum and typical prices and purities" but are not asked to report "how data were collected and how reliable it is" (UNODC, 2010b).

Table 2.3. UN Estimates of the Total Consumption and Value of Heroin in Asia, 2011

Country	Number of Users (thousands)	Consumption (metric tons)	Purity-Adjusted Retail Price per Gram (U.S. \$)	Value in Millions (U.S. \$)
China	2,366	47.3	222	10,496
Indonesia	247	4.9	213	1,048
Malaysia	170	3.4	222	755
Vietnam	155	3.1	140	433
Myanmar	100	2.0	96	193
Philippines	—	0.5	222	118
South Korea	60	1.2	452	538
Japan	41	0.8	1,395	1,157
Other Southeast Asia	—	1.3	633	796
Total	—	64.5	—	15,534

SOURCE: UNODC, 2013b.

NOTE: Cells with dashes denote that data were unavailable.

Finally, if one believes that information about the number of heavy users is reasonably accurate, another approach for generating annual retail expenditures is to multiply the number of users by the self-reported amount spent on their last purchase, by the number of purchases made in the past month, by 12 (Bond et al., 2014).⁹ Information about recent purchases can be obtained from heavy users in multiple ways, including respondent-driven sampling (Caulkins, Kilmer, et al., 2015; Ober et al., 2016). To our knowledge, this heavy-user estimate has not been attempted in Asia.

Given the data collection challenges from GPS in Asia, policymakers should consider methods to improve drug use measures, especially in countries that have the infrastructure and human capital to deploy novel approaches to estimating drug prevalence. One such method is wastewater-based epidemiology (WBE), which has potential promise in Asia. We discuss this method in more detail in Box 2.2. Once established, such methods can allow researchers to obtain wastewater samples at minimal cost (Castiglioni et al., 2016). These measures can be processed in near-real time and do not suffer from respondent measurement error or long data lags. In combination, these factors make WBE an attractive supplement to existing epidemiological measures generated from surveys. That said, challenges to deploying WBE remain. Castiglioni and colleagues (2016) mention that analytical techniques might be expensive depending on their rigor, although the authors did not discuss how WBE costs compare with executing regular GPS. They also cannot provide frequency estimates or details on patterns of use (such as the mode of administration) that might be helpful when considering public health

⁹ Although there are concerns about assuming that an individual's last drug purchase is representative of a typical purchase (Kilmer et al., 2014b), insights from drug user surveys in two countries—the Melbourne Injecting Drug User Cohort Study and the Washington Cannabis Consumption Study—suggest that this might not be a problem (Bond et al., 2014).

interventions. The most important consideration has to do with the connection to municipal sewer systems, which can be a challenge in developing economies. Most municipal sewer systems that allow for WBE exist in urban environments. Yet, according to the World Bank, 85 percent to 90 percent of urban citizens in countries like Indonesia, the Philippines, and Vietnam rely on septic tanks or latrine pits (World Bank Group, 2015). These infrastructural limitations might impede the use of WBE outside major urban areas that have developed public sewer systems.

China has been using WBE in major cities for a few years. Since 2014, Chinese authorities and researchers have tested the municipal wastewater systems in Beijing, Guangzhou, Shenzhen, Hong Kong, and Shanghai (Khan et al., 2014; Lai et al., 2013; Li, Hou, et al., 2014). These preliminary studies provided a proof of concept of wastewater testing in China, showing regional and temporal variations in drug use based on the concentration of metabolites. However, the studies were unable to confirm wastewater analysis with conventional epidemiological data to evaluate their accuracy. Nevertheless, governments in China are eager to expand such methods. According to statements in the press, local governments are investing U.S. \$1.5 million into WBE in an effort to evaluate trends and policy impacts (Cyranski, 2018).

Box 2.2. Use of Wastewater-Based Epidemiology to Improve Drug Use Measures

Novel approaches to measuring total drug consumption or fluctuations in drug markets might be necessary, especially in regions that lack regular data collection or where respondents are likely to face considerable stigmatization. As noted earlier, GPS often suffer from sampling limitations and underreporting. Additionally, they are expensive to conduct and take time to administer. Reported results often lag market demand by a year or more. These are important limitations in Asia, where drug users might be less likely to respond honestly to surveys given stigma toward drug use. WBE is one possible mechanism to improve accuracy and reduce the lag of drug demand measures, including total amount consumed. Chemical metabolites of controlled substances and novel psychoactives are excreted by the body after metabolism. As these metabolites leave the body and enter municipal sewer systems, researchers can collect and measure their concentration, giving authorities a sense of the magnitude and type of drugs consumed in a given population (Castiglioni et al., 2016).

This technique, which is utilized in Europe and, to a much lesser extent, in the United States, can supplement traditional epidemiological drug indicators, such as prevalence rates or overdoses. For example, use of wastewater analysis in Oregon shows that higher concentrations of drug metabolites were found in municipalities that reported higher rates of drug use (Banta-Green et al., 2009). Cities in Europe have been deploying and developing this technique for more than a decade, with demonstrated success in delivering near-real-time information about shifting use patterns of drug markets (Castiglioni et al., 2016). For example, results from one wastewater examination of eight cities in Europe found high correlations between results from tested water samples and various indicators of local drug markets, including the sale of pharmaceuticals and illicit drug seizure records (Baz-Lomba et al., 2016).

For more than ten years, EMCDDA has led most of the efforts to develop wastewater methods and standardize protocols to monitor drug use patterns. For example, by identifying and quantifying drug metabolites in the municipal wastewater system, researchers can calculate the total amount consumed (Castiglioni et al., 2016). Likewise, through testing for novel substances, wastewater evaluations can serve as early warning systems when shifts in drug use patterns and supply occur (Kinyua et al., 2015). Preliminary reports from local case studies have shown that wastewater estimates can be consistent with traditional demand-side estimates based on population surveys (e.g., Zobel et al., 2018), although this might hold only for localities that do not experience substantial changes in population levels over time. Although promising, the method is still developing and does have limits. For example, it cannot account for frequency of use, route of administration, or purity of substance used (Castiglioni et al., 2016). Likewise, evaluations are made from samples drawn from municipal sewer systems, which exclude communities or households not connected to such systems (e.g., septic systems, latrines, open streams).

Illicit Drugs and the Burden of Disease

Use of intoxicating substances carries risk of harm. This is particularly true for injection drug use, which raises the risk of contracting or spreading such blood-borne diseases as human immunodeficiency virus (HIV) or hepatitis C virus (HCV). Likewise, some drug use might disinhibit individuals from engaging in risky sex behaviors, increasing the likelihood of transmitting disease to non-drug-using populations (Molitor et al., 1998). Some drug use—particularly injection drug use—contributes to a country’s overall burden of disease, which is an estimate of the impact of a health problem in terms of financial cost, mortality (e.g., drug overdose), morbidity (e.g., addiction, transmission of disease), and other measures. It is often quantified using quality-adjusted life years (QALYs) or disability-adjusted life years (DALYs).

Researchers focusing on the burden of disease attributable to drug use have generated country-specific estimates for some Asian countries. In one study by Degenhardt and colleagues (2013), the authors estimated the burden of disease attributed to illicit drug use by calculating the disability weight attributed to drug use (this varies by the harm associated with each drug but often includes measures of disability and mortality attributed to dependence and overdose) multiplied by the estimated prevalence of use of a given drug. These calculations return the years of life lived with disability and years of life lost from premature death, which are summed to obtain DALYs.¹⁰

Different substances vary in terms of their overall burden of disease. For example, cannabis use can lead to dependence and is associated with some mental disorders, but is not associated with overdose deaths. In comparison, opiate use is a major cause of mortality and morbidity from fatal overdose and dependence. Among injection drug users, infections from such unsafe injection practices as sharing needles add to morbidity measures.

Injection drug use is a major contributor to the global burden of disease because of blood-borne viral infections as a result of unsafe drug injection (Degenhardt et al., 2016). The consequences of HIV and hepatitis are among the top ten causes of death worldwide (Naghavi et al., 2010). Compared with HIV, Hepatitis B and C viruses (HBV and HCV) are even more efficiently spread by means of sharing contaminated injection equipment (Donoghoe and Wodak, 1998).

That said, burden of disease measures are imprecise and often exclude other population-level measures of the harms of drug use, including crime and violence associated with the illicit trade. Others have pointed to the limitations of these measures to evaluate public health, especially when it comes to difficult-to-measure behaviors, like substance use (Thacker et al., 2006). Furthermore, prevalence estimates, a key factor in these calculations, are often imprecise because of the issues of underreporting and sampling discussed earlier.

¹⁰ A lack of reliable drug-related outcome data in the region complicates such burden of disease estimates. For example, the absence of drug-related mortality data in Southeast and East Asia poses challenges to quantifying drug overdose fatalities. This might become increasingly important if potent synthetic opioids, such as fentanyl, enter existing opiate markets in the region.

In short, estimates of the burden of disease attributed to illicit substance use should be interpreted with caution. They can provide some indication as to the scope of the problem of drug-related health harms, but these estimates are far from precise. In Table 2.4, we report the total burden of disease, as measured in DALYs standardized per 100,000 inhabitants to aid in cross-country comparison, for illicit drug use for selected countries in Asia. We include estimates from Western Europe and North America for point of reference.

Table 2.4. DALYs per 100,000 for Total Illicit Drug Burden, 2010

Country	Mean	Lower 95-Percent Confidence Interval	Upper 95-Percent Confidence Interval
China	201.6	139.2	283.50
Indonesia	287.0	196.2	417.50
Malaysia	319.2	209.6	487.20
Myanmar	573.3	421.9	764.00
Philippines	251.3	160.1	383.90
Thailand	311.7	225.3	445.44
Vietnam	344.3	233.4	478.10
Canada	581.0	427.8	760.30
France	333.6	250.3	434.60
Germany	397.8	306.9	508.00
United States	816.2	626.0	1,046.20

SOURCES: Data are from Degenhardt et al., 2013, and supplementary material.

These figures are generally lower than those in other countries with major drug markets in part because they are derived from prevalence estimates. Estimating this parameter in countries where drug use is stigmatized introduces challenges of measurement error. Nonetheless, in 2010, Myanmar had the region’s highest burden of disease attributed to illicit drugs. For every 100,000 inhabitants, it was estimated that there were 573.3 years of life lived with disability (e.g., HIV, HCV) or prematurely lost because of illicit drugs (e.g., overdose, death from complications from HIV).

Blood-borne infectious disease accounts for a majority of the burden of disease (as measured in DALYs) attributed to illicit drug use. This is particularly true when drugs are injected. In Asia, injection drug use is common in opiate markets and to a lesser extent with methamphetamine (which traditionally has been smoked or taken orally as tablets or pills) (McKetin et al., 2008). Injection drug use increases the risk of transmission of HIV, HCV, and HBV. In 2016, an estimated 5.1 million (confidence interval: 3.9 million to 7.2 million) people were living with HIV in Asia, and there were 270,000 (confidence interval: 190,000 to 370,000) new HIV infections in the region.

Estimates for the DALYs attributable to injection drug use as a risk factor for HIV, HCV, and HBV by country are reported in Table 2.5. Estimates of the burden of disease specific to injection drug use for each of these three blood-borne diseases are reported by country. With the exceptions of Malaysia and Thailand, HCV is the largest contributor to the burden of disease for

injection drug use in Asia. In Malaysia and Thailand, HIV predominates in terms of health harms for injection drug use.¹¹

Table 2.5. DALYs per 100,000 Attributable to Injection Drug Use, 2013

Country	HIV (mean)	HCV (mean)	HBV (mean)
China	10.0	139.0	5.6
Indonesia	51.8	102.8	1.6
Malaysia	226.2	21.3	7.5
Myanmar	147.8	179.7	5.5
Philippines	11.4	14.2	0.3
Thailand	103.6	65.7	4.3
Vietnam	70.5	93.1	3.3

SOURCES: Data are from Degenhardt et al., 2013, and supplementary material.

Among countries in East and Southeast Asia, the prevalence rate of these diseases varies substantially (Mathers et al., 2008; Mathers et al., 2010). Chronic infection occurs in 75 percent of HCV infections (Te and Jensen, 2010), and 3 to 11 percent of chronic HCV carriers will develop liver cirrhosis within 20 years (Dore et al., 2002). Compared with the high prevalence rate of HCV among injection drug users, chronic HBV is higher among people who were infected as a child: Thus, the proportion of the burden of disease attributable to injection drug use is lower than that of HCV. Table 2.6 reports the estimated prevalence of HIV, HCV, and HBV in the population of injection drug users in selected Asian countries.

According to estimates from Degenhardt and colleagues (2017) and UNAIDS (2017), Malaysia has the highest prevalence of injection drug users. However, almost half of injection drug users in Indonesia are estimated to have HIV. This is followed by Thailand and Myanmar, where about one-quarter of injection drug users are reportedly HIV positive. Rates of HCV are much higher in injection drug–using populations. In Indonesia and Thailand, nine out of every ten injection drug users are estimated to have HCV. Only in China, Myanmar, and the Philippines are less than half of injection drug users estimated to have HCV.

¹¹ According to the 2017 Joint United Nations Programme on HIV/AIDS (UNAIDS) report, the prevalence rate of HIV among people who inject drugs in East and Southeast Asia are Philippines (29 percent), Myanmar (26.3 percent), Thailand (19.02 percent), Malaysia (16.6 percent), Vietnam (11 percent), China (5.9 percent), Singapore (1.5 percent), and Japan (0.02 percent). Although HIV is widely known to be associated with injection drug use (10 percent of people in East and Southeast Asia and 14 percent of people globally are living with HIV, according to 2014 data), the prevalence of HCV among injection drug users is found to be far greater than HIV or HBV (UNAIDS, 2017).

Table 2.6. Estimates of HIV, HCV, and HBV in Drug Injection Populations in Asia

Country	Prevalence of Injection Drug Use		HIV Prevalence Among PWID		HCV Prevalence Among PWID		HBV Prevalence Among PWID	
	Percentage (CI)	Year	Percentage (CI)	Year	Percentage (CI)	Year	Percentage (CI)	Year
China	0.25 (0.19, 0.31)	2012	12.4 (6.8, 17.9)	2010– 2013	43.1 (27.5, 58.6)	2012– 2015	23.4 (10.4, 36.4)	2012– 2014
Indonesia	0.11 (0.19, 0.13)	2012	44.5 (34, 55)	2013, 2015	89.2 (85.3, 92.3)	2015	—	—
Malaysia	1.33 (1.11, 1.56)	2002	17.8 (16.6, 19.1)	2012, 2014	67.1 (62.9, 71.1)	2017	—	—
Myanmar	0.48 (0.32, 0.65)	2014	23.4 (19.0, 27.7)	2011, 2012, 2014	29.5 (26.9, 32.2)	2009, 2010	17.1 (14.9, 19.2)	2009, 2010
Philippines	0.04 (0.03, 0.05)	2011	20.3 (13.0, 27.6)	2011, 2013	35.2 (15.9, 54.5)	2009, 2011	—	—
Thailand	0.11 (0.03, 0.18)	2013	24.5 (17.4, 31.7)	2009, 2010, 2012	88.5 (82.6, 92.9)	2005	30.5 (28.2, 32.9)	2005
Vietnam	0.25 (0.19, 0.31)	2005	16.6 (13.1, 20.1)	2011– 2014	58.3 (42.7, 74.0)	2010, 2014	14.7 (12.2, 17.2)	2007– 2010

SOURCES: Degenhardt et al., 2017; UNAIDS, 2017.

NOTE: CI = confidence interval; PWID = persons who inject drugs. Cells with dashes denote that data were unavailable.

Summary

Estimates of the prevalence of drug use in Asia are calculated from GPS. Most countries in the region irregularly perform these surveys or supplement them with data from treatment admissions or arrests by law enforcement, which might not be representative. Estimating the share of drug users in the general population provides limited insight into the overall scope of a country’s drug phenomenon, including the portion of the burden of disease attributed to drug-related morbidity and mortality. From these estimates, policymakers in a given country can better assess the total volume of drugs consumed (and potentially the value of the retail market). In 2010, the UN estimated that in all of Asia there were some 6 million opiate users who consumed nearly 1,000 metric tons of opium equivalent.

Cannabis is the drug of most prevalent use according to most recent country surveys. However, rates of injection drug use contribute to a larger portion of the region’s drug problem, including the percentage of negative health outcomes. Injection drug use, which occurs more frequently with opiates and, to a lesser extent, methamphetamine, contributes largely to the spread of such blood-borne diseases as HIV and HCV, and thus to a country’s burden of disease. HCV prevalence rates are high in injection drug-using populations in the region, at more than 90 percent in some countries. HIV rates are less prevalent in injection drug-using populations, although about half of injection drug users in Indonesia are HIV positive.

Given the data limitations in the region, novel approaches to measuring total drug consumption are needed. Wastewater-based epidemiological studies have shown their utility in North American and European cities. Chinese authorities have started to deploy such methods in megacities with reliable access to municipal sewage systems. However, much of the region,

especially in developing countries, lacks reliable access to municipal water and sewer systems, making it all but impossible to test for metabolites.

Demand for drugs in Asia is likely to continue to be a concern as the region develops. Yet, traditionally, parts of Asia have served as a source of primary drug inputs and finished product. In the next chapter, we turn to the supply of drugs in the region.

3. Drug and Precursor Chemical Production

Production and Trafficking

Asia has long been a global source of many drugs and chemical precursors. Although drug use in the region has increased, Asia continues to play an important role as the primary source of many plant-based and synthetic substances that are controlled under international and national law. Historically, Asia has been a major global producer of illicit poppy and heroin destined for consumer markets in Europe and North America. Recently, emerging pharmaceutical and chemical industries in middle-developed countries have been linked to the manufacture and supply of synthetic drugs and chemical precursors in regional and global markets. In this chapter, we discuss current illicit production and trafficking of plant-based and synthetic drugs.

Estimates in this chapter are reported to the UN, often by national authorities. It is inherently difficult to reliably estimate the size of illicit cultivations or the volume of smuggled drugs and chemical precursors. Nonetheless, cultivation estimates and illicit seizures are hallmark indicators of the supply of illicit substances. It is hard to determine the underlying factors that contribute to the increase (or decrease) of seizures from one year to the next (Reuter, 1995). Law enforcement capacity and the intensity of efforts to detect and seize illicit drug shipments, as well as smugglers' ability and determination to evade detection, might confound these estimates. Therefore, seizure data might only reliably indicate the presence of smuggling routes rather than the volume or intensity of illicit drug supply.

Plant-Based Drugs

There is no known cultivation of illicit coca in Asia. All cocaine seized in the region originates from the Americas. Compared with other regions, Asia reports few cocaine seizures. In 2016, East and Southeast Asia seized 2.7 tons of cocaine, which more than doubled since 2014 (1.2 tons). One-third of the year's cocaine seizures, 928 kilograms, was seized in one event in Sri Lanka. Illicit cannabis cultivation in Asia occurs in almost every country in the region, but Indonesia, Myanmar, the Philippines, and Laos are reported to cultivate substantial amounts. Cannabis cultivation is quite prevalent in or near developed consumer markets, diminishing the region's role as a supplier of global cannabis markets (UNODC, 2017b).

Poppy is the primary illicit crop cultivated in Asia. There are two major poppy cultivation regions: one in Southwest/Central Asia (known as the Golden Crescent) and the other in Southeast Asia (known as the Golden Triangle). Afghanistan is the world's largest producer of opium, accounting for two-thirds of estimated global illicit poppy cultivation (UNODC, 2017b).

In 2017, the UN estimated that some 41,000 hectares of poppy were cultivated in Myanmar, making that country the second-largest producer of illicit poppy (UNODC, 2017e). This is slightly down from a peak of nearly 58,000 hectares in 2013, but is still more than double a

recent nadir of just more than 20,000 hectares in 2006. Almost all of Myanmar's poppy is cultivated in the Shan and Kachin States. A 2016 survey of the Shan State reported that half of households in opium-growing villages produced poppy, or about one in ten households in the state. The survey reports that there were nearly 30 percent fewer households in the state involved in poppy cultivation than in 2015 (UNODC, 2017f). However, this decline was offset by a 50-percent increase of farms in the area. According to the UN World Drug Report, Laos is estimated to cultivate some 5,700 hectares of poppy in 2015, making it the other regional producer of illicit poppy (UNODC, 2018c). Illicit opium from Southeast Asia, which once supplied markets in Europe and North America, largely and almost exclusively supplies regional heroin markets in China, Southeast Asia, and Oceania. The region is estimated to produce some 800 metric tons of heroin for regional markets (UNODC, 2015a).

The UN estimates that some 156 metric tons of heroin and morphine were seized globally in 2016 (UNODC, 2018c). This is slightly down from a peak of 160 tons in 2011. Of the 156 tons seized, 7 percent was seized in East and Southeast Asia. Reported heroin and morphine seizures in Southeast Asia have increased by almost 25 percent between 2012 and 2016, now totaling some 11.7 tons (UNODC, 2018c).

Although it is not subject to international control, one plant-based substance that is gaining attention is kratom (*Mitragyna speciosa*). The plant is native to Southeast Asia, where its leaves have been used as a traditional medicine for millennia in Thailand, Indonesia, Malaysia, Myanmar, and Papua New Guinea. Kratom contains several psychoactive alkaloids that produce opioid and stimulant-like effects. Because the plant is not controlled, it is generally considered an NPS in developed markets. Raw kratom can be purchased in some Western markets via online distributors. It has recently been controlled in some European countries, Australia, New Zealand, and several U.S. states. Thailand, Myanmar, and Malaysia have prohibited kratom under various statutes for about half a century. Estimating the size of illicit kratom cultivation in Southeast Asia is challenging because suppression of trafficking in the drug is not often a priority for law enforcement (Tanguay, 2011). Yet, according to national law enforcement reports, kratom seizures have increased in Thailand, Myanmar, and Malaysia. In 2014, Thai police seized more than 75 metric tons of kratom, more than double that seized in 2009. However, by 2016, seizures of kratom fell to 5.7 metric tons (UNODC, 2018c). Malaysia seized some 29 metric tons in 2015, up tenfold since 2009, and Myanmar seized about 1.4 metric tons in 2016, up from 600 kilograms in 2009 (UNODC, 2018c).

Synthetic Substances and Precursor Chemicals

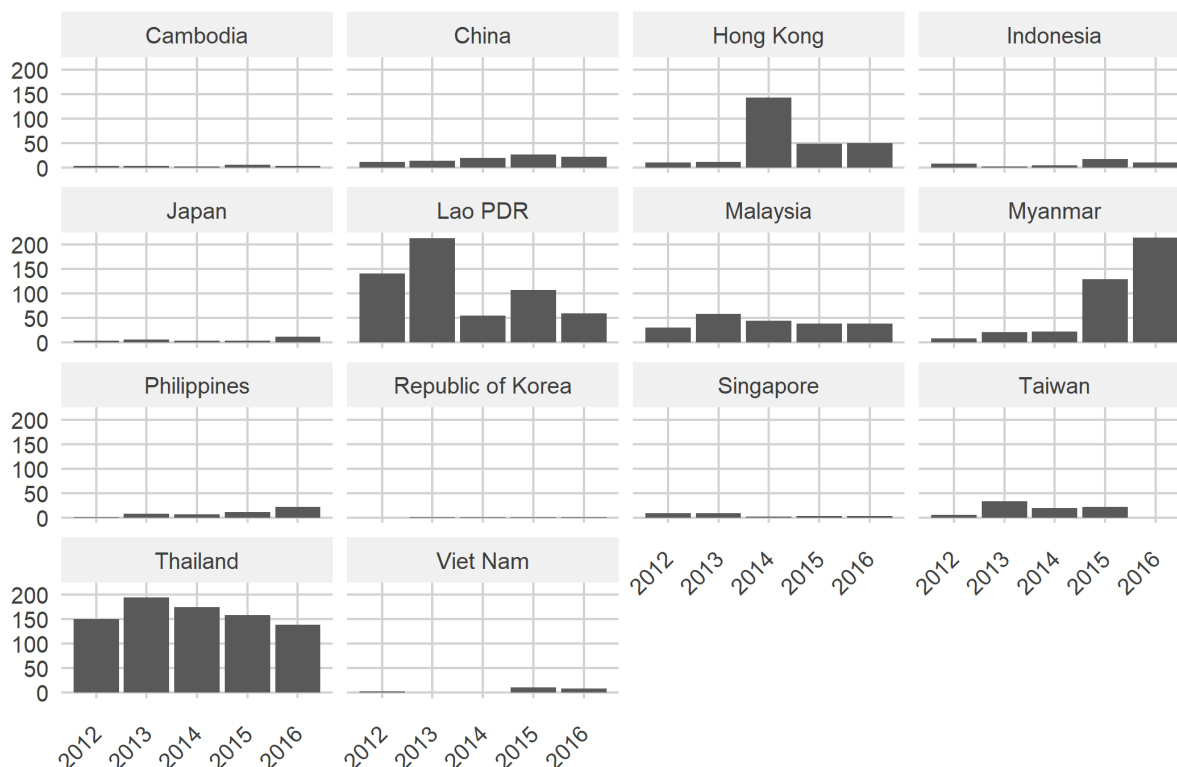
The region's increasing production and use of synthetic substances and precursor chemicals have been a growing concern among policymakers. Although heroin seizures have declined, there has been rapid growth in the number of seizures for synthetic substances, such as methamphetamine. Methamphetamine is a popular synthetic stimulant in the region, where it is known as "yaba" in Thailand; ice and "philopon" in South Korea and Japan; or "shabu" in the Philippines, Malaysia, and Indonesia. Of additional concern is the growth in uncontrolled new

psychoactive substances, which circumvent many national and international drug control laws (UNODC, 2017d). There is growing concern from regional and national authorities that drug markets are increasingly favoring synthetic substances over plant-based drugs (Kanato et al., 2018). Shifts in production away from poppy could be replaced by increased production of such synthetic stimulants as methamphetamine.

Most demand indicators suggest that methamphetamine use is on the rise. This is mirrored by increasing supply indicators within Asia as many countries have continued to report record-breaking seizure totals. The UN reports that, since 2006, methamphetamine seizures in East and Southeast Asia have more than sextupled to 64 metric tons in 2016 (UNODC, 2017b; UNODC, 2017d). As of 2015, East and Southeast Asia account for the highest proportion global methamphetamine seizures, with China alone accounting for 37 metric tons, a substantial amount of which occurred in the four provinces in the southwestern part of the country near the Golden Triangle (UNODC, 2017d).

Seizures are increasing in almost every national market in Asia. However, total and per capita seizures are relatively low. Methamphetamine seizures in Japan, although increasing, range from just less than half a metric ton in 2012 to more than 1.5 metric tons in 2016. Seizures of small quantities of methamphetamine also have been reported by South Korea. Between 2012 and 2016, methamphetamine seizures in that country reached some 30 kilograms from a low of just more than 20 kilograms, with the majority of reported seizures originating in China (UNODC, 2018d). Thailand and Myanmar report the highest rates of per capita methamphetamine and amphetamine seizures, at 150 kilograms and 200 kilograms per million inhabitants for 2016, respectively. The rate of seizures has declined substantially in Laos, from about 200 kilograms per million in 2013 to just more than 50 kilograms in 2016. Although 2017 seizure figures by country have not been published, the UNODC reports in correspondence with the authors that in 2017, East and Southeast Asia seized 75 metric tons of methamphetamine. According to correspondence with the UNODC Regional Office for Southeast Asia and the Pacific, seizures for 2018 (through September) have surpassed those of 2017. See Figure 3.1, which shows methamphetamine seizures per capita over time.

Figure 3.1. Methamphetamine and Amphetamine Seizures in Select Countries, 2012–2016



SOURCE: Data are from UNODC, undated(a).
 NOTE: Data are in kilograms per 1 million inhabitants.

Although per capita rates are low for most countries in the region, quantities of seized illicit methamphetamine are historically high: Indonesia seized an unprecedented 4.4 metric tons in 2015, double the amount seized in 2012. The UN suggests that increasing seizures in Indonesia reflect greater rates of illicit imports from neighboring China and Malaysia. Methamphetamine seizures in Malaysia have risen ninefold since 2009 to 1.1 metric tons in 2015. The Philippines has reported that methamphetamine seizures increased tenfold between 2011 and 2016 to 2.5 metric tons, the largest amount in more than a decade. Although the Philippines reports clandestine production of methamphetamine (ten labs were detected in 2016), much of the drug is imported from China, with a growing amount imported from Mexico (UNODC, 2017d).

Likewise, the number of dismantled illicit synthetic labs reported in China and Southeast Asia has grown from fewer than 100 in 2006 to more than 600 in 2015. The vast majority (593) of detected clandestine labs were in China, primarily in Guangdong or Sichuan provinces. In recent years, the UN reported that labs were destroyed in Indonesia (three), Malaysia (23), and Thailand (13). No large-scale labs have been detected in Myanmar, but country officials and the UN report that seizures in the Shan State and in neighboring countries could indicate illicit manufacture in that country (UNODC, 2017d). The UN and APAIC report that Myanmar is the

principal source of methamphetamine for neighboring Thailand, accounting for 90 percent of the crystal methamphetamine used in the country (UNODC, 2017d).

Increases in detections of clandestine labs correlate with seizures of precursors, such as ephedrine and pseudoephedrine. The majority of precursor seizures occurred in China, which reported seizures of ephedrine and pseudoephedrine totaling 16.7 tons in 2013, 31.5 tons in 2014, 23.5 tons in 2015, and 1.4 tons in 2016 (UNODC, 2018b). Seizures of pseudoephedrine in Myanmar have plummeted from a height of nearly seven tons seized in 2012 to just more than half a ton in 2016 (UNODC, 2017d; UNODC, 2018b). The UN reports that controls on ephedrine and pseudoephedrine have encouraged traffickers to adopt other precursors, such as 1-phenyl-2-propanone (P-2-P). Decline in seizures of ephedrine and pseudoephedrine have been mirrored by increases in seizures of P-2-P. The UN reports that China seized 6.5 tons of P-2-P in 2013 and even larger liquid seizures in subsequent years. Likewise, in 2015, Myanmar seized some 14,200 liters of P-2-P that originated in China (UNODC, 2017d).

Apart from methamphetamine, ecstasy (or MDMA) and ketamine are other synthetic drugs of concern in the region. According to UNODC reports, there is more country variability in the production and trafficking of ecstasy, and Indonesia appears to be the only country in East and Southeast Asia where MDMA is commonly reported. Spikes in seizures often are driven by individual seizures of large quantities. In 2015, approximately 3 million tablets suspected of containing MDMA were seized in East and Southeast Asia, which converts to approximately 900 kilograms (UNODC, 2018c). In 2016, the weight of seizures of ecstasy-type substances came to 946 kilograms, more than half of which was seized in Indonesia, followed by China (38 percent) and Malaysia (6 percent) (UNODC, 2018c). Between 2012 and 2016, Indonesia accounted for slightly more than half of the total amount of MDMA seizures for the East and Southeast Asian region (UNODC, 2018c).

The UN reports that ecstasy manufacturing is not as widespread in East and Southeast Asia and that only two countries uncovered clandestine labs in 2015: four in China and seven in Malaysia. In 2016, Malaysia dismantled another seven laboratories, and the UN suggests that the country might be a substantial point of entry for ecstasy trafficked from the Netherlands to the regional market. Prior to 2014, Malaysia reported insignificant MDMA seizures, but in 2015, the country seized more than 400,000 pills. Countries in East and Southeast Asia also have seized chemical precursors; for example, China seized 1.5 tons of 3,4-MDP-2-P (an MDMA precursor) in 2013. The UN notes one substantial seizure in August 2014 in Cambodia of five tons of safrole-rich oils, which were produced in Cambodia and destined for Europe. East and Southeast Asia reported no seizures of such MDMA precursors as 3,4-MDP-2-P, piperonal, safrole, and isosafrole in 2015. However, in 2016, a small quantity of safrole oils was seized in Thailand (UNODC, 2017d).

Ketamine seizures in East and Southeast Asia reached an all-time high of 20.4 metric tons in 2015. The region's largest market is China, which accounts for 99 percent of ketamine seizures in 2015 and has reported multiton seizures every year since 2007. The UN reports that there have been recent declines in ketamine seizures in Thailand and Malaysia. In 2015, 113 ketamine labs

were detected and dismantled in China; Malaysian authorities detected the first ketamine lab in 2015 (UNODC, 2017d).

Recently, a number of tablets sold as ecstasy contained substances other than MDMA, including many new psychoactives that often are produced in East and Southeast Asia, including ketamine, 2C-B, TFMPP, and PMMA (UNODC, 2017d). Between 2008 and 2016, 168 different NPSs, mostly synthetic cathinones and cannabinoids, were reported by countries in East and Southeast Asia. It is unclear what proportion of these substances remain in regional markets. The general consensus is that most of these NPSs are destined for markets in Japan, Europe, and North America. Japan has stepped up efforts to enforce against NPSs, closing outlets suspected of selling NPSs and arresting those that violate controls under the Pharmaceutical Affairs Law. The number of individuals arrested for NPS-related offenses has grown from zero in 2011 to approximately 1,200 in 2015 (APAIC, 2014b).

The UNODC reports an alarming trend in the type of NPSs detected, reporting that synthetic opioids and benzodiazepines are the fastest-growing category of new substances. Many of these substances are exported to markets in North America and Europe, where they have been linked to recent increases in user deaths (UNODC, 2017d).

The production of new substances has been linked to a burgeoning chemical industry in China. According to the U.S.-China Economic and Security Review Commission, the Chinese pharmaceutical industry consists of more than 5,000 companies that produce active pharmaceutical ingredients, which can include synthetic substances and precursor chemicals. The industry reported \$105 billion in revenue in 2014, making it the second-largest pharmaceutical industry in the world (O'Connor, 2016). China is a leading exporter of active pharmaceutical ingredients (APIs) and chemicals that can be used in the production of controlled substances. In addition to the thousands of pharmaceutical companies, the U.S. government estimates that there might be as many as 400,000 chemical distributors or suppliers in China, many of which are large facilities located near export zones (U.S. Department of State, 2015). Of those companies, the U.S. State Department estimates that there are some 160,000 firms that produce chemical precursors (U.S. Department of State, 2014). Some of these chemical manufacturers produce large quantities of precursor chemicals and NPSs. According to O'Connor (2016), the U.S. Drug Enforcement Administration (DEA) reports that China is the primary source of precursor chemicals, providing 80 percent of the chemicals used in Mexico to manufacture methamphetamine destined for U.S. markets.

Some of these new chemicals are sold online and can be shipped directly to consumers in markets overseas. In an effort to stem the growing production of NPSs, China recently has moved to control some 116 new substances, including 38 synthetic cannabinoids, 26 synthetic cathinones, 23 phenethylamines, and several synthetic opioids (UNODC, 2015d; UNODC, 2018d).

Summary

Asia remains a source of both primary inputs and finished drugs for regional and international markets. The Golden Triangle in Southeast Asia is an important source of poppy for opium and heroin markets in the region, and Myanmar remains a major producer of illicit poppy, second only to Afghanistan. The region also has seen increasing seizures of synthetic drugs and clandestine labs. Reported seizures of ATSS (e.g., methamphetamine and MDMA) are increasing. Most countries are reporting sharp increases in methamphetamine seizures, with a substantial increase reported in Southeast Asian countries and the four neighboring provinces of China. By many accounts, clandestine manufacturing of methamphetamine has increased substantially in most countries, but particularly in China, which shut down almost 600 labs in 2015.

Seizures of ketamine have continued to rise in recent years. This has mostly been the case in China, where ketamine use is more prevalent. Recent reports of increases in seizures of precursor chemicals and NPSs suggest that manufacturers are developing and exporting new drug analogs to global markets. China remains an important source of many new synthetic chemicals and precursors, including those used in the manufacture of methamphetamine and synthetic opioids (for more information, see the section “Synthetic Opioids” in Chapter 5).

The region’s supply of drugs is one critical factor that governments have attempted to address alongside reducing demand for drugs. In the next chapter, we turn to a broad analysis of drug policy responses in Asia.

4. Drug Policies in Asia

Asia is an important link in the global trade in illicit substances and precursor chemicals. As discussed earlier, the region is becoming increasingly important as a center for production and trafficking of opium and synthetic drugs. Apart from long-standing consumer markets in developed countries, such as Australia and New Zealand, the region has seen growth in consumer markets in almost every country. Maturing drug markets and problematic drug use are becoming increasingly important social issues.

With the exception of a few island nations in the Pacific, all countries in Asia are parties to the three international drug conventions (see Box 2.1 in Chapter 2), which oblige signatories to prohibit the production, supply, and use of controlled substances outside of medical and research purposes. Furthermore, these conventions require signatories to criminally sanction drug trafficking. That said, much of the region pursues policies with the explicit goal of working toward a drug-free society. These policies can be divided into two areas: supply reduction and demand reduction. Supply reduction focuses on eradicating illicit crops, closing clandestine production facilities, encouraging alternative crop development (away from such crops as the poppy), interdicting illicit drug shipments, enforcing criminal prohibitions on the dealing and possession of controlled substances, and regulating access to precursor chemicals. Demand reduction includes broad prevention campaigns, drug treatment, and penalties to deter drug use.

Most Asian countries apply strict and sometimes severe penalties for drug-related offenses. These penalties include lengthy prison sentences, compulsory detention and rehabilitation, and sometimes inhumane treatment practices (Kamarulzaman and McBrayer, 2015). According to advocacy groups, Asian countries retain and use the death penalty for moderate to severe drug violations, including possession of a few grams of heroin (Gallahue and Lines, 2015).¹² International bodies have called on countries in the region to abolish the practice for drug-related offenses (International Narcotics Control Board [INCB], 2016). It has been reported that about 200 people were executed in Asia for drug law violations in 2013 (Gallahue and Lines, 2015). Indeed, as many as 600 people were executed for drug-related offenses in China alone in 2014 (Stone, 2016). Although responses to drug supply and use in Asia have been considered severe and are sometimes linked to gross human rights violations, as in the case of the Philippines' most-recent efforts under President Rodrigo Duterte, countries like Thailand recently have moved to reduce penalties for drug law violations and adopt additional harm-reduction responses to drug use (see Chapter 5 for additional information about these countries).

¹² Singapore's Misuse of Drugs Act stipulates a death sentence for trafficking 15 grams of heroin. Indonesia's Law No. 20/2009 on Narcotics stipulates a death sentence for trafficking five or more grams of substances in Schedules I and II. Singapore executed a foreign national in 2016 for trafficking 1.6 kg of methamphetamine (Boh, 2018). Indonesia executed four foreign traffickers in July 2016 (Jatmiko and Wright, 2016).

Countries in the region maintain demand-reduction mechanisms within national drug policies, yet the majority of countries follow aggressive supply-reduction efforts and punitive sanctions to discourage supply and use of controlled substances. Estimates are hard to come by, but media reports and nongovernmental organization (NGO) studies suggest that drug law convictions make up a substantial proportion of the prison population in some countries in the region. Recent reports suggest that about 70 percent of Thailand's 320,000 prisoners were incarcerated for drug offenses in 2016 (Lefever, 2016). Official sources in the Philippines suggest that drug law violators make up a substantial proportion of inmates. In mid-2017, convicted drug offenders made up 17 percent of inmates in Philippine prisons, whereas drug-related offenders make up more than 60 percent of those detained in jail (Bureau of Jail Management and Penology [BJMP], 2017a; BJMP, 2017b). Taiwan reports similar figures, with more than 50 percent of its 56,000 prisoners behind bars for drug law violations in 2016 (Ministry of Justice, 2018). In Malaysia, the number of drug law inmates has increased steadily in recent years (Mohamad, Mat, and Muhammad, 2017). Official statistics from Malaysia suggest that about 60 percent of prisoners are convicted on drug law offenses, and almost all of those convictions relate to opiates and methamphetamine (Ministry of Home Affairs, 2017).

A substantial number of foreigners have been arrested and convicted for drug offenses. According to recent data from Hong Kong, approximately 18 percent of prisoners were from abroad, of whom many were charged or convicted of drug offenses (Leung, 2016). Statistics from Malaysia suggest that about 20 percent of drug-related prisoners were foreigners. ASEAN estimates that two-thirds of foreign drug offenders in Southeast Asia were from neighboring ASEAN member countries, 23 percent were from Asia and Oceania, and the remainder were from elsewhere (Kanato et al., 2016).

ASEAN coordinates much regional drug policy, especially as concerns Southeast Asia, although countries have considerable latitude when it comes to domestic drug policy matters. In October 2016, members outlined a ten-year work plan with proposals to address illicit drug activities and mitigate the negative consequences of drugs to society. This most recent work plan replaced an earlier 2009–2015 work plan aimed at achieving a drug-free ASEAN by 2015. Continued expansion of drug markets and drug trafficking throughout much of the region necessitated a new ten-year plan (ASEAN, 2016).

Supply Reduction

Reducing the supply of such primary inputs as illicit crops, controlled chemicals, and other precursors is a feature of drug policy in the region. This is especially true for countries that produce and trade precursor chemicals or are known to cultivate substantial amounts of poppy. Southeast Asia has played an important role in the cultivation of poppy for heroin production. Thailand was once a major producer of opium, and it has been hailed as one of the few successful cases of illicit crop eradication. Over a span of decades, alternative development programs in rural regions encouraged subsistence poppy farmers to abandon illicit cultivations (Windle, 2016; Jinawat, 2007). However, Thailand's drug problem has evolved from poppy

cultivation to methamphetamine production. Such a transition could be occurring elsewhere in the region, as shown by increasing seizures of synthetic drugs and other precursors.

Enhancing precursor chemical controls to prevent their diversion for the production of synthetic drugs is one policy area that has been successful in the Americas in reducing drug-related outcomes, such as treatment admissions and drug-involved arrests (Cunningham and Liu, 2005; Cunningham et al., 2010).

Although synthetic drug production appears to be increasing, the majority of early supply-reduction interventions focus on crop reduction. With the help of international partners like the UN and the European Union, illicit crop reduction entails a two-pronged approach of crop eradication and alternative development. Eradication efforts have recently declined in Afghanistan, in part because of increasing security concerns. Instead, international development agencies have encouraged farmers to adopt alternative licit crops that raise incomes and discourage illicit poppy cultivation (Greenfield et al., 2015).

Broader security and international challenges facing Afghanistan might have hindered illicit crop-reduction efforts, but Southeast Asia has seen some successes in reducing illicit crops. Thailand is regarded as an important success story. Over decades, the country was able to eliminate illicit poppy cultivation, moving from almost 18,000 hectares in the mid-1960s to virtually none by the beginning of the 21st century. This was largely achieved through successful economic development in rural areas by means of crop substitution (UNODC, 2015b). Thailand continues to promote alternative development—both at home and abroad—as one major policy tool in reducing drug supply (Jinawat, 2007). One important feature of Thai policy is that it favors broad economic development over eradication and law enforcement, especially for subsistence farmers.

Myanmar and Laos employ the aforementioned two-pronged strategy of eradication and alternative development. The UN notes that in both of these countries, alternative development is often funded or implemented by international donors such as the UN, European Union, and Chinese government, although it is integrated into national drug strategies. The most recent ASEAN work plan on regional drug strategy encourages greater public and private involvement to integrate illicit cultivators into national economies along with enhanced eradication efforts (ASEAN, 2016).

Reducing illicit cultivation is just one policy of supply reduction. Other mechanisms involve interdicting illicit shipments of controlled substances and precursor chemicals (see Chapter 3 for more information). This is a common practice in Asia, which is often at the crossroads of major international trafficking. ASEAN has agreed to increase the number of counterdrug operations, especially seizures of shipments of precursor chemicals and drugs. Some countries have enthusiastically adopted strong law enforcement policies to counter the problem of supply and use of drugs. Since July 2016, the Philippines has initiated a domestic counternarcotics offensive, encouraging vast roundups of drug dealers and users. Some advocacy groups have raised serious concerns that these efforts have encouraged state-sponsored human rights violations and extrajudicial killings (Amnesty International, 2017; we discuss this further in Chapter 5).

Law enforcement agencies throughout the region regularly meet to strengthen efforts to dismantle trafficking routes and share intelligence. ASEAN's Drug Monitoring Network regularly meets with ASEAN + 3 countries (the ten ASEAN member states plus China, Japan, and South Korea) to promote technical cooperation among members and the international community. Likewise, heads of national drug law enforcement agencies meet annually to discuss regional trends, goals, and challenges (ASEAN, 2016).

Demand Reduction

Countries in Asia maintain policies to reduce the demand for drugs. Efforts to discourage initiation focus on general and school-based campaigns. These are often youth prevention campaigns designed to educate students about the harms of drug use or to promote healthy and drug-free lifestyles. General public campaigns are often broad and attempt to reach a wide audience, while school-based prevention messaging focuses on primary and secondary students. According to ASEAN and national drug control reports, Cambodia, China, Laos, and Thailand have invested in school-based prevention campaigns aimed at building youth resiliency to drug use (Kanato et al., 2016; Kanato, Leyatikul, and Choomwattana, 2017; National Narcotics Control Commission, 2017). In the last several years, Indonesia, Malaysia, Myanmar, and Vietnam have started implementing or piloting drug prevention campaigns aimed at both general and at-risk populations. However, most of these programs lack any outcome evaluations assessing their effectiveness or impact on reducing the demand for drugs.

Treatment and rehabilitation policies and capacities vary dramatically by country. In the last three decades, some countries have deemphasized the use of criminal penalties for drug use and possession and have started to promote the use of compulsory centers for drug users (CCDUs) (Kamarulzaman and McBrayer, 2015). In most of these cases, drug users who do not voluntarily seek treatment can be involuntarily detained in a CCDU for extensive periods. For example, under Chinese law, a drug user can be detained in a center for up to three years, undergoing compulsory treatment; compulsory detention can last as long as five years in Vietnam (Kamarulzaman and McBrayer, 2015). According to the UN, CCDUs are used primarily in Cambodia, China, Indonesia, Laos, Malaysia, Myanmar, the Philippines, Thailand, and Vietnam (UNODC, 2015c). CCDUs often are criticized for their lack of efficacy and their association with enhancing stigmatization and harm to users (Kamarulzaman and McBrayer, 2015).

Estimating the number of detainees in CCDUs is difficult: Not all reported treatment admissions are for entrants into CCDUs, as some drug users voluntarily seek treatment. Recent efforts by some countries to migrate from compulsory to voluntary treatment confounds estimation. One figure cited in the literature reported that more than 235,000 drug users were detained in more than 1,000 CCDUs across the region in 2010 (Kamarulzaman and McBrayer, 2015). According to official reports, there could be more than half a million registrants in Malaysia, Thailand, Vietnam, and China (National Narcotics Control Commission, 2017; Kanato et al., 2016).

A recent study analyzing governmental data from the region suggests that, although the number of detention centers has declined, the number of detainees in CCDUs remains high. Reported figures might be imprecise, but Lunze and colleagues (2018) report that more than 450,000 people were detained in nearly 1,000 facilities across the region in 2014. See Table 4.1 for estimates of CCDU detainees across the region. Thailand and Vietnam show the largest declines in detainees. However, these are official numbers reported by governments and they should be interpreted with caution. The authors of the study determined that detainees were remanded to facilities for treatment for 3 to 24 months.

Table 4.1. Compulsory Centers for Drug Users in Asia, 2012–2014

Country	Length of Stay (months)	2012		2013		2014	
		Centers	Detainees	Centers	Detainees	Centers	Detainees
Cambodia	6	10	2,600	10	2,713	10	3,249
China	12–24	700	319,000	700	319,000	700	319,000
Laos	3–6	9	3,915	10	4,718	11	5,339
Malaysia	9–12	21	5,473	18	5,136	21	5,753
Philippines	8	37	2,744	37	3,266	37	4,392
Thailand	6	87	112,589	86	131,496	86	96,680
Vietnam	12–24	110	27,920	105	29,273	83	21,401
Total	N/A	974	474,241	966	495,602	948	455,814

SOURCE: Data are from Lunze et al., 2018.

NOTE: N/A = not applicable.

CCDUs have been criticized for being punitive, operating outside the medical system, and requiring abstinence. Medication treatment (e.g., methadone) often is not available and centers generally require detoxification. CCDUs also can be unsafe for their patients. Research has documented cases of human rights violations, including denial of care, forced labor, and physical and sexual violence. Compared with those in evidence-based treatment services, CCDU detainees suffer from higher rates of HIV, have poorer access to health care, are reported to have higher rates of relapse and recidivism after release, and are at greater risk of overdose (Kamarulzaman and McBrayer, 2015; UNODC, 2015c; Vuong, Nguyen, et al., 2017).

Historically, stigmatization and criminal penalties for drug use have been primary features of policy in Asia. Societal condemnation of drugs and drug use might have the paradoxical effect of increasing drug-related harms by deterring problem drug users from seeking treatment or by pushing them further into high-risk activities and environments. In one qualitative study of injection drug users in Bangkok, Thailand, in 2011, one-quarter of respondents reported avoiding health interventions; this was especially the case for those that reported previously being detained by law enforcement or refused medical care (Heath et al., 2016).

In order to reduce stigmatization and human rights abuses, the UN has called for countries to close CCDUs and move to voluntary, evidence- and community-based treatment services (UNODC, 2015c). Some countries in the region have started to convert CCDUs into voluntary treatment facilities that offer methadone treatment (MT). In the past decade, Malaysia and Vietnam have made strides toward voluntary outpatient drug treatment, including clinic provision of methadone (see Box 4.1). In 2008, Malaysia began offering MT to those with opiate use disorder and in 2011 started to convert 18 of its 28 CCDUs into voluntary treatment clinics. In 2013, Vietnam started reforming its treatment provision services by converting 80 of its 107 CCDUs to voluntary treatment clinics (Kamarulzaman and McBrayer, 2015).

Box 4.1. Medication Therapies

Medication therapy for the treatment of opiate use disorder is offered to individuals to prevent withdrawal symptoms and cravings associated with addiction. Many of these medications are taken daily or every other day to prevent an individual in recovery from relapsing into illicit drug use. These medications include opioid agonists, such as methadone and buprenorphine, as well as antagonists, such as naltrexone. Unfortunately, no such clinically approved medication therapy exists for stimulant abuse. In North America and Europe, access to these therapies saves lives, reduces criminal activity in chronic opioid users, and helps many enter into recovery. Some programs require tapering, although that is not always necessary or advisable.

States' capacity to provide opioid medication therapies varies considerably across the region. Compared with other parts of the world, buprenorphine has not permeated the region, although several countries have begun to allow its use (Reid, Sharma, and Higgs, 2014). Thailand has allowed access to methadone treatment since 1979 and buprenorphine since 2007 (Reid, Sharma, and Higgs, 2014). Other countries have begun to employ some form of medication treatment: China and Myanmar have had limited access to MT since 2004, Malaysia started offering methadone in 2005, and Indonesia has offered methadone and buprenorphine since 2001 and 2003, respectively (Shen et al., 2016; Reid, Sharma, and Higgs, 2014; Ali et al., 2018).

While they transition away from compulsory treatment centers, some countries are adopting medication treatments alongside the provision of other social and behavioral treatment services for drug users. One overview of medication treatment provision in the region suggests that access is limited. Fewer than 6,000 patients receive either buprenorphine or methadone in Indonesia; some 4,000 to 5,000 patients received methadone in Thailand in 2009, but that number has dropped to perhaps fewer than 2,000 as drug consumption shifts away from opiates to ATs. By 2013, some 3,000 patients had access to methadone in Myanmar (Reid, Sharma, and Higgs, 2014).

There is a growing body of literature assessing outcomes of voluntary treatment facilities and methadone therapy programs in the region. Most research supports the positive benefits of MT. These assessments are important as countries begin moving away from CCDUs and toward a voluntary model of drug treatment (Vuong, Ritter, et al., 2017). These voluntary facilities provide patients with access to treatment, including methadone and social and health services. In a preliminary study of Malaysia's second voluntary treatment facility, which is located in Kota Bharu, Kelantan, and offers both inpatient and outpatient treatment, patients' self-reported monthly drug use significantly declined in the first month after enrolling in the government-run Cure and Care facility (Khan et al., 2017).

Another study from Malaysia evaluated relapse rates between opiate-using individuals remanded to CCDUs and those who enter voluntary methadone treatment. The observational study, where treatment was not randomly assigned, controlled for demographic factors between groups and reported that those accessing methadone in a voluntary setting had reduced their risk of postrelease relapse by 84 percent, whereas the CCDU group quickly relapsed (Wegman et al., 2017). Because the Malaysian judicial system determined who entered a CCDU or received methadone, issues of selection bias pose one limitation. A similar study assessing outcomes between heroin users remanded to CCDUs and voluntary methadone programs in Vietnam reported nearly the same findings. Those receiving methadone had, on average, 344 more drug-free days over the previous 36 months compared with those in the CCDUs a year after release (Vuong et al., 2016). Authors also evaluated the cost-effectiveness of programs and concluded that voluntary methadone treatment programs not only cost less than CCDUs but also were more effective at reducing illicit drug use.

Although early studies show promise for voluntary MT in the region, impediments remain. Stigma and lack of access to sufficient MT have limited patient recovery. Studies evaluating MT patient dropouts and utilization in injection drug-using populations in several countries have shown that high levels of social stigma and insufficient doses of methadone correlate with incomplete treatment adherence, early termination, or low levels of program utilization (Lan et al., 2017; Tran et al., 2018; Khue et al., 2017). This is especially true outside major urban areas (Van Nguyen et al., 2017; Pham et al., 2017). One study reported that 16 percent of patients in an MT program in Bangkok, Thailand, regularly procured diverted methadone from street markets because standard doses were reported to be too low (Hayashi et al., 2013). The authors also reported that stigma (e.g., use of a Western medicine, difficulty negotiating doses) and other social barriers (e.g., poor MT access, intense police surveillance of clinics) prevented access to methadone. Similar findings have been reported in China, although it has rapidly expanded access to methadone in the last 15 years (Sullivan and Wu, 2007). One recent study assessed patient adherence in one MT program in Xi'an, China, and found that a below-average methadone dose was associated with early termination and relapse (Zhou et al., 2017). An earlier study in Yunnan province reported similar findings; lower daily doses (less than 60 mg of methadone) were significantly associated with poor adherence and early treatment termination (Shen et al., 2016).

Although there are reports of limitations on dosing of methadone in China, the country has adopted some innovative solutions to attract and maintain access to hard-to-reach rural populations. Mobile methadone clinics, first introduced in Yunnan in 2010, have expanded to ten other provinces (Sullivan et al., 2014). There are some two dozen vans that service rural areas, giving patients greater flexibility and access to medication therapies (Yin et al., 2010). Although they are not fully evaluated, the idea of mobile methadone clinics deserves greater attention and research.¹³

Apart from the responses outlined earlier, some countries in the region offer evidence-based treatments in harm-reduction settings. Such policies include needle and syringe exchange programs (NSPs). According to one report by Harm Reduction International, Brunei, Japan, South Korea, the Philippines, and Singapore offer neither NSPs nor medication treatment. Other countries in the region offer one or both (Stone, 2016). Such policies are gaining acceptance and some governments have made concerted efforts to increase access and funding to both NSPs and medication treatment. Coverage varies by country, with as few as one NSP site in Mongolia to more than 1,000 in Taiwan and one medication treatment provision service in Afghanistan to more than 800 in Malaysia (Stone, 2016). The UN estimates that nearly 300,000 injection drug users in the region access medication treatment services. Most medication treatment entails methadone, although some private clinics do offer buprenorphine (UNAIDS, 2017).

One exhaustive review of harm reduction and medication treatment policies around the world estimated that East and Southeast Asia had large populations of injection drug users and poor coverage of NSP and medication treatment (Larney et al., 2017). However, coverage varies in the region. Malaysia and Vietnam reportedly offer greater access to medication treatment, and Myanmar and Vietnam offer clean injection supplies more frequently to injection drug users. Table 4.2 shows relevant annual estimates of the availability of NSPs and medication treatment in Asia. We note in Figure 4.1 that only a few countries have recently increased access to methadone, as measured in milligrams per capita.¹⁴

¹³ For example, the lack of available therapies in hard-to-reach areas in rural parts of the United States might be alleviated, in part, by assessing the impact that mobile methadone clinics might have elsewhere by improving access to medication therapies. Although some mobile methadone vans do operate in the United States, none have been licensed by the U.S. Drug Enforcement Administration since 2007 (Vestal, 2018).

¹⁴ These reported prescription measures might include methadone used to treat pain. Data reported by country do not allow us to determine the share of dispensed methadone for treating opioid use disorder. Ideally, the calculation should have the population of opioid users as a denominator, but as discussed earlier, data on prevalence are imprecise in Asia.

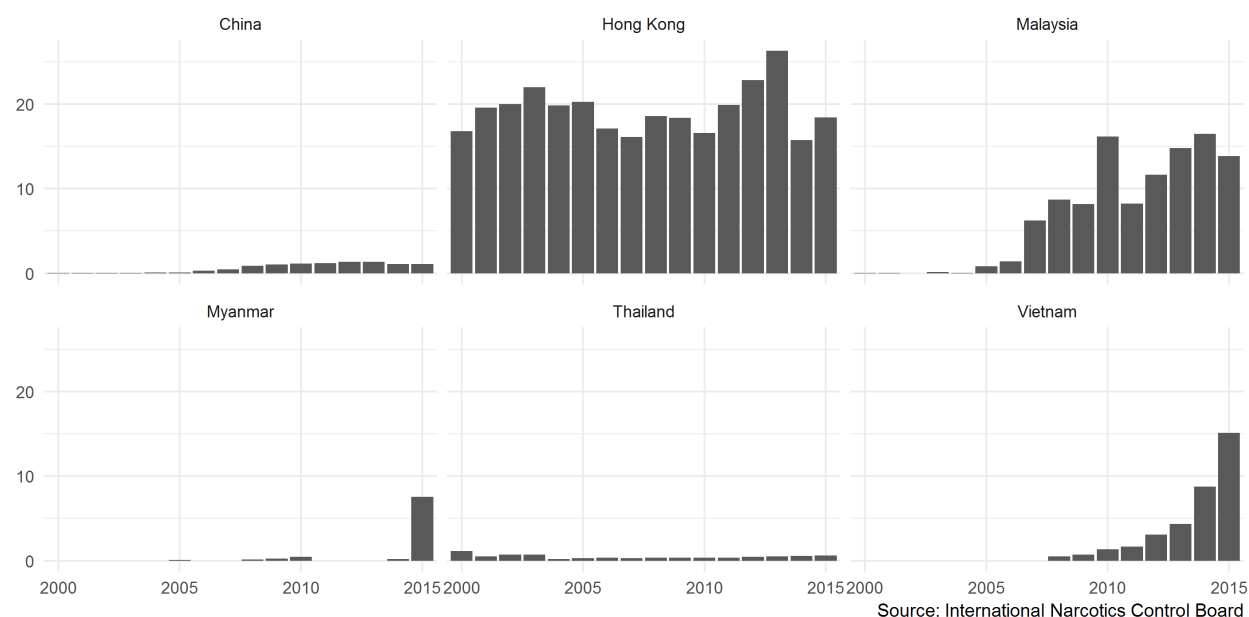
Table 4.2. Availability of Needle Exchange and Medication Treatment in Asia

Country	NSP Implemented	Number of Needles/Syringes Distributed per Injection Drug User	Medication Treatment Forms Available	Medication Treatment Recipients	Medication Treatment Recipients per 100 Injection Drug Users
Cambodia	Yes	—	Methadone	130	1
China	Yes	4	Methadone	184,000	7
Indonesia	Yes	2	Methadone/buprenorphine	5,329	3
Malaysia	Yes	—	Methadone/buprenorphine	74,816	27
Myanmar	Yes	80	Methadone	7,872	5
Philippines	No	0	None	0	0
Singapore	No	0	None	0	0
Thailand	Yes	24	Methadone/buprenorphine	3,646	7
Vietnam	Yes	176	Methadone	50,766	32

SOURCE: Larney et al., 2017, appendix.

NOTE: Given the difficulty in estimating the share of PWID, these per capita rates are likely to overestimate access to medication therapies in injection drug–using populations. Cells with dashes denote that data were unavailable.

Figure 4.1. Per Capita Methadone Dispensed (mg), by Country



Source: International Narcotics Control Board

SOURCE: Data are from INCB Annual Reports, 2000–2015.

Summary

Drug policy in Asia largely focuses on criminal sanctions and social stigmatization of drug use. Regionally, countries have supported efforts to create a “drug-free” society through policies that aim to eradicate supply and deter use. In many cases, governments employ compulsory treatment for those suspected of using drugs and capital punishment for supplying or trafficking, even relatively small amounts of drugs. Rates of incarceration for drug law violations are

substantial in several countries. Approximately 70 percent of Thailand's prison population is incarcerated for drug offenses, 60 percent of detainees in Philippine jails are there for suspected drug law violations, and drug law violators make up about half of the prison population in several other countries (Ministry of Justice, 2018; BJMP, 2017a; BJMP, 2017b; Lefever, 2016; Ministry of Home Affairs, 2017).

Drug-supply reduction involves illicit crop eradication, precursor chemical controls, and law enforcement interdiction efforts. Historically, such countries as Thailand and Myanmar have prioritized alternative livelihood programs to reduce illicit crop cultivation by incentivizing subsistence poppy farmers to produce other legitimate crops. Challenges remain, although over a generation Thailand successfully eradicated its illicit cultivation of poppy. Additionally, Asian countries have jointly agreed to interdiction and intelligence operations to seize chemical precursors and drugs smuggled across borders.

In terms of reducing demand, countries in Asia generally have employed a compulsory treatment model, forcing individuals to remain in detention centers while they undergo some form of treatment. International bodies have considered such forced treatment to be ineffective and a violation of rights. Governments across Asia are slowly phasing out these compulsory centers in favor of evidence-based outpatient treatment modalities, including medication therapies (e.g., methadone). Early evaluations suggest that patients receiving medication therapy report better outcomes than those in compulsory facilities. Nevertheless, limits to medication therapies and to access to facilities hinder their efficacy.

5. Case Studies

Three country case studies were selected to examine the shifting drug and drug policy landscape and give policymakers further insights. The cases were chosen to highlight the region's ongoing challenges and policy developments. Although the region remains an important source of poppy and synthetic substances, some countries have experienced growing drug use and its attendant problems. Policy choices made by different countries in Asia illustrate two diverging options when it comes to addressing increasing demand for drugs: stiffer penalties and violent suppression efforts versus a more patient-focused treatment and rehabilitation model.

At one end, the Philippines has recently taken significant steps to repress drug users and other drug law violators. Human rights groups and international bodies have questioned the current government's violent sweeps of urban communities. Dragnets and extrajudicial killings by vigilante groups and law enforcement have gone on since mid-2016. Some leaders in the region have supported the use of these tactics (Bangladesh declared a similar crackdown in May 2018 and Indonesian officials have weighed in positively), although there is no empirical basis for their effectiveness in reducing the drug problem. So far, mass arrests and surrenders have contributed to a substantial rise in prison overcrowding and a general fear of authorities.

In contrast, Thailand has started to shift its focus away from repressive demand-reduction policies, including a violent crackdown during a brief period in 2003–2004. Thailand is currently at the forefront of the region with respect to shifting the rhetoric away from harsh drug policies, and it is also taking action. Thailand has started to adopt voluntary treatment modalities that include opiate medication therapies and efforts to stem the harm from injection drug use. Additionally, the government is seriously discussing allowing the cultivation of medical cannabis—perhaps the region's first—with the eventual approval of use by Thai patients.¹⁵

The third case study focuses on China's growing production of synthetic substances and precursor chemicals destined for international drug markets. It is home to one of the largest and most poorly regulated chemical industries in the world. Lack of regulatory oversight allows unscrupulous businesses to market and export potent synthetic drugs, such as fentanyl. Use of these substances in major consumer markets in North America has contributed to tens of thousands of fatal overdoses in recent years. China has made some limited efforts to regulate this supply, but the emergence of new chemicals continues to confound regulators and law enforcement.

Each of these three case studies provides a deeper assessment of the developing drug phenomenon in Asia. As economies grow and attitudes change, countries in the region will continue to face shifting drug demand priorities and problems. Some might double down on a

¹⁵ In December 2018, Thailand's National Legislative Assembly approved final legislation to allow medical cannabis.

punitive focus; others might adopt a more nuanced set of goals aimed at reducing harm rather than reducing the use of drugs. Most importantly, the region remains a source of primary inputs and drugs for global markets. The growth in synthetic drug production could have unforeseen consequences, including the displacement of traditional plant-based drugs. The policy goals and problems encapsulated by these three case studies offer greater insight into the ongoing and future challenges faced by the region.

The Philippines' War on Drugs

While several countries in Asia have started to relax harsh punishment for some drug-related offenses or have adopted a voluntary model for rehabilitation, the Philippines under Duterte has moved to forcefully suppress the country's drug problem. The current government has garnered international attention and opprobrium from civil-society groups, NGOs, most Western governments,¹⁶ and international bodies for its recent and continued hard-line efforts to suppress crime and drugs. Since June 2016, Philippine law enforcement has initiated a series of antidrug operations, resulting in mass arrests, prison overcrowding, and extrajudicial killings (which are forbidden under multiple international conventions; Amnesty International, 2017). In addition to these concerns, it is unclear what impact the current antidrug campaign might have on state agencies, the wider drug market, crime, and drug users.

The Philippine experience stands in contrast to other efforts in the region. Nevertheless, the president of Indonesia has indicated his support for such heavy-handed policies (Chandran, 2017). More recently, Bangladesh has started a crackdown on drug users and low-level dealers, leaving at least 200 dead between May and July 2018 (Baldwin and Paul, 2018). The Philippine case study provides one early examination of such a repressive policy and its immediate outcomes. Although effects in the Philippines have not been empirically evaluated in terms of changes in drug distribution and use, early reports suggest substantial impacts on rehabilitation services, human rights, prison overcrowding, spread of contagious disease, and a general fear of government officials.

Context and Preceding Events

In the Philippines, multiple government agencies have a role in crafting the country's drug policy. The Dangerous Drugs Board (DDB) coordinates all policy in conjunction with its implementing arm, the Philippine Drug Enforcement Agency (PDEA). Other agencies, such as the Departments of Health and Justice, support the DDB and the PDEA in policy design and implementation related to the treatment or prosecution of drug offenders (DDB, 2016b). However, Duterte's administration has worked to refocus national drug policy, deploying the Philippine National Police (PNP) to eradicate drug use and sales across the country.

¹⁶ However, during a call with Duterte in May 2017, President Donald Trump praised the Philippines for its violent drug crackdown (Sanger and Haberman, 2017).

Drug use in the Philippines appears to have risen in the past few years. The last national household survey, which was fielded in 2015, reported that 1.8 million people, or 2.3 percent of citizens ages 10 to 69, used any drug in the past year (past-month rates were not reported) (DDB, 2016a). The primary drugs of use are cannabis and shabu (methamphetamine), with about half of surveyed drug users reporting that they used shabu at least once in the past year. The survey also reports that only one-quarter of past-year users used multiple drugs. This past-year prevalence total is up from 1.3 million in the 2012 household survey, but is down substantially from a peak of 6.7 million in 2004 (Rappler, 2016c; DDB, 2008). The DDB reports that treatment admissions doubled from a total of 2,744 in 2012 to 5,402 in 2015 (DDB, 2016b). Likewise, PNP arrest data prior to the crackdown show that there was a similar surge in arrests for drug law violators: In 2011, 5,000 individuals were arrested compared with more than 44,000 in 2014 (DDB 2016a, p. 30).

Until recently, the Philippines was primarily a transshipment point for illicit drugs rather than a destination. The previous comprehensive government response consisted of five pillars: supply reduction, demand reduction, alternative development, civic awareness, and international cooperation (DDB, 2013). To address supply, law enforcement divided responsibility into high- and low-level targets, with the PDEA focusing on high-value targets and the PNP handling low-level dealers (U.S. Department of State, 2015). The PDEA was the country’s main counternarcotics law enforcement agency; the PNP, although involved in combating local drug crime, focused on general public security and keeping the peace. The PDEA and customs authorities looked for methamphetamine shipments at ports of entry, dismantled clandestine synthetic drug labs, and eradicated illicit cultivation of cannabis (PDEA, 2016). Methamphetamine seizures were relatively flat until recent years. The U.S. State Department reports that methamphetamine from Mexico has made inroads into markets in the Philippines (U.S. Department of State, 2016). According to data from the PDEA, methamphetamine seizures nearly quadrupled from 2015 to 2016 (PDEA, 2016). In 2015, law enforcement operations increased by almost 50 percent after holding steady in previous years (see Table 5.1). Aggressive enforcement continued in 2016, as reflected by indicators that year.

Table 5.1. Philippine Drug Policy Indicators

	2012	2013	2014	2015	2016
Knock-and-plead operations	15,613	11,474	16,939	25,041	54,340
Methamphetamine seizures (kg)	112	838	718	596	2,211
Treatment admissions	2,744	3,266	4,392	5,402	6,079

SOURCES: DDB, 2016b; PDEA, 2016; UNODC, undated(c).

NOTES: *Knock-and-plead operations* are door-to-door strategies to encourage drug offenders and low-level retailers to surrender voluntarily. Data on methamphetamine seizures come from the UNODC for 2012–2014; 2015–2016 data are from the DDB.

Prior to the most recent crackdown, demand reduction in the country focused largely on inpatient programs aimed at methamphetamine abuse. Most of these inpatient programs are adopted from the compulsory treatment model common throughout the region (Vuong, Nguyen, et al., 2017). According to the DDB, 92 percent of inpatient admissions in 2016 indicated that methamphetamine was the primary drug of abuse (DDB, 2016b). Data from the DBB suggest that inpatient services are prioritized over less costly outpatient rehabilitation programs, such as relapse prevention or training early recovery skills (DDB, 2016b). The U.S. State Department notes that, in 2014, inpatient treatment was available from 41 accredited facilities, 15 of which were public (U.S. Department of State, 2015). That same year, the DDB claimed that “the increase of admissions may be attributed to the parents or guardians becoming more supportive of dependents with substance use disorders seeking treatment [and] improved rehabilitation programs,” along with antidrug campaigns (U.S. Department of State, 2015). Apart from drug treatment, through 2015 the Philippine government continued to make strides toward drug prevention education, engaging with local NGOs in public service announcement and awareness campaigns (U.S. Department of State, 2016).

Although drug use and supply indicators suggest an upward trend in methamphetamine since 2012, it is unclear what impact this has had on drug-related crime. Overall reported crime in the Philippines declined in the years preceding Duterte’s election. The rate of violent and property crimes per 100,000 people had fallen from 327 in 2009 to 198 in 2015 (National Statistics Office, 2011; Philippine Statistics Authority, 2017). Nevertheless, general anxiety over crime has been dwarfed by concerns about government corruption and judicial mismanagement by recent administrations (Thompson, 2016). In one embarrassing high-profile case, a raid of the maximum-security Bilibid Prison in December 2014 found more than a dozen high-level drug traffickers living in “luxury” cells full of contraband, including large amounts of cash, flat-screen TVs, firearms, a Jacuzzi, and methamphetamine (Cupin, 2014; U.S. Department of State, 2016).

Publicized incidents of corruption and an overall decline in processing alleged offenders added to the perception of government corruption and timidity toward crime (Thompson, 2016). During the 2016 presidential campaign, candidate Duterte pointed to rising drug-related indicators, inflating official prevalence estimates and calling for a crackdown on drugs (Thompson, 2016). On the campaign trail, Duterte pointed to successful crime reductions during his long tenure as mayor of Davao. During the election, he promised to implement similar strong-armed tactics across the Philippines, including mass executions.¹⁷ His law and order rhetoric resonated with voters who were tired of corruption and apathetic toward traditional parties and political powerbrokers (Thompson, 2016).

Duterte won a plurality, garnering almost 40 percent of the votes. He was sworn in as president on June 30, 2016. The next day, he publicly reprimanded the PNP for its corruption and encouraged officers to use deadly force against criminals (Cupin, 2016). Speaking to the public later that day, he openly called for the killing of addicted drug users: “If you know of any

¹⁷ Shortly after the election, Duterte vowed to kill 100,000 criminals in his first six months in office (Whaley, 2017).

addicts, go ahead and kill them yourself as getting their parents to do it would be too painful” (Agence France-Presse, 2016).

Initial Stages of the Drug War: July 2016 to January 2017

In his first State of the Nation Address less than a month after his inauguration, Duterte called for increasing drug law enforcement and expanding compulsory facilities to rehabilitate drug users (Rappler, 2016a). In support of the president’s declaration against drugs, the newly appointed director general of the PNP, Ronald Dela Rosa,¹⁸ issued Command Memorandum Circular No. 16-2016, charging the PNP to execute the “Barangay Drug Clearing Strategy of the government and the neutralization of illegal drug personalities nationwide” (National Police Commission, 2016).¹⁹ The memorandum stated that approximately one-quarter of barangays, most of which were urban, were “drug-affected.” The directive proposed a two-pronged operational strategy known as Operation Double Barrel focusing on high-level targets, as well as door-to-door “knock-and-plead” strategies to encourage drug users and low-level retailers to surrender voluntarily. The order effectively reshaped previous drug supply reduction policy, elevating the PNP as the principal antinarcotics force and targeting all drug-involved individuals, regardless of their status or relation to criminal operations.

In support of those efforts, the DDB issued a resolution in August 2016 that created a reward schedule of up to U.S. \$40,000, encouraging officers to seize product and arrest suspects (DDB, 2016c). It was initially reported by news sources and reiterated in interviews conducted by Amnesty International that officers are rewarded for killing drug offenders, not just for arresting individuals or seizing product. Rewards for killing drug law violators include U.S. \$400 for a street-level retailer or user, U.S. \$1,000 for a local official, U.S. \$20,000 for distributors, and U.S. \$100,000 for drug lords (Amnesty International, 2017; Mogato and Baldwin, 2017).

Amnesty International has cited concerns that, apart from orienting the PNP from general policing to drug law enforcement, the memorandum encourages the use of individual data- and intelligence-gathering on suspected drug law violators to maintain watch and target lists that are liable for abuse by law enforcement and local authorities (Amnesty International, 2017). The compilation and use of such lists predate the recent crackdown, but they are now being used to a greater degree. In June 2015, a circular issued by the Department of the Interior and Local Government called for Barangay Anti-Drug Abuse Councils (BADACs) to “continuously gather and update data on all drug related incidents . . . including the listing of suspected drug users and pushers” (Department of the Interior and Local Government, 2015). It is unclear whether national authorities, including the PNP or PDEA, had unfettered access to these earlier lists, although it is widely suspected to be the case.

On August 7, 2016, Duterte released the first list of public officials suspected of involvement with drugs. More than 150 names of judges, mayors, congressmen, and members of the military

¹⁸ Dela Rosa formerly served as Davao City chief of police under then-mayor Duterte.

¹⁹ A *barangay* is the smallest administrative division in the Philippines. There are some 42,000 barangays throughout the country.

and the PNP were released with the intention of removing these individuals from duty (Rappler, 2016b). Human rights groups criticized the action as politically motivated (Amnesty International, 2017). Some of the named individuals surrendered to authorities, pledging support for the government's counternarcotics efforts and submitting to drug testing (Francisco, 2016). Apart from these high-level surrenders, some 600,000 individuals surrendered in the first month, hoping to receive leniency or absolution after signing a government pledge to refrain from drug use (Cousins, 2016; Lowe, 2016).

This mass surrender was just one notable achievement of the new policy. In the first month and a half of operations, the PNP reported to have killed more than 650 individuals in self-defense during operations (UN News, 2016). The president's statements encouraging police to act with impunity and offering bounties were condemned by Agnes Callamard, the UN special rapporteur on summary executions (Office of the United Nations High Commissioner for Human Rights [UN OHCHR], 2016). The United States, under President Barack Obama, also voiced its concern about the number of extrajudicial killings (Associated Press, 2016). The international rebuke prompted Duterte to say that the Philippines would leave the UN (Reuters, 2016).

As extrajudicial killings continued, the senator and human rights activist Leila de Lima initiated a congressional investigation in late August 2016 (Quismundo, 2016). Duterte immediately alleged that the senator was guilty of corruption and "immoral" acts, citing a previous romantic relationship with her driver (Panti, 2016; Esguerra, 2016). Senator de Lima was stripped of her chair position in the Senate Justice and Human Rights Committee in September by Duterte's political allies, effectively ending the investigation (Elemia, 2016). She was arrested and remanded to detention in early 2017, where she has been awaiting trial for drug-related offenses.

Testimony from the now-shuttered investigation began to make headlines in October 2016. One unnamed PNP official stated to the *Guardian* that the police force was using "secret police teams" to execute suspected drug offenders (Lamb, 2016). The *Guardian*, unable to independently confirm the allegations, reported that the PNP has ten nonuniformed special operations units of 16 members each that use lists to target suspected drug users, dealers, and alleged criminals. Victims' bodies are left in public, bound with tape and adorned with a makeshift cardboard sign indicating their involvement as drug retailers, or "pushers." These death counts are not included in official PNP figures, suggesting that the total number of drug-related extrajudicial killings is greater than that reported by officials (Lamb, 2016).

Law enforcement appears to be committing these extrajudicial killings under the guise of self-defense. Late October and early November 2016 witnessed two extrajudicial killings of incumbent mayors who were on a government watchlist. In one case, the mayor of Albuera, Leyte, was killed in his jail cell in an apparent shootout after turning himself in; the closed-circuit television (CCTV) footage of the incident was never found and critics have questioned the official explanation (ABS-CBN News, 2016; Rappler, 2016d). Reuters investigated police reports provided by the Philippine Commission on Human Rights and found that the police have a high kill ratio. Of a sample of 51 reported shootout events analyzed, there was a 97-percent

suspect fatality ratio, suggesting that law enforcement is executing targeted individuals (Baldwin, Marshall, and Sagolj, 2016). Other findings show that law enforcement has started to underreport the number of individuals killed on site by police. Victims' families suggest that the PNP is covering up summary executions by transporting the deceased to hospitals in an effort to hide rights abuses and destroy evidence (Baldwin and Marshall, 2017).

International condemnation crested in late January 2017, after events came to light surrounding the forced kidnapping and execution of a South Korean business executive at the hands of the PNP. Jee Ick-Joo was suspected of being involved in the drug trade, forced from his residence in mid-October, and executed inside a PNP facility. His body was disposed of by cremation (ABS-CBN News, 2017). The government implicated corrupt officers, and Duterte announced the suspension of the PNP's counternarcotics efforts until the force had been "cleansed," handing authority back to the PDEA (Northbound Philippines News Online, 2017; Ranada, 2017a).

The Crackdown Continues: February 2017 to October 2017

The PNP's 170,000 officers and staff were briefly relieved of their drug enforcement duties in light of Jee Ick-Joo's extrajudicial killing. Director General Dela Rosa ordered the dissolution of antidrug units in the PNP and promised to overhaul the force, subordinating it to the PDEA (Ranada, 2017a). However, just four weeks later, Duterte reversed course and allowed limited participation of vetted PNP personnel, supervised by PDEA officials, to continue antidrug operations (Ranada, 2017b). The PDEA's limited manpower, estimated at some 2,000 officers, suggests that the agency is unable to maintain the heavy police presence and undertake the door-to-door operations initiated by the PNP.

In late February 2017, the DDB issued a regulatory directive reaffirming the creation of BADACs in every municipality to aid law enforcement in targeting and logistical operations (DDB, 2017). The BADACs are designed to catalog suspected drug-involved individuals, effect citizens' arrests, and deploy with law enforcement during residential knock-and-plead operations.

By April 2017, PNP operations, including the rebranded Operation Double Barrel Reloaded, had fully resumed without any reforms to guard against abuse (Rappler, 2017). News media and human rights groups had estimated that, up to that point, some 7,000 to 9,000 individuals had died at the hands of law enforcement or vigilante groups (Simangan, 2018). By July 2017, a little more than a year since the start of the crackdown, the PNP reported that 3,451 individuals were killed in antidrug operations and that there were an additional 2,098 drug-related deaths and 8,200 homicides pending investigation that were likely vigilante-related (Simangan, 2018).

The country saw one of the most intense periods of extrajudicial killings in mid-August, when 82 individuals were killed in a 24-hour period by PNP forces in an effort to eradicate drugs from several neighborhoods in Luzon (Serafica, 2018). One of those killed was a 17-year-old student, Kian Loyd de los Santos. Officers claimed that they shot de los Santos in self-defense, but CCTV footage, eyewitness accounts, and autopsy reports indicate that the minor was

unarmed, on his knees, and begging for his life when he was shot twice in the head (Serafica, 2018; de Guzman, 2017). De los Santos's assassination sparked widespread outrage. His funeral was marked by the first organized public protest against the president's war on drugs (de Castro and Marshall, 2017). Public and media disapproval of the killing prompted the president to call for the prosecution of the officers involved (de Guzman, 2017).

Public opinion in support of Duterte's job satisfaction fell from 66 percent to 48 percent by early October. On October 12, 2017, the president once again withdrew the PNP, replacing it with the PDEA and vowing to reassess if things did not get better (Rappler, 2017).

Recent Events: November 2017 to July 2018

Less than two months passed before Duterte officially reassigned the PNP to support antidrug efforts led by the PDEA. In a memo dated December 5, 2017, the president directed the National Bureau of Investigation, Bureau of Customs, Armed Forces of the Philippines, Philippine Postal Service, and other agencies to support the PDEA in the national antidrug campaign (Ranada, 2017c).

The government also has continued to pressure barangays to form BADACs in order to implement national drug policies at the local level through prevention and treatment services and by drafting and maintaining lists of suspected drug-involved individuals. As of late February 2018, some 9,000 barangays had not established a local antidrug council. The Department of Interior and Local Government has alleged that these derelict barangays might be politically compromised by drug pushers and threatened to sanction them for not establishing BADACs (Mellejor, 2018).

Domestic support has waned, although most citizens continue to favor Duterte's crackdown. Media and human rights groups estimate that more than 20,000 people have died as of February 2018 (Regencia, 2018). Of those, some 4,500 are officially recognized as having died because of PNP action in the first two years of the crackdown (Talabong, 2018d). On February 8, 2018, the International Criminal Court initiated a preliminary examination into the extrajudicial killings to determine whether there is a basis for further investigation under international law (International Criminal Court, 2018). In an effort to respect human rights, the PNP issued updated guidelines for door-to-door sweeps. The operations target those listed by the government and can only be carried out by uniformed police with the coordination of local government units during normal business hours (Talabong, 2018a).

In April 2018, PNP Director General Dela Rosa retired from the police force and was succeeded by Oscar Albayalde (Ballaran, 2018). Dela Rosa, who was age-mandated to retire from the police force, has been named the new director of the Bureau of Correction by Duterte. Since moving to the bureau, he has reignited a national debate on capital punishment. In an interview with the Rappler, he called for the death penalty for all drug offenses, including those found in possession of small amounts of drugs (Talabong, 2018b). Since 2016, the government has pushed to repeal the 11-year-old moratorium on capital punishment and in March 2017, the lower house approved capital punishment against drug offenders. The effort has since stalled in

the Senate (Deutsche Welle, 2017). Dela Rosa's comments come as he is deciding on whether to pursue a 2019 run for a Senate seat based on a platform in favor of capital punishment.

In late April 2018, the president ordered the PDEA to release another list naming more than 200 political and community leaders suspected of involvement with drugs (Agence France-Press, 2018). The move was criticized by human rights groups, especially in light of the local elections taking place in May. Local politicians continued to be targeted for their suspected links to the drug trade. In June and July 2018, two more mayors were assassinated, bringing the total to five since Duterte initiated the crackdown (Villamor, 2018).

At the same time, the government is seeking to expand drug law enforcement to schools. Prior to Duterte, the DBB and the PDEA had a cooperative relationship with schools, engaging with educators to raise awareness of the harms of drug use in young populations (U.S. Department of State, 2015). As of June 2018, the PDEA has proposed mandatory drug testing for all teachers and primary, secondary, and university students ages ten and older. The PDEA also directed law enforcement to conduct random searches of bags and lockers in primary and secondary schools (Reuters, 2018). The Ministry of Education has opposed the drug testing initiative because it would require an amendment to the Comprehensive Dangerous Drugs Act of 2002. Moreover, studies in the United States have suggested that such policies aimed at deterring drug use in adolescents report few gains. They have more often been criticized for promoting a hostile and negative climate and for being ineffective (Levy et al., 2007; Roche et al., 2009).

Effects of the Crackdown and Policy Implications

Although the government has declared victories in its recent antidrug efforts, the crackdown on drugs has had immediate impacts on the lives of many Filipinos (Gonzales, 2018). The most obvious effect has been the increase in extrajudicial killings and potential state-sanctioned human rights violations. Domestic and international human rights groups have raised concerns about such abuses and about political intimidation by the Duterte government. The UN has indicated its intention to assess whether a full investigation is warranted. Nonetheless, the Philippines has seen a substantial increase in the numbers of reported and suspected shootouts with law enforcement, mass arrests, and voluntary surrenders. It is unclear what impact aggressive law enforcement efforts have on drug markets. Given that such extreme measures are rarely adopted, such a policy is not well researched. Furthermore, the threat and use of violence against those accused or convicted of drug law violations lack any empirical evidence base when compared with effective treatment and innovative crime-reduction initiatives.

Human rights groups have criticized the knock-and-plead policy that encourages individuals to surrender to authorities. In addition to creating opportunities for law enforcement to extort compromised individuals, the policy of recording the names and details of suspects might violate rights and create a stigmatizing and fearful environment. Although these surrenders are voluntary, it is unclear how much autonomy suspected drug users or dealers have in the matter; some surrender in hopes of entering treatment (Amnesty International, 2017). Those who surrender sign affidavits that permit the state to obtain urine samples and remit the individuals to

treatment (DDB, 2016d). Some have raised concerns about being placed on a government watchlist after surrendering (Human Rights Watch, 2017). Such lists have been used to increase arrests and target suspected drug sellers.

After signing affidavits admitting drug use, individuals are screened to determine their level of need, although it is unclear how many individuals were appropriately screened, given the lack of accredited physicians qualified for drug abuse screening (Amnesty International, 2017). The majority of evaluated individuals are remitted to community rehabilitation programs, consisting of little more than exercise regimens—including dance classes—and antidrug lectures (Amnesty International, 2017). According to statements made by the former minister of health, only about 1 percent of those evaluated postsurrender required residential care, although capacity remains limited (Cousins, 2016).

Treatment resources are strained in the country. Government figures report that the Philippines had some 50 rehabilitation centers with a capacity of 5,000 beds when the crackdown started (Cousins, 2016). In late 2016, an additional 10,000 beds were added with the inauguration of a rehabilitation facility located on a military base. Nonetheless, former Minister of Health Paulyn Rosell-Ubial stated that the president's antidrug campaign caught the health system "flatfooted" and that the country lacks adequate and appropriate levels of treatment (Cousins, 2016).

Many of those who were arrested by authorities were sent to the country's overcrowded prisons. The Philippine prison system exceeded capacity prior to the crackdown, but the first year alone saw a 22-percent increase in the number of prisoners to almost 140,000 (Morales, 2017). Government data show that Philippine prisons exceed their housing capacity by a factor of five and a half, and that drug-involved offenders account for 62 percent of the total inmate population (BJMP, 2017a; BJMP, 2017b). Of the almost 84,000 drug-involved inmates, only 290 have been sentenced: The remainder await trial. Overcrowding is exacerbating public health problems in prisons. The spread of tuberculosis is of most concern to such international aid agencies as the International Committee of the Red Cross (ICRC), which notes that detainees report suffering from a drug-resistant strain of the disease (ICRC, 2018). Other agencies have pointed to the rise in such contagious diseases as HIV and HCV in overcrowded prisons (Macarayan et al., 2016).

Media has reported that between July 1, 2016, and June 30, 2018, the PNP arrested 149,265 individuals and a total of 1,274,148 people have voluntarily surrendered (Talabong, 2018c; PNP, 2017). Official police reports show that between July 1, 2016, and March 20, 2018, some 92,000 operations were conducted, resulting in the deaths of 4,075 drug-related persons. According to human rights groups, the majority of those killed were poor people residing in urban centers (Amnesty International, 2017). Of those arrested, 200 were elected officials, 45 were uniformed security personnel, and 225 were government employees (PDEA, 2018). Since September 2017, the PNP has not released figures for homicides pending investigation. Earlier reports suggest that there are more than 16,000 such cases (Regencia, 2018). Some estimate that more than 90 percent of the 1.3 million people who have surrendered are drug users (Bueza, 2016). See Table

5.2 for the numbers of people who surrendered, were arrested, and died, according to PNP reports.

Table 5.2. Official PNP War on Drugs in Numbers, July 2016–November 2017

Campaign	Houses Visited	Individuals Surrendered	Individuals Arrested	Individuals Died
Double Barrel, June–October 2016	3,046,004	746,853	34,154	1,798
Double Barrel Alpha, November 2016–February 2017	4,802,442	443,226	23,104	861
Double Barrel Reloaded, March–October 2017	979,043	72,109	54,828	1,274
Total	8,827,489	1,262,188	112,086	3,933

SOURCE: Talabong, 2017.

NOTES: These are official figures. Media and human rights groups have pointed out that deaths involving vigilantes are not included in these figures.

In addition to these law enforcement statistics, the government has reported that 6,558 patients have completed inpatient rehabilitation and nearly 160,000 surrendered drug users have participated in a community-based outpatient rehabilitation program (Talabong, 2018c), although there is no clear legal framework regarding community-based treatment (Cepeda, 2016). Authorities point to such outpatient community-oriented solutions given the limited inpatient treatment capacity, which can serve fewer than 10,000 people. Generally, community-based programs in the Philippines are reserved for individuals with mild substance use disorder (DDB, 2016b). They are locally administered programs that consist of community service, recreation, counselling, and spiritual formation (Hechanova et al., 2018).

We are not aware of any formal evaluations of the impact of such strategies on drug suppliers in general or in the Philippines specifically. Although there have been studies of drug law enforcement in other regions, the studies have not focused on extrajudicial killings or large-scale knock-and-plead sweeps. Indeed, much of the existing research on interventions targeting suppliers is based on *marginal* changes in drug law enforcement in high-enforcement nations. Reviews of this literature find little evidence that these changes affect the markets (as measured by prices), but the literature is small and there are important methodological concerns with some of these studies.²⁰ Of course, there are questions about the external validity of studies examining

²⁰ Pollack and Reuter’s (2014) review ultimately concluded: “Given the high human and economic costs of stringent enforcement measures, particularly incarceration, the lack of evidence that tougher enforcement raises prices calls into question the value, at the margin, of stringent supply-side enforcement policies in high-enforcement nations.” Although Caulkins (2014) agreed with the conclusions of the review, he commented that

It is worth noting, however, that enforcement is a highly heterogeneous collection of activities. The empirical evidence speaks only to the failures of enforcement as practiced in the past, and enforcement has never been optimized to produce the maximal impact on prices. Many police chiefs and other policy makers do not even think in terms of evaluating enforcement based on its effects on prices. For that matter, law enforcement does not always think in terms of efficient

law enforcement efforts in Australia, Europe, and the United States being applied to other regions of the world.

We also are unaware of any studies examining how these massive crackdowns influence the number of drug users, how much they consume, and the actions users take to avoid detection. Human rights groups argue that government sweeps and mass arrests have deterred drug users from seeking out HIV testing, sterile injection equipment, and treatment (Amnesty International, 2017). This claim is consistent with some of the qualitative research on police activities in Western countries. For example, one study assessing drug law enforcement in urban markets in Australia suggests that enhanced police activity encourages harmful practices in users who seek to conceal their drug use from authorities. Practices include hiding drugs in the body and engaging in risky drug use, such as sharing needles and rushing injections (Maher and Dixon, 1999). Another study of Vancouver's drug market reported that law enforcement sweeps might displace drug use into neighboring areas, making it hard for users to engage with social services (Wood et al., 2004). Future research in this area must consider outcomes beyond drug prices and consumption.

Conclusion

The Philippine government is undertaking a violent and harsh antidrug campaign. Drug supply and use indicators appear to have risen in recent years, and growing frustration with corruption and an unresponsive judicial system contributed to the election of Duterte in May 2016. Since entering office, Duterte has initiated an aggressive law enforcement campaign against drug users and suppliers. These efforts have sparked domestic and international debates over the degree and magnitude of state-sponsored killings. The government's use of dragnets and alleged extrajudicial killings has resulted in hundreds of thousands of arrests, more than 1 million voluntary surrenders, and some estimated 20,000 deaths at the hands of the PNP and vigilante groups. Human rights groups also have raised the alarm about government-sponsored watchlists of suspected drug-involved persons and the overall shift in tone encouraging street justice.

Other countries in the region are considering or have initiated similar crackdowns on drug dealing and use. As a policy, the Philippine crackdown has not been evaluated to determine what impact it has had on drug dealing or use. Nonetheless, early counts of those killed in the street and detained in prison indicate that costs have been substantial. It is possible that the policy is having an impact on individuals who have turned themselves in to authorities, seeking leniency.

production or maximization of social welfare with respect to any objective function, prices or otherwise.

It is important not to conclude that all drug law enforcement is necessarily bad or ineffective. If the only choice were to scale up or to scale down all drug law enforcement activities across the board, then I would unhesitatingly prefer to scale it down; but my first choice would be sharp cuts only for incarceration, not investigation and prosecution, with the hope of targeting the remaining incarceration more effectively at the worst offenders (p. 1967).

Apart from the shift in rhetoric, including a call to bring back capital punishment, strong-armed policies could enhance overall harm to drug users and common criminals, as well as reduce force morale and community trust. Inmate overcrowding is a serious problem in the Philippines, with jails and prisons at more than five times their capacity. International groups report increasing incidence of such communicable diseases as HIV and tuberculosis in inmate populations. It is unclear whether screening surrendered drug users has been successful: Some have questioned the government's ability to properly diagnose problematic drug use. Likewise, government-provided treatment is severely underfunded and overwhelmed. The country's treatment capacity covers only a small percentage of self-declared drug users. Furthermore, the treatment provided in government facilities has been criticized for its lack of evidence-based methods. Most drug users are referred to unevaluated community-based rehabilitation programs.

Several high-profile killings have resulted in an abeyance of police sweeps. However, in the prominent cases discussed earlier, the government shortly reversed course and returned the police to their full duties, albeit with minor changes in directives or authority. As of June 2018, the government remains committed to the crackdown. Duterte continues to deride domestic and international voices calling for authorities to respect human rights and the rule of law. There seems to be no official effort to evaluate these policies in terms of their effectiveness or harms caused. Furthermore, it is unclear what consideration has been made to measures of success or to the opportunity costs of utilizing scarce public security and health resources to round up suspected drug-involved persons.

Drug Law Reform in Thailand

National security concerns have driven much of Thai drug policy since the mid-20th century (Cole, 2016, p. 200). However, in the last decade and a half, drug policy in Thailand has undergone a series of changes. The country has been hailed as one of the few successful cases of illicit crop eradication. Alternative development programs in rural regions encouraged subsistence poppy farmers to abandon illicit cultivations over several decades (Windle, 2016; Jinawat, 2007). However, Thailand's drug problem has evolved from poppy cultivation to methamphetamine production and injection drug use. Rising methamphetamine prevalence rates, increasing injection drug use, and the spread of HIV have preoccupied Thai authorities since the 1990s (Farrell et al., 2002; Beyrer et al., 2003; Nelson, Eiumtrakul, et al., 2002). Concern over methamphetamine production and trafficking grew during the 2000s as seizures of product and clandestine labs increased (Windle, 2016).

Initially, the government responded to its changing drug problem by reiterating its commitment to a drug-free society and emphasizing a zero-tolerance approach to drug distribution and use (Windle, 2016). This response was criticized for contributing to human rights abuses, increasing incarceration, and failing to address the harms of injection drugs. Drug policy in Thailand has shifted in the last few years, facing the challenges of prison overcrowding and the alarming increase in disease transmission related to needle-sharing. In this section, we discuss Thailand's move away from harsh drug policies, including the expansion of voluntary

outpatient treatment, reductions in drug-related penalties, and developments toward relaxing prohibitions for the medical use of cannabis and kratom.

Early 21st-Century Thai Crackdown on Drugs

The Philippines is not the first country in the region to initiate a crackdown against drug distribution and use. Thailand under Prime Minister Thaksin Shinawatra carried out a similar—although brief—war on methamphetamine retailers and users from 2003 to 2004, foreshadowing much of the current Philippine policy. In collaboration with local officials, the government compiled lists of suspected drug-involved individuals, encouraged voluntary surrender, and had security forces sweep areas linked to suspected drug activity. Initially, three-quarters of the public supported Thaksin’s campaign, although most did not think it would succeed (Bionat, 2016).

The prime minister claimed success in the first three months, claiming that 90 percent of the problem had been eradicated. However, Thaksin renewed repressive efforts throughout 2003, brushing aside human rights criticism (BBC, 2003a; BBC, 2003b). The crackdown affected local drug markets and resulted in the deaths and apprehensions of thousands. Rights groups and official statistics report 2,000 to 3,000 extrajudicial killings, mostly at the hands of security forces and the police; almost 56,000 arrests; and some 285,000 surrenders (Vongchak et al., 2005; Windle, 2016). The price of methamphetamine pills and tablets, known as yaba, doubled during the crackdown, resulting in a short-term drop in their consumption (Windle, 2016). However, the U.S. State Department noted that users moved to other forms of the drug, stating that “One potential side effect . . . has been changes in use patterns of Thai abusers. Late in 2004, there were reports of an increasing popularity in the use of crystallized methamphetamine known as ‘ice’” (U.S. Department of State, 2005).

Past-year prevalence rates of tableted forms of methamphetamine (i.e., yaba) in Thailand dropped during the crackdown. According to national household surveys, self-reported use of yaba declined in adolescents (ages 12 to 24) and adults (ages 25 to 65) from 3.87 and 1.86 percent, respectively, in 2001 to 0.46 and 0.08 percent, respectively, in 2003 (Angkurawaranon et al., 2018). Prevalence rates remained well below the 2001 levels reported in household surveys reproduced by Angkurawaranon and colleagues (2018). By 2011, 0.26 percent of adolescents and 0.17 percent of adults reported using yaba in the previous year. However, the prevalence of new crystalline forms of methamphetamine (i.e., ice) was not reported in surveys, making it difficult to assess whether yaba users traded over to ice, as suggested by the U.S. State Department. Nonetheless, past-year use of cannabis among the general public also fell from 1.5 percent in 2001 to 0.18 percent in 2003 (Angkurawaranon et al., 2018).

Prime Minister Thaksin was removed from office in a coup in 2006 for corruption, ending any possibility of a return to the drug crackdown under his tenure. An official investigation in 2007 concluded that half of the reported extrajudicial killings were unrelated to drug offenses (Windle, 2016). The crackdown was criticized by rights groups for undermining efforts to slow the spread of HIV (Nelson, Eiumtrakul et al., 2002). Human Rights Watch stated that

“Thailand’s fight against human immunodeficiency virus/acquired immune deficiency syndrome (HIV/AIDS), for which it has received international praise, has been severely undermined by a climate of fear that has driven injection drug users, in particular, underground” (Human Rights Watch, 2004a).

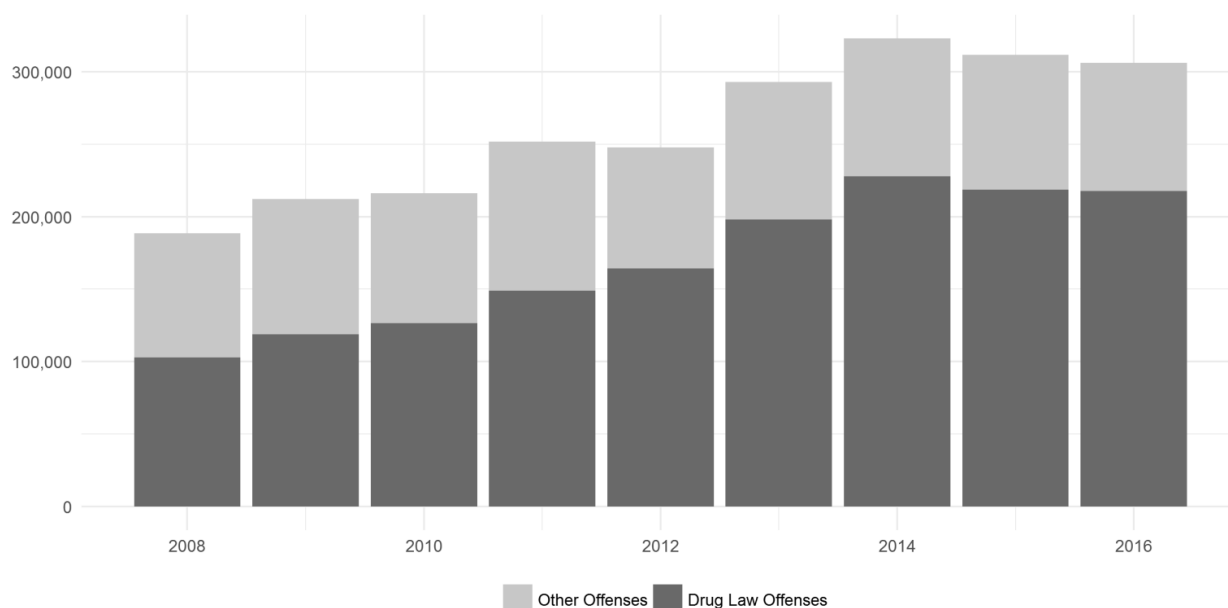
Concerns of Incarceration and Harms of Injection Drug Use

Although the Thai government ended its brief war on drugs in 2004, many punitive elements of drug policy endured, including the compulsory treatment and stiff penalties that had existed prior to the crackdown. Under the 2002 Narcotic Addict Rehabilitation Act, drug users are to be evaluated and diverted away from prison; in practice, many are held in detention (Macdonald and Nacapew, 2013). In 2016, about 70 percent of Thailand’s 320,000 prisoners were incarcerated for drug offenses (Lefever, 2016). Figure 5.1 plots the total number of prisoners in Thailand from 2008 to 2016, as well as the share of those in prison for drug offenses. The number of inmates behind bars for drug law violations has disproportionately contributed to the recent increase in incarceration rates; counts of imprisoned drug offenders doubled between 2006 and 2016 (Lefever, 2016). According to several media accounts, a substantial portion of those convicted for drug law violations are in prison for possessing or supplying small quantities of drugs (Lefever, 2016; Laohong, 2017b).

Drug users are supposed to be diverted to treatment, but an estimated one in five drug-convicted prisoners were behind bars for consumption-related offenses in 2013 (Macdonald and Nacapew, 2013).²¹ Although it expanded in the late 2000s and early 2010s, drug treatment has largely consisted of compulsory rehabilitation facilities often run by the Thai armed forces (Cole, 2016, pp. 185–186). According to Windle (2016), in 2010, about 75 percent of drug users were treated in compulsory facilities or prisons, with the remaining 25 percent treated in voluntary outpatient facilities.

²¹ Thai drug law criminalizes not only possession for use, but use itself. Law enforcement can obtain a urine sample to establish the commission of a crime (National Assembly of Thailand, 1976; Human Rights Watch, 2004b).

Figure 5.1. Prisoners in Thailand, 2008–2016



SOURCE: Prisoner data were obtained from Saingam, 2017.

Incarceration rates in Thailand are now the highest in Southeast and East Asia (Walmsley, 2015b). The UNODC has noted that Thailand constitutes 10 percent of the ASEAN population, yet its prisoner population makes up 40 percent of the bloc’s total (Walmsley, 2015a). Incarceration is even more acute for women. According to the Institute for Criminal Policy, Thailand has the fourth-largest female prison population in the world, after the United States, China, and Russia (Walmsley, 2015a). High incarceration rates have encouraged Thai leaders, including members of the influential royal family, to advocate for drug and prison reform (Lefever, 2018).

In addition to incarceration, rates of blood-borne disease, especially HIV and HCV, remain alarmingly high. By the late 2000s, it was estimated that one-quarter of injection drug users tested positive for HIV (UNAIDS, 2013). Almost 90 percent of injection drug users tested positive for HCV (Nelson, Mathers, et al., 2011; see also Table 2.5 in Chapter 2). These rates, which were only surpassed by those in Indonesia, prompted the National AIDS Prevention and Alleviation Committee to draft an initial harm reduction policy oriented toward needle exchange and medication-assisted therapy in 2009 (Macdonald and Nacapew, 2013).²² The draft was never officially approved because the Council of State opined that needle-exchange programs were in contravention of existing law. Nevertheless, in 2010, Thailand’s Office of the Narcotics Control Board (ONCB) permitted a narrow pilot program of harm-reduction services, including needle exchange, in ten provinces (Macdonald and Nacapew, 2013).

²² Thailand’s HIV prevention policy is highly regarded within the international community. In the 1980s and 1990s, the government was successful in dramatically reducing HIV rates in such high-risk populations as sex workers through a combination of public messaging and harm-reduction campaigns.

In the early 2010s, Thailand began to move toward voluntary outpatient treatment, especially for opiate use disorder, by expanding access to methadone and buprenorphine. Between 2009 and 2013, the government tripled the number of medication-assisted therapy sites across the country, from 49 to 147 (Windle, 2016). Between 2013 and 2014, Thailand reported a 26-percent decline in the number of individuals residing in compulsory treatment facilities (see Table 4.1 in Chapter 4; Lunze et al., 2018). Similarly, limited efforts were made to expand access to sterile injection equipment to reduce the spread of blood-borne disease. In 2013, the ONCB expanded the pilot to an additional nine provinces (Macdonald and Nacapew, 2013). By 2013, about 12 needles per user-year (or about one per month per user) were distributed. However, given the inherent challenges of estimating the total count of drug users, it is likely that this estimate is inflated. This is far from the regional median of 116 needles per user-year, in part because the number of exchange sites declined by 22 percent to 38 sites nationally (Windle, 2016). Additionally, needle-exchange provisions continue to exist in a legally ambiguous area, as unauthorized possession of injection equipment is an arrestable offense (Cole, 2016, p. 190).

Today, drug policy in Thailand has continued to shift in favor of greater harm reduction and voluntary drug treatment, although implementation challenges remain. Since 2009, the country has taken additional steps in favor of implementing harm-reduction policies (Cole, 2016, p. 192). After several years of vacillating policies, parliamentary deliberations, and the direct involvement of members of the royal family, Thailand took the necessary steps to formalize a national harm-reduction policy.

Thailand Adopts a National Harm-Reduction Policy and Wades into Drug Law Reform

To address its high rates of blood-borne disease transmission in injection drug-using populations, Thailand, drawing on its earlier successes in reducing the spread of HIV in high-risk populations, incorporated many of the harm-reduction strategies put forward by UNAIDS and advocacy groups. Injection drug users were one of three groups targeted by the new harm-reduction policies (other groups were men who have sex with men and female sex workers). Cole outlines the five strategies detailed in the official national harm-reduction policy specific to injection drug users, which were adopted by the ONCB in February 2014:

- support access to health services for people who use drugs by strengthening care and support strategies
- reduce the burden of blood-borne infections among PWID
- assist PWID in accessing and entering voluntary drug rehabilitation services aimed at reduction and eventual cessation of drug use
- reduce drug-related harms among PWID, their communities, and society as a whole
- create an enabling service delivery environment that facilitates access to and delivery of harm-reduction services (Cole, 2016).

International harm-reduction advocates have hailed this shift away from abstinence, applauding Thailand's efforts to extend peer-based education focusing on reducing drug-involved harms and the prevention of sexually transmitted infections (Transnational Institute,

2018b). Nonetheless, implementation challenges remain, such as finalizing the transition of demand reduction from the Ministry of Justice to the Ministry of Health.²³

Drug-related indicators reported to the UN suggest a similar shift in drug markets. Drug treatment admissions peaked just before the country formally adopted a new strategy and rhetoric in 2014 and 2015 (see Table 5.3). Declines in methamphetamine treatment admissions in 2014 might be attributable to shifting drug patterns and the country’s orientation away from a law enforcement response.

Table 5.3. Recent Drug Market Indicators in Thailand

	2011	2012	2013	2014	2015	2016
Methamphetamine and amphetamine seizures (kg equivalents)	1,232 ^a	10,160	13,216	11,936	10,869	9,594
Methamphetamine treatment admissions	165,044	262,423	269,014	197,082	101,360	138,705
Heroin and opium seizures (kg)	571	158	926	480	454	152
Opiate treatment admissions	4,716	5,405	5,522	6,185	7,382	7,418

SOURCES: UNODC, undated(a); and APAIC, 2017d.

^a Only powder; excludes seizures of pills. Since the 2018 World Drug Report, the UNODC now publishes kg equivalents, converting pills to powder weight of ATS.

Treatment admissions for methamphetamine continued to rise from 2011 to 2013, when it peaked at almost 270,000 admissions. Admissions numbers started dropping substantially in 2014. By 2015, admissions had declined by nearly 40 percent, although they increased again in 2016. Seizures of methamphetamine and amphetamine, although they peaked in 2013, remained stable over the 2012–2016 period. International bodies have not reported more-updated seizure figures, but the U.S. State Department notes that seizures of powder methamphetamine (ice) in 2016 surpassed recent seizure counts. In that year, Thai authorities reportedly seized 1,920 kg of methamphetamine powder, suggesting that the remaining 80 percent of seizures were in tablet form (U.S. Department of State, 2018). Opiate treatment admissions, although small in comparison to methamphetamine treatment admissions, have continued to trend upward over this period.

In July 2015, then–Minister of Justice General Paiboon Khumchaya marked a turning point in the rhetoric of the war on drugs that was hailed by civil-society groups and advocacy coalitions. In a speech to criminal justice and health officials, General Paiboon stated that eradication of drugs is a counterproductive policy goal that should not be pursued. He went on to state that the war on drugs has targeted the poor, contributed to prison overcrowding, and that compulsory rehabilitation is a failure that should end (Tibke, 2015).

²³ According to our conversations with harm-reduction advocates in Thailand, the slow transition has reduced harm-reduction efforts. For example, the number of needles distributed per user-year remains far below the regional median.

For a year and a half, General Paiboon continued to lead a national debate on reforming Thailand's drug policy. After supporting an end to harsh treatment of drug users, in June 2016 Paiboon called for a delisting of methamphetamine (and, later, cannabis and kratom) from the Narcotic Drugs Act of 1979 (Pakkawan, 2016; Laohong and Charoenpo, 2016). He also called for lowering sanctions on drug-related offenses, noting that half of the pending 270,000 criminal court cases involved low-level drug offenses (Laohong and Charoenpo, 2016). Thailand officially initiated the reallocation of ministerial responsibility for drug treatment from the Ministry of Justice to the Ministry of Public Health to be completed by the end of 2018 (Tanguay and Ngammee, 2018). These reforms are aimed at increasing voluntary drug treatment and focusing on patient outcomes.

During the latter half of 2016, General Paiboon shepherded a drug law reform bill through parliament. The reforms were unanimously passed in the National Assembly in January 2017. The amendments reduce penalties for possession, import/export, and production for sale; replace mandatory sentences; increase quantity thresholds for trafficking penalties; expand legal defense and judicial discretion; and stipulate a higher burden of proof for supply-related offenses (Akbar and Lai, 2017). The aim of these reforms is to reorient efforts to treat drug use and dependence as a health problem and not a criminal justice matter.

The text of the law differentiates between possession for the purposes of consumption and possession with intent to distribute, narrowing the scope of supply-related offenses to avoid ensnaring users. Reforms also reduce penalties for possession from 4–15 years to 1–10 years and reduce the penalty for producing, importing, or exporting drugs from the death penalty to ten years to life in prison. Although the death penalty remains in the penal code for drug trafficking, Thailand is considered a “low application” country (Global Commission on Drug Policy, 2016). In 2014, about half of capital convictions were for drug-related offenses and the last time Thailand carried out an execution was in 2009, for drug trafficking (Death Penalty Database, 2015).

Although rhetoric has pivoted away from a punitive focus, some have pointed to insufficient treatment and outreach resources and the lack of an implementation strategy (*Bangkok Post*, 2018b). Because Thailand is currently governed by a military junta, many of these reforms have taken place outside traditional democratic processes and deliberations, leaving the public unaware of many of these changes.²⁴ General Paiboon has indicated that much is to be done to raise public awareness of recent legal changes regarding reductions in penalties (Laohong, 2017a). In fact, the ONCB has yet to release a new national drug strategy or annual report to reflect this reorientation. Nonetheless, according to a 2016 poll of 5,300 respondents in 14 provinces, two-thirds are in favor of treating, rather than punishing, drug addicts (Transnational Institute, 2018b).

²⁴ In May 2014, amid internal political turmoil, the military staged a coup, repealed the 2007 Constitution, and installed a junta with the authority to appoint and dismiss governing officials.

Recent Developments and Future Steps

The passing of King Bhumibol Adulyadej in late 2016 added to Thailand's political uncertainty (Schiavenza, 2015). Nonetheless, the government continued to make headway toward drug policy reform. In early 2017, the Ministry of Justice outlined efforts to expand access to needle-exchange services in the country (according to correspondence with Gloria Lai of the International Drug Policy Consortium). A few months later, Thailand hosted the release of the Global Commission on Drug Policy's 2016 annual report. The commission promotes drug law reform and is made up of former world leaders from government and business, including Paul Volker, Kofi Annan, and Richard Branson. The commission chose to announce its release in Thailand in order to highlight the country's recent reforms (Laohong, 2017a). The event was opened by General Paiboon, who was appointed to sit on the King's Privy Council in late 2016; he called on ASEAN to reform its ten-year drug strategy and move away from the goal of a "drug-free" society (Laohong, 2017a).

Shifts in tone and rhetoric continued into 2018. In April 2018, the secretary-general of the ONCB, Sirinya Sitdhichai, called for a new comprehensive drug rehabilitation program, elevating treatment over incarceration (*Bangkok Post*, 2018b). Rhetoric has been met with additional reforms. Thai officials are working to change the country's drug laws, including the drafting of legal text to allow for medical cannabis. In early 2018, governmental bodies agreed to the rescheduling of cannabis and the drafting of regulations to permit its cultivation in a secure location housed by the military (*Bangkok Post*, 2018a).

In May 2018, the draft bill, which will permit the manufacture, import, distribution, and possession of cannabis for research and medical purposes, was elevated for cabinet approval (Tanakorn, 2018). The bill also will allow Thai citizens to obtain and use cannabis with a doctor's prescription (Charuvastra, 2018). Under the bill's current design, as reported in the media, the Ministry of Public Health would lead efforts on the regulations to authorize use of medical cannabis, with input from the ONCB. It is unclear whether the government will license private firms to cultivate, process, and distribute the drug as in other countries. Efforts to allow for the research and utilization of medical cannabis in Thailand are driven in part by the desire to promote economic development (Pisuthipan and Mahavongtrakul, 2018). If successful, Thailand would become one of the first countries in Asia and the Pacific (with the exclusion of Australia) to permit the cultivation, distribution, and use of medical cannabis.

In addition to allowing for cannabis, ONCB Secretary-General Sirinya has suggested ending control over kratom, an indigenous psychoactive plant that has been banned in Thailand since 1943. A proposal submitted to the cabinet in May 2018 would allow individuals to register to grow kratom plants and consume their leaves "in accordance with the traditional way of living" (Charuvastra, 2017; see also Charuvastra, 2018). Legislative subcommittees have recommended maintaining the plant's controlled status, but exempt growing up to three plants per household and personal use (Akbar and Laomanutsak, 2018). Although the plant is banned and law enforcement regularly seizes leaves and prosecutes offenders, kratom has long been used by manual laborers in rural areas (Cinosi et al., 2015; Tanguay, 2011).

Conclusion

As noted by Cole (2016), for decades, national security elements dominated much of Thailand's drug policy landscape through crop eradication, intelligence-gathering, target surveillance, and management of compulsory rehabilitation centers. Interestingly, Thailand's military, under the current governing junta, is leading efforts to reorient national drug policy in favor of reform. Concerns over increasing rates of blood-borne disease among injection drug-using populations and the rising population of incarcerated drug-involved offenders are pushing the current government to move forward with many reforms.

Thailand is breaking from the long-standing goal of a drug-free society, reiterated by many countries in the region, as well as by ASEAN. Instead, it is adopting an alternative approach, expanding medication therapies, reducing penalties for minor drug offenses, and moving to relax prohibitions on the cultivation and use of cannabis and kratom. Although Thailand has been lauded by international drug policy advocates, the challenges of implementation and public information remain. The Ministry of Health has not assumed full responsibility over treatment provision, and legal ambiguities surrounding needle exchange and criminalized consumption impede the full scope of Thailand's reorientation toward harm reduction (according to personal communication with Gloria Lai of the International Drug Policy Consortium). As of 2018, the government has not released official statistics to evaluate these reforms, let alone established benchmarks. Legal and policy changes are still in their nascent stages, but officials have not publicly discussed any data-collection or evaluation mechanisms beyond existing prevalence and incarceration rates.

The Thai case will help inform regional drug policy. Similar efforts to soften the drug war rhetoric and promote reform have been reported in neighboring Myanmar. In late 2017, draft bills were proposed in Myanmar's parliament to reduce penalties for drug offenses, including the elimination of prison penalties for drug use, and scale up the provision of voluntary drug treatment (Transnational Institute, 2017). Reforms were finalized in early 2018 with the passage of several amendments (Transnational Institute, 2018a). The new laws identify harm reduction as one of five policy areas for future drug policy. These reforms contrast with the long-standing punitive image of the region.

Drug Production in China

New chemical discoveries and the growth in global trade over the past 30 years have changed the global pharmaceutical and illicit drug landscapes. Early drug control agreements and efforts generally focused on three plant-based substances: opiates, cocaine, and cannabis. Today, law enforcement and public health authorities have to deal with an increasing number of chemically synthesized psychoactives. Some—like ATs—are not new, having been developed a century ago. Others—like many methcathinones and new cannabinioids—have only been synthesized recently (UNODC, 2013a). Many of these NPSs sold to drug users are specifically designed to circumvent existing global and national drug controls. They often are manufactured by

entrepreneurial chemists who add or remove certain molecules from chemical compounds, creating entirely new substances about which very little is known in terms of pharmacology or harms (Griffiths et al., 2010; Griffiths, Evans-Brown, and Sedefov, 2013).

The majority of NPSs mimic the effects of traditional street drugs, such as cocaine, MDMA, cannabis, and heroin. These new substances fall under a wide range of terms, including legal highs, synthetics, research chemicals, designer drugs, and party drugs. The production and distribution of NPSs and illicitly manufactured synthetic opioids, such as fentanyl and its analogs, for North American markets are alarming policymakers.

China is reportedly the source of most of these NPSs and chemical precursors (Griffiths et al., 2010; O'Connor, 2016; U.S. Department of State, 2018). Commercial and economic reforms in the past 30 years have helped Chinese products access global markets. The same is true for China's expansive domestic pharmaceutical and chemical industries and illicit products. Initially, China prioritized the development of these sectors under strong central planning, but over the years it has slowly introduced market reforms, including privatization (World Health Organization [WHO], 2017). Today, China's pharmaceutical industry is the second largest in the world, with recent annual sales revenues greater than \$100 billion (WHO, 2017). Continued growth has made China the world's largest exporter of APIs (WHO, 2017). Likewise, its chemical industry produces tons of chemicals each week, including drug precursors (O'Connor, 2016; Lee and Hirschler, 2012). Industry analysts estimate that, in 2016, the Chinese chemical industry (separate from its pharmaceutical industry) generated more than \$100 billion in profits (Atradius, 2017).

Increased international trade is facilitated by the development and adoption of internet e-commerce. Today, many items can be purchased online and mailed directly to customers, practically anywhere in the world. This is almost the case for many NPSs, including new synthetic opioids, as well as fentanyl, which can be purchased online using various payment methods (e.g., Bitcoin, money order, credit card) and shipped directly to customers via international postal networks or private couriers, like FedEx or DHL (Commission on Narcotic Drugs, 2016; U.S. Senate, 2018). Access to powerful synthetic opioids has contributed to massive public health crises in Canada and the United States, resulting in tens of thousands of fatal overdoses annually (Gladden, Martinez, and Seth, 2016; Rudd et al., 2016).

Growing Industries

During most of its recent history, China's planned economy directed early pharmaceutical and chemical research and manufacturing efforts. Until recently, many Chinese pharmaceutical products did not meet standards for much of the global market (Li and Sun, 2014). The last several decades have witnessed extensive government support and interest in developing high-value and high-tech pharmaceutical and chemical industries to meet the demand for cheap active pharmaceutical ingredients and chemicals for export markets. Starting in the late 1970s, China embarked on a series of market reforms. As state-run producers slowly privatized, the industry saw continued economic development. From 1981 to 1985, the pharmaceutical industry grew by

about 15 percent per year and almost 20 percent per year until 1990 (Li and Sun, 2014). According to Li and Sun (2014), the pharmaceutical industry was one of the fastest-growing sectors in China during the 1990s. By 1995, the number of pharmaceutical manufacturers had hit a peak of 5,300.

As of 2018, there are an estimated 5,000 manufacturers of APIs or final pharmaceutical products (FPPs). According to the WHO, the government is promoting industry consolidation, especially of smaller companies that cannot meet developing regulatory standards (WHO, 2017). In terms of APIs, Chinese manufacturers produce more than 2,000 products with an annual production capacity of more than 2 million tons, making it the single largest exporter of APIs in the world. Most Chinese APIs are imported by the United States for the production of legitimate pharmaceutical products (WHO, 2017).

In addition to pharmaceutical companies, the U.S. Department of State estimates that there could be as many as 400,000 chemical manufacturers and distributors in China, some of which operate illegally and produce a variety of chemicals, including drug precursors and compounds frequently used to manufacture psychoactive substances (O'Connor, 2016; U.S. Department of State, 2014; U.S. Department of State, 2015). According to analysis by staff of the U.S.-China Economic and Security Review Commission, China's chemical exports make up one-third of all global shipments, totaling almost \$2 billion in 2014 (O'Connor, 2016). Market analysts estimate that the chemical industry makes up 3 percent of China's economy, growing at almost 9 percent per year in the last five years (Atradius, 2017).

According to the U.S. State Department, the capacity and size of China's pharmaceutical and chemical industries make for an ideal environment to conceal production and export of synthetic psychoactives, including opioids (U.S. Department of State, 2018).

Regulatory Difficulties

Market reforms that spurred rapid growth also necessitated the creation of an independent regulatory system to police the industry and ensure product quality. Prior to these reforms, there was no need for a robust regulatory system for state-run industries. However, business growth outpaced the capacity and design of China's new regulatory authorities (Li and Sun, 2014; WHO, 2017). Regulatory gaps and bureaucratic fragmentation continue to hamper China's oversight of its pharmaceutical and chemical industries.

The State Drug Administration (the forerunner to today's China Food and Drug Administration [CFDA]) was created in 1998 to regulate manufacturers of pharmaceutical and medical products. For the first time, the regulatory authority was formally prohibited from joint ventures or profit-seeking activities in the pharmaceutical industry (Li and Sun, 2014). Although efforts were made to divorce regulators from industry, problems of regulatory capture and high-level government corruption continued. The director of the State Drug Administration was convicted in a bribery scandal and executed in 2007 (BBC, 2007). In the last decade, efforts have been made to adopt better enforcement and production guidelines, including good manufacturing

practices (GMP). The GMP standards cover the most-basic aspects of manufacturing, including sanitary working conditions, product testing and tracking, and record-keeping (WHO, 2017).

Nevertheless, regulatory problems persist. The division of regulatory responsibilities between central and provincial governments and among national governmental agencies is a commonly noted problem. For example, the agencies involved in promulgating and enforcing production and export requirements for pharmaceuticals or chemicals include the CFDA; the State Council Leading Group on Product Quality and Food Safety; the National Narcotics Control Commission; the Anti-Smuggling Bureau in the General Administration of Customs; the Ministry of Chemical Industry; the Ministry of Agriculture; the Ministry of Commerce; and the General Administration of Quality Supervision, Inspection, and Quarantine (O'Connor, 2017). Efforts to regulate the chemical industry have been overlooked at times. According to O'Connor (2016), API producers that were registered as nonpharmaceutical manufacturers operating as chemical manufacturers escaped CFDA regulatory oversight. This oversight was closed in 2014, after China's State Administration of Work Safety moved to strengthen its jurisdiction over chemical manufacturers (O'Connor, 2016).

To further complicate matters, the provincial governments are responsible for local regulatory compliance, including the certification of manufacturing facilities and adherence to the GMP standards set by the central government. According to the WHO, the CFDA inspects manufacturers of products deemed sensitive by the central government (such as radioactive pharmaceuticals and biologics), whereas provincial governments are tasked with inspecting manufacturing facilities (WHO, 2017).

According to a staff report from the U.S.-China Economic and Security Review Commission, the regulatory complexity and diverse interest of the various agencies involved contributes to bureaucratic infighting and gaps in oversight that hamper effective counternarcotics operations and export screening (O'Connor, 2017). To make matters worse, the government's regulatory capacity is limited. The CFDA and other regulators are unable to effectively inspect and police the large number of pharmaceutical manufacturers. The WHO notes that, although the CFDA is attempting to hire more inspectors, its efforts are complicated by lack of time and resources; private-industry salaries are highly competitive, making staff retention challenging (WHO, 2017).

There is a similar situation for China's chemical regulators, who cannot adequately enforce regulations on all manufacturers and distributors (O'Connor, 2017). Regulatory gaps have led to a large increase in the number of unlicensed or "semi-legitimate" chemical manufacturers or distributors (O'Connor, 2016). O'Connor (2016) reports that the use of shell facilities and weak oversight lets some chemical and pharmaceutical manufacturers avoid scrutiny, allowing licensees to produce and sell beyond their legal limits. In 2007, industry insiders estimated that uncertified chemical manufacturers produced half of the APIs sold in China, with most exported to foreign markets (Bogdanich, 2007b). It is unclear what proportion of uncertified manufacturers are supplying international API markets today or how much synthetic opioids are produced and exported via shell entities.

Byzantine regulatory design, the division of responsibility between provincial and central governments, and a lack of oversight and ability to demand government and corporate accountability increase opportunities for corruption. The regional representative of the UNODC, Jeremy Douglas, has asserted that corruption contributes to the ongoing illicit manufacture and export of synthetic drugs and precursors. After a major seizure of 2.5 tons of methamphetamine—one of the biggest seizures in Asia at the time—by authorities in Guangdong province, China, Douglas stated, “To operate a lab like this, you need a lot of chemicals, which are legitimate, regulated chemicals from the pharmaceutical industry. There is some kind of corruption in the chemical/pharmaceutical industry taking place allowing this to happen” (quoted in Harris, 2015). The U.S. State Department points to insufficient regulatory oversight and corruption of governmental officials as major explanations behind illicit drug and chemical production (U.S. Department of State, 2017).

The government has made efforts to expel corrupt officials. The high-profile execution of the former director of the CFDA is one such example. In 2012, the central government has arrested nearly 2,000 people in a nationwide crackdown on counterfeit drug manufacturers (Lee and Hirschler, 2012). In 2015, President Xi Jinping demanded that the central government increase penalties and stiffen drug regulations (WHO, 2017).

Data from CFDA show that regulators are increasing the number of inspections, but gaps remain. Figures from annual reports show an increase in inspected firms from 688 in 2015 to 751 in 2017, although there was a dip in inspections in 2016 (CFDA, 2016; CFDA, 2018; see Table 5.4). The number of CFDA inspectors has remained around 2,000 over the same period; however, regulators have shifted focus to GMP certification from other oversight activities, such as preapproval and overseas inspections. GMP certifications have more than doubled from about 200 in 2015 and 2016 to 428 in 2017 (CFDA, 2016; CFDA, 2017; CFDA, 2018). The number of unannounced inspections or those that include foreign observers (such as the U.S. Food and Drug Administration) has modestly increased.

Table 5.4. China Food and Drug Inspections

Inspections	Number of Inspected Firms/Applicants			Number of Inspectors		
	2015	2016	2017	2015	2016	2017
GMP certification inspection	221	204	428	784	47	1,234
Unannounced inspection	59	39	57	170	155	183
Observation of international inspection	74	81	84	76	85	92
Other inspections	334	107	182	1,052	990	556
Total	688	431	751	2,082	1,277	2,065

SOURCES: CFDA, 2016; CFDA, 2017; CFDA, 2018.

Of the 428 GMP inspections in 2017, 37 firms did not pass and one-quarter were issued warning letters for violations. According to the most recent annual CFDA report, 15 firms that

manufacture narcotic or psychotropic drugs, precursors, or pharmaceuticals were inspected in 2017; three did not pass inspection for failure to properly handle mailing and transportation certificates or for failure to control samples (CFDA, 2018).

China's National Narcotics Control Commission has worked to improve its enforcement actions against online drug retailers. According to its 2017 annual report, authorities stepped up efforts to shut down online vendors. This resulted in the arrest of 21,000 individuals, the seizure of 10.8 tons of controlled substances and 52 tons of precursors, and the closure of more than 1,700 websites and programs (National Narcotics Control Commission, 2017).

Supply of Precursors and Psychoactives

China's large and underregulated chemical and pharmaceutical sectors are supplying primary inputs or finished products to global drug markets. China is a leading exporter of APIs and chemicals that can be utilized in the production of controlled substances. These chemicals include methamphetamine precursors, ephedrine, and pseudoephedrine. According to a recent U.S. State Department report, in 2014, China was the world's sixth-largest licit exporter of ephedrine (2.1 metric tons) and the fifth-largest exporter of pseudoephedrine (66 metric tons; U.S. Department of State, 2016). According to O'Connor, the DEA estimates that China is the primary source (80 percent) of precursor chemicals used to manufacture methamphetamine in Mexico destined for U.S. markets (O'Connor, 2016). The U.S. Department of State also notes that Ecuador has reported increased Chinese imports of potassium permanganate, a chemical ingredient used to manufacture cocaine over the past ten years (U.S. Department of State, 2017).

International drug control treaties, including the 1988 UN Convention Against Illicit Traffic in Narcotic Drugs and Psychotropic Substances, of which China is a signatory, require countries to utilize international tracking and reporting systems for precursor chemicals. To escape detection, Chinese chemical producers often employ technically legal workarounds and, when necessary, outright deception. According to O'Connor (2016), Chinese traffickers or unscrupulous chemical companies will modify chemicals, mislabel shipments, or ship pre-precursors (O'Connor, 2016). The first strategy is straightforward: Manufacturers chemically modify a precursor, converting it into another compound that does not require reporting. Similarly, Chinese producers offer pre-precursors, which often are not controlled by international agreements and are later modified into precursors for use in illicit drug production (O'Connor, 2016).

In some cases, precursors might not be subject to international or national control. Until October 2017, after a request from the U.S. Department of State, the two principal precursors for fentanyl and some fentanyl analogs, N-Phenethyl-4-piperidinone (NPP) and anilino-N-phenethylpiperidine (ANPP), were not listed or subject to international controls (INCB, 2017b). Both were brought under control in the United States in 2007 and 2008. Until recently, China did not control either, meaning that manufacturers faced no reporting or export restrictions. In a letter justifying control, the U.S. Department of State said that it identified 178 producers of NPP and 79 producers of ANPP who ship to foreign markets (Whalen, 2016). As of February 2018,

these precursors are under scheduling controls issued by China's Ministry of Public Security (DEA, 2018).

The development of NPSs outside national and international control is increasingly concerning. Some of these new chemicals are sold online and can be shipped directly to consumers overseas. In an effort to stem the growing production of NPSs, in late 2015, China moved to control 116 new substances, including 38 synthetic cannabinoids, 26 synthetic cathinones, 23 phenethylamines, and half a dozen synthetic opioids (UNODC, 2015d). China has continued to control additional fentanyl analogs as they are brought to the attention of authorities. In January 2017, China's Ministry of Public Security listed four additional fentanyl controls, covering acrylfentanyl, carfentanil, furanylfentanyl and valerylfentanyl (Chinese Ministry of Public Security, 2017). This was followed in June with the control of four NPSs, including two synthetic opioids, U-47700 and MT-45 (DEA, 2017b; UNODC, 2018d).

Synthetic Opioids

Although China has moved to control many fentanyls and their precursors in the last few years, it remains a major producer of NPSs and synthetic opioids. The arrival of fentanyl, its analogs, and other synthetic opioids (excluding methadone) has contributed to a growing overdose crisis in North America. Many of these synthetic opioids are more potent than semisynthetic or natural opioids, such as codeine, morphine, oxycodone, or heroin. Active at tens of micrograms, they are some of the most potent substances ever developed (Suzuki and El-Haddad, 2017). The potency of fentanyl can be 50 to 100 times that of morphine, and some analogs, such as carfentanil, are reported to be as much as 10,000 times more potent than morphine (Suzuki and El-Haddad, 2017). Other recently developed synthetic opioids found in the illicit market lack pharmacokinetic evaluations (Armenian et al., 2018). In short, their effects in humans are virtually untested and unknown.

For illicit drug suppliers, fentanyl's potency and price make it an economically attractive alternative to heroin. According to the U.S. DEA, one kilogram of fentanyl, after being pressed into pills, could generate between \$10 and \$20 million in retail sales (DEA, 2016). After factoring the minimal \$3,500 per kilogram of product purchased online from China, dealers are attracted to the drug's profitability. In comparison, heroin wholesales at \$50,000 to \$80,000 per kilogram and is a fraction of the potency, generating a profit of perhaps \$200,000 (Deprez, Hui, and Wills, 2018).

Fentanyl was synthesized in 1959 and gained U.S. Food and Drug Administration approval in 1972 as an anesthetic. Its pharmacodynamics and synthesis from inexpensive and readily available synthetic precursors instead of poppy made it a superior anesthetic to morphine (Suzuki and El-Haddad, 2017). Fentanyl analogs, such as sufentanil, alfentanil, remifentanil, and carfentanil, were developed not long after fentanyl's synthesis for use in medicinal and veterinary applications (Armenian et al., 2018).

Since 2012, the United States has reported a near sevenfold increase in fatal overdoses attributed to synthetic opioids like fentanyl and other new opioids. Of the 42,000 opioid-related

fatal overdoses reported in 2016, almost half were attributed to synthetic opioids (Hedegaard, Warner, and Miniño, 2017).²⁵ Provisional figures for 2017 suggest an increasing shift toward synthetic opioids. Of the estimated 49,000 opioid-involved overdose deaths, some 29,000 involved synthetic opioids (Ahmad et al., 2018). Likewise, reports of the number of fentanyl-confirmed drug seizures submitted to state and local crime laboratories has exploded from 978 in 2013 to nearly 15,000 in 2015 (DEA, 2017a).

U.S. law enforcement has determined that most of these synthetic opioids originate from China via the post or private couriers (e.g., UPS, FedEx), smuggled from Mexico or Canada and sometimes mixed with heroin or pressed into counterfeit prescription pills (O'Connor, 2017; Office of National Drug Control Policy [ONDCP], 2017). Chinese exporters will sometimes purposefully conceal shipments through freight forwarding systems, move parcels from shipper to shipper, mislabel packages, or forward them through a third country to conceal efforts to trace packages to their original source (U.S. Senate, 2018).

At the time of this writing, it is unknown what share of fentanyl enters by each point of entry, although the DEA suggests that some portion of fentanyl might be produced in Mexico using precursors from China (DEA, 2017c). U.S. Customs and Border Protection (CBP) reports that in fiscal year 2016, about 250 kilograms of fentanyl were seized, with 80 percent of seizures occurring at ports of entry (including border crossings and mail and express consignment carrier facilities), while the remainder was interdicted at U.S. Border Patrol checkpoints (CBP, 2018a).

CBP reports that fentanyl interdictions have jumped from one kilogram in 2013 to 675 kilograms in 2017 (CBP, 2017). Seizures of fentanyl shipped by post also have increased. From late 2014 until the beginning of 2017, the U.S. Postal Inspection Service seized nearly 100 parcels that contained synthetic opioids (ONDCP, 2017). CBP reports that in 2017 it made 118 fentanyl seizures: 110 kilograms were seized at facilities operated by private couriers (e.g., FedEx, DHL), 42 kilograms were seized in the international mail network, and, presumably, the remaining 520 kilograms were seized at other points of entry or on the border (CBP, 2018a).

The purity of these CBP seizures was not reported. According to authorities, the purity of postal seizures originating in China is upward of 90 percent pure, while the purity of product seized on the border with Mexico is typically 5 percent to 10 percent (DEA, 2017c; ONDCP, 2017). See Table 5.5 for a breakdown of these figures. Note that these figures represent product that is seized before it arrives in markets. Given the large quantity of packages handled each day by mail services and private couriers, some percentage of illicitly manufactured fentanyl still makes its way to markets downstream. According to the DEA, recent significant fentanyl seizures (larger than 1 kilogram) have been located in major urban areas in the Northeast, mid-Atlantic, Southwest, and Midwest.²⁶

²⁵ This is the official Centers for Disease Control and Prevention estimate and is believed to be low; the 2016 figure is likely closer to 50,000 (Humphreys, Caulkins, and Felbab-Brown, 2018; Ruhm, 2018).

²⁶ For a map of seizures, see DEA, undated.

Table 5.5. Fentanyl Seizures Reported by CBP in Fiscal Year 2017

Point of Interdiction	Total Amount (kg)	Reported Purity (%)	Purity-Adjusted Amount (kg)
Express consignment carrier facilities	110	90.0	99.0
International mail network	42	90.0	37.8
Land point of entry (Southwest border)	388	7.5	29.1
Remainder (presumably Border Patrol checkpoints)	135	7.5	10.1
Total	675	N/A	176

SOURCE: CBP, 2018a.

NOTES: Purity at the Southwest border is reportedly 5–10 percent; here we use the midpoint. N/A = not applicable.

According to publicly reported CBP seizure and purity data, the majority of purity-adjusted seizures occur in the private courier system, followed by mail, then at points of entry and at the Southwest border (CBP, 2018a). To compound things, these figures are not broken down by chemical type. Fentanyl analogs, such as carfentanil, can be several orders of magnitude more potent than fentanyl. Nonetheless, these data suggest that a substantial amount of fentanyl reaches consumer markets from China via the postal and courier systems. The DEA has noted that China is the primary source of supply for fentanyl and other synthetic opioids and precursors destined for North America (DEA, 2016).

However, smuggling trends can evolve. In late June 2018, CBP in Philadelphia’s port seized 50 kilograms of 4-fluoroisobutyryl fentanyl hidden in barrels of iron oxide in a container ship from China (CBP, 2018b). CBP noted high purity, which would make this single seizure one of the largest to originate from China.

Otherwise, synthetic opioids (namely fentanyl) and precursors, such as NPP and ANPP, are exported to Mexico, where they are manufactured into fentanyl, blended with heroin, or pressed into tablets (DEA, 2016). These products are then smuggled north into the United States (O’Connor, 2017). This was first reported in the mid-2000s, when a lab in Toluca, Mexico, started importing fentanyl precursors from China (Whalen and Spegele, 2016). The lab was eventually shut down by law enforcement, but fentanyl-laced heroin and cocaine made their way to regional street drug markets in the United States, claiming the lives of some 1,000 drug users (Centers for Disease Control and Prevention, 2008). Fentanyl smuggling would reemerge several years later. Seizures at the border have increased: In 2015, CBP seized 200 pounds of fentanyl (purity not stated), up from 8 pounds the previous year (O’Connor, 2017). Mexican authorities also have reported large seizures of smuggled fentanyls. In August 2017, a record-breaking 140 pounds of powder suspected to contain fentanyl and 30,000 tablets were seized en route to the United States (Dibble, 2017).

Although Mexican drug traffickers are smuggling fentanyl across the border, a substantial amount of synthetic opioids are available to U.S.-based drug dealers and end users. Chinese chemical and pharmaceutical firms openly advertise fentanyl and synthetic opioids on English-language websites available on the “surface” web (as opposed to the “darknet,” which requires additional levels of technological sophistication to reroute prospective buyers who want to avoid detection). Product can be purchased in various quantities, ranging from a few grams up to as much as a kilogram. Bulk purchases are discounted (U.S. Senate, 2018). According to a recent

investigation by the U.S. Senate Permanent Subcommittee on Investigations, online vendors actively engage prospective customers and make no effort to conceal their intention to circumvent detection, including by rerouting packages through countries that would draw less suspicion (U.S. Senate, 2018).

In one specific case, U.S. Senate investigators identified a U.S.-based distributor allegedly linked to an online retailer based in China. After examining subpoenaed shipment and payment data, investigators tied more than 120 packages from a single address in Pennsylvania to payments made to an online vendor during a two-month period in early 2017 (U.S. Senate, 2018). Investigators concluded that “it is likely that an active drug distributor in Pennsylvania is acting as a distributor for an internationally-based website that advertises synthetic opioids for sale on the open web” (U.S. Senate, 2018).

Vendors also monitor scheduling. In one instance, after Chinese authorities declared their intention to schedule U-47700, vendors notified prospective customers of liquidation sales (U.S. Senate, 2018). To stay one step ahead of regulations, chemical producers also synthesize new substances. After authorities controlled U-47700, online vendors promoted a new analog, U-48800 (U.S. Senate, 2018).

In addition to importing synthetic opioids by mail, drug dealers in the United States have been able to obtain machinery and inputs to mass produce substances for distribution. Items seized by U.S. law enforcement include industrial pill presses, chemical bonding agents, pill casings, and chemical dyes (U.S. Senate, 2018). Items often are shipped using misleading information on customs declarations. In one instance, a 500-pound pill press was exported to a buyer in Southern California labeled as a hole puncher (Armstrong, 2016). Under U.S. law, the DEA regulates access to pill presses and must be notified of the importation of such devices (U.S. Senate, 2018, p. 160). Such equipment—which is able to produce large quantities of counterfeit tablets or pills for domestic street markets—has been found in unauthorized laboratories in Canada and in the United States (Armstrong, 2016).²⁷ CBP has reported an increase in seizures of pill presses and tablet machines. According to CBP testimony to the Senate, it seized 24 such machines in fiscal year 2014. Seizures continued to increase, and in fiscal year 2017, CBP seized 92 machines (CBP, 2018a).

U.S.-China Cooperation

The U.S. government, through various channels, has lobbied the Chinese government to increase its counternarcotics and regulatory efforts to stem the flow of new synthetic substances, especially synthetic opioids. The DEA and the Narcotics Control Bureau (NCB) of China’s Ministry of Public Security have had a formal relationship since 2002. Both agencies share drug-related intelligence and trends through a formal bilateral working group (U.S. Department of Justice [DOJ], 2018). Since 2014, authorities from both China and the United States have regularly met to discuss efforts to reduce the flow of synthetic opioids, including sharing

²⁷ Canada amended its Controlled Drugs and Substances Act in 2017 in an effort to regulate pill press machines.

intelligence and chemical information on emerging synthetic substances and sampling standards (DOJ, 2018). In early 2017, the DEA opened another Chinese field office in Guangzhou to coordinate with local and national law enforcement (Kinetz, 2017).

China has continued to schedule new substances as they emerge. According to recent testimony, the DEA is “encouraged” by China’s willingness to engage with efforts to control new opioids (DOJ, 2018). The NCB is currently consulting with U.S. authorities to develop a class-based scheduling system for the control of whole groups of fentanyl-type substances, even though domestic abuse of synthetic opioids is not a problem in China (DOJ, 2018). Likewise, Chinese foreign ministry officials have highlighted the country’s efforts to improve screening of postal shipments, providing additional electronic data on packages to the U.S. Postal Service and CBP (Associated Press, 2018). The U.S. State Department notes that U.S.-Chinese cooperation in the area of drug control has continued to improve and U.S. law enforcement has worked to build relationships with provincial and public security authorities (U.S. Department of State, 2018).

Although cooperation exists, some disagreements remain. In October 2017 and for the first time, DOJ indicted two Chinese nationals suspected of conspiracy to manufacture and distribute fentanyl (DOJ, 2017). This announcement was criticized by China’s minister of public security, who said that it would impede joint investigations and raised the possibility that indicted individuals would be extradited (Wee and Hernández, 2017). Unlike other major drug-producing countries, such as Mexico and Colombia, the United States does not have an extradition agreement with China.

Public statements and shifting political attitudes could continue to impair the cooperation and law enforcement relationship between the two countries. In 2018, Chinese leaders defended the country from further blame, calling for the United States to acknowledge its responsibility in reducing demand for drugs. In June 2018, the deputy chief of China’s National Narcotics Control Commission stated, “The U.S. should adopt a comprehensive and balanced strategy to reduce and suppress the huge demand in the country for fentanyl and other similar drugs as soon as possible” (Jiang, 2018). There is additional concern that the developing trade dispute between the United States and China might further impede law enforcement cooperation. If tensions continue to rise, some have noted that Chinese authorities might halt law enforcement cooperation to control emerging chemicals (Garcia, 2018).

Conclusion

China is a leading source of many chemicals and pharmaceutical ingredients. According to U.S. law enforcement, the vast majority of illicitly sourced synthetic opioids originate in China. In some cases, producers are shipping precursors or finished product to U.S. markets either directly through the mail or via transshipment points in Canada or Mexico. Lack of regulatory oversight and an abundance of chemical manufacturers contribute to the exportation of precursors and finished synthetic drugs, including potent opioids like fentanyl. China has taken

some steps to bring new chemicals under regulatory control, but producers are quick to adapt, impeding Chinese law enforcement's ability to stem the flow to global markets.

Misaligned regulatory incentives between levels of government and competing bureaucracies have allowed many producers to operate with near impunity. This combination of weak regulatory oversight and industry growth has resulted in harms to consumers in global markets. In the last decade and a half, Chinese manufacturers have been implicated in cutting corners at the expense of consumer safety, including by manufacturing pet food that contained melamine, toothpaste tainted with antifreeze, children's toys with lead, and contaminated blood thinners (Bogdanich, 2007a; Sivaraman, 2007; Lipton and Barboza, 2007; Bogdanich, 2008).

In addition, the ability of manufactures to develop new uncontrolled synthetics and easily conceal shipments through the international postal system poses substantial hurdles to interdicting packages, let alone prosecuting suppliers. The ability of individuals to easily obtain shipments of potent synthetic opioids over the internet could disrupt traditional opiate supply chains. Policymakers and international authorities should continue to monitor the potential impact that the supply of synthetic opioids has on illicit poppy cultivation, as well as on transnational drug trafficking.

Poor governance and local corruption could serve as fertile ground for the expansion of clandestine synthetic opioid manufacturing in parts of Southeast Asia, especially in provinces on the political and social periphery. Furthermore, India's robust pharmaceutical and chemical industry has the capacity to pick up slack, should China successfully eradicate production (Humphreys, Caulkins, and Felbab-Brown, 2018). Potent synthetic opioids make for attractive substitutes for organized crime. They do not depend on geographically fixed plant-based inputs, such as poppy. Instead, they can be manufactured rather easily in a laboratory, using various precursors. Their potency-to-weight ratio makes them easy to conceal and they can be shipped virtually anywhere in the world through conventional post or parcel systems. If current trends continue, it is possible that these substances might displace plant-based opiates, given the wide profit margin that dealers can net by substituting synthetic opioids for heroin.

6. Recommendations for Improving Research and Policies in the Region

Based on our assessment of illegal drug use and drug policy in Asia, we conclude with some ideas for improving research and policy in the region. Some of these ideas also might also be of interest to policymakers and researchers interested in drug policy outside Asia.

Improve Estimates of Drug Consumption in Asia

The drug phenomenon in Asia has long been driven by the production and trafficking of plant-derived drugs and precursor chemicals. As countries develop, so too can their respective drug problems. Emerging economies and changing social attitudes toward intoxication have resulted in burgeoning consumer markets in many countries in the region. However, the region lacks the full suite of tools needed to measure and reduce the demand for drugs.

Drug use prevalence is not easily estimated from national representative surveys and studies, and many surveys do not ask about the frequency of drug use or quantity consumed. Many countries do not conduct regular surveys and others do not conduct them at all. Considering the stigmatization and punitive responses in many countries in the region, underreporting is a concern. This, in turn, leads to underestimates of the economic burden that substance use imposes in the region. Ideas for improving drug market estimates in the region include the following:

- **Adopt additional measurement methodologies to improve demand estimates.** One method of improving drug use measurement is to test wastewater sources for the presence of drug metabolites and then back-calculate total consumption based on biological studies of drug metabolism. This practice has long been used in Europe to evaluate drug use trends in certain populations (Castiglioni et al., 2016). In Asia, several recent studies report the utility of such drug-detection practices to evaluate the presence of drugs in metropolitan populations in Hong Kong, Beijing, and elsewhere in China. These studies show that drugs used in these cities include amphetamine, methamphetamine, cannabis, cocaine, ecstasy, ketamine, and heroin (Khan et al., 2014; Lai et al., 2013; Li et al., 2014).

Preliminary reports from local case studies in Europe have shown that wastewater estimates can be consistent with traditional demand-side estimates based on population surveys (e.g., Zobel et al., 2018), although challenges remain (UNODC, 2017c). In addition to approximating the volume of demand, wastewater survey techniques can detect use of novel substances in drug markets. Given the lack of regular drug use surveys and heightened levels of stigmatization in the region, wastewater estimates can provide insight into the scope and type of drugs consumed.

- **Invest in regular data collection through population surveys and consider web-based surveys.** Countries in the region, especially ASEAN members, have increased their epidemiological drug use survey measures, yet challenges remain. Surveys need to be regular and should include additional questions to gauge respondents' drug use in terms of frequency, quantity, and expenditures. Some countries employ household surveys; others report household and secondary school surveys. Use of both household and school surveys can provide a more nuanced picture of drug use. For some drugs, web surveys are a cost-effective approach for collecting data about use and expenditures; however, care must be taken to assess the integrity of the responses and representativeness of the respondents because issues of internet privacy and underreporting might impede results (Kilmer et al., 2013; van Laar et al., 2013).
- **Employ novel sampling methods to measure hard-to-reach populations.** Respondent-driven sampling can be used to measure drug use behavior in hidden populations that traditional sampling methods often fail to reach (Heckathorn and Cameron, 2017). Respondent-driven sampling can be used to learn about the consumption and spending patterns of heavy drug users who are neither in the treatment population nor under criminal justice supervision (Caulkins, Sussell, et al., 2015). In Asia, respondent-driven sampling might have advantages over traditional sampling frameworks, given social stigma and a history of state-sanctioned punitive responses to drug use.

Expand Evidence-Based Drug Treatment and Disease-Prevention Modalities

As the region's drug phenomenon continues to change, countries should adopt proven evidence-based treatment modalities to reduce drug use and the harms of injection drug use. In the past ten years, some countries have slowly started to move away from abstinence-based compulsory treatment for opiate use disorder to voluntary medication-assisted therapies, such as methadone and buprenorphine. Additionally, some countries have expanded the provision of needle-exchange programs and other harm-reduction initiatives. Nevertheless, stigma continues to limit the effectiveness of these programs. Countries in the region should continue to do the following:

- **Increase access to medications for opiate use disorder, making sure that proper doses are prescribed.** Studies in the region suggest that patient outcomes are superior when drug users are offered some form of medication-assisted therapy, such as methadone (Vuong, Ritter, et al., 2017). Although early studies show promise for voluntary methadone in the region, impediments remain. Stigma, lack of availability, and suboptimal dosing of methadone have limited recovery in patients. Studies evaluating methadone patient dropouts and utilization in injection drug-using populations in several countries have shown that high levels of social stigma and insufficient doses of methadone correlate with incomplete treatment adherence, early termination, or low

levels of program utilization (Lan et al., 2017; Khue et al., 2017; Tran et al., 2018). This is especially true outside major urban areas. Efforts should be made to offer appropriate dosing of medication therapies. In addition, access to buprenorphine is still very limited in Asia. Expanding access to these two medications should be a priority for treating opiate use disorder, especially in an outpatient setting.

- **Expand access to sterile needles and syringes for injection drug users.** Rates of such blood-borne diseases as HIV and HCV are high in injection drug-using populations in the region. Some countries are expanding access to needle exchange programs to reduce risky drug injection. However, many of these programs are severely limited. Efforts should be made to reduce bureaucratic impediments and engage community and public stakeholders to reduce resistance to opening such facilities. Thailand's experience in public harm-reduction campaigns, especially in its sex worker population, is a possible model going forward.

Monitor Shifting Patterns in Drug Supply

The emergence of and transition to synthetic substances, such as methamphetamine or opioids like fentanyl, can have unforeseen impacts in drug markets. If trends continue, potent synthetic opioids might affect regional drug markets or displace poppy cultivation. Rapid changes in the region's illicit labor supply could affect fragile sociopolitical environments. For example, conflict areas in Myanmar that are known to cultivate the majority of the region's poppy might face greater pressure in the future if synthetic drugs supplant plant-based drugs. Therefore, future research efforts should focus on the following:

- **Assess the impact that synthetic opioid production could have in Asia.** Chinese production of fentanyl and other synthetic opioids could—in theory—displace traditional poppy farmers in the Golden Triangle (Douglas, 2018; Humphreys, Caulkins, and Felbab-Brown, 2018). The short- to medium-term impact of such supply distortions might generate unwanted economic or political pressures in remote and impoverished parts of Southeast Asia. The region should monitor these trends, perhaps stepping up efforts to promote alternative livelihoods. Additionally, Chinese efforts to regulate its chemical industry could push producers to seek more-accommodating environments, such as areas with weak state presence and high levels of corruption. The illicit labor market might adapt by partaking in new forms of illicit activity or conflict, putting pressure on central governments. Assessing the future of synthetic opioid production and efforts to address this development should be a priority.
- **Address regulatory and enforcement gaps for the production of and trade in chemicals and controlled substances.** The introduction of novel substances and their precursors can stretch the regulatory and legal capacity of states in the region. Reports of large seizures of methamphetamine and other precursors suggest that countries in the region lack the capacity to properly restrict access to primary inputs. Divergent incentive

structures among varying levels of governments and regulatory agencies impede effective chemical and precursor controls. Corruption also weakens the effectiveness of regulatory controls. Efforts should be made by countries in the region to study where such regulatory gaps exist and how to close them. Countries should consider engagement through existing multilateral frameworks, such as relevant sectoral bodies of ASEAN and the Mekong Memorandum of Understanding on Drug Control, as well as counterpart law enforcement and regulatory agencies to improve information-sharing about the trade of precursors and harmonize regulatory control at the regional level.

- **Build capacity to better identify emerging synthetic drugs, including fentanyl analogs, and precursor chemicals.** Going forward, the adoption of synthetic drugs makes regulatory capacity increasingly important. Countries will need to strengthen their efforts to detect, identify, and catalog new and emerging drugs. Such efforts will be necessary to reduce the time needed to control new and emerging chemicals. Working with international and regional partners to build technical assistance is paramount to equip, train, and build such capacity. Strengthening ASEAN members' review and information-sharing procedures will be needed as markets continue to evolve toward the production and use of synthetic substances.

Reconsider Harsh Drug Law Enforcement, Including Capital Punishment

Like Thailand in the early 2000s, the Philippines has embarked on a violent repression of drug distribution and use. According to human rights groups and the media, the national police force and vigilante groups have committed thousands of extrajudicial killings since mid-2016. Hundreds of thousands have surrendered to authorities for suspected involvement with drugs, contributing to prison overcrowding and overwhelming treatment capacity. Other countries (e.g., Bangladesh and Indonesia) have indicated their intention to adopt similar violent crackdowns in local drug markets.

Extrajudicial killings of illicit drug users and low-level sellers (many of whom also use drugs) are forbidden under multiple international conventions. This also is a particularly dubious approach for improving health and safety outcomes related to illicit drug activity and could have unintended consequences for the broader market of drug users (e.g., deterring those with substance use disorders from seeking health and psychosocial services).

Furthermore, there is a growing body of research suggesting that the certainty and swiftness of a sanction matters more than severity in creating a deterrent effect (Kleiman, 2009; National Research Council, 2014; Chalfin and McCrary, 2017). Although it is unclear how well this research applies outside Western countries, it raises additional questions about the use of violent crackdowns and capital punishment for drug offenses in Asia. Directing scarce law enforcement capacity to focus on drug users or retail distributors might detract or limit efforts to infiltrate or disrupt high-level transnational organized criminal groups.

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Changing patterns in drug use and supply can affect the well-being and development of Asian countries in many ways: The burden of disease from injection drug use, overreliance on the criminal justice system, and rise of drug-related crime can impede economic, environmental, and social development. Historically, countries in Asia have addressed illicit drug use and supply with harsh punishments, including compulsory treatment and the death penalty. The region has long espoused the goal of creating a drug-free society, a goal that has been abandoned in other parts of the globe for being infeasible.

This report describes the illicit drug policy landscape for the Association of Southeast Asian Nations (ASEAN) + 3 countries (China, Japan, and South Korea), which account for about 30 percent of the world's population. The authors also present three case studies on the shifting drug policy landscape in Asia: (1) the violent crackdown on people who use or sell drugs in the Philippines, (2) Thailand's move from a similar crackdown toward an alternative approach of reducing criminal sanctions for drug use and improving access to medication treatment and needle exchange, and (3) China's emergence as a major source of many new chemical precursors and drugs, like fentanyl, that are exported outside Asia.



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