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Afghanistan opium survey 2017

Challenges to sustainable development,
peace and security

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Introduction

The Afghanistan Opium Surveys are implemented annually by the Ministry of Counter Narcotics (MCN) of Afghanistan in collaboration with the United Nations Office on Drugs and Crime (UNODC). The survey team collects and analyses information on the location and extent of opium poppy cultivation, potential opium production and the socio-economic situation in rural areas.

The results provide a detailed picture of the outcome of the 2017 opium season and, together with data from previous years, enable the identification of medium- and long-term trends in the evolution of illicit opium poppy cultivation in Afghanistan. This information is essential for planning, implementing and monitoring the impact of measures required for tackling a problem that has serious implications for Afghanistan and the international community.

The implementation of the survey would not have been possible without the dedicated work of the field interviewers, who often faced difficult security conditions.

The Afghanistan Opium Surveys 2017 were implemented under project AFG/F98, "Monitoring of Opium Production in Afghanistan", with financial contributions from the Governments of Japan and the United States of America.

Executive summary

Area under opium poppy cultivation and opium production reached a new record high in 2017

In 2017, opium poppy cultivation increased sharply to an unprecedented record high of 328,000 hectares from an estimated 201,000 hectares in 2016. Between 2016 and 2017, the area under cultivation with opium poppy increased by 127,000 hectares – the increase alone exceeded the levels of annual cultivation of 2009 and 2010.

Opium poppy cultivation increased strongly in almost all major poppy cultivating provinces. In Hilmand province alone, cultivation increased by 63,700 hectares (+79 per cent) which accounted for about half of the total national increase between 2016 and 2017. Strong increases were observed also in Balkh (+10,000 hectares or almost five times more than in 2016), Kandahar (+7,500 hectares or +37 per cent), Nimroz (+6,200 hectares or +116 per cent), and Uruzgan (+6,000 hectares or +39 per cent).

Mainly caused by the increase in area under cultivation but as well due to good yields, potential opium production almost doubled from its 2016 level (4,800 tons) to 9,000 tons in 2017. Accounting for 57 per cent of national production, the Southern region continued to produce the vast majority of opium in Afghanistan, followed by the Northern (16 per cent of national production), Western (13 per cent) and Eastern regions (9 per cent).

The MCN/UNODC report “Afghanistan opium survey 2017 – cultivation and production” presents a detailed regional and provincial data on area under cultivation, eradication, yields and production of opium.

Reasons for the sharp increase between 2016 and 2017

There is no single reason for the massive 2017 increase in opium poppy cultivation in Afghanistan.

The multiple drivers are complex and geographically diverse, as many elements continue to influence farmers’ decisions regarding opium poppy cultivation. Rule of law-related challenges, such as political instability, lack of government control and security have been found to be main drivers of illicit cultivation. Socio-economic factors also impact farmers’ decisions, for example scarce employment opportunities, lack of quality education and limited access to markets and financial services continue to contribute to the vulnerability of farmers towards opium poppy cultivation.

A combination of events may have exacerbated some of these elements and may have led to the large increase in 2017. The shift in strategy by the Afghan government - focusing its efforts against anti-government elements (AGE) in densely populated areas - may have made the rural population more vulnerable to the influence of AGE.

Political instability and increased insecurity particularly affected the Northern region, where opium poppy cultivation expanded drastically over the last couple of years. Increased poverty and vulnerability towards external shocks, in combination with the economic down-turn after the withdrawal of the international troops, may have caused many farmers to resort to opium poppy cultivation to sustain their livelihoods.

Unprecedented potential heroin production

Each year thousands of tons of opium are produced in Afghanistan and then converted into heroin to reach end-consumer markets around the globe. With the record high of production in 2017, a wave of high quality, low cost heroin is expected to reach consumer markets across the world.

All the opium produced in Afghanistan is either consumed as raw opium in and outside of Afghanistan or further processed into heroin, which is then traded to end-consumer markets across the world. For 2017, it can be estimated that 7,600 – 7,900 tons of opium were potentially available for heroin production and

1,100 – 1,400 tons were consumed in form of raw opium in the region. From the 2017 opium harvest some 550-900 tons of heroin of export quality (purity between 50 and 70 per cent) or 390 – 450 tons of pure heroin base can be produced.

Seizure data indicated that between 48 per cent and 56 per cent of the 2017 opium harvest was converted into heroin or morphine within Afghanistan and that the remainder was exported unprocessed. Substantial seizures of illicit morphine outside of Afghanistan suggest that morphine is traded to be further processed into heroin outside of the country.

There is great uncertainty around these estimates, since potential heroin production is driven by a variety of factors. Only little is known about the efficiency and capacity of heroin and morphine labs in Afghanistan, and the purity of seized product is often unknown. Precursors and chemicals used, such as acetic anhydride, ammonium chloride, acids, bases and solvents, are of unknown purities. Purity data collected on heroin in Afghanistan and neighbouring countries suggests that there is wide range of different qualities of heroin in the market.

This report discusses these uncertainties in detail and discusses how much of the heroin is potentially produced inside Afghanistan and how much outside of it (see chapter “Heroin production 2017 and its economic value”).

The illegal sector of Afghanistan’s economy rapidly expanded in 2017

The record high of opium production in Afghanistan led to a rapid expansion of the illegal opiate economy in 2017. Being worth between US\$ 4.1 to 6.6 billion in 2017, it was of considerable size when compared to Afghanistan’s overall economy, namely between 20 and 32 per cent of GDP. The opiate economy had about the size of the entire agricultural sector of the country and exceeded by far the value of Afghanistan’s licit exports of goods and services in 2016 (estimated at 7 per cent of GDP). The value of the opiate economy is the farm-gate value of opium together with revenues from heroin production and trafficking of opiates to the Afghan border.

ESTIMATED GROSS AND NET VALUES OF THE OPIATE ECONOMY, 2017

	Gross value US\$ (rounded)	Value in relation to GDP
Value of the opiate economy (gross)	4.1 – 6.6 billion	20 - 32%
Value of opiates potentially available for export	4 – 6.5 billion	20 - 32%
Value of the domestic use market	93 million	0.5%
Value of imported precursor substances	180 – 300 million	0.9 - 1.5%
Farm-gate value of opium	1.4 billion (1.2 – 1.5 billion)	6 - 8%
Value of production and trafficking after farm-gate to the border (net)	2.6-4.8 billion	13 - 24%

Note: Ranges are calculated based on different assumptions on the conversion of opium to morphine/heroin within Afghanistan and on the purity of the exported products. “Value of the opiate economy (gross)” is the sum of the value of the domestic market and the value of opiates believed to be exported, including the value of the imported precursor substance acetic anhydride. “Value of production and trafficking after farm-gate to the border (net)” is the value added to the opiate economy after the farm-gate value with costs for imported precursor substances subtracted.

Opium poppy has become a crucial component of the Afghan economy that secures the livelihoods of many Afghans who engage in cultivation, work on poppy fields or partake in the illicit drug trade. Opium poppy provides much needed income to many impoverished farming households in rural areas and is a source of

wealth creation for those who are “better-off”. It provides employment for many landless persons, often migrant workers, who work as opium poppy harvesters on the fields.

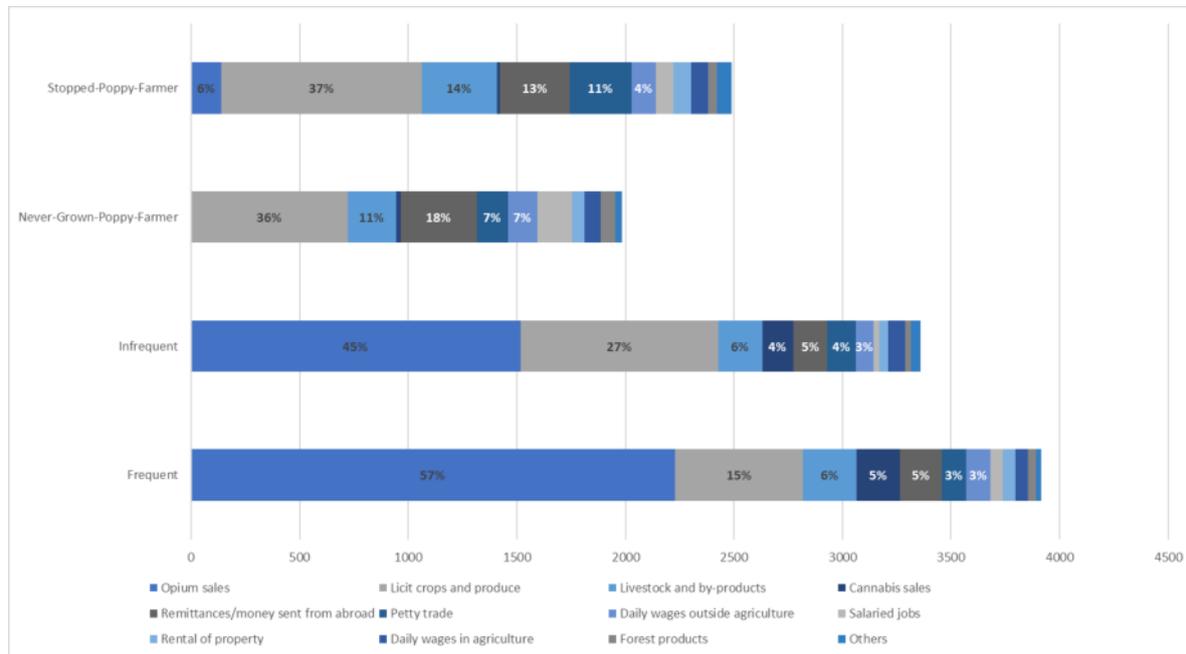
In rural areas, a considerable share of the population was affected by opium poppy cultivation in 2017. In the Western and Northern regions, more than a third of the village headmen reported the presence of opium poppy; in the Eastern region it was more than 50 per cent and in the Southern region it was almost 85 per cent. In Hilmand province, the randomly selected villages in the survey did not include a single village without opium poppy cultivation.

The farm-gate value of opium is an important measure of the income generated by cultivation and harvesting of opium in rural areas. In 2017, Afghan farmers earned a combined US\$ 1.4 billion (1.2 – 1.5 billion) at the farm-gate corresponding to roughly seven per cent of GDP, or about 30 per cent of the value of licit agricultural sector of the country.

Cultivating opium poppy, a lucrative cash crop, is one of the many coping strategies that a rural household may employ for securing its livelihood. Livelihood strategies adopted by a household – poppy growing or others – are not constant and change over time, the decision to cultivate opium poppy can thus change from one year to the next. In 2017, 46 per cent of all farmers were classified as frequent farmers and the remaining 54 per cent as infrequent farmers.¹

For frequent opium poppy farmers, sales of opium poppy and derivatives constituted the main source of income in the year before the survey. On average, such sales accounted for 57 per cent of the annual household income of frequent poppy farmers. For infrequent farmers, opium poppy made up 45 per cent of household income. These numbers provide insights on how important opium poppy is household economy of those who cultivate it.

SHARES OF TOTAL ANNUAL INCOME PER INCOME-GENERATING ACTIVITY BY TYPE OF FARMER IN AFGHANISTAN, 2017



Opium poppy farmers use their income for covering basic needs. Food, paying debt, and medical expenses were the three most common uses of opium income reported by farmers. Investment in property,

¹ Opium poppy farmers were classified as frequent poppy farmers if they cultivated opium poppy in at least four of the five years between 2012 and 2016 and as infrequent farmers if they cultivated opium poppy in less than four years in that period.

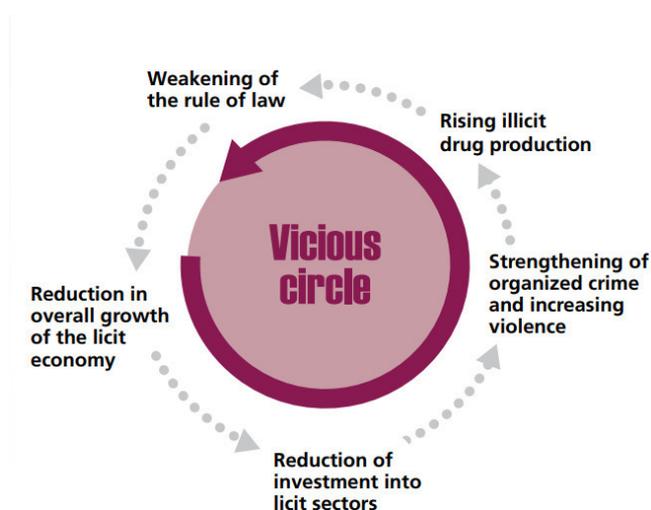
education, or other activities that have potential to build alternatives to opium poppy cultivation, was reported only by few farmers and more often by farmers who cultivated opium poppy infrequently.

Opium poppy cultivation provides access to daily wage labour to a large number of persons, as it is work intensive. In 2017, opium poppy weeding and harvesting provided the equivalent of up to 354,000 full time jobs to local and migrant workers hired by farmers. While no numbers on involvement or profits are available, the sheer size of opium production in 2017 suggested that many more Afghans sustained themselves with some income from the onwards processing and trade with opiates.

The income earned at the farm-gate supported the wider, licit rural economy. Afghan farmers purchase food, have medical expenses, and purchase daily needs products. These expenses - paid from opium money - benefited local bakers, butchers and other small-scale businesses in rural Afghanistan.

Opiates have thus created an illegal economy that has permeated the rural society to the extent that many communities – not only farmers – have become dependent on the income from opium poppy to sustain their livelihoods. The income from opium poppy helps Afghanistan and its impoverished rural population to cope with its economic and social challenges. This comes at a cost, as the illicit economy discourages private and public investment by fuelling insecurity, violence and insurgency - all factors that create a conducive environment for illicit drug cultivation and production. The illegal economy thus creates a vicious cycle that is hard to break.

VICIOUS CYCLE OF ILLEGAL DRUG PRODUCTION



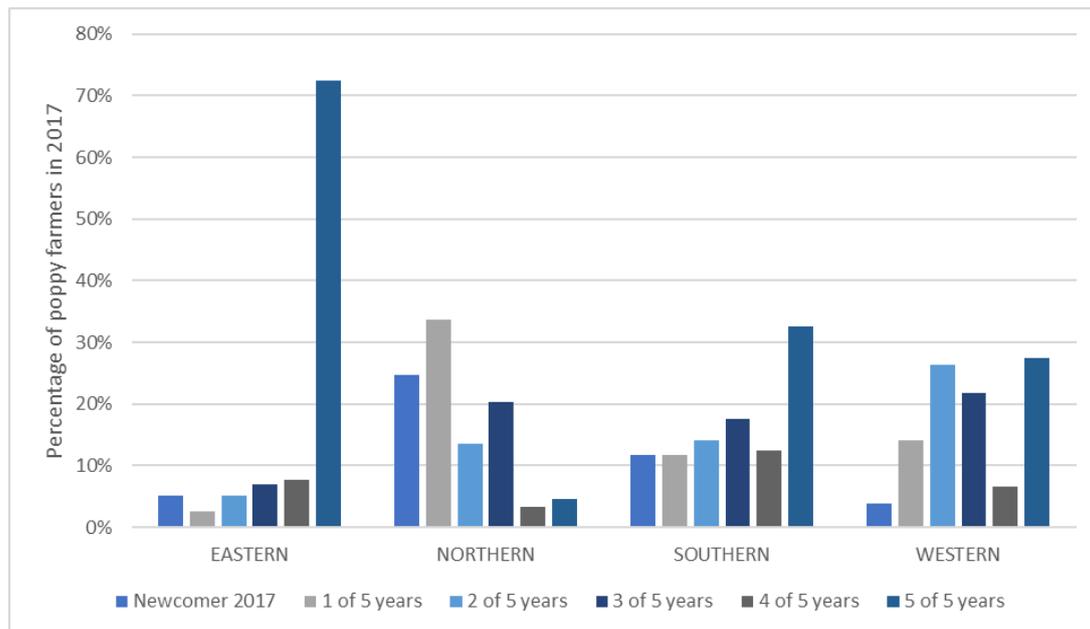
Source: UNODC.

Many households newly engaged in opium poppy cultivation in 2017

Eleven per cent of all opium poppy farmers reported in the 2017 survey that they had cultivated opium poppy for the first time in 2017. This implied that the large increase in area under cultivation was not only caused by increased area under cultivation of established farmers, but as well by a large influx of farmers who newly started (or re-started after five years) opium poppy cultivation that year.

The largest share of newcomers was found in the Northern region, where 25 per cent of all interviewed farmers cultivated opium poppy for the first time in 2017. At the same time, this region accounted for the lowest share of farmers who cultivated 5 out of 5 years between 2012 and 2016. This distribution reflected the strong upward trend of opium poppy cultivation of the past 6 years in the Northern region. The second highest share of newcomers in 2017 (11 per cent) was found in the Southern region, where large increases took place, too. The share of newcomers in the remaining regions varied between 4 per cent (Western region) and 8 per cent (North-eastern region).

FREQUENCY OF OPIUM POPPY CULTIVATION BETWEEN 2012 AND 2016 OF OPIUM POPPY FARMERS OF 2017, SELECTED REGIONS



Insecurity and lack of government presence as drivers of cultivation

There is a clear and well-established link between lack of government control, insecurity and increased opium poppy cultivation. In 2017, an estimated 29 per cent of village headmen reported that the village was under the control of insurgency or anti-government elements and an estimated 5 per cent reported “other groupings” (no further information was available).² The remaining 66 per cent of village headmen reported that the government was in control of the village.

Comparing opium poppy with non-opium-poppy villages shows that among villages where opium poppy cultivation took place, the share of villages outside of government control was much higher: 54 per cent of all headmen of poppy villages reported that the village was under control of the insurgency or other non-government groups. Among villages without opium poppy cultivation, the share was only 23 per cent.

Village headmen were as well asked about who controlled the village in the previous year. According to the interviews, the government lost control over a little more than five per cent of all villages between 2016 and 2017, and gained control in less than one per cent. More than two-thirds of the villages (68 per cent) where the government lost control, cultivated opium poppy.

Lack of government control and insecurity go often hand in hand. Opium poppy cultivation tended to take place more often in insecure villages than in secure ones. Among villages with opium poppy cultivation, 27 per cent of headmen considered their village as insecure or very insecure, whereas only 15 per cent of villages without opium poppy cultivation reported the same.

Opium poppy cultivation therefore took place and expanded predominantly to areas without government control and higher insecurity. There were two main exceptions: in the Central region, large areas were

² The notion of control in this report reflected the perception of the village headmen interviewed. In Afghanistan, the relationship between the population, the government, and various non-state authorities has found to be complex and there appear to be varying degrees of government influence and influence of local power-holders that are far from being a dichotomy. See as well Mansfield, David, *Understanding Control and Influence: What Opium Poppy and Tax Reveal about the Writ of the Afghan State*.

outside government control and free from opium poppy cultivation, whereas in Badakhshan, significant levels of opium poppy cultivation took place in areas under government control.

Opium poppy cultivation fuels instability by funding insurgency groups

Not only did opium poppy cultivation take place in areas with less governmental presence and with less security, it destabilized the country further by funding insurgency and anti-government groups.

The 2017 MCN/UNODC village survey asked headmen about whether opium poppy farmers paid any taxes on their opium sales, to whom they paid them and what percentage of earnings they paid. Overall, poppy farmers needed to pay taxes on their opium sales in an estimated 41 per cent of all villages where opium poppy cultivation took place. Of the total 2017 opium harvest, 62 per cent, or some 5,500 out of 9,000 tons, were subject to some form of tax.

The reported average tax on opium sales varied between 2 and 20 per cent of the sales value of opium, with half of the values lying between 4 and 10 per cent. Combining the estimates on the share of the harvest taxed and the average tax rates yielded a total tax revenue of 5.3 per cent of the opium sales value in 2017 (farm-gate value). This corresponded to US\$ 74 million (US\$ 65 – 82 million) being incurred by various players in the form of opium taxes from the farm-gate value of opium in 2017. If the same groups collected a similar share of the earnings from manufacturing and trafficking of opiates after the farm-gate, as well, the amount of money incurred in form of taxes would total in some US\$ 220-350 million.

The MCN/UNODC village survey 2017 asked village headmen about the recipients of the opium poppy taxes. Responses were open-ended, meaning that the headmen could report freely to whom they thought that villagers paid their taxes. According to the interviewees, ‘the powerful’, which referred mainly to local powerholders in Hilmand province, accrued 36 per cent of all opium taxes collected, the Taliban 35 per cent, generic insurgency/anti-government groups 18 per cent and ‘others’ 12 per cent.³ If the same groupings collected a similar share from the value of the opiate economy (including the farm-gate value) this would correspond to US\$ 78-124 million for ‘the powerful’, US\$ 76-121 million for the Taliban, US\$ 40-63 million for generic anti-government/insurgency groups and US\$ 25-41 million for ‘others’.

Opium poppy is not the only source of funding for insurgency groups. The MCN/UNODC village survey collected evidence that non-state authorities, including the Taliban, used as well the widely prevalent traditional ushr to fund their activities. Ushr denotes the traditional Islamic tithe on agricultural production, usually about 10 per cent, which is payable on the harvest a farmer makes.

Based on the data collected, it could be estimated that the Taliban collected ushr in 7 per cent of all villages, and anti-government elements/insurgency in another 3 per cent. The Taliban were named most often in the Eastern and Western regions (in 13 and 9 percent of all villages, respectively), followed by the Central and Northern region with 7 per cent each. Anti-government/insurgency groups were named most often in North-eastern and Northern regions. In the Southern region, perhaps reflecting the findings on powerful local commanders, neither Taliban nor anti-government/insurgency groups were mentioned, but mainly ‘the poor’ and ‘the Mullah’. Insurgency groups thus fund themselves from various sources, including taxing legal agricultural production in those areas where they are in control.

The way forward

Opium poppy, being a lucrative cash crop with well-established markets and trade networks, has become a critical component in securing the livelihoods of many Afghans who engage in cultivation, work on poppy

³ Responses are reported as they were provided. Insurgency/anti-government answers might include references to the Taliban. According to the interviewers, local power-holders in Hilmand included local insurgency groups, the Taliban, local government and non-government officials including local police forces. The interviewed headmen referred to the grouping as “the powerful”.

fields or participate in the illicit drug trade. The 2017 record levels of cultivation and production further reinforce the dependency of Afghanistan's rural economy on opium poppy cultivation.

The MCN/UNODC village surveys have shown that opium poppy cultivation is closely related to poor governance, lack of security, and lack of basic infrastructure and services that are essential for the well-functioning of a society. Moreover, socio-economic factors, for example scarce employment opportunities, lack of quality education and limited access to markets and financial services contribute as well to the vulnerability of farmers towards opium poppy cultivation.

The security situation in Afghanistan remains highly volatile, as conflicts between government and anti-government forces continue throughout most of the country.⁴ The ongoing instability has made sustaining livelihoods by licit means more difficult and has amplified the vulnerability of the population to economic and environmental shocks.

The latest available data from the Afghan Living Conditions Surveys indicates that poverty rates increased throughout the country, especially in rural areas, where vulnerability of poor households to weather-related shocks and natural disasters remained high.⁵ Other studies highlight that the deteriorating living conditions in rural areas are linked to the deteriorating security situation and to declining financial engagement of the international community since the beginning of the withdrawal of international security forces in 2012.⁶ The decline in international spending caused labour demand in the off-farm sector to fall, leaving the rural population in a precarious situation with less opportunities to sustain their livelihoods.⁷

This is exacerbated by increased repatriation of Afghans from Europe, Iran and Pakistan. In 2017, more than 560,000 Afghan refugees returned from Pakistan and Iran.⁸ At the same time, the number of displacements resulting from escalated internal conflicts has increased significantly with more than 650,000 people being internally displaced in 2016 and another 159,000 being newly displaced between January and June 2017, whose livelihoods need to be sustained.⁹

The 2017 record levels of opium poppy cultivation in Afghanistan create additional challenges for the country. The significant levels of opium poppy cultivation and illicit trafficking of opiates will further fuel instability, insurgency and increase funding to terrorist groups in Afghanistan, which in turn impedes licit, economic development.

Given the complexity of factors that drive illicit cultivation, policies to replace opium poppy require careful planning, a long time-horizon and long-term political and financial support. Short-sighted interventions, either law enforcement or development based, bear the risk of not only being ineffective but counter-productive. Ill planned interventions may create perverse incentives that are likely to lead to overall increases in opium poppy cultivation.

The MCN/UNODC opium surveys have shown that the reduction of illicit crop cultivation depends on the achievement of broader development goals, such as well-established and strong state institutions for

⁴ General assembly, Seventy-second session, "The situation in Afghanistan and its implications for international peace and security", Report of the Secretary-General, A/72/651-S/2017/1056

⁵ Afghanistan Living Conditions Survey 2014-2015, Central Statistical Organization Afghanistan

⁶ Joya, Mohammad Omar; Farahi, Mohammad Aman; Wieser, Christina; Nassif, Claudia. 2017. Afghanistan development update (English). Washington, D.C. :: World Bank Group.

⁷ Ibid.

⁸ International Organisation for Migrants, "Return of undocumented Afghans – monthly situation report December 2017", https://afghanistan.iom.int/sites/default/files/Reports/iom_afghanistan-return_of_undocumented_afghans-situation_report_decemb.pdf.

⁹ See <http://www.internal-displacement.org/countries/afghanistan> and "Report of the Special Rapporteur on the human rights of internally displaced persons on his mission to Afghanistan" (A/HRC/35/27/Add.3)

effective governance, and functioning social protection mechanisms, which calls for a strong representation of counter-narcotics in the development strategy for Afghanistan.

The diversity of conditions and factors associated with the different levels of development and opium poppy cultivation need to be acknowledged and taken into account in the elaboration of drug control strategies.

The evidence suggested that improvement in governance and the rule of law, infrastructure and services can create opportunities for licit economic development and for a diversification of livelihood strategies, which in turn decreases the dependency of communities on opium poppy income. The socio-economic, cultural and biophysical diversity in the country requires adaptive approaches that consider local circumstances and conditions in all stages of programme development.

Alternative development policies aim at breaking the vicious cycle of rising illicit drug production by effectively promoting factors fostering a sustainable licit economy. In the long run, this can attract investment and help to develop the necessary infrastructure, thereby changing and sustaining the livelihood of rural communities.

Addressing the opiate problem in Afghanistan remains a shared responsibility. Unprecedented amounts of heroin will reach consumer markets across the world, with increased consumption and related harms as a likely consequence. Only a small share of the revenues generated by the cultivation and trafficking of Afghan opiates reaches Afghan drug trafficking groups. Many more billions of dollars are made from trafficking opiates into major consumer markets, mainly in Europe and Asia. Reducing the Afghan opium production requires thus an international approach that targets the supply chain of opiates along all its stages, from source to destination.

Part I: Causes and consequences of opium poppy cultivation 2017

Setting the context

After long years of war, Afghanistan is a country in a state of constant, protracted crisis. In 2017, The security situation remained highly volatile, as conflict between government and anti-government forces continued throughout most of the country. The Taliban and Islamic State in Iraq and the Levant-Khorasan Province (ISIL-KP) showed continued capacity for inflicting casualties amid increased Afghan and international air strikes.¹⁰

Civilians continued to suffer the effects of armed conflict in Afghanistan throughout 2017. Between 1 January and 31 December, UNAMA¹¹ documented 10,453 civilian casualties related to the conflict, an overall decrease of nine per cent compared to 2016. The overall continuation of high numbers of civilian casualties underscores the enormous human cost of the ongoing armed conflict. The nine per cent decrease in civilian casualties in 2017 mainly resulted from less harm to civilians caused by ground fighting compared to 2016, while civilian casualties from suicide and complex attacks continued to rise.¹²

The on-going instability and reduced economic growth has increased the vulnerability of the population to economic and environmental shocks. Since the beginning of the withdrawal of international security forces in 2012, the average economic growth rate has declined from 9.4 percent in the period from 2003 to 2012 to around 2.1 percent in the period from 2013 to 2016. In that time, spending of the international community and international assistance has declined significantly.¹³

The poverty rate increased to 39.1 percent in 2013-14, up from 36 percent in 2011-12.¹⁴ This meant that some 1.3 million additional people fell into poverty over this period, being unable to satisfy basic food and non-food needs. The increase in poverty was especially severe in rural areas, where vulnerability of poor households to weather-related shocks and natural disasters is high.¹⁵ The World Bank¹⁶ linked the deteriorating living conditions in rural areas to the deteriorating security situation and to the decline in international spending associated with the withdrawal of international military forces. The decline in international spending caused labour demand in the off-farm sector to decline, with most of the jobs created during the pre-transition phase being lost.

The deteriorating security conditions and the increased repatriation of Afghans from Europe, Iran and Pakistan have increased pressures related to internally displaced persons.¹⁷ In 2017, more than 560,000 Afghan refugees returned from Pakistan and Iran. Returnees reported as final destination most frequently the provinces of Nangarhar, Kabul, Kandahar and Nimroz.¹⁸ At the same time, the number of displacements resulting from the escalated internal conflicts has increased significantly with more than

¹⁰ General assembly, Seventy-second session, "The situation in Afghanistan and its implications for international peace and security", Report of the Secretary-General, A/72/651-S/2017/1056

¹¹ United Nations Assistance Mission in Afghanistan, "Protection of Civilians in Armed Conflict – Annual report 2017", February 2018

¹² Ibid.

¹³ Joya, Mohammad Omar; Farahi, Mohammad Aman; Wieser, Christina; Nassif, Claudia. 2017. Afghanistan development update (English). Washington, D.C.: World Bank Group.

<http://documents.worldbank.org/curated/en/471191495626000119/Afghanistan-development-update>

¹⁴ Afghanistan Living Conditions Survey 2014-2015, Central Statistical Organization Afghanistan

¹⁵ Ibid.

¹⁶ Joya, Mohammad Omar; Farahi, Mohammad Aman; Wieser, Christina; Nassif, Claudia. 2017. Afghanistan development update (English). Washington, D.C.: World Bank Group.

¹⁷ Ibid.

¹⁸ International Organisation for Migrants, "Return of undocumented Afghans – monthly situation report December 2017", https://afghanistan.iom.int/sites/default/files/Reports/iom_afghanistan-return_of_undocumented_afghans-situation_report_decemb.pdf.

650,000 people being internally displaced in 2016 and another 159,000 being newly displaced between January and June 2017.¹⁹ Most affected by displacements were the Northern and North-eastern regions in 2017, but as well the provinces of Nangarhar (due to conflicts between the national security forces and insurgency) and Hilmand province.²⁰

In this context, opium poppy cultivation increased sharply from an average of 125,000 hectares between 2009 and 2011 to an unprecedented record high of 328,000 hectares in 2017. Between 2016 and 2017, the area under cultivation with opium poppy increased by 127,000 hectares - the increase alone exceeded the level of overall annual cultivation of 2009 and 2010.

This report discusses the drivers and consequences of opium poppy cultivation in Afghanistan and provides the evidence for the design and implementation of counternarcotic strategies. It is based on the findings of the Afghanistan opium survey conducted jointly by MCN and UNODC and builds on socio-economic data collected in more than 4,500 structured interviews in some 1,400 opium poppy growing and non-growing villages in 2017, which constituted a representative sample of rural areas in Afghanistan.

The economy of opiates 2017

The role illicit drug cultivation and production play in the economy of Afghanistan, one of the poorest countries world-wide, is multifaceted. Opiates have created an economy based on illicit activities that has permeated the rural society to the extent that many communities – not only farmers – have become dependent on the income from opium poppy and its derivatives to sustain their livelihoods.

The illicit economy discourages private and public investment by fuelling insecurity and insurgency, and creates costs associated with the consumption of opiates for individual drug users and their families, and for the society in general. The income from opium poppy, on the other hand, helps Afghanistan and its impoverished rural population to cope with its economic and social challenges. The opiate sector, being worth more than Afghanistan's entire exports of licit goods and services, provides much needed income to the rural poor and is a source of wealth creation for those who are "better-off".

The illegal sector of Afghanistan's economy rapidly expanded in 2017

The record high of opium production in Afghanistan led to a rapid expansion of the illegal opiate economy in 2017. This expansion most probably came at cost to licit agricultural activities and bears the risk of an increased dependency of Afghanistan's economy on opiate production.

Being worth between US\$ 4.1 to 6.6 billion in 2017,²¹ or 20 to 32 per cent of GDP, the value of opiates, including revenues from heroin production and trafficking to the border, was of considerable size when compared to Afghanistan's licit economy, and exceeded by far the value of its licit exports of goods and services in 2016 (6.9 per cent of GDP).²² It was worth about as much the entire licit agricultural sector of the country, which constituted 23 per cent of GDP in 2016/2017.²³

The increase of opium production by 87 per cent led to a strong expansion of the opiate economy: the gross value of the Afghan opiate economy was estimated to be US\$ 3 billion in 2016 and US\$ 4.1-6.6 billion

¹⁹ Internal Displacement Monitoring Centre (IDMC) and "Report of the Special Rapporteur on the human rights of internally displaced persons on his mission to Afghanistan" (A/HRC/35/27/Add.3)

²⁰ Internal Displacement Monitoring Centre (IDMC)

²¹ It should be stressed that despite ongoing improvements in the estimates of the opiate economy through additional information-gathering activities, economic calculations remain far less robust than estimates of the area under cultivation, opium yield and opium production. The calculations presented here are intended to provide reasonable orders of magnitude of the income generated rather than exact amounts.

²² World Bank, World Development Indicators.

²³ Central Statistics Organization (CSO) of the Government of the Islamic Republic of Afghanistan. These estimates of the agricultural sector do not include the farm-gate value of opium poppy.

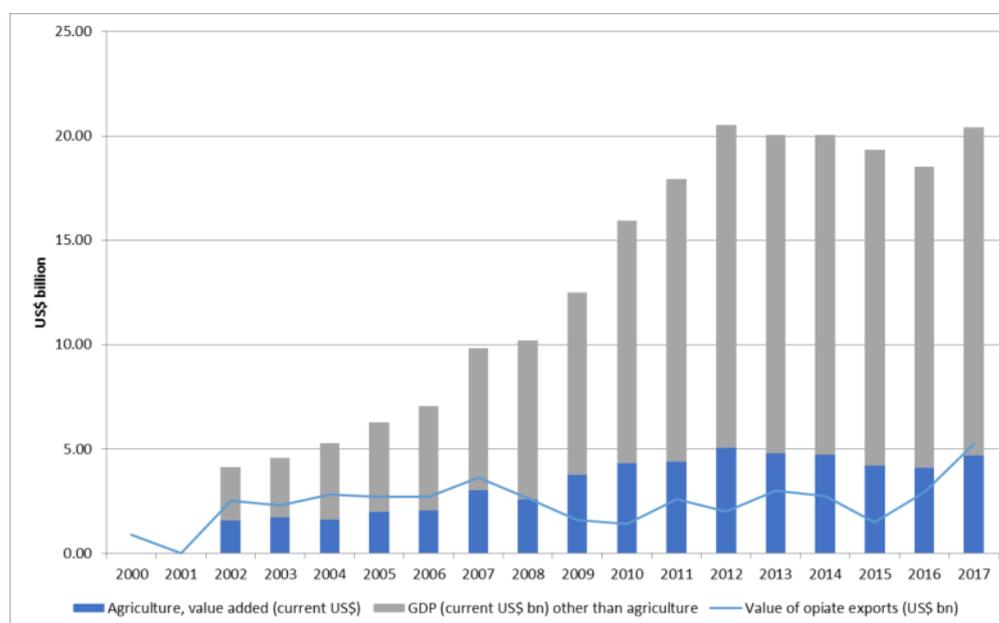
in 2017, which means that the increase was minimum 40 per cent and maximum 120 per cent between 2016 and 2017.

TABLE 1 ESTIMATED GROSS AND NET VALUES OF THE OPIATE ECONOMY, 2017

	Gross value US\$ (rounded)	Value in relation to GDP
Value of the opiate economy (gross)	4.1 – 6.6 billion	20 - 32%
Value of opiates potentially available for export	4 – 6.5 billion	20 - 32%
Value of the domestic use market	93 million	0.5%
Value of imported precursor substances	180 – 300 million	0.9 - 1.5%
Farm-gate value of opium	1.4 billion (1.2 – 1.5 billion)	6 - 8%
Value of production and trafficking after farm-gate to the border (net)	2.6-4.8 billion	13 - 24%

Note: Ranges are calculated based on different assumptions on the conversion of opium to morphine/heroin within Afghanistan and on the purity of the exported products. “Value of the opiate economy (gross)” is the sum of the value of the domestic market and the value of opiates believed to be exported, including the value of the imported precursor substance acetic anhydride. The net value of the opiate economy would exclude the value of imported precursor substances. Details on the calculation and the underlying assumptions are provided in the methodology section. “Value of production and trafficking after farm-gate to the border (net)” is the value added in the opiate economy after the farm-gate value with costs for imported precursor substances subtracted.

FIGURE 1 GDP, BY VALUE ADDED OF THE AGRICULTURAL SECTOR AND OTHER SECTORS, AND ESTIMATED GROSS VALUE OF OPIATE EXPORTS, AFGHANISTAN, (US\$ BILLION) 2000-2017



Source: MCN/UNODC Afghanistan opium surveys (value of opiate exports); World Bank (GDP and value added of the agricultural sector, 2002-2015); CSO Afghanistan (GDP and value added of the agricultural sector, 2015/16 and 2016/17). Note: The gross value of opiate exports is shown because of data availability prior to 2011. For comparison with GDP, the value of the opiate economy without the costs for imported precursor substances is considered to be more appropriate.

Opium poppy cultivation has become an important pillar of the rural economy in many regions

Opium poppy has become a crucial component that secures the livelihoods of many Afghans who engage in cultivation, work on poppy fields or partake in the illicit drug trade. Opium poppy provides much needed income to many impoverished farming households in rural areas and is a source of wealth creation for those who are “better-off”. It provides employment for many landless persons, often migrant workers, who work as opium poppy harvesters on the fields.

In rural areas, a considerable share of the population was affected by opium poppy cultivation in 2017. About 35 per cent of all village headmen reported that at least some villagers cultivated opium poppy (see Map 1). This national average masks large regional differences. In the Central region, host a to a large number of villages, only 2 per cent of villages cultivated opium poppy in 2017. In other regions the concentration was much higher. In the Eastern region, more than half of the villages partook in opium poppy cultivation; in the Southern region it was almost 85 per cent. In Hilmand province, the randomly selected villages did not include a single village without opium poppy cultivation.

Overall, about 4 per cent of the arable land in Afghanistan was under opium poppy cultivation in 2017 (3 per cent 2016).²⁴ In some provinces, opium poppy was cultivated in much higher densities. In Hilmand province about a third of the potential agricultural land was dedicated to opium poppy (in 2016, it was about a 20 per cent). In Nangarhar, opium poppy was planted on 21 per cent of the land in 2017, compared to 16 per cent in 2016.

TABLE 2 NUMBER OF SAMPLED VILLAGES AND OPIUM POPPY CULTIVATION, 2017

Region	Percentage of villages with poppy cultivation	Number of sampled villages
Central	2%	396
Eastern	52%	134
North-Eastern	14%	116
Northern	36%	244
Southern	85%	263
Western	38%	224
National	36%	1,377

Note: Number of sampled villages is proportional to number of total villages in a region.

The farm-gate value of opium is an important measure of the income generated by cultivation and harvesting of opium in rural areas. In 2017, Afghan farmers earned a combined US\$ 1.4 billion (1.2 – 1.5 billion) at the farm-gate, which is a 55 per cent increase from 2016 (US\$ 0.9 billion). The farm-gate value corresponded to about 30 per cent of the value of the licit agricultural sector or almost 80 per cent of the value of the entire cereal production of the country in 2016/17.²⁵

Opium poppy cultivation provides access to daily wage labour for a large number of farmers and temporal workers, as it is work intensive. Over a period of 8 to 12 days, lancers visit the fields, lance mature opium poppy capsules and return on the next day to manually collect the opium gum that has oozed out overnight.

²⁴ FAO estimated 7,765,000 hectares of arable land in Afghanistan in 2015. <http://www.fao.org/faostat/>

²⁵ Central Statistical Organisation, Afghanistan. The value of the agricultural sector in a year of interest depends on area under cultivation, yields and prices.

The work force hired by farmers for harvesting opium was substantial. In 2017, opium poppy weeding and harvesting provided the equivalent of up to 354,000 full time²⁶ jobs to local and migrant workers hired by farmers.²⁷ Family labour, e.g. labour by members of an opium poppy cultivating household, is not included in this estimate.²⁸

Opium poppy lancers (workers harvesting opium) earned considerable income when compared to earnings from licit activities. Daily wages for lancing (US\$ 10.2 in 2017) were about twice as much as the wages for other farming related jobs (US\$ 5.4) and 40 per cent more than non-farming jobs (US\$ 6.1), e.g. construction work on roads. The combined wages for opium poppy labour amounted to US\$ 542 million, or 39 per cent of the farm-gate value of opium. Hired labourers are not only paid in cash: almost all farmers reported that labourers were provided with daily food and 48 per cent reported that labourers were paid also with opium (see Table 17 in the statistical annex).

While no numbers are available, the sheer size of opium production in 2017 suggested that many more Afghans sustained themselves with some income from the onwards processing and trade of opiates.

MCN/UNODC village surveys showed that Afghan farmers used their income from opium poppy mostly for covering basic needs such as purchasing food or for medical expenses. The local economy, such as local bakers, butchers and other small scale businesses may profit indirectly from the income generated by opium poppy cultivation.

Only few farmers mentioned to invest their income in asset generation such as education, property or farming tools, which may have potential to generate long-term alternatives to opium poppy cultivation. The potential of opium poppy cultivation to sustainably improve the livelihoods of farmers (and labourers) seemed to be limited.



Afghan women working in a greenhouse. Source: MCN/UNODC.

²⁶ Full time job assumed to have 200 working days a year.

²⁷ Opium farmers were asked how many persons they employed for poppy weeding and harvesting in the previous year. The average number of labourers employed per hectare was extrapolated to the area under cultivation in 2017. The estimated number of full-time jobs (equivalent to 200 working days a year) refers to labour created in addition to the income it provides to farming households.

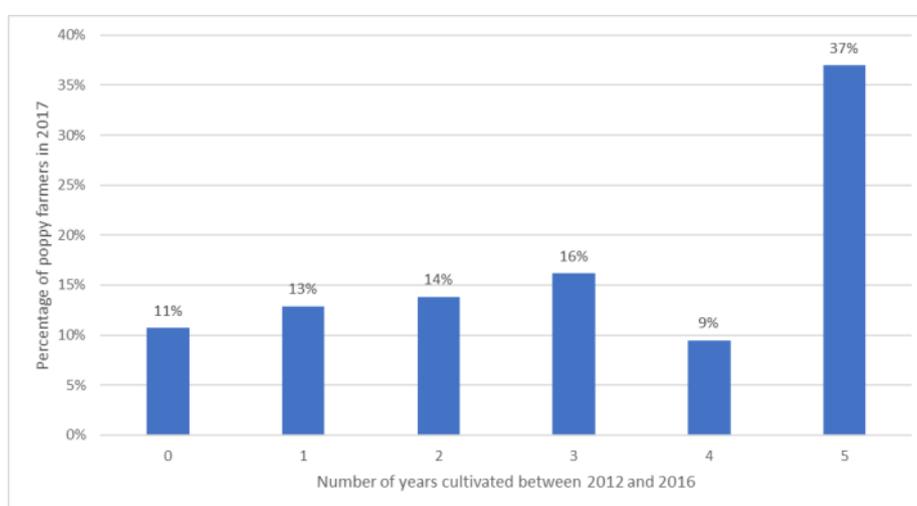
²⁸ Byrd (2017) estimated that poppy cultivation alone provided around 590,000 full time equivalent (FTE) on-farm jobs in 2017 to all households. The estimate included family labour and was based on David Mansfield's work from 2002. See Byrd, W.A., "Disease or Symptom? Afghanistan's burgeoning opium economy in 2017", Afghanistan Research and Evaluation Unit 2017, p 1.

Many households newly engaged in opium poppy cultivation in 2017

The role opium poppy plays in the economy of a household is not fixed and can change from year to year. Cultivating opium poppy is one of the many coping strategies that a rural household may employ for securing its livelihood.²⁹ Livelihood strategies adopted by a household – poppy growing or others – are not constant and change over time in response to changed circumstances, such as increased monetary needs or adverse weather conditions in the crop growing season. Thus, the decision to cultivate opium poppy can change from one year to the next.

Opium poppy farmers of 2017 were asked if they had cultivated opium poppy in the five years prior to 2017. Eleven per cent of all opium poppy farmers reported that they had cultivated opium poppy for the first time in 2017 or took up cultivation after stopping for at least five years. This implies that the large increase in area under cultivation was not only caused by opium growing farmers increasing the area under cultivation, but as well by a large influx of farmers who newly started (or re-started after five years) opium poppy cultivation that year.

FIGURE 2 FREQUENCY OF OPIUM POPPY CULTIVATION BETWEEN 2012 AND 2016 OF FARMERS WHO CULTIVATED OPIUM POPPY IN 2017



Note: Farmers who cultivated opium poppy were asked if and when they had cultivated opium in the past five years.

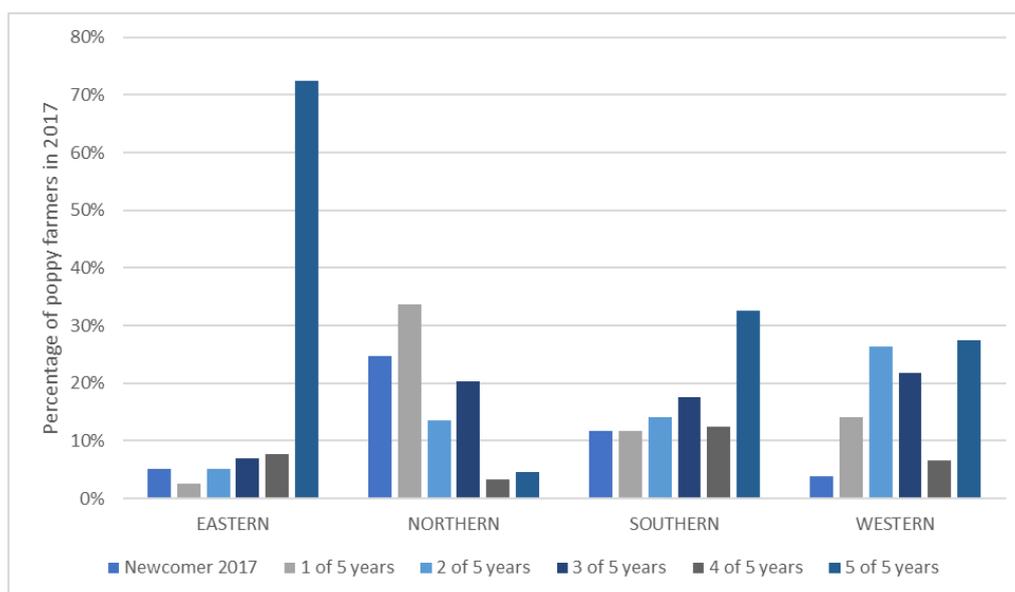
A share of 37 percent of opium poppy farmers reported to have cultivated opium poppy each year between 2012 and 2016 (in addition to 2017). The remaining 52 per cent of farmers cultivated opium poppy in between one and four years out of the past five years.

The largest share of newcomers was found in the Northern region, where 25 per cent of all interviewed farmers cultivated opium poppy for the first time in 2017. The share of farmers who cultivated 5 out of 5 years was the lowest in this region when compared to the other regions. This distribution reflects the strong upward trend of opium poppy cultivation in the Northern region in the past 6 years.

The Eastern region had the largest share of opium poppy farmers who cultivated continuously for 5 out of 5 years. This might indicate that in this region, increases in area under cultivation were mostly caused by an increase in area per household - in contrast to an increasing number of households who cultivate opium poppy.

²⁹ Livelihood is understood as all activities and decisions that enable members of a household to sustain their living.

FIGURE 3 FREQUENCY OF OPIUM POPPY CULTIVATION BETWEEN 2012 AND 2016 OF FARMERS WHO CULTIVATED OPIUM POPPY IN 2017, SELECTED REGIONS



Opium constituted a significant share of the household income of opium poppy farmers

One indicator of the relevance of opium poppy in a household is the share of household income it provided to farming households. In the following analysis opium poppy farmers were classified as frequent poppy farmers if they cultivated opium poppy in at least four of the five years between 2012 and 2016 and as infrequent farmers if they cultivated opium poppy in less than four years in that time period. In 2017, 46 per cent of all farmers were classified as frequent farmers and the remaining 54 per cent as infrequent farmers.³⁰

For frequent opium poppy farmers, sales of opium poppy and derivatives constituted the main source of income in the year before the survey. On average, such sales accounted for 57 per cent of the annual household income of frequent poppy farmers. For infrequent farmers, opium poppy made up 45 per cent of household income.

In terms of absolute household income, those farmers who frequently cultivated opium poppy reported the highest income, followed by infrequent poppy farmers, and those who stopped cultivation in or before 2017 (Figure 4). Farmers who reportedly never had cultivated opium poppy stated the lowest income. This finding was consistent with findings of previous years.

Excluding income from opium poppy cultivation (Figure 5) changed that order: frequent opium farmers had the smallest amount of non-opium related income, followed by infrequent farmers, farmers who had never cultivated opium poppy and those who stopped cultivating in or before 2017. This seems to indicate that infrequent poppy farmers could afford to opt in and out of opium poppy cultivation, because their non-poppy income allowed to sustain their livelihoods.

The income distribution also showed the link between opium poppy cultivation and cannabis cultivation. This link is well established by the MCN/UNODC village surveys.

³⁰ In 2016, 63 per cent of all poppy farmers were considered to be frequent farmers and 37 per cent to be infrequent farmers. The change in the ratios reflects as well the large increase in opium poppy farmers from 2016 to 2017.

FIGURE 4 SHARES OF TOTAL ANNUAL INCOME PER INCOME-GENERATING ACTIVITY BY TYPE OF FARMER IN AFGHANISTAN, 2017

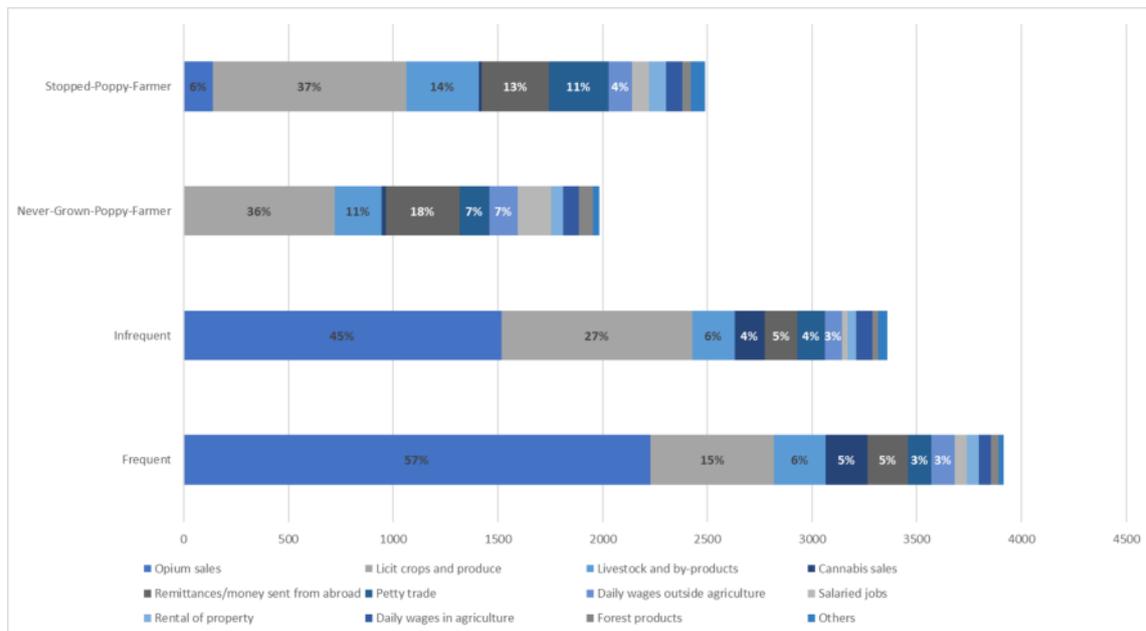
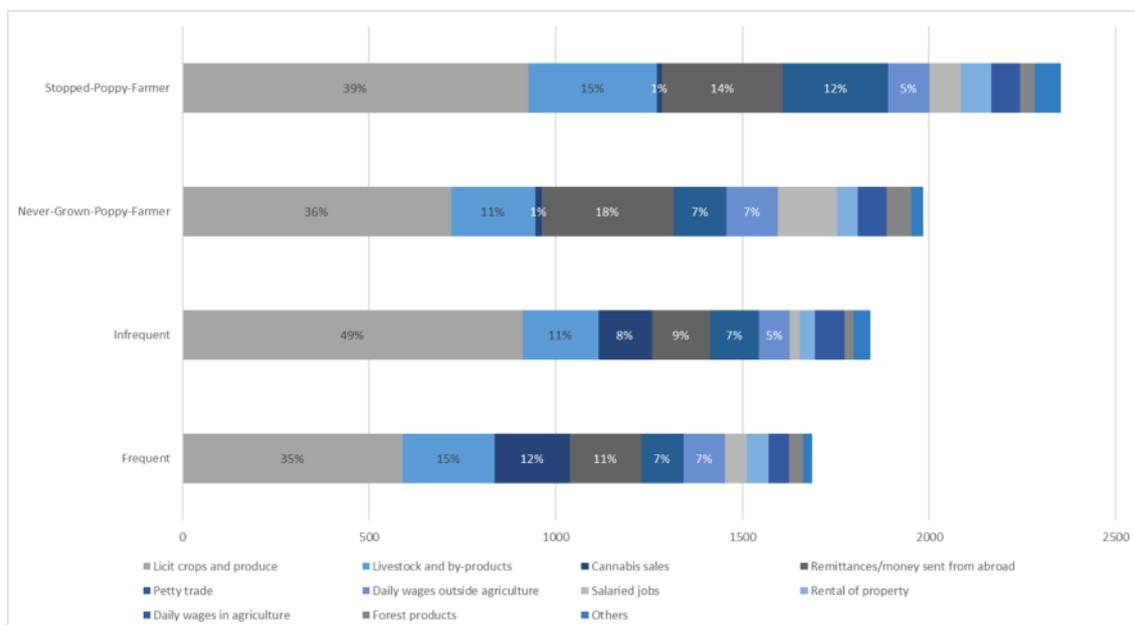


FIGURE 5 SHARES OF TOTAL ANNUAL INCOME PER INCOME-GENERATING ACTIVITY EXCLUDING OPIUM POPPY, BY TYPE OF FARMER IN AFGHANISTAN, 2017

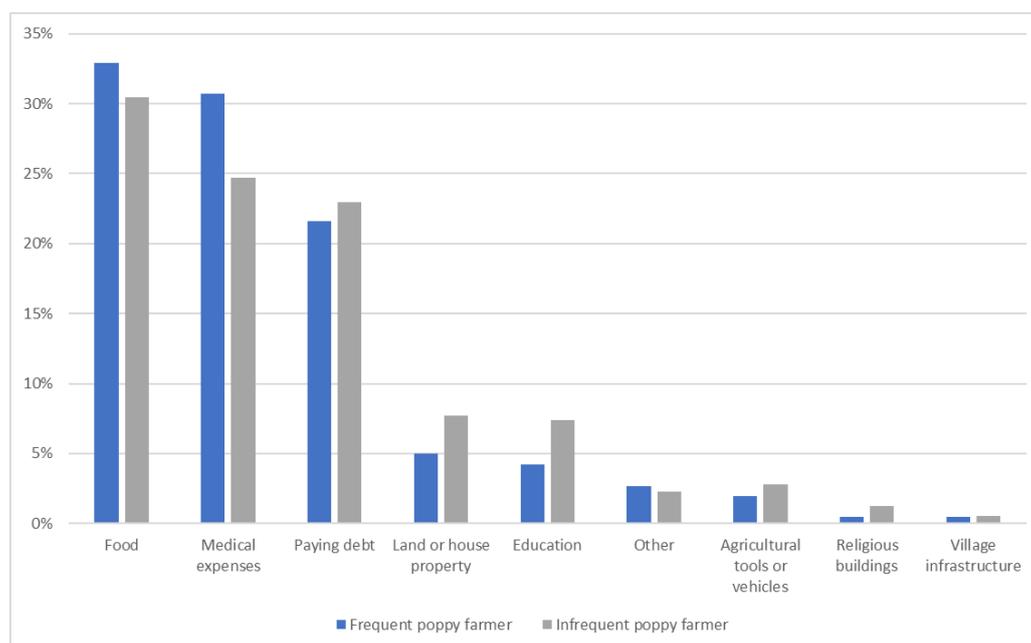


Since the decision to cultivate opium poppy can change from one year to the next, an absolute divide of farmers into opium-poppy and non-opium-poppy growers is an oversimplification. A farmer might cultivate opium poppy in one year and abstain in the next – depending on the fluctuating economic needs and opportunities. Infrequent opium poppy farmers appear to have a higher non-poppy income than frequent opium poppy farmers, which is an indication that their livelihoods do not rely as much on opium poppy as the livelihoods of those who cultivate poppy frequently. Farmers who have never cultivated opium poppy reported the on average lowest income of all types of farmers – indicating that income is not the only factor that influences whether or not farmers cultivate opium poppy.

Using household income to measure standards of living or livelihood opportunities has its limitations. In poor rural economies with a substantial variability of income associated with seasonality and high degrees of self-consumption, standards of living also depend on other household assets, such as livestock and size of landholdings, as well as on local costs of living.

The MCN/UNODC village survey asked poppy farmers about their use of the income from opium. Food, paying debt, and medical expenses were the three most common uses of opium income reported by farmers. Investment in property, education, or other activities that have potential in building alternatives to opium poppy cultivation, were reported only by few farmers and more often by farmers who cultivate opium poppy infrequently. The findings of the 2017 village survey confirmed the findings of previous years.

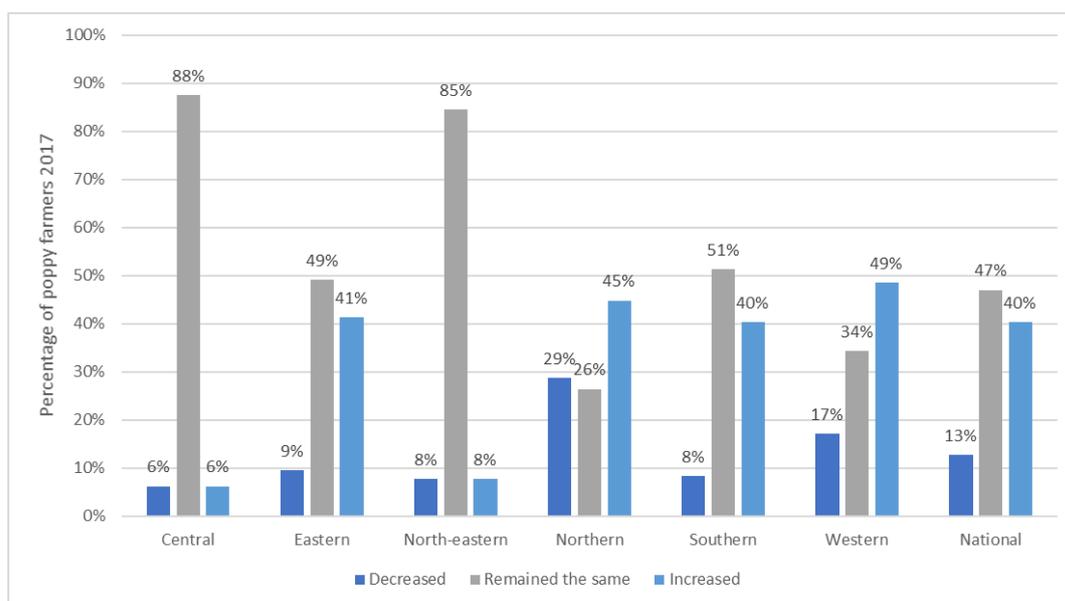
FIGURE 6 MOST IMPORTANT USES OF INCOME FROM OPIUM POPPY AS REPORTED BY POPPY FARMERS IN 2016, (REPORTED IN 2017)



Note: Farmers were asked for the three main uses of their income from opium poppy. Data reflects all mentions of a purpose, regardless of its rank.

Depending on their needs and opportunities, frequent and infrequent opium poppy farmers vary their total area under opium poppy cultivation over time, either by using their own land or other modalities (tenancy or sharecropping). Overall, 47 per cent of all poppy farmers reported an increase in area under cultivation, 40 per cent reported that the area remained the same and the remaining 13 per cent reported a decrease in area under cultivation. The large increase in area under cultivation between 2016 and 2017 can thus be explained by both an increase in the number of opium poppy farmers and an increase in the average area under cultivation per farmer.

FIGURE 7 PERCENTAGE OF OPIUM POPPY FARMERS REPORTING A CERTAIN CHANGE OF INDIVIDUAL AREA UNDER CULTIVATION IN 2017 WITH RESPECT TO 2016, BY REGION



Opium cultivation took place in areas with limited development opportunities

When comparing opium poppy cultivating villages with poppy-free villages, it becomes apparent that opium poppy cultivation is strongly linked to more limited access to essential infrastructure and services.

The MCN/UNODC village surveys of recent years asked village headmen about:

- access to a health care centre or medical clinic,
- access to a health care centre or medical clinic with female staff available,
- availability of schools for boys and for girls,
- access to electricity from the grid (public electricity),
- access to roads and public transportation,
- farmers' associations and small scale industries,
- availability of a local market to sell produce.

The results have been very consistent over the years and have shown that opium poppy villages had – on average – significantly less access to infrastructure and services were relevant for sustainable development. A detailed analysis of the differences can be found in the MCN/UNODC report “Sustainable development in an opium production environment - Afghanistan Opium Survey Report 2016” and in a recent issue of the UNODC Bulletin on Narcotics.³¹

With opium-poppy cultivation becoming more and more wide-spread the difference between opium poppy villages and poppy-free villages might become smaller. This was already observed in the distance to markets. Easy access to markets is imperative for obtaining sufficient household income and a lack of close-by markets might make opium poppy cultivation more attractive. The difference in distance to markets between opium-poppy villages and non-opium-poppy villages became less important over the years as more villages with better access to markets engaged in opium poppy cultivation,³² which indicates that other factors than market access influenced the decision to start cultivating opium poppy. Strengthening

³¹ <https://www.unodc.org/unodc/en/crop-monitoring/index.html>; García-Yi, J. “Building resilience to opium poppy cultivation by strengthening the design of alternative development interventions: evidence from Afghanistan” in UNODC Bulletin on narcotics, Volume LXI, 2017, “Alternative development: practices and reflections”.

³² See as well “Sustainable development in an opium production environment - Afghanistan Opium Survey Report 2016”

the resilience of poppy-free villages to cultivation is thus key for containing opium poppy cultivation in Afghanistan.



A woman weaving in Afghanistan. Source: MCN/UNODC.

Discussion

The results of the MCN/UNODC village survey demonstrate that the Afghan opium economy in 2017 can be considered as an important pillar of Afghanistan's economy.

Opium poppy, being a lucrative cash crop with well-established markets and trade networks, has become a crucial component in securing the livelihoods of many Afghans who engaged in cultivation, worked on poppy fields or participated in the illicit drug trade. Opium poppy provided much needed income to many impoverished farming households in rural areas, as well as to many landless persons, often migrant workers, who worked as opium poppy harvesters on the fields. While no numbers are available, the sheer size of opium production in 2017 suggested that many more Afghans sustained themselves with income from the trade with opiates, as well.

Opium poppy farmers invest their income from opium in food, paying debt, and to cover medical expenses. Investment in property, education, or other activities that have potential in building alternatives to opium poppy cultivation, were reported only by few farmers and more often by farmers who cultivate opium poppy infrequently. The potential that opium poppy cultivation has for sustainably improving livelihoods of farmers thus seems to be limited.

MCN/UNODC village surveys have found consistently that opium poppy cultivation takes place predominantly in areas with more limited access to development infrastructure and services and with more limited access to licit economic opportunities. Scarce employment opportunities, lack of quality education and limited access to markets and financial services continue to contribute to the vulnerability of farmers towards opium poppy cultivation.

While the income from opium production boosts the national economy, particular in rural areas where poverty and food insecurity are most extreme, an illicit economy of such a size is a threat to sustainable economic development. The illegal economy operates in parallel to licit economy and outside of government control. As such it deprives the country of urgently needed resources for investments in development or infrastructure and discourages private and public investments in licit economic sectors. Opium and heroin are Afghanistan's most successful export products which have well-established markets

and distribution networks. The size and prominence of the opium economy makes the replacement of opiate production as an economic factor challenging.

Moreover, opium poppy and its related economy funds insurgency and anti-government groups. In 2017, such groups incurred up to US\$ 330 million in form of taxes on opium production and further processing and trafficking of heroin to the border. Profits from drug trafficking are also used for corruption and bribery, which weakens the trust of the population in the government and thus increases the propensity of the population to engage in the illegal economy.

A comprehensive strategy is needed that takes into account the needs and opportunities of the rural population and considers that the dependency of the population on opium poppy is in many cases not simply related to the income generated by opium sales, but rather to the lack of sustainable access to both physical and economic markets for selling alternative products, and to the overall limited opportunities of villages in terms of social and economic development, governance and security.

Addressing security and tackling the illicit economy while fostering economic development is thus key to achieving sustainable development in rural Afghanistan.



Solar panel on a field in Afghanistan. Source: MCN/UNODC

Peace and security

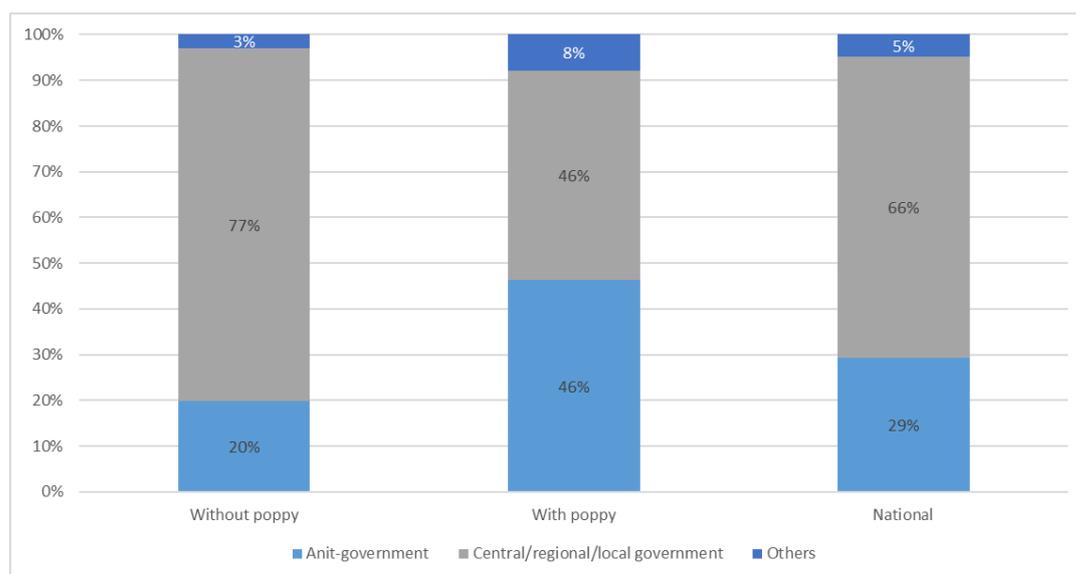
Link between government control and opium poppy cultivation

There is a clear and well-established link between lack of government control, insecurity and increased opium poppy cultivation. In 2017, 34 per cent of all headmen reported in the survey that the village was not under the control of the government. Among those, 29 per cent reported that it was under the control of insurgency or anti-government elements and 5 per cent reported “others”.³³ The remaining 66 per cent of village headmen reported that the government was in control of the village.

The notion of government control reflected the perception of the village headmen interviewed. What ‘control’ meant varied between different regions or even villages, and being under control of the government or under non-state authorities did not necessarily mean that one or the other had no influence in the village.³⁴

Where opium poppy cultivation took place, the share of villages outside of government control was much higher: 54 per cent of all headmen of poppy villages reported that the village was under control of the insurgency or other non-government groups. Among villages without opium poppy cultivation, the share was 23 per cent.

FIGURE 8 GOVERNMENT CONTROL IN VILLAGES AS REPORTED BY VILLAGE HEADMEN, BY OPIUM POPPY CULTIVATION STATUS, 2017



Note: The notion of government control reflected the perception of the village headmen interviewed.

Village headmen were also asked about who controlled the village in the previous year. According to the interviews, the government lost control over a little more than five per cent of all villages between 2016 and 2017, and gained control in less than one per cent. More than two-thirds of the villages (68 per cent) where the government lost control, cultivated opium poppy.

Notably, in Hilmand, where opium poppy cultivation increased by 79 per cent in 2017, headmen reports indicated that the government lost control over 26 per cent of the villages (17 out of 66 sampled villages) between 2016 and 2017. In 2017, not a single headman from the sampled villages reported that the village

³³ No information was provided to what kind of groupings “others” refer.

³⁴ See as well Mansfield, David, *Understanding Control and Influence: What Opium Poppy and Tax Reveal about the Writ of the Afghan State* (AREU, August 2017, <https://areu.org.af/wp-content/uploads/2017/08/1724E-Understanding-Control-and-Influence1.pdf>) on varying degrees of control of state and non-state authorities in Afghanistan.

was under control of the government. This reflected media reports that the government lost control over rural Hilmand.

Map 2 and Map 3 show the villages sampled in the opium survey by government control and by change of control according to the village headmen. The number of villages under government control was limited particularly in Hilmand, Uruzgan and in the north of Kandahar. Districts with high levels of poppy cultivation seemed to be predominantly under control of non-government authorities.

TABLE 3 CONTROL OVER THE VILLAGE, AS REPORTED BY THE VILLAGE HEADMEN, 2017

Region	Anti-government	Central/ regional/ local government	Others
Central	25%	71%	3%
Eastern	54%	45%	1%
North-Eastern	16%	83%	1%
Northern	16%	75%	9%
Southern	35%	62%	3%
Western	36%	54%	10%
National	29%	66%	5%

Note: based on 1,371 responses from village headmen.

TABLE 4 DISTRIBUTION OF SAMPLED VILLAGES BY CHANGE IN CONTROL OVER THE VILLAGE, AS REPORTED BY THE VILLAGE HEADMEN, 2016 TO 2017

Who was in control 2016?	Who was in control 2017?		
	Anti-government	Central/ regional/ local government	Others
Anti-government	25%	1%	1%
Central/ regional/ local government	4%	65%	1%
Others	0.1%	0.0%	3%

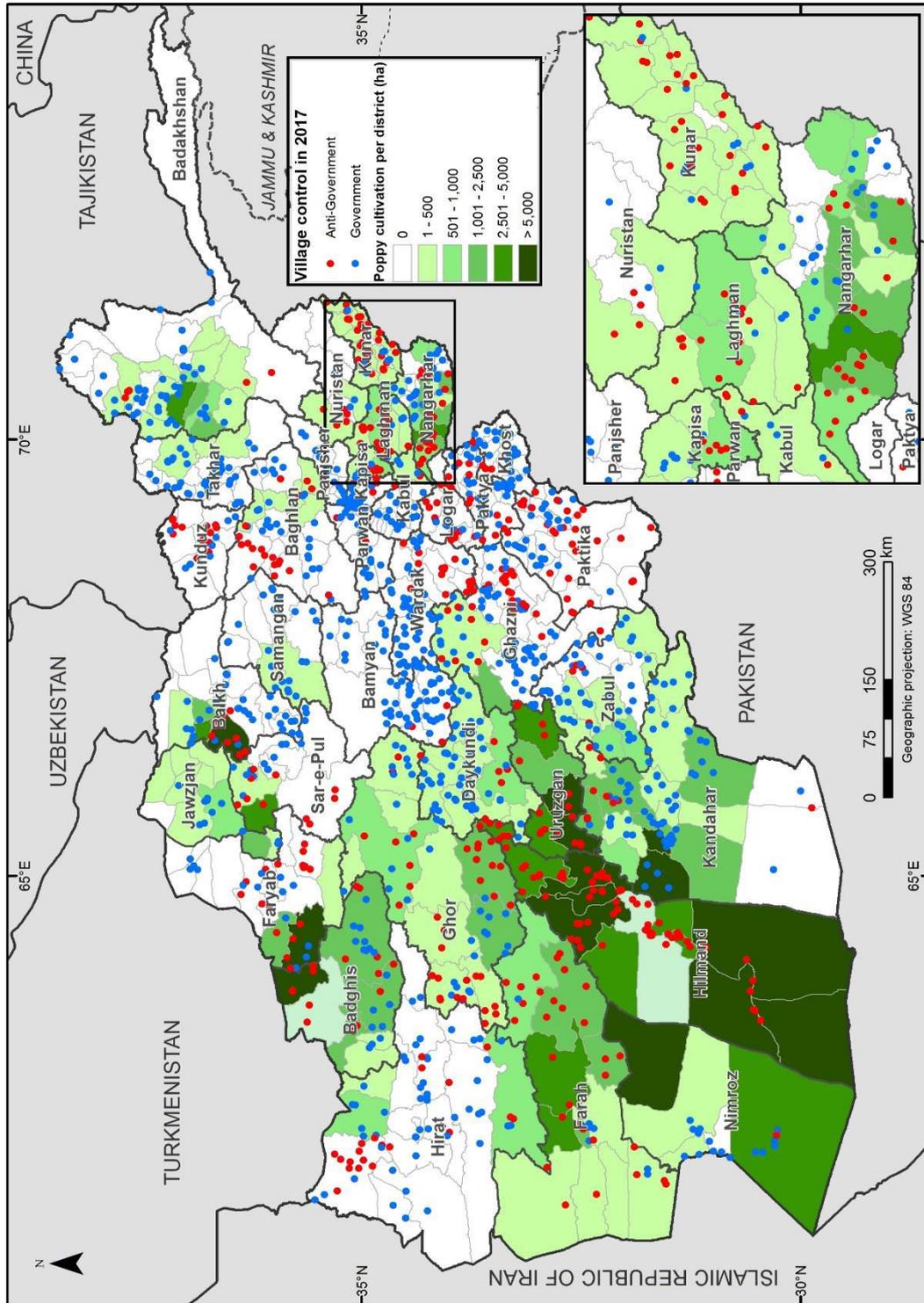
Based on 1,369 responsive villages. Example: in 4 per cent of the sampled villages, control changed from government in 2016 to anti-government in 2017.

Opium poppy cultivation took place and expanded predominantly in areas without government control. There were two main exceptions: in the Central region, large areas were outside government control and free from opium poppy cultivation, and in Badakhshan, where significant levels of opium poppy cultivation took place in areas under government control.

Not only the presence or absence of the government was linked to opium poppy cultivation, but also the relationship of villagers to the government seemed to play a role. Findings from in-depth research of UNODC on alternative development programmes in Afghanistan showed that lack of trust in the government was a strong explanatory factor for the presence of opium poppy cultivation, as well.³⁵ The research found that villagers who did not trust the government to protect its citizens or to guard them against corruption, were more likely to cultivate opium poppy.

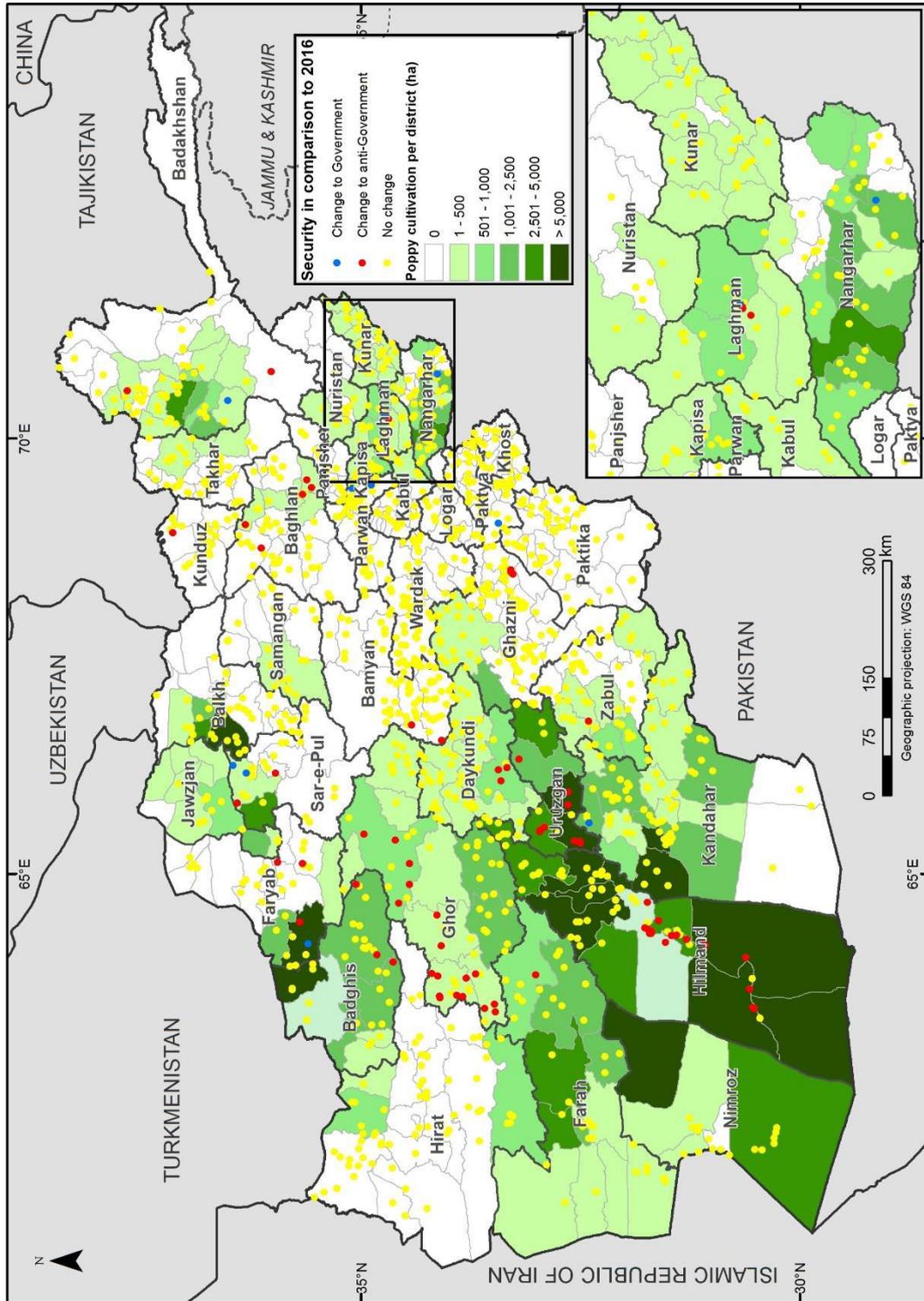
³⁵ UNODC, "Baseline report and impact assessment of alternative development projects in Afghanistan", forthcoming.

MAP 2 GOVERNMENT CONTROL IN SAMPLED VILLAGES, AS REPORTED BY VILLAGE HEADMEN, 2017



Source: Afghanistan opium cultivation and production 2016, UNODC/ICN Government of Afghanistan.
 Note: the boundaries and names shown and the designations used on this map do not imply official endorsement or acceptance by the United Nations. Dashed lines represents undetermined boundaries. Dotted line represents approximately the Line of Control in Jammu and Kashmir. The final status of Jammu and Kashmir has not yet been agreed upon by the parties.

MAP 3 CHANGE IN GOVERNMENT CONTROL IN SAMPLED VILLAGES, AS REPORTED BY VILLAGE HEADMEN, 2016 AND 2017

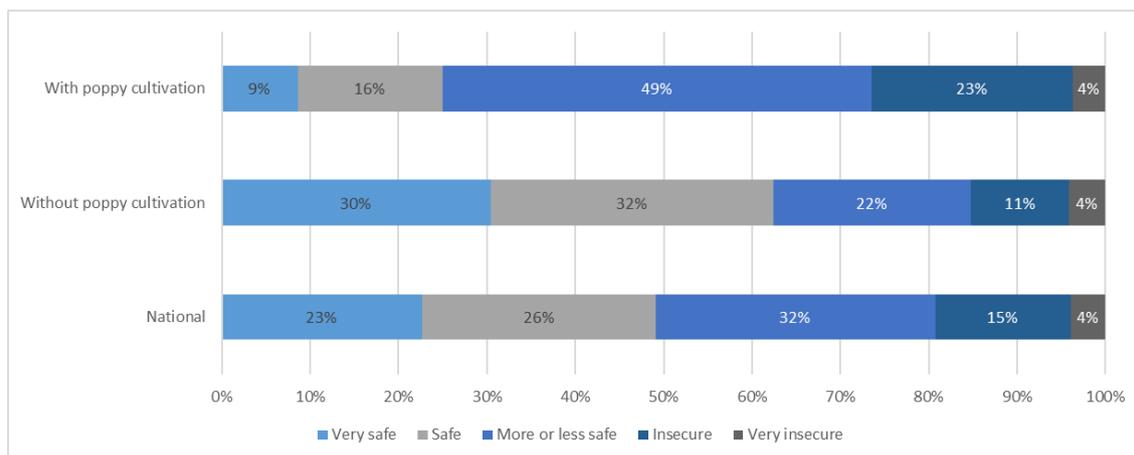


Source: Afghanistan opium cultivation and production 2016, UNODC/MCN Government of Afghanistan.
 Note: the boundaries and names shown and the designations used on this map do not imply official endorsement or acceptance by the United Nations. Dashed lines represent undetermined boundaries. Dotted line represents approximately the Line of Control in Jammu and Kashmir agreed upon by India and Pakistan. The final status of Jammu and Kashmir has not yet been agreed upon by the parties.

Insecurity and opium poppy cultivation

Village headmen were asked to assess whether the village was very safe, safe, more or less safe, insecure or very insecure. At the national level, about a fifth of village headmen (19 per cent) assessed that their village was insecure or very insecure. Among villages with opium poppy cultivation 27 per cent of headmen considered their village as insecure or very insecure, whereas only 15 per cent of villages without opium poppy cultivation reported the same.³⁶ See Map 4.

FIGURE 9 SECURITY ASSESSMENT OF VILLAGE HEADMEN, BY OPIUM POPPY CULTIVATION STATUS, 2017



Overall, almost every fifth village headmen assessed that the security situation had deteriorated when compared to 2016. According to the headmen, security deteriorated specifically in central and southern Hilmand, in parts of Ghor and Faryab, but as well in poppy-free provinces such as Logar. See Map 5.

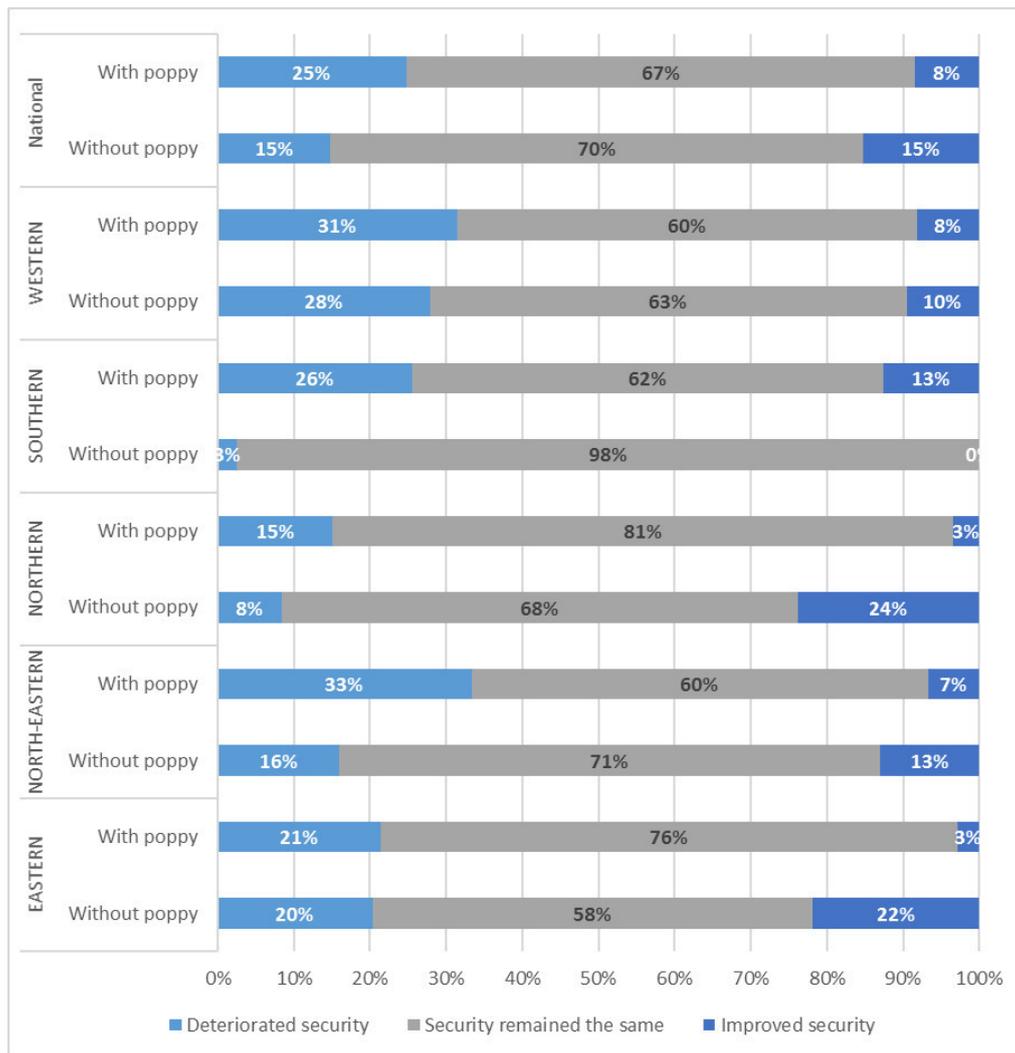
Village headmen of villages with opium poppy cultivation reported more frequently that the situation deteriorated. Among opium-poppy villages, 25 per cent of headmen reported a deteriorating security situation while only 8 per cent reported that the security had improved when compared to the last year. The remaining 67 per cent reported that the situation remained the same. In villages without opium poppy cultivation, 15 per cent reported a deterioration, 15 per cent an improvement and 70 per cent reported that the situation remained the same between 2016 and 2017.

TABLE 5 CHANGE IN THE SECURITY SITUATION IN THE VILLAGE ACCORDING TO VILLAGE HEADMEN, 2016-2017

Region	Deteriorated	Remained the same	Increased
Central	13%	72%	14%
Eastern	21%	67%	12%
North-Eastern	18%	70%	12%
Northern	11%	73%	17%
Southern	22%	67%	11%
Western	29%	62%	9%
National	18%	69%	13%

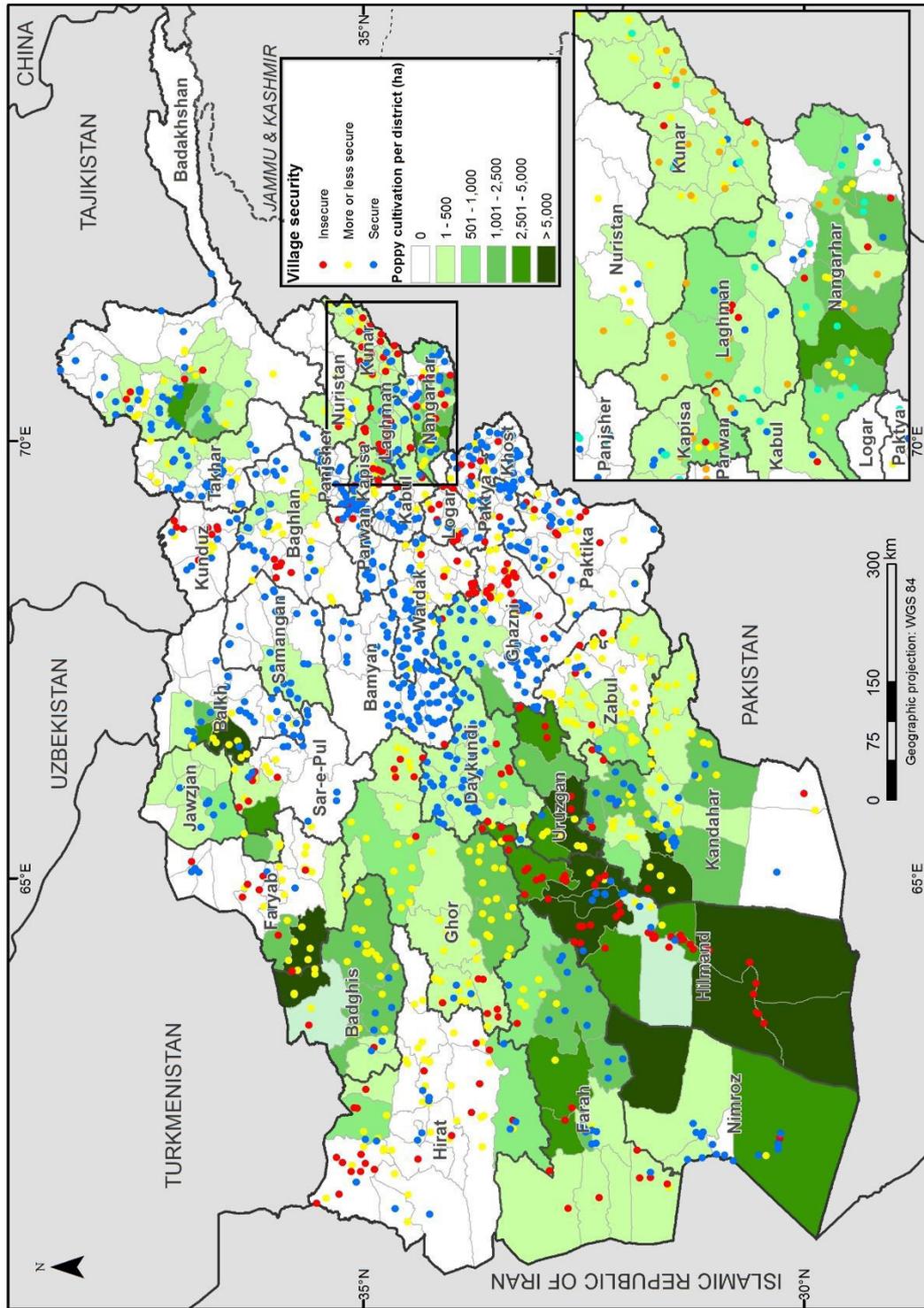
³⁶ Please note, that the reported security situation reflects the assessment of the village headmen. MCN/UNODC could not verify the reports.

FIGURE 10 CHANGE OF THE SECURITY SITUATION IN THE VILLAGE ACCORDING TO VILLAGE HEADMEN, BY POPPY-CULTIVATION STATUS, REGION AND NATIONAL, 2016 TO 2017



Note: The Central region has been excluded from the analysis because of a small number of sampled opium poppy village. These villages are represented in the national average.

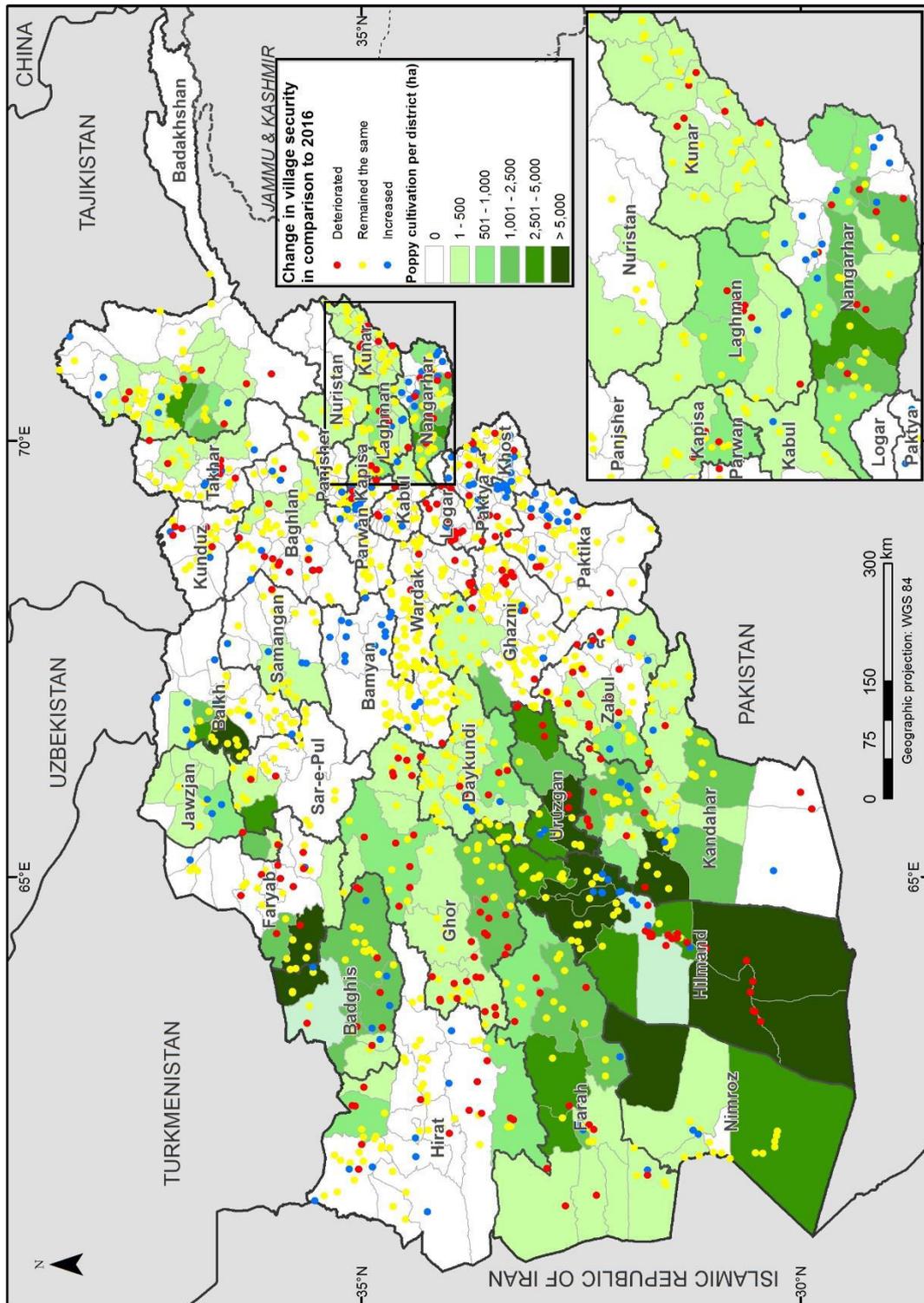
MAP 4 SECURITY LEVELS IN SAMPLED VILLAGES, ACCORDING TO VILLAGE HEADMEN, 2017



Source: Afghanistan opium cultivation and production 2016, UNODC/MCN Government of Afghanistan.
 Note: the boundaries and names shown and the designations used on this map do not imply official endorsement or acceptance by the United Nations. Dashed lines represents undetermined boundaries. Dotted line represents approximately the Line of Control in Jammu and Kashmir agreed upon by India and Pakistan. The final status of Jammu and Kashmir has not yet been agreed upon by the parties.

Note: For the purpose of this map, secure and insecure summarize reports of “very secure” and “secure”, and “very insecure” and “insecure”, respectively.

MAP 5 CHANGE IN SECURITY LEVELS IN SAMPLED VILLAGES BETWEEN 2016 AND 2017 ACCORDING TO VILLAGE HEADMEN



Source: Afghanistan opium cultivation and production 2016, UNODC/ICN Government of Afghanistan.
 Note: the boundaries and names shown and the designations used on this map do not imply official endorsement or acceptance by the United Nations. Dashed lines represents undetermined boundaries. Dotted line represents approximately the Line of Control in Jammu and Kashmir agreed upon by India and Pakistan. The final status of Jammu and Kashmir has not yet been agreed upon by the parties.

Opium poppy tax and funding of insurgency

In Afghanistan, opium poppy and other agricultural products can be subjected to taxes collected by state and non-state authorities. Information on who collects taxes in the village can yield insights on who is in control of the village and on the profits made by insurgency groups from illicit crop cultivation in Afghanistan. Given the unstable political situation, an understanding of how insurgency is funded is critical for designing policies that strengthen the national government and the rule of law.

The 2017 MCN/UNODC village survey asked headmen about whether opium poppy farmers paid any taxes on their opium sales, to whom they paid them and what percentage of earnings they paid. The responses reflected the perception of the village headmen and could not be verified by the interviewers.

According to village headmen, the collection of taxes on opium poppy sales was very heterogenous across the country. Map 6 shows the sampled opium poppy villages by tax-paying status. In Hilmand province in the Southern region, taxes on opium were collected in about 85 per cent of poppy villages. In Kandahar, also located in the South, only 25 per cent of opium poppy villages reported to pay opium taxes. In Nangarhar (Eastern region), 60 per cent of village headmen reported that opium poppy farmers paid an opium tax, but only seven per cent of headmen of the remaining provinces in that region.

Overall, based on the data collected in 2017, poppy farmers needed to pay taxes on their opium sales in an estimated 41 per cent of villages where opium poppy cultivation took place. Taking into account the different levels of opium production at the provincial level, it can be further estimated that 62 per cent,³⁷ or some 5,500 out of 9,000 tons, of the total 2017 opium harvest were subject to some form of tax.

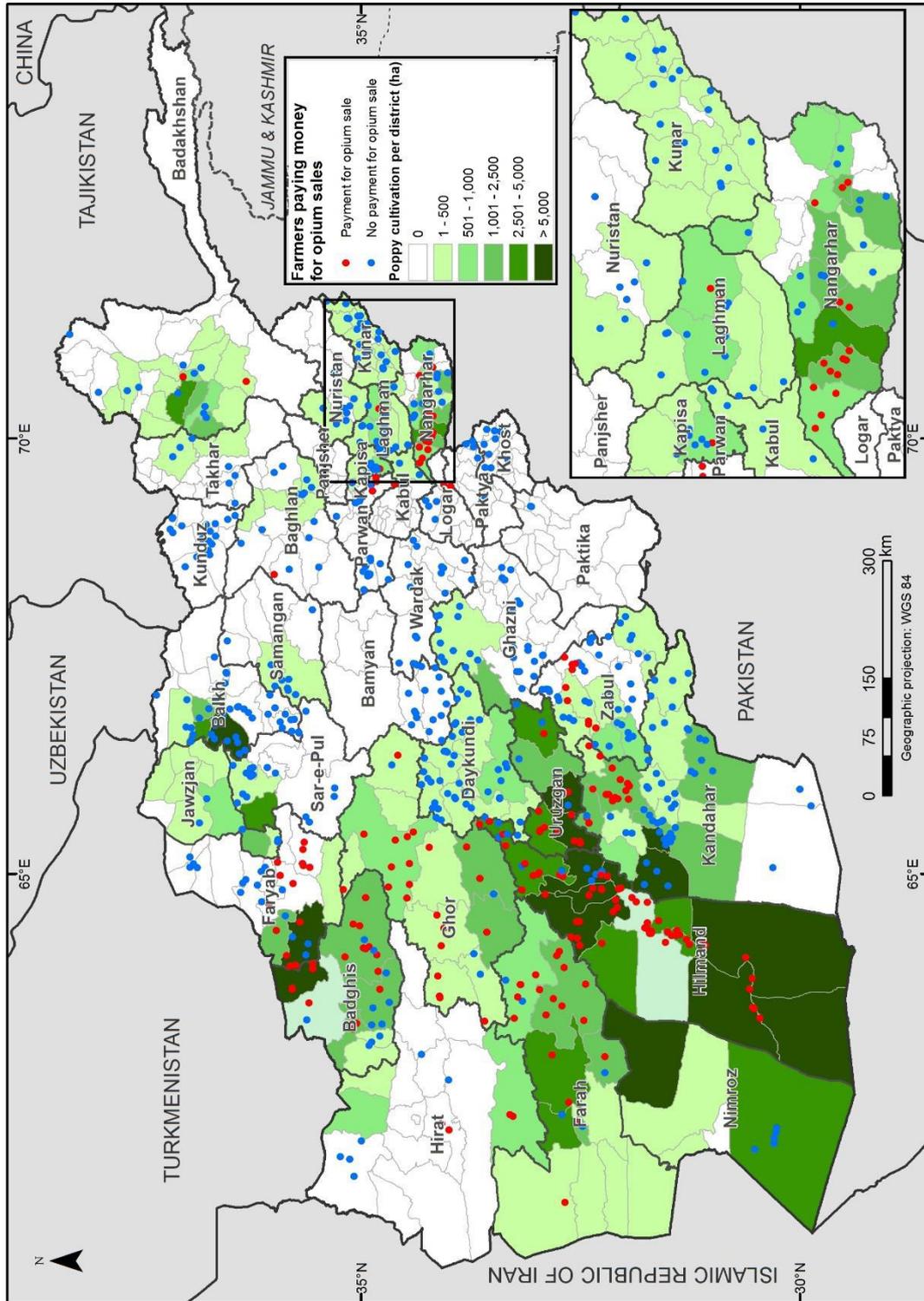
TABLE 6 PERCENTAGE OF VILLAGE HEADMEN OF OPIUM POPPY VILLAGES REPORTING THAT VILLAGERS PAY A TAX ON OPIUM SALES AND NUMBER OF RESPONSES, BY REGION, 2017

Region	Yes	Number of responding village headmen
Central	67%	9
Eastern	27%	67
North-Eastern	13%	15
Northern	18%	82
Southern	43%	214
Western	74%	82
National	41%	469
Percentage of opium harvest taxed	62%	5,500 tons

Note: National average represents the estimated share of poppy villages where farmers have to pay for their opium harvest. For the purpose of the estimate of the percentage of the national opium production being taxed, the average share of tax-paying poppy-villages per province was calculated and weighted by provincial production estimates of 2017. It is assumed that the share of villages reporting to pay tax is equivalent to the share of the opium production of that province being taxed.

³⁷ For the purpose of this estimate the average share of tax-paying poppy-villages per province was calculated and applied to the provincial production estimates of 2017. It is assumed that the share of villages reporting to pay tax is equivalent to the share of the opium production of that province being taxed.

MAP 6 SAMPLED OPIUM POPPY VILLAGES AND TAXES ON OPIUM SALES, AS REPORTED BY VILLAGE HEADMEN, 2017



The reported average tax on opium sales varied between 2 and 20 per cent of the sales value of opium, with half of the values lying between 4 and 10 per cent. The geographic differences were not as pronounced as in the share of villages where the harvest was taxed, but still present. While most provinces averaged at about a 10 per cent tax, farmers reported an average tax as high as 16 per cent in Zabul and as low as 4.5 per cent in Uruzgan.

TABLE 7 RESPONSES OF VILLAGE HEADMEN TO "WHAT PERCENTAGE OF OPIUM EARNINGS IS PAID IN FORM OF TAXES?" AND NUMBER OF RESPONSES, 2017

Region	Average tax rate (%)	Number of responses
Central	9.7	6
Eastern	8.7	18
North-Eastern	10.0	1
Northern	13.0	15
Southern	7.6	78
Western	9.2	58
National	8.8	176

Note: National average represents regional averages weighted by regional production levels.

Combining the estimates on the share of the harvest taxed and the average tax rates yielded a total tax revenue of 5.3 per cent of the opium sales in 2017 (farm-gate value). This corresponded to US\$ 74 million (65 – 82 million) being incurred in the form of opium taxes from the farm-gate value of opium in 2017.

The MCN/UNODC village survey 2017 asked village headmen about the recipients of the opium poppy taxes. Responses were open-ended, meaning that the headmen could report freely to whom they thought that villagers paid their taxes. It has to be noted that taxes in rural Afghanistan can be complex and are often paid to more than one player,³⁸ however, this complexity cannot be fully captured by the MCN/UNODC village survey, which intends to provide a national overview of the situation.

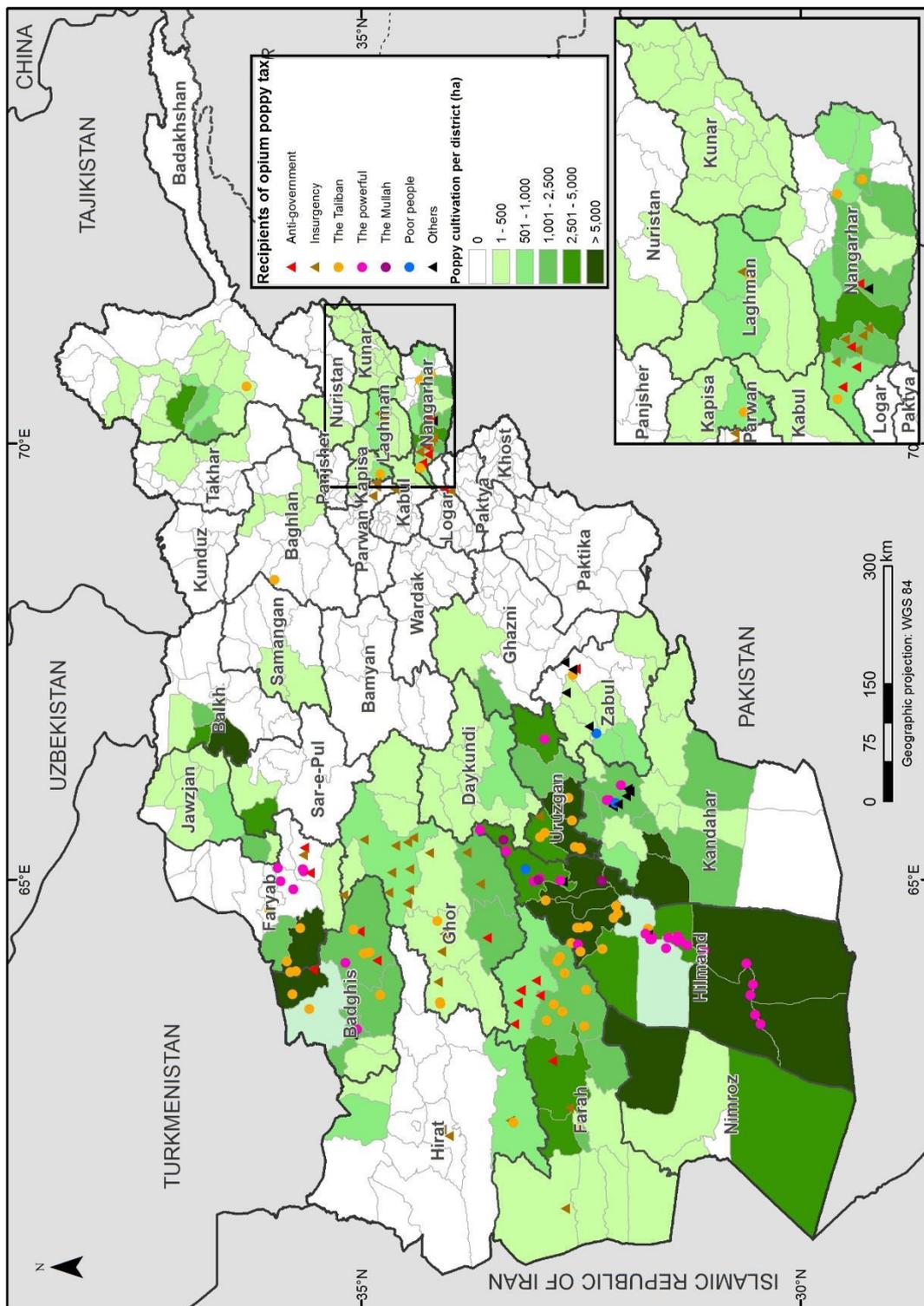
A total of 66 per cent of all headmen reported that the taxes were paid to either the Taliban (32 per cent), insurgency groups (22 per cent) or anti-government groups (12 per cent). A share of 18 per cent reported to pay taxes to 'the powerful'.³⁹ This answer was provided mostly by village headmen of Hilmand province, and – according to the interviewers – referred to local power-holders in Hilmand, which included local insurgency groups, the Taliban, local government and non-government officials including local police forces. In all villages where 'the powerful' were mentioned, village headmen reported that anti-government elements or insurgency controlled the village.

The information on the groupings receiving taxes is provided as reported by the village headmen. Insurgency/anti-government might have been used interchangeably and no further information on the nature of these groupings was available. It therefore cannot be excluded that some mentionings of insurgency/anti-government referred to the Taliban. The relationship and affiliation of 'the powerful' to the Taliban and/or insurgency was not investigated in the village survey.

³⁸ Mansfield, David, Understanding Control and Influence: What Opium Poppy and Tax Reveal about the Writ of the Afghan State (AREU, August 2017, <https://areu.org.af/wp-content/uploads/2017/08/1724E-Understanding-Control-and-Influence1.pdf>).

³⁹ The answer these village headmen provided, *خُواکمن* in Pashto, translated to 'the mighty' or 'the powerful' in English.

MAP 7 RECIPIENTS OF OPIUM POPPY TAX IN SAMPLED VILLAGES (VILLAGES WITHOUT OPIUM TAX ARE NOT SHOWN), ACCORDING TO VILLAGE HEADMEN, 2017



Source: Afghanistan opium cultivation and production 2016, UNODC/MCN Government of Afghanistan.
 Note: the boundaries and names shown and the designations used on this map do not imply official endorsement or acceptance by the United Nations. Dashed lines represents undetermined boundaries. Dotted line represents approximately the Line of Control in Jammu and Kashmir agreed upon by India and Pakistan. The final status of Jammu and Kashmir has not yet been agreed upon by the parties.

The amount of taxes collected by each group depends on the proportion of the opium harvested in villages controlled by the group⁴⁰ and the average tax rate applied. The following table shows the percentage of the total opium production taxed by group of recipients, the percentage of the sales value incurred, and the amount of taxes collected from the farm-gate value of opium. The last column shows the amount of taxes collected if the same groups applied a similar tax to the earnings from manufacturing and trafficking of opiates after the farm-gate. The values presented correspond to 5.3 per cent of the value of the opiate economy in 2017, which was estimated at US\$ 4.1 – 6.6 billion (this range included the farm-gate values of the opium production).

To provide an example, the Taliban secured at least US\$ 26 million in taxes from the farm-gate value of opium alone and up to US\$ 116 million if they collected a similar share of taxes on the earnings from onwards manufacturing and trafficking of opiates in Afghanistan. It cannot be excluded that some of the earnings attributed to ‘insurgency’ and ‘anti-government’ are to be accounted to the Taliban.

TABLE 8 PERCENTAGE OF OPIUM HARVEST TAXED, PERCENTAGE OF FARM-GATE VALUE ACCRUED AND INCOME INCURRED FROM TAXING OPIUM POPPY SALES, BY GROUP OF RECIPIENTS, 2017

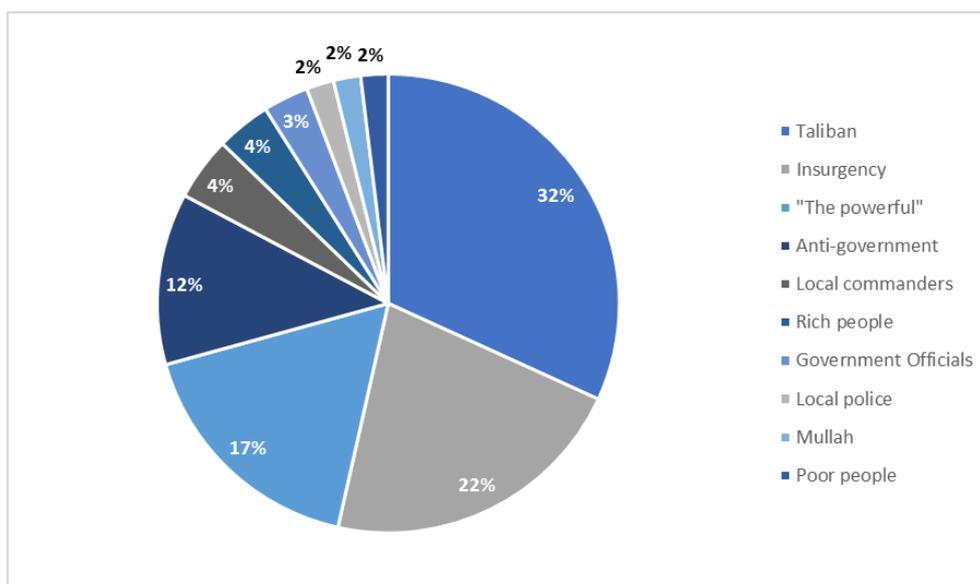
	Percentage of total opium production taxed	Percentage of farm-gate value accrued from taxing opium	Million US\$ from the farm-gate value	Million US\$ of the value of opiates (farm-gate value and onwards manufacturing and trafficking)
“The powerful”	24%	1.9%	26	78-124
The Taliban	21%	1.8%	26	76-121
Others	8%	0.6%	9	25-41
Anti-government	4%	0.5%	7	21-34
Insurgency	4%	0.4%	6	18-29
National average/total	62%	5.3%	74 (65 – 81)	219-349

Notes: Values presented are a combined estimate of the number of villages reported to pay taxes on opium sales per province, an average, regional tax rate, and the distribution of the recipients per province. It is assumed that the share of villages reported to pay taxes in a province is equivalent to the share of the opium harvest taxed in that province. Estimates need to be seen as indications of the order of magnitude rather than robust statistical estimates.

The groups of recipients are reported here as they were provided. Insurgency/anti-government might have been used interchangeably. Since no further information on the nature of these groupings was available, it cannot be excluded that some of the answers might refer to the Taliban even if they are not explicitly named. The relationship and affiliation of ‘the powerful’, local power-holders in Hilmand, to the Taliban and/or insurgency is unknown.

⁴⁰ Given the large heterogeneity within regions, the national estimate was calculated on basis of provincial estimates weighted by production. Some provincial estimates are based on a limited number of samples. In contrast to area and production estimates, these results are based on less robust data have to be interpreted with caution. Estimates are considered as indication of the order of magnitude instead of a robust statistical estimate. See Table 26.

FIGURE 11 PERCENTAGE OF VILLAGE HEADMEN NAMING A CERTAIN RECIPIENT OF OPIUM TAXES , 2017



Note: Based on 159 responses from village headmen in opium poppy cultivating villages where taxes were collected. The recipients are provided as reported. Insurgency/anti-government might have been used interchangeably. Since no further information on the nature of these groupings was available, it cannot be excluded that some of the answers might refer to the Taliban even if they are not explicitly named.

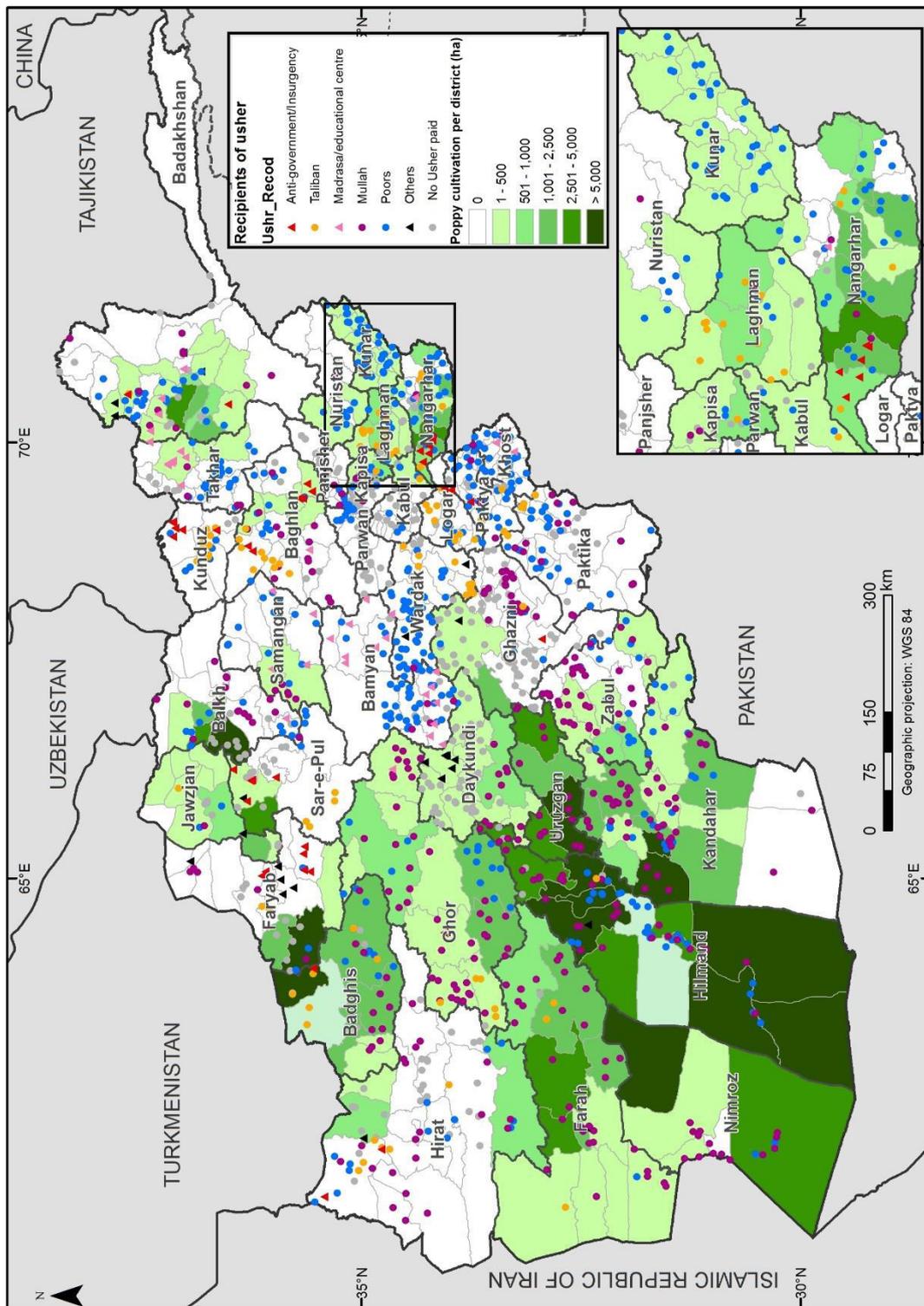
Opium poppy is not the only source of funding for insurgency groups. The MCN/UNODC village survey collected evidence that non-state authorities, including the Taliban, use the traditional ushr to fund their activities. Ushr denotes the traditional Islamic tithe on agricultural production, usually about 10 per cent, which is payable on the harvest a farmer makes. The term ushr combines many forms of taxes, including Zakat, the Muslim tradition of alms-giving.

Paying ushr was a wide-spread phenomenon. Overall, 77 per cent of all headmen reported that farmers pay ushr. The highest percentage was found in the North-eastern region with 87 per cent, the lowest in the Central region with 63 per cent.

Based on the data collected, it could be estimated that the Taliban collected ushr in 7 per cent of all villages, and anti-government elements/insurgency in another 3 per cent. The Taliban were named most often in the Eastern and Western regions (in 13 and 9 percent of all villages, respectively), followed by the Central and Northern region with 7 per cent each. Anti-government/insurgency groups were named most often in North-eastern and Northern regions. In the Southern region, perhaps reflecting the findings on powerful local commanders, neither Taliban nor anti-government/insurgency groups were mentioned, but mainly 'the poor' and 'the Mullah'.

Map 8 shows the geographical distribution of villages who reportedly paid to the Taliban and insurgency/anti-government. The Taliban were mentioned in comparatively high concentrations in Kunduz and the north-west of Baghlan, as well as in Logar and Laghman. Insurgency groups were mentioned in the East of Nangarhar and Faryab.

MAP 8 PAYMENTS OF USHR AND ITS RECIPIENTS IN SAMPLED VILLAGES, ACCORDING TO VILLAGE HEADMEN, 2017



Source: Afghanistan opium cultivation and production 2016, UNODC/ICN Government of Afghanistan.
 Note: the boundaries and names shown and the designations used on this map do not imply official endorsement or acceptance by the United Nations. Dashed lines represents undetermined boundaries. Dotted line represents approximately the Line of Control in Jammu and Kashmir agreed upon by India and Pakistan. The final status of Jammu and Kashmir has not yet been agreed upon by the parties.

The most commonly named recipients of the ushr were ‘the poor’ (35 per cent of all villages) and ‘the Mullah’ (28 per cent of all villages). In the South, ushr was almost exclusively paid to ‘the poor’ and ‘the Mullah’.

FIGURE 12 SHARE OF VILLAGE HEADMEN NAMING A CERTAIN RECIPIENT OF USHR, THE TRADITIONAL ISLAMIC TITHE ON AGRICULTURAL PRODUCTION, 2017

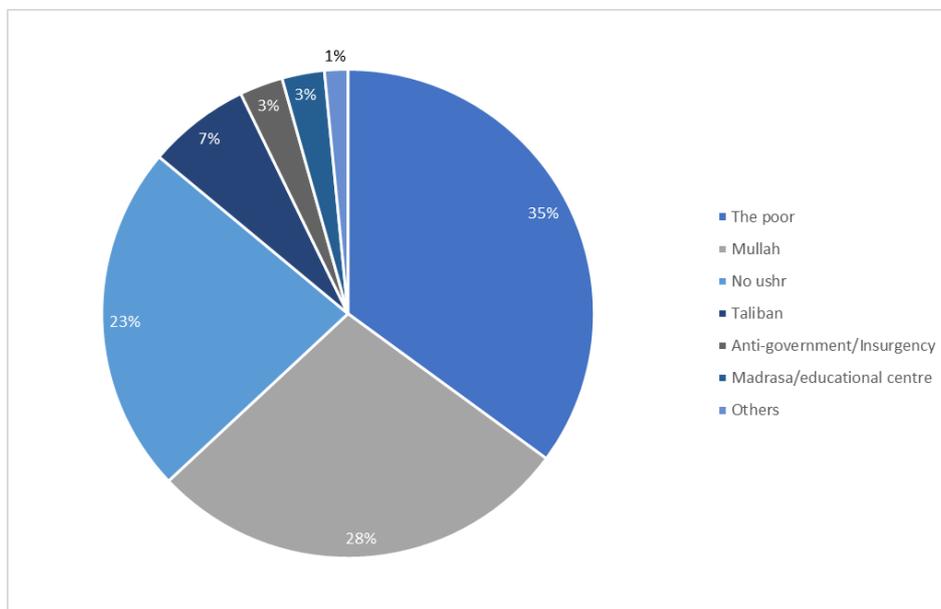


TABLE 9 RECIPIENTS OF 'USHR', INCLUDING VILLAGES WITHOUT USHR, BY REGION, 2017

Recipients	Central	Eastern	North-Eastern	Northern	Southern	Western	National
To the poor	41%	59%	45%	35%	24%	18%	35%
To Mullah	12%	5%	12%	19%	54%	57%	28%
No ushr	37%	18%	13%	21%	19%	14%	23%
To Taliban	7%	13%	8%	7%	0%	9%	7%
Anti-government/ Insurgency	1%	4%	7%	7%	0%	2%	3%
Madrasa/ educational centre	1%	1%	11%	9%	0%	0%	3%
Others	1%	0%	4%	3%	2%	0%	2%

Note: Based on 1,365 responsive villages. Information as provided by the village headmen.

When comparing opium poppy cultivating villages with villages without opium poppy cultivation, the village survey found that ushr was slightly more often collected in villages with opium-poppy cultivation (85 per cent) than in villages without opium poppy (72 per cent).

If and how the presence of opium poppy tax and ushr are related was difficult to assess. It cannot be excluded that in areas where opium poppy was taxed, ushr was paid in its more traditional form as tithe for the support of the poor and religious communities. This seemed to be mainly the case in the South, where farmers almost exclusively reported these two recipients of ushr.



Source: Makeshift bridge across a river, Afghanistan. MCN/UNODC

Advance payments for opium poppy cultivation

One element which makes opium poppy cultivation attractive is the practice of advance payments for the opium poppy harvest. A farmer would receive credit in form of cash for agricultural inputs, such as seeds and fertilizers, or for exceptional expenses such as a wedding. The credit needs to be re-paid in form of raw opium after the harvest.

About 24 per-cent of headmen from opium-poppy villages reported that farmers in their villages received advanced payments for opium-poppy cultivation in 2017 (see Table 10). The percentage varied greatly year-by-year, in 2016 about 37 per-cent of headmen reported that farmers in their villages received advanced payments for opium-poppy cultivation, whereas in 2015, only 11 per cent of headmen reported the same.

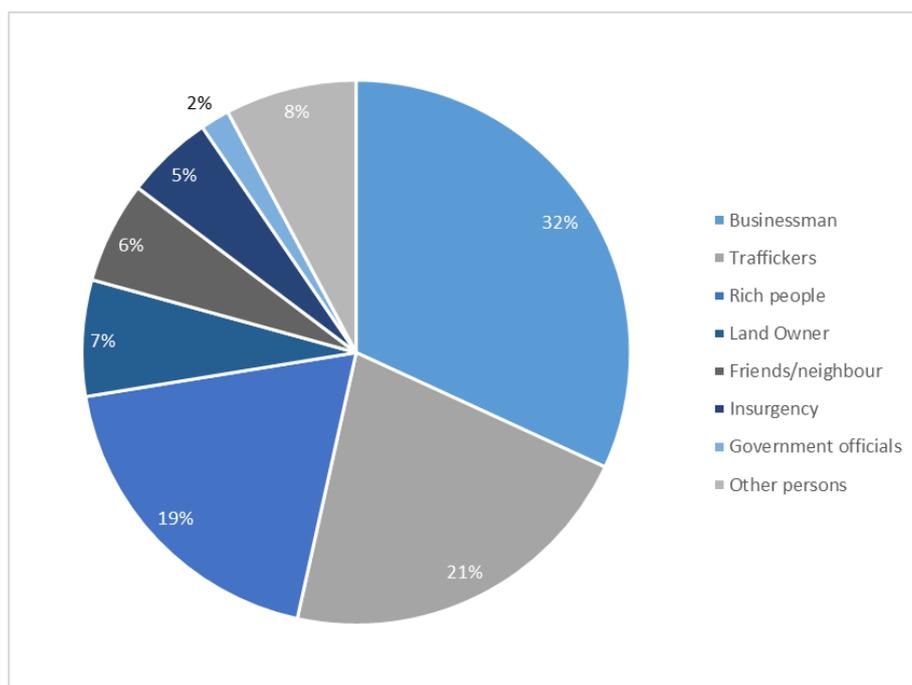
The nature and function of advance payments appeared to be different and independent from the system of taxing opium poppy sales. While non-government authorities such as the Taliban appeared to be heavily involved in collecting taxes on opium sales, advance payments were collected by private persons such as business men or traffickers (see Figure 12). More in-depth information around this practice and its relation to opium poppy cultivation would be needed to assess if and how insurgency groups were benefitting from this practice.

TABLE 10 PERCENTAGE OF VILLAGE HEADMEN IN OPIUM POPPY VILLAGES REPORTING THAT FARMERS HAD ACCESS TO ADVANCE PAYMENTS FOR OPIUM POPPY CULTIVATION, BY REGION, 2017

Region	Advance money available
Eastern	36%
North-Eastern	7%
Northern	14%
Southern	29%
Western	11%
National	24%

Note: Because of a very small number of samples, the Central and North-eastern regions have been excluded from the regional analysis, but are considered in the national average.

FIGURE 13 PROVIDERS OF ADVANCE PAYMENTS FOR OPIUM POPPY CULTIVATION, ACCORDING TO VILLAGE HEADMEN, 2017



Note: 'Others' include 'foreigners', 'friends', 'the powerful' and 'other people'.

Discussion and policy implications

The MCN/UNODC village survey 2017 confirmed the strong links between government control, insecurity and opium poppy cultivation in Afghanistan. It showed as well that a noteworthy proportion of the opium harvest is taxed by non-state authorities and insurgency groups such as the Taliban.

There is little disagreement regarding the high level of correlation between poor governance and illicit crop cultivation in Afghanistan.⁴¹ Government control can take many forms and what is understood as 'being under the control' of the government (or any non-state authority), can vary between different provinces and even villages. The notion of control in this report reflects the perception of the village headmen interviewed during the survey. Reporting of being under control of the government or non-state authorities does not exclude that one or the other player is influential in some form. There appear to be varying degrees of government influence and influence of local power-holders that are far from being a dichotomy.⁴²

The causal links behind absence of government and opium poppy cultivation can be manifold and may be closely linked to how government presence manifests itself. One element of perceived government control is the enforcement of the law: lack of government control may increase the perception that opium poppy can be cultivated with no or only little risk of legal repercussions (including eradication), which – in particular in absence of viable legal alternatives – can motivate more farmers to partake in opium poppy

⁴¹ García-Yi, J. "Building resilience to opium poppy cultivation by strengthening the design of alternative development interventions: evidence from Afghanistan" in UNODC Bulletin on narcotics, Volume LXI, 2017, "Alternative development: practices and reflections".

⁴² In Afghanistan, the relationship between the population, the government, and various non-state authorities – which include but are not limited to armed insurgent groups – has found to be complex and often fluid in nature, especially in rural areas. See as well Mansfield, David, Understanding Control and Influence: What Opium Poppy and Tax Reveal about the Writ of the Afghan State (AREU, August 2017, <https://areu.org.af/wp-content/uploads/2017/08/1724E-Understanding-Control-and-Influence1.pdf>).

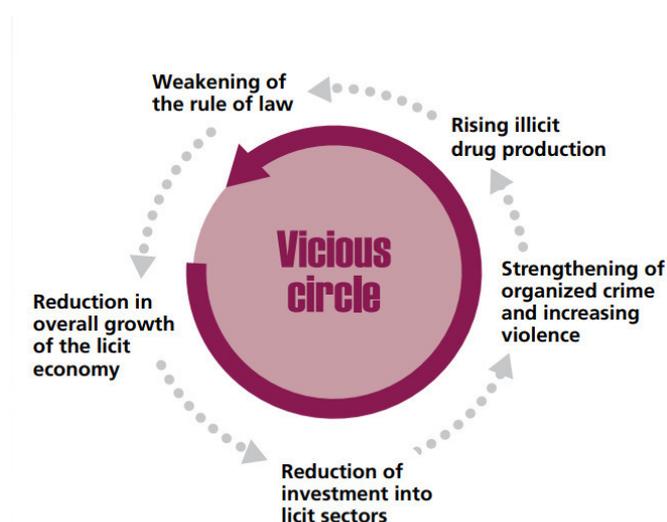
cultivation. Research has shown that farmers diversify their sources of income in areas not under government control, probably as risk mitigation strategy in an unsecure situation.⁴³

Lack of good governance and security can also reduce the sustainability of livelihoods by legal means. The absence of good governance, which manifests itself in the form of lack of schools, health care or security, hinders the development of licit markets, the accumulation of assets and the growth of sustainable economic activities in the legal sector of the economy.⁴⁴ This creates an environment that is conducive to the illegal economy and to increased influence of insurgency groups.

Another possible link between increased opium poppy cultivation and absence of government is active encouragement of opium poppy cultivation by insurgency, with the motive to increase funding for their activities through collecting taxes on the opium sales. The village survey did not collect any data on whether non-state authorities actively encouraged opium poppy cultivation. However, since 41 percent of village headmen of poppy villages reported some forms of taxes for opium poppy cultivation, it cannot be excluded that opium poppy cultivation is welcomed or even promoted by non-state authorities.

The lack of government control and opium poppy cultivation creates a vicious cycle. The absence of the government is a strong contributing factor for increased opium poppy cultivation, and opium poppy cultivation undermines the rule of law by funding insurgency and organised crime groups. The evidence provided by the MCN/UNODC village surveys suggests that improvements in public services and governability may assist to break that vicious cycle.

FIGURE 14 VICIOUS CYCLE OF ILLICIT DRUG PRODUCTION



Source: UNODC.

Source: UNODC World Drug Report 2015.

⁴³ UNODC, “Baseline report and impact assessment of alternative development projects in Afghanistan”, forthcoming.

⁴⁴ García-Yi, J. “Building resilience to opium poppy cultivation by strengthening the design of alternative development interventions: evidence from Afghanistan” in UNODC Bulletin on narcotics, Volume LXI, 2017, “Alternative development: practices and reflections”.

Heroin production 2017 and its economic value

Each year thousands of tons of opium are produced in Afghanistan and then converted into heroin to reach end-consumer markets around the globe. With the record high of production in 2017, a wave of high quality, low cost heroin will reach consumer markets across the world, with likely supply-induced consumption and related harms.

All the opium produced in Afghanistan is either consumed as raw opium in and outside of Afghanistan or further processed into heroin, which is then traded to end-consumer markets across the world.

It can be estimated that the 2017 harvest of 9,000 tons provides 1,100 - 1,400 tons of opium to meet the demand for opium consumption. The remaining 7,600 - 7,900 tons are potentially available for heroin production and can yield some 550 - 900 tons of heroin of export quality (purity between 50 and 70 per cent) or 390 - 450 tons of pure heroin base.

TABLE 11 ESTIMATED SHARES OF OPIUM PRODUCTION AVAILABLE FOR HEROIN PRODUCTION

Opium production 2017	Demand for unprocessed opium in the region	Potential production of heroin of export quality	Potential production of pure heroin base
9,000 tons (8,000 – 10,000)	1,100 – 1,400 tons	550 – 900 tons	390 – 450 tons

Sources behind the demand estimate, see Table 12.

A ratio of 18.5:1 (17.5:1 – 19.6:1) is used for converting opium to pure heroin base. For converting opium to 50% pure heroin, 9.2 kilograms (8.7 to 9.8 kilograms) of opium are assumed to be needed; for converting opium to 70% pure heroin, 12.9 kilograms (12.2 to 13.7 kilograms) of opium are assumed to be needed. For a detailed discussion of the heroin conversion ratios see “Afghanistan opium survey report 2014 – cultivation and production.” Ranges reflect different purities and the upper and lower bounds of the 95% confidence interval around opium production estimates 2017.

These values represent a potential heroin production: A noteworthy share of the opium and heroin production is seized or lost along the supply chain from source to destination countries, and a proportion of the product may not enter the market in the year of interest. The amount of heroin that actually reaches end-consumer markets is thus lower than this estimate.

There is great uncertainty around these estimates. While confidence in the opium production estimates is high, uncertainties around the conversion ratio from opium to heroin stem mainly from the wide range of possible purities of the product and from scarce data on the efficiency of the conversion from opium to heroin (i.e., how much opium is needed to produce one kilogramme of heroin). Uncertainties around the demand estimate are mainly associated with the assumptions around annual opium consumption per user.

The following presents the estimation process and its underlying assumptions in detail and discusses how much of the heroin is potentially produced inside Afghanistan and how much outside of it.

Estimation of the 2017 heroin production

Estimating the amount of heroin that one year’s opium production can yield, requires knowledge on a set of critical components:

- The share of raw opium that is consumed in the form of opium (demand for opium) and the remainder that is available for conversion to heroin within and outside of Afghanistan,
- the amount of heroin/morphine that can be produced from one kilogramme of raw opium (conversion ratio),
- and the purity of the heroin considered.

There is a clear understanding of the amount of opium produced, which is a compound estimate of area under cultivation and annual opium yield per hectare. The factors that define annual heroin production

estimates are much less clear as only secondary data can be used as a proxy. For example, the purity of the heroin is often unclear and only little is known about the conversion of opium to morphine and heroin.

Demand for raw opium in the region

Data reported to UNODC by member states, as well as academic sources, indicate substantial consumption of raw opium in Afghanistan, Iran and Pakistan. By using information from drug use surveys,⁴⁵ MCN/UNODC estimated that some 950 to 1,200 tons of opium are consumed annually in Iran and Pakistan, and some additional 160-200 tons are consumed in Afghanistan, totalling in approximately 1,100 – 1,400 tons of opium used for consumption. More details on the estimates are presented in the methodology section.

TABLE 12 ESTIMATED OPIUM CONSUMPTION IN AFGHANISTAN, PAKISTAN AND IRAN

	Iran and Pakistan	Afghanistan
Number of opium users	1,432,000 (1,257,000 – 1,607,000)	230,000 (210,000 – 260,000)
Average annual consumption	0.77 kilograms	0.77 kilograms
Estimated consumption in tons (range)	1,100 (970 – 1,230)	175 (160 – 200)

Sources: Afghanistan Ministry of Counter Narcotics/Ministry of Health/UNODC: *Drug Use in Afghanistan 2009 Survey* (average daily consumption and drug users in Afghanistan); UNODC/Pakistan Ministry of Interior and Narcotics Control: “Drug use in Pakistan 2013”; Ali Nikfarjam et al. (2016), “National population size estimation of illicit drug users through the network scale-up method in 2013 in Iran”, *International Journal of Drug Policy*, Volume 31, 2016 (opium users in Iran).

Conversion ratio of opium to pure heroin base

The amount of raw opium needed for producing pure heroin base depends on two main factors:⁴⁶

- the average morphine content of opium, which is the base for heroin,
- the efficiency of the heroin laboratory in extracting morphine from opium and in converting the yielded morphine to pure heroin base (laboratory efficiency).

Morphine content of opium is very well researched. Annual investigations undertaken from 2010 to 2015⁴⁷ resulted in an average morphine content of 12.35 per cent (95 per cent confidence interval ± 0.71 per cent). However, only little is known about the laboratory efficiency of heroin laboratories in Afghanistan.

The laboratory efficiency depends on how well (or efficient) raw opium is converted into heroin base.⁴⁸ There are two main steps: In the first step, the extraction step, morphine (and other alkaloids) are extracted from raw opium by adding hot water and readily available chemicals such as calcium oxide and ammonium chloride. In the second step, morphine base is converted to heroin base by adding costly, internationally controlled precursor substances such as acetic anhydride.

In a theoretical scenario, 100 kilograms of opium with a 12.35 per cent morphine content could yield 15.9 kilograms of pure heroin base (corresponding to 6.3 kilograms of opium per kilogram heroin). However, in

⁴⁵ Sources: Afghanistan Ministry of Counternarcotics/Ministry of Health/UNODC: *Drug Use in Afghanistan 2009 Survey* (average daily consumption and drug users in Afghanistan); UNODC/Pakistan Ministry of Interior and Narcotics Control: “Drug use in Pakistan 2013”; Ali Nikfarjam et al. (2016), “National population size estimation of illicit drug users through the network scale-up method in 2013 in Iran”, *International Journal of Drug Policy*, Volume 31, 2016 (opium users in Iran).

⁴⁶ For more details on the heroin production process in Afghanistan, please see *Bulletin on Narcotics*, vol. LVII, Nos. 1 and 2, 2005, pp. 11-31.

⁴⁷ In 2013 and 2014, UNODC/MCN also collected samples. These samples have been dried and stored and their analysis is in progress.

⁴⁸ Chemically it is Diacetylmorphine.

reality traffickers are not well-trained chemists and do not work under optimal conditions. Thus it is unlikely that all morphine is extracted from the opium and a that no morphine is lost at the conversion step to heroin.

The combined losses in both steps are reflected in “laboratory efficiency”,⁴⁹ which is a measure of the ability of traffickers and clandestine chemists to extract morphine from opium and to convert it into heroin. Laboratory efficiency can vary substantially, depending on factors such as the skills and efforts of the chemists producing the heroin, the availability and quality of precursor substances, and the equipment used.

To date, only one study⁵⁰ is available that has investigated laboratory efficiency in Afghanistan under local conditions. In this experiment, a laboratory efficiency⁵¹ of 34 per cent was achieved in the conversion of raw opium of low quality (8.5 per cent morphine content) to pure heroin base. The study has some limitations, including a limited number of experiments performed by only two “heroin cooks”. The main uncertainty surrounding the conversion ratio of opium to pure heroin base is thus due to a lack of information on the average efficiency of heroin laboratories in Afghanistan.

Using a 12.35 per cent morphine content together with 34 per cent of laboratory efficiency results in a conversion ratio of 18.5:1 for opium to pure heroin base, meaning that 18.5 kilogrammes of opium are needed to produce one kilogramme of pure heroin base.

TABLE 13 OPIUM CONVERSION TO PURE HEROIN BASE, ASSUMPTIONS AND RATIO⁵²

	Value
Average morphine content of opium	12.35 per cent (±0.71 per cent)
Laboratory efficiency	34 per cent
Chemical constant	1.29
Conversion ratio to pure heroin base	18.5:1 (17.5:1 – 19.6:1)

Note: range of the conversion ratio reflects the 95% confidence interval of the average morphine content. The chemical constant reflects the weight morphine gains when being converted to heroin base.

Purity of heroin in the market

Heroin base is hardly ever pure. At all stages of the conversion process impurities remain in the product and increase its volume. Heroin of higher purity is easier to traffic, which is one of the reasons why traffickers undertake the effort to purify the product. High quality heroin is predominantly found close to the source and at wholesale trade level. At later stages of the supply chain, at retail level, heroin is adulterated to increase its volume and thus its sales value.

Purity of heroin of export quality can vary greatly. Reported purities of heroin seized at the whole sale level of 2015 ranged between 20 per cent (15-25 per cent) in Kazakhstan, 25 to 60 per cent in Tajikistan (no point estimate provided), 70 per cent (60-80 per cent) in Italy and 70 per cent (65-85 per cent) in Lebanon. Turkey, an important transit country at the route between Afghanistan and Europe, reported 52 (24-84 per cent) in 2015.⁵³

⁴⁹ Laboratory efficiency is expressed as the percentage of actual amount of pure heroin base produced over the theoretically possible, maximum output (potential amount).

⁵⁰ Bulletin on Narcotics, vol. LVII, Nos. 1 and 2, 2005, pp. 11-31.

⁵¹ In the study, 70 kilograms of raw opium with 8.5% morphine content were converted to 2.9 kilograms of pure heroin hydrochloride, which is equivalent to 2.64 kilograms of pure heroin base – assuming no further losses.

⁵² Estimates have been updated with the latest available data and thus differ from the figures published in “Afghanistan opium survey-cultivation and production report 2017”.

⁵³ Source of all purities UNODC statistics - <https://data.unodc.org/>.

The data closest to the source are from the United States Drug Enforcement Agency, which conducted purity analyses of major seizures in Afghanistan.⁵⁴ The DEA reported an average purity of bulk seizures (reflecting export quality) of the highly-refined Afghan heroin of 76 per cent (based on 25 samples collected over four years). The average purity of the crude heroin base seized in Afghanistan was about 60 per cent (based on 21 samples over four years). DEA also received over 230 other samples of heroin from Afghanistan that were deemed to be “sham” or “junk” samples. These samples were not included in the averages presented.

Based on the available data, MCN/UNODC used a range of 50 -70 per cent purity for estimating the amount of heroin produced from the opium harvest and a laboratory efficiency of 34 per cent.

TABLE 14 OPIUM CONVERSION TO HEROIN OF EXPORT QUALITY, ASSUMPTIONS AND RATIO⁵⁵

	100 per cent pure heroin	70 per cent purity	50 per cent purity
Conversion ratio to heroin of a certain quality	18.5:1 (17.5:1 – 19.6:1)	12.9:1 (12.2:1-13.7:1)	9.2:1 (8.7:1-9.8:1)

The above is calculated by using the values in Table 13: 12.35% (±0.71%) morphine content; 34% laboratory efficiency.

⁵⁴ US Drug Enforcement Administration Special Testing and Research Laboratory analysis – October 2017

⁵⁵ Estimates have been updated with the latest available data and thus differ from the figures published in “Afghanistan opium survey-cultivation and production report 2017”.

FIGURE 15 PICTURES FROM THE MORPHINE EXTRACTION PROCESS IN AFGHANISTAN, 2005



Source: Bulletin on Narcotics, vol. LVII, Nos. 1 and 2, 2005.

FIGURE 16 PICTURES FROM HEROIN MANUFACTURE IN AFGHANISTAN, 2005

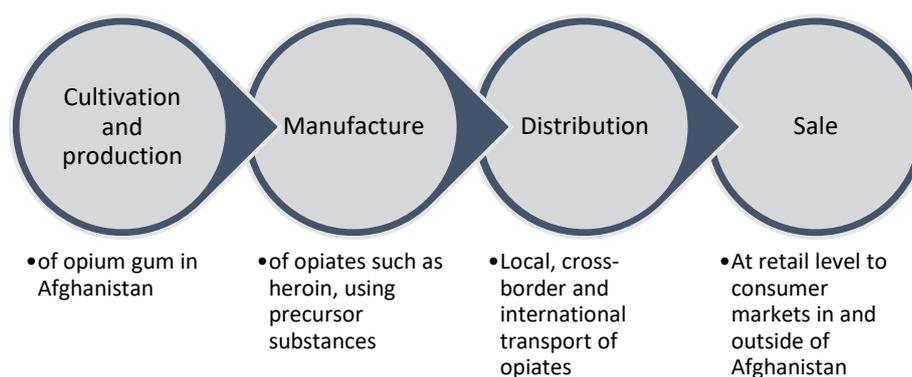


Source: Bulletin on Narcotics, vol. LVII, Nos. 1 and 2, 2005.

Value chain of Afghan opium

The production and trade with Afghan opiates is a business, primarily motivated by profit. Opiate manufacturing and trade can be divided into four stages: production of opium gum, manufacturing of opiates (heroin and its precursor morphine), distribution and retail. At each stage, income is generated that benefits different players. While cultivation of opium poppy and production of opium gum occur primarily in Afghanistan, distribution and final retail most often occur in major destination markets such as Europe.

FIGURE 17 VALUE CHAIN OF AFGHAN OPIATES



The farm-gate value of opium represents the potential gross amount earned from opium by farmers in a given year. It is the value of the first link of the value chain, of cultivation and production of opium gum. The farm-gate value is an important measure of the added value generated in rural communities by the cultivation and harvesting of opium. In contrast to the proceeds of onward processing and trafficking, which is assumed to mainly benefit external individuals, the proceeds of opium poppy cultivation most likely remain within rural communities.

The estimated farm-gate value of opium production in 2017 amounted to US\$ 1.4 billion (US\$ 1.23-1.55 billion), which is an increase of 58 per cent from its 2016 level. The increase in farm-gate value was mainly due to the 87 per cent increase in opium production in that year.

The value of the opium production at farm-gate - and thus the overall income of the Afghan rural population - is small when compared to the proceeds generated within the country from the illicit manufacture of opiates and onwards trafficking to the borders. It is insignificant when compared to the proceeds made by traffickers and organized crime groups who distribute opiates to the consumer markets in Europe and elsewhere.

Within Afghanistan, the by far the largest share of income is generated by opiate transformation and exports to neighbouring countries. Based on seizure data of opium and heroin in Afghanistan and neighbouring countries, it can be estimated that between 48 per cent and 56 per cent of the 2017 opium harvest was converted into heroin or morphine within Afghanistan and that the remainder was exported unprocessed.⁵⁶

The proceeds of Afghan traffickers from the processing of opium into morphine/heroin and from the export of processed and unprocessed opiates was estimated to range between US\$ 2.6-4.8 billion. It is the net

⁵⁶ The estimated amounts of unprocessed opium exported from Afghanistan exceeded by far the estimated demand for unprocessed opium. This, together with substantial seizures of morphine in Afghanistan's neighbouring countries suggests that heroin is manufactured as well outside of Afghanistan.

value of all exported opiates after the opium left the farm and represents the income from opiate manufacturing and trafficking from source to the borders of Afghanistan.⁵⁷

Onwards trafficking and sale in retail markets represent the largest piece of the total income generated by Afghan opiates. A 2015 UNODC study⁵⁸ on Afghan opiates trafficked to Western Europe through the Balkans estimated the total value of illicitly trafficked heroin and opium at some US\$ 28 billion per year, which was worth more than the entire GDP of Afghanistan in 2017 – and this estimate pertains only to opiates trafficked along the Balkan route and leaves out other important routes such as the Northern route to Central Asia and Russia.

FIGURE 18 VALUE OF THE AFGHAN OPIATE ECONOMY 2017 BY COMPONENT, AND ESTIMATED PROCEEDS FROM ONWARDS TRAFFICKING (AVERAGE 2010-2015)



Proceeds from onwards trafficking to markets through the Balkan route are an average of five years between 2010 and 2014; Sources: UNODC, "Drug money: the illicit proceeds of opiates trafficked on the Balkan route". Data on the value of the opiate economy 2016 are MCN/UNODC estimates. The value of onwards trafficking to consumer markets in Europe is a gross value. Seized opiates are not considered in these calculations.

The proceeds generated in the international trade hardly feed into Afghanistan's licit economy. Trafficking from Afghanistan's borders to end-consumer markets appears to be organized by nationals of countries other than Afghanistan with the result that these proceeds are – in some sense – lost to Afghanistan's economy.

There is thus also a shared international responsibility for the opiate problem of Afghanistan, with billions of dollars in profits made from trafficking of opiates to major consumer markets world-wide, amounts that do not benefit the Afghan economy. Moreover, hundreds of tons of precursor chemicals are being diverted from licit international markets and smuggled into the country each year.

All trade with illicit substances generates substantial illicit financial flows – between source and transit countries, and even more so between transit countries and countries of destination. The proceeds from wholesale and retail of opiates are laundered and further transferred to financial centres across the globe.

⁵⁷ Net value excludes the costs for imported precursor substances.

⁵⁸ UNODC (2015), *Drug Money: the illicit proceeds of opiates trafficked on the Balkan route*.

Reducing the Afghan opium production requires thus an approach that targets the supply chain of opiates along all its stages, from source to destination.

Part II: Statistical annex

UNODC/MCN conduct annual socio-economic surveys among the rural population in Afghanistan. The first part of the report focused on specific, selected topics that highlight current challenges arising from and related to increasing opium poppy production in the country. The second part of the report presents the underlying data in greater detail, but as well additional indicators that are collected each year (e.g., self-reported reasons for cultivation and per-hectare income from opium and wheat) and are presented here for providing a closed time-series.

The farm-gate value of the opium production

The farm-gate value of opium represents the potential gross amount earned from opium by farmers in a given year. It is the value of the first link of value chain, of cultivation and production of opium gum. The farm-gate value is an important measure of the added value generated in rural communities by the cultivation and harvesting of opium. In contrast to the proceeds of onward processing and trafficking, which benefit external individuals, the proceeds of opium poppy cultivation most likely remain within rural communities.

FIGURE 19 FARM-GATE VALUE OF OPIUM PRODUCTION IN AFGHANISTAN, 2008-2017 (US\$ MILLION)

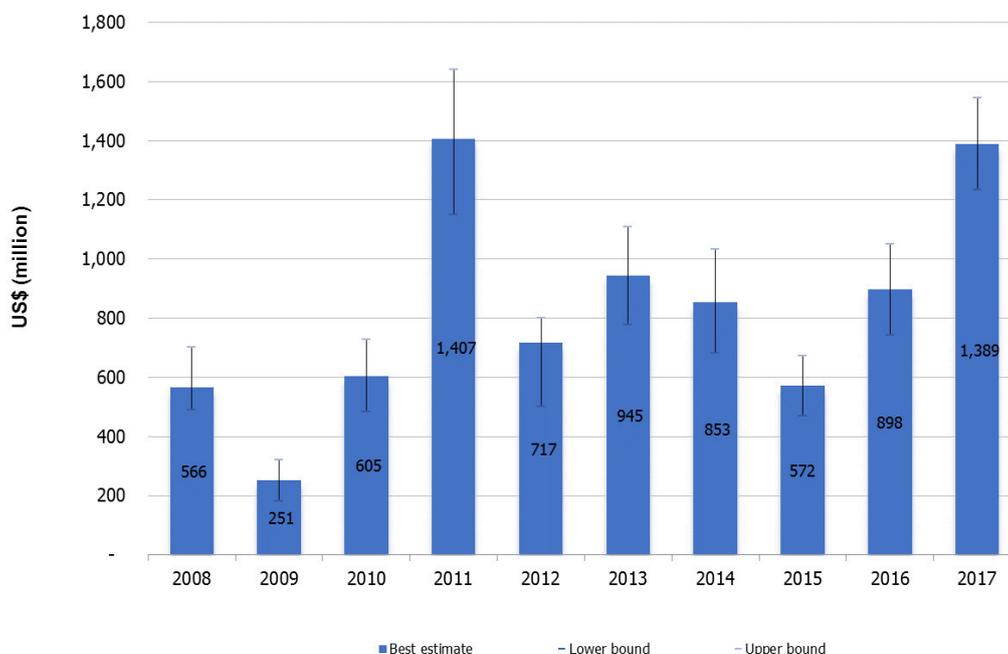
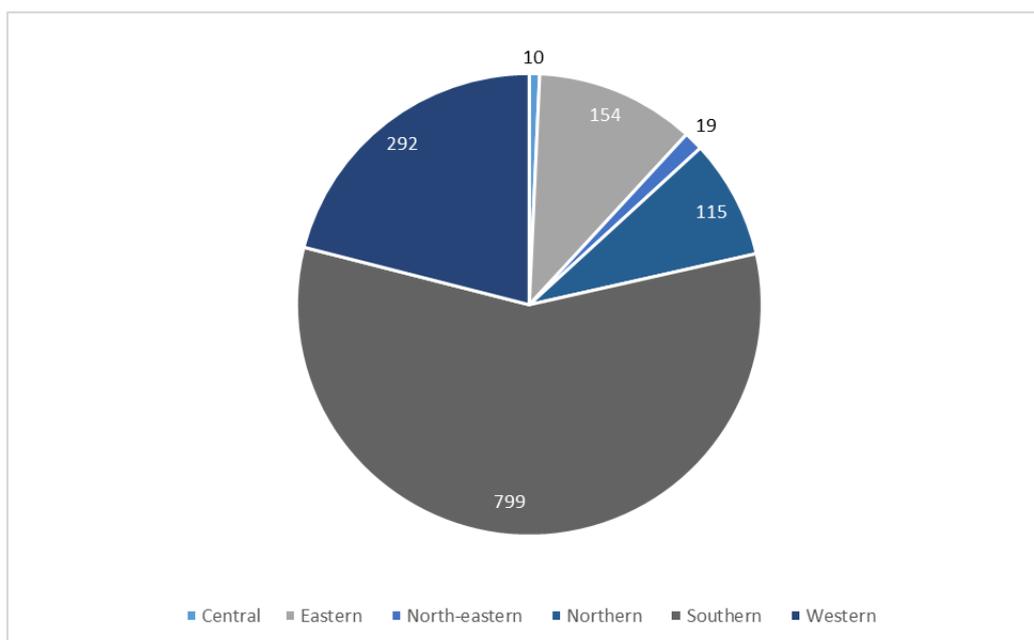


FIGURE 20 FARM-GATE VALUE OF OPIUM PRODUCTION IN AFGHANISTAN BY REGION, 2017 (US\$ MILLION)



Labour for poppy harvesting and daily wages

Opium farmers were asked how many persons they employed for poppy weeding and harvesting in the previous year, how many days they spent on each activity and how much labourers earned on a day.

TABLE 15 AVERAGE NUMBER OF PERSONS PER HECTARE HIRED FOR POPPY WEEDING AND POPPY LANCING, BY REGION, 2017

	For poppy lancing	For poppy weeding
Central	12	12
Eastern	7	6
North-Eastern	11	14
Northern	14	14
Southern	5	4
Western	15	11
National	8	7

Note: National average is the average of the regional daily wages, weighted by area under cultivation.

TABLE 16 AVERAGE NUMBER OF DAYS SPENT ON POPPY LANCING AND POPPY WEEDING, BY REGION, 2017

Region	For poppy lancing	For poppy weeding
Central	9	5
Eastern	11	12
North-Eastern	10	10
Northern	9	7
Southern	14	22
Western	11	10
National	13	17

Note: National average is the average of the regional daily wages, weighted by area under cultivation.

TABLE 17 DAILY WAGE RATES FOR OPIUM GUM COLLECTION AND OPIUM POPPY WEEDING, BY REGION, 2017

Region	Lancing/ gum collection (US\$)	Opium poppy weeding
Central	6.4	5.3
Eastern	6.0	4.9
North-Eastern	18.3	12.7
Northern	8.8	5.6
Southern	10.0	5.1
Western	12.8	5.6
National	10.2	5.4

Note: National average is the average of the regional daily wages, weighted by area under cultivation.

TABLE 18 PERCENTAGE OF FARMERS WHO PROVIDED DAILY FOOD TO THE LABOURERS AND PERCENTAGE OF FARMERS WHO PAID LABOURERS AS WELL IN OPIUM, BY REGION, 2017

Region	Provided daily food	Paid in opium
Central	100%	0%
Eastern	100%	8%
North-Eastern	100%	47%
Northern	89%	25%
Southern	99%	84%
Western	82%	47%
National	95%	63%

Note: National average is the average of the regional daily wages, weighted by area under cultivation.

TABLE 19 DAILY WAGE RATES FOR NON-POPPY RELATED LABOUR, 2017

Region	Farm labour (non-poppy)	Non-farm labour (construction of roads, houses, etc)
Central	5.1	5.6
Eastern	4.5	4.6
North-Eastern	5.6	5.2
Northern	5.0	5.8
Southern	4.2	5.1
Western	7.9	9.7
National	5.4	6.1

Replacement strategies of farmers who stopped cultivating opium poppy and change in income

The MCN/UNODC village survey has asked farmers who stopped cultivating opium poppy how they replaced their income.

TABLE 20 STRATEGIES FOR REPLACING INCOME FROM OPIUM POPPY BY FARMERS WHO STOPPED CULTIVATING (PER CENT), BY IMPORTANCE, 2017

	Most important	Second most important	Third most important	Overall
Livestock raising	54%	20%	15%	30%
Daily wages	15%	39%	21%	25%
Petty trade	11%	17%	26%	18%
Rely on remittance	4%	10%	15%	9%
Others. Specify	11%	7%	8%	9%
Rental of land, cars or agricultural tools	4%	6%	11%	7%
External or government assistance	0%	2%	4%	2%

TABLE 21 FARMERS RESPONSES ON HOW HOUSEHOLD INCOME CHANGED AFTER STOPPING OPIUM POPPY CULTIVATION (PER CENT), 2017

Region	Decreased	Remained the same	Increased
Eastern	63%	16%	21%
North-Eastern	23%	52%	25%
Northern	28%	48%	25%
Southern	24%	56%	20%
Western	19%	55%	26%
National	29%	47%	23%

Note: Because of a very low number of samples, the Central region has been omitted from the regional analysis.

Self-reported reasons for cultivating opium poppy, for stopping and for never engaging in opium poppy cultivation

Given a number of reasons to choose from, Afghanistan’s opium poppy farmers named a singular large expense, such as a wedding, most often as one of three reasons for cultivating opium poppy in 2017. This was followed by lack of alternative employment, and high poppy yields. The most striking differences between frequent and infrequent poppy farmers could be found in being motivated by debt or loans and by convenience of growing – infrequent poppy farmers named that reason notably more often than frequent poppy farmers.

The far most common reason named for stopping opium poppy cultivation was that opium poppy cultivation is against Islam, followed by fear of addiction, and good yields from other crops.

FIGURE 21 REASONS FOR CULTIVATING OPIUM POPPY AMONG FARMERS IN AFGHANISTAN BY FREQUENCY OF CULTIVATION (PERCENTAGE), 2017

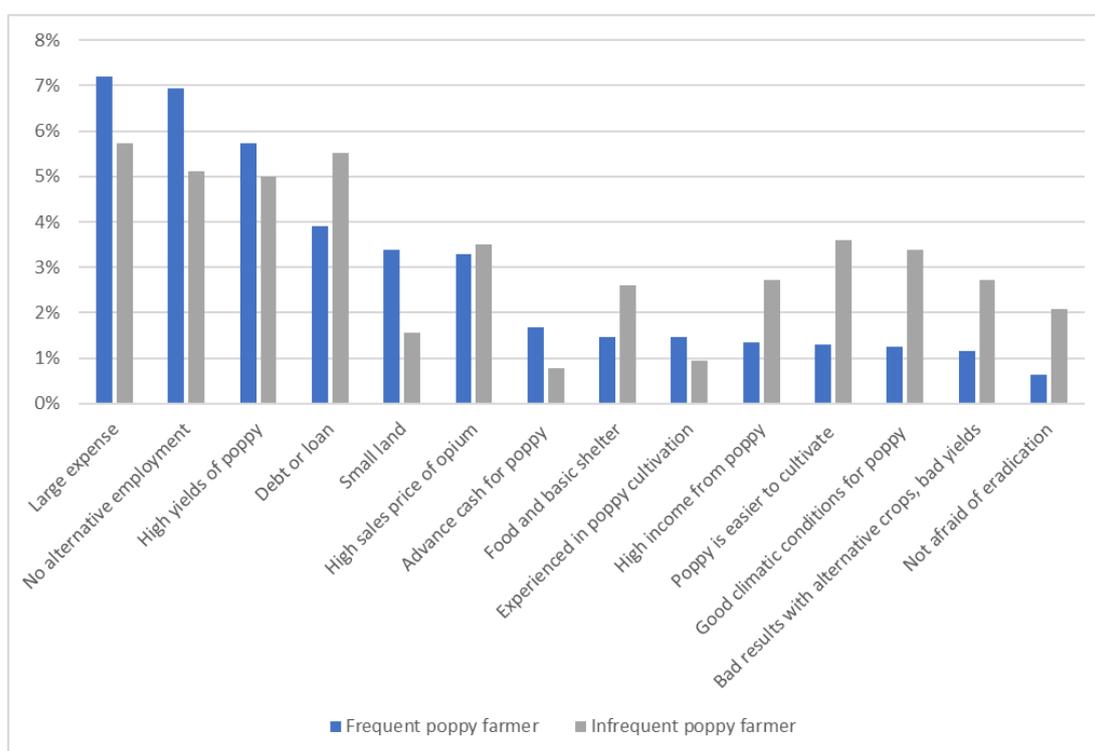


FIGURE 22 REASONS FOR STOPPING OPIUM POPPY CULTIVATION (PERCENTAGE), 2017

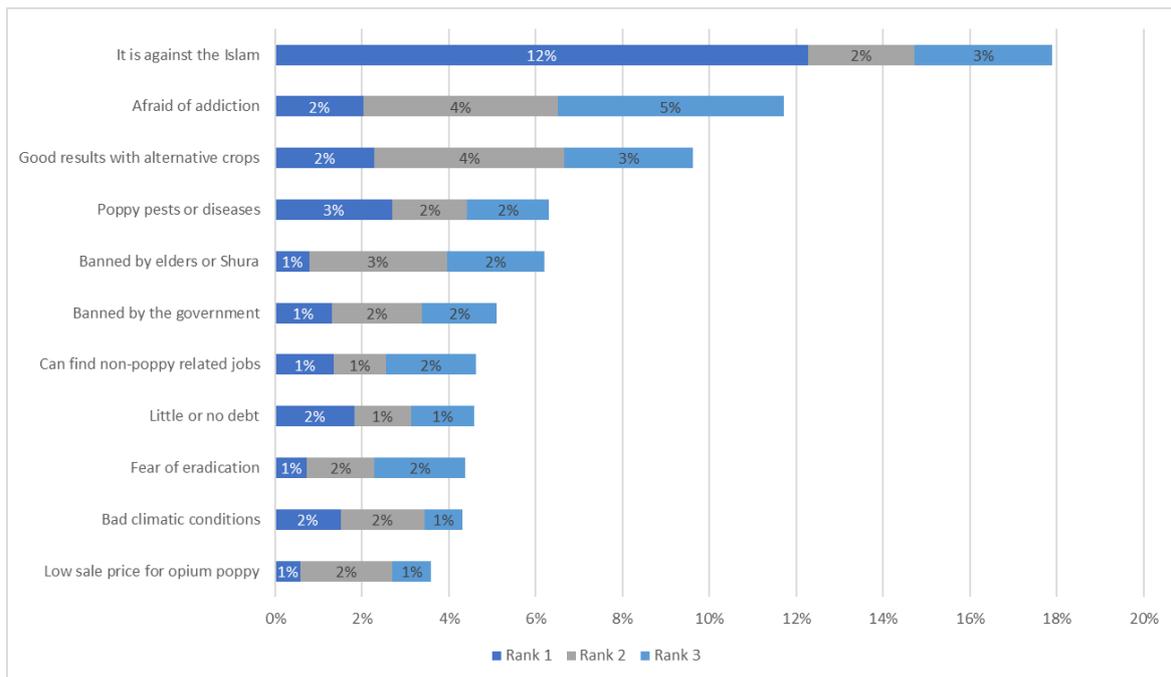
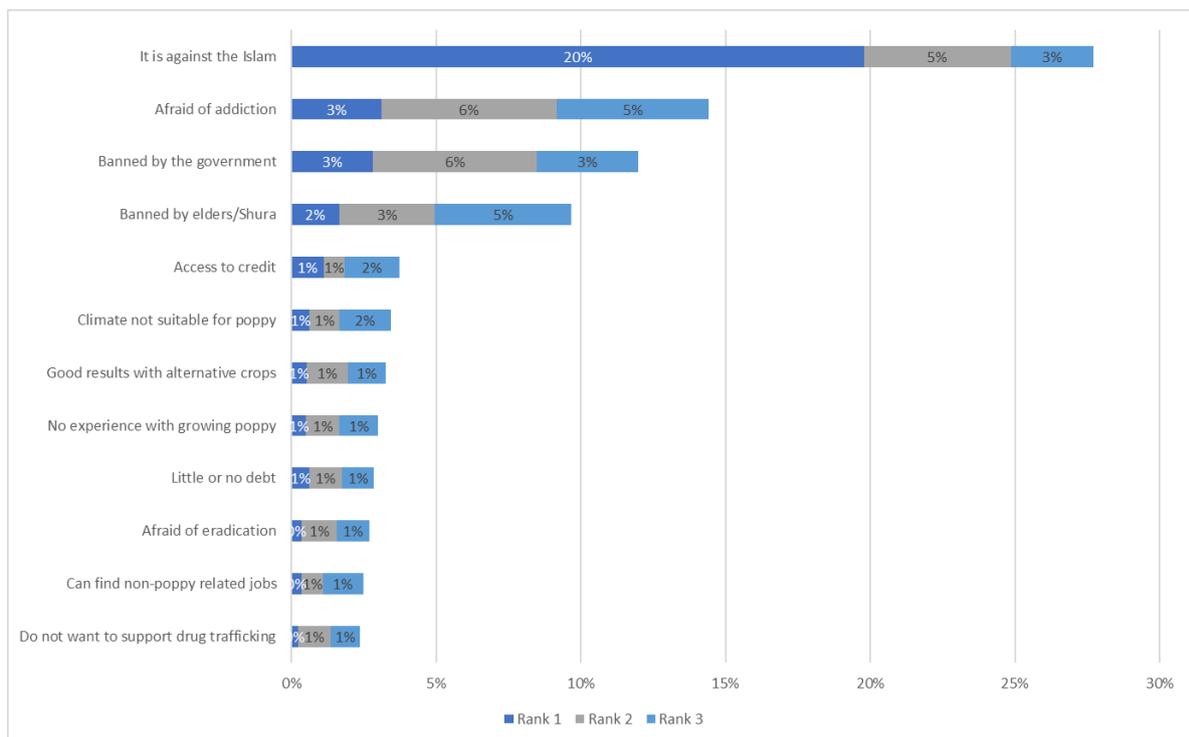


FIGURE 23 REASONS FOR NEVER CULTIVATING OPIUM POPPY, 2017



Self-reported reasons for increasing or decreasing area under poppy cultivation

The most common reasons reported for increasing area under opium poppy cultivation were economic related such as a large expenses (e.g. wedding) that needed to be covered, lack of non-opium-poppy related jobs/unemployment, and the high sales price of opium.

The most common reason for decreasing area under opium poppy cultivation was “increase in opium poppy pests or diseases”, “Good results with other crops”, and the absence of large expenses (e.g. wedding).

FIGURE 24 REASONS FOR INCREASING AREA UNDER OPIUM POPPY CULTIVATION REPORTED BY POPPY FARMERS IN 2017, BY FREQUENCY OF CULTIVATION (PERCENTAGE OF FARMERS)

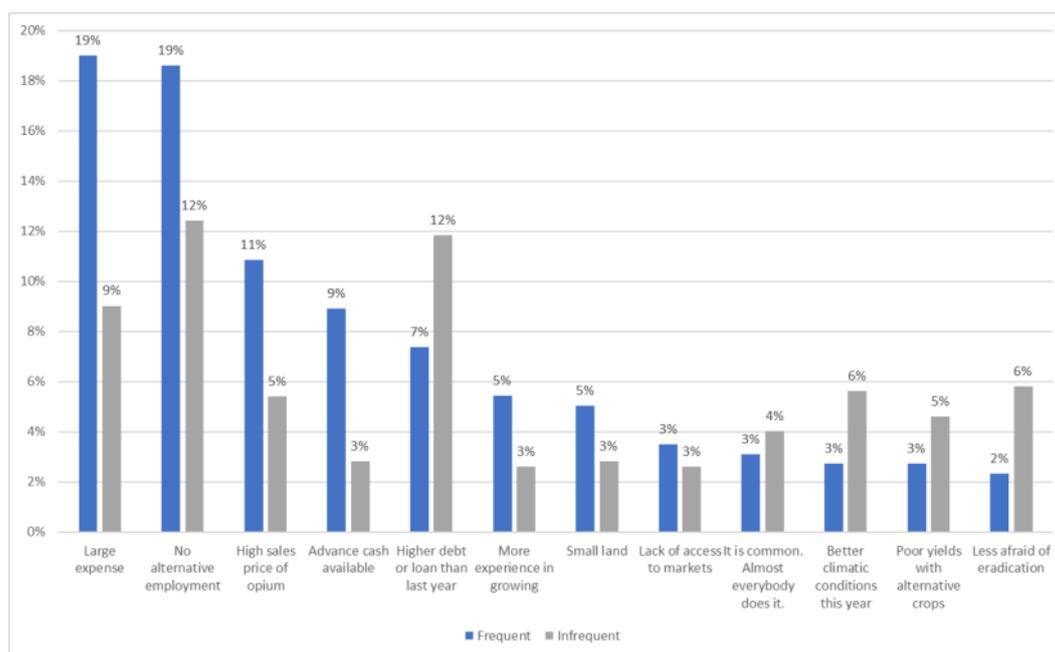
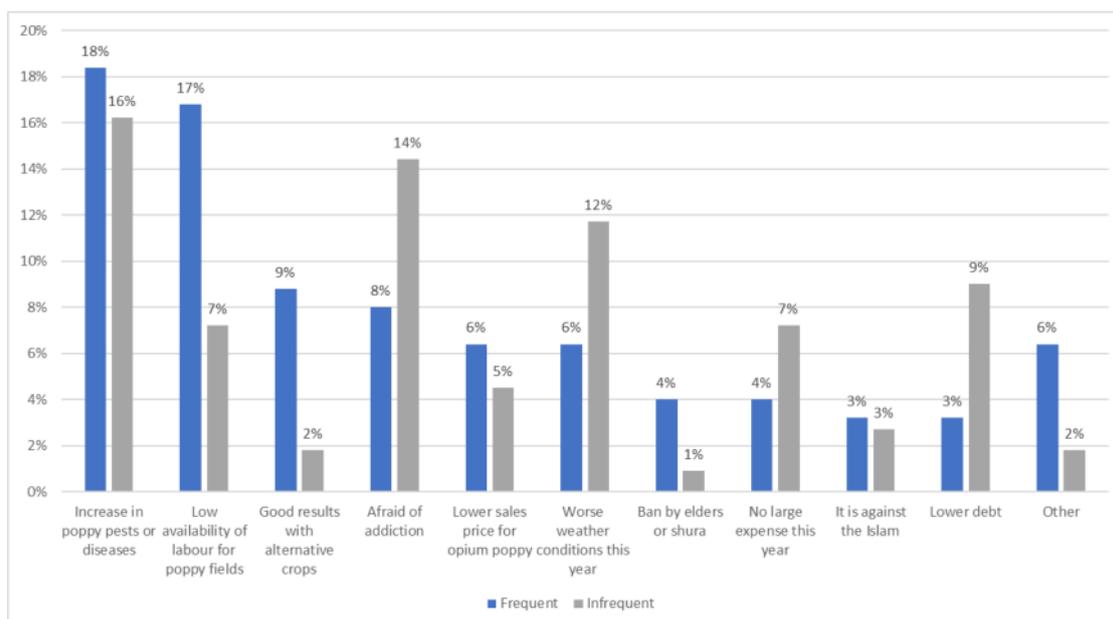


FIGURE 25 MAIN REASONS FOR DECREASING AREA UNDER OPIUM POPPY CULTIVATION REPORTED BY POPPY FARMERS IN 2017, BY FREQUENCY OF CULTIVATION (PERCENTAGE OF FARMERS)



Per-hectare income from opium and wheat

The financial benefits of illicit crops are an important aspect of household decision making. Per-hectare income from opium in the past years has ranged from US\$ 3,100 (2015) to US\$ 10,700 (2011). Per-hectare income from opium (gross) decreased by 7 per cent from US\$ 4,500 in 2016 to US\$ 4,200 in 2017.

Net income per hectare opium is derived by subtracting production costs from gross income. Production costs per hectare, reported by farmers, amounted to US\$ 630 in 2017. Variations in net income are mainly caused by variations in gross income, which are heavily driven by per-kilogram prices of dry opium and yields.

Some caveats should be added. Average production costs for opium do not necessarily apply to small-scale farmers who typically cultivate 1 jerib (= 0.2 hectares) or less in Afghanistan. They can make use of the “free” labour of their household members for ploughing and weeding the fields as well as for lancing and collecting opium. In some provinces, notably those with a strong insurgent presence, some or all farmers reported paying an opium tax, which further reduced their net income. This was not considered in this calculation of net income as it does not apply to all poppy farmers.

As comparison, gross per-hectare income from wheat was estimated to be US\$ 1,200 in 2017.⁵⁹ Average per-hectare costs for wheat production are lower than for opium production estimated at US\$ 440.

TABLE 22 AVERAGE EXPENDITURE ON OPIUM POPPY AND WHEAT CULTIVATION, PER HECTARE, 2017 (US DOLLARS PER HECTARE)

Activity	Opium (US\$/HA)	Wheat (US\$/ha)
Ploughing	36	53
Fertilizer	132	99
Herbicides	17	22
Irrigation	55	78
Reaping	NA	57
Harvesting/Lancing	278	NA
Seeds	23	53
Weeding	122	44
Thresher machine	NA	59
Total (rounded)	630	440

Note: Average over all expenditures named by farmers for each category. Zero expenditure is excluded for the estimates by category. Total cost is the average of the total expenditure reported by farmers.

⁵⁹ Estimates based on 2016 yield and price information retrieved from FAOSTAT.

Security and government control

TABLE 23 GOVERNMENT CONTROL OF VILLAGES, BY REGION, 2017

Region	Anti-government	Central/ regional/ local government	Others
Central	25%	71%	3%
Eastern	54%	45%	1%
North-Eastern	16%	83%	1%
Northern	16%	75%	9%
Southern	35%	62%	3%
Western	36%	54%	10%
National	29%	66%	5%

Note: The notion of government control reflected the perception of the village headmen interviewed.

TABLE 24 SECURITY ASSESSMENT BY VILLAGE HEADMEN, BY REGION, 2017

Region	Very insecure	Insecure	More or less safe	Secure	Very Secure
Central	7%	12%	16%	28%	36%
Eastern	9%	22%	32%	20%	18%
North-Eastern	0%	10%	30%	43%	16%
Northern	0%	8%	26%	29%	37%
Southern	4%	22%	41%	24%	9%
Western	1%	19%	55%	19%	6%
National	4%	15%	32%	26%	23%

TABLE 25 CHANGE IN SECURITY SITUATION AS ASSESSED BY VILLAGE HEADMEN, BY REGION, 2017

Region	Deteriorated	Remain the same	Increased
Central	13%	72%	14%
Eastern	21%	67%	12%
North-Eastern	18%	70%	12%
Northern	11%	73%	17%
Southern	22%	67%	11%
Western	29%	62%	9%
National	18%	69%	13%

Taxing of opium poppy and usher, by province and region

TABLE 26 PERCENTAGE OF VILLAGE HEADMEN OF POPPY VILLAGES REPORTING TO PAY OPIUM POPPY TAX, 2017

Province	Percentage of poppy villages paying taxes on opium poppy
BADAKHSHAN	20%
BADGHIS	73%
BAGHLAN	7%
BALKH	0%
BAMYAN	0%
DAYKUNDI	0%
FARAH	80%
FARYAB	64%
GHAZNI	67%
GHOR	88%
HELMAND	85%
HERAT	67%
JAWZJAN	0%
KABUL	0%
KANDAHAR	25%
KAPISA	13%
KHOST	0%
KUNARHA	0%
KUNDUZ	0%
LAGHMAN	17%
LOGAR	100%
NANGARHAR	60%
NIMROZ	0%
NOORISTAN	0%
PAKTIKA	0%
PAKTYA	0%
PARWAN	100%
SAMANGAN	0%
SAR-E-PUL	0%
TAHKAR	0%
UROZGAN	80%
WARDAK	0%
ZABUL	20%
National	62%

TABLE 27 RECIPIENTS OF POPPY TAX ACCORDING TO VILLAGE HEADMEN, BY PROVINCE, 2017

Province	Anti-government	Insurgency	Others	The powerful	The Taliban
BADAKHSHAN	0%	0%	0%	0%	100%
BADGHIS	25%	0%	8%	17%	50%
BAGHLAN	0%	0%	0%	0%	100%
BALKH					
BAMYAN					
DAYKUNDI					
FARAH	39%	11%	0%	0%	50%
FARYAB	15%	8%	0%	38%	38%
GHAZNI	17%	83%	0%	0%	0%
GHOR	5%	80%	0%	0%	15%
HELMAND	0%	0%	15%	56%	28%
HERAT	0%	75%	0%	0%	25%
JAWZJAN					
KABUL					
KANDAHAR	0%	0%	70%	30%	0%
KAPISA	0%	0%	0%	0%	100%
KHOST					
KUNARHA					
KUNDUZ					
LAGHMAN	0%	50%	0%	0%	50%
LOGAR	50%	50%	0%	0%	0%
NANGARHAR	31%	38%	8%	0%	23%
NIMROZ					
NOORISTAN					
PAKTIKA					
PAKTYA					
PARWAN	0%	100%	0%	0%	0%
SAMANGAN					
SAR-E-PUL					
TAHKAR					
UROZGAN	0%	10%	0%	20%	70%
WARDAK					
ZABUL	14%	0%	71%	0%	14%

Note: Provincial estimates are often based on very few samples and have to be considered as indicative. 'Others' include 'rich people', 'government officials', 'local police', 'Mullah', 'To poor people'.

TABLE 28 AVERAGE TAX RATE ON OPIUM POPPY SALES AS REPORTED BY VILLAGE HEADMEN, BY REGION, 2017

Region	Average tax rate
Central	10%
Eastern	9%
North-Eastern	10%
Northern	13%
Southern	8%
Western	9%
National	8.8%

Note: National estimate is an average of regional estimates weighted by estimated regional production of opium gum.

TABLE 29 RECIPIENTS OF USHR ACCORDING TO VILLAGE HEADMEN, BY REGION, 2017

Grouping	Central	Eastern	North-Eastern	Northern	Southern	Western	National
Anti-government/Insurgency	1%	4%	7%	7%	0%	2%	3%
Madrasa/educational centre	1%	1%	11%	9%	0%	0%	3%
No usher	37%	18%	13%	21%	19%	14%	23%
Others	1%	0%	4%	3%	2%	0%	2%
To Mullah	12%	6%	12%	19%	54%	57%	28%
To Taliban	7%	13%	8%	7%	0%	9%	7%
To the poor	41%	58%	45%	35%	25%	18%	35%

Note: 'Others' include the government, local police and local commanders.

TABLE 30 TAXES INCURRED FROM OPIUM SALES (FARM-GATE VALUE) BY RECIPIENT AND REGION, (US\$), 2017

Region	Anti-government	Insurgency	Others	'The powerful'	The Taliban	Total
Central	75	374	-	-	-	449
Eastern	1,964	2,561	491	-	1,647	6,663
North-Eastern	-	-	-	-	371	371
Northern	779	390	-	1,948	1,975	5,092
Southern	19	528	7,333	22,742	14,233	44,854
Western	4,293	2,302	741	1,483	7,356	16,175
National	7,130	6,154	8,565	26,173	25,581	73,602

Presence of more than one opium poppy harvest

TABLE 31 PERCENTAGE OF VILLAGE HEADMEN REPORTING THAT VILLAGERS HARVEST OPIUM POPPY MORE THAN ONCE A YEAR, BY REGION, 2017

Region	More than one poppy harvest
Central	0%
Eastern	0%
North-Eastern	0%
Northern	0%
Southern	13%
Western	1%
National	6%

TABLE 32 PERCENTAGE OF VILLAGE HEADMEN OF THE SOUTHERN REGION REPORTING THAT VILLAGERS HARVEST OPIUM POPPY MORE THAN ONCE A YEAR, BY PROVINCE, 2017

Southern Region	More than one poppy harvest
Day Kundi	0%
Helmand	40%
Kandahar	0%
Uruzgan	25%
Zabul	0%
Southern Total	13%

Awareness campaigns against opium poppy

TABLE 33 PRESENCE OF AN AWARENESS CAMPAIGN AGAINST POPPY, BY REGION, 2017

Region	Awareness campaign
Central	34%
Eastern	43%
North-Eastern	69%
Northern	57%
Southern	54%
Western	55%
National	49%

TABLE 34 MOST COMMON SOURCES OF AWARENESS CAMPAIGNS AGAINST OPIUM POPPY CULTIVATION, 2017

Source	Percentage
Mosque/Mullah	31%
Radio	24%
Shura	20%
Government official	15%
TV	7%
Billboard	3%

Opiate seizures in Afghanistan, Iran and Pakistan

FIGURE 26 OPIUM SEIZURES IN AFGHANISTAN, IRAN AND PAKISTAN, 2005-2016

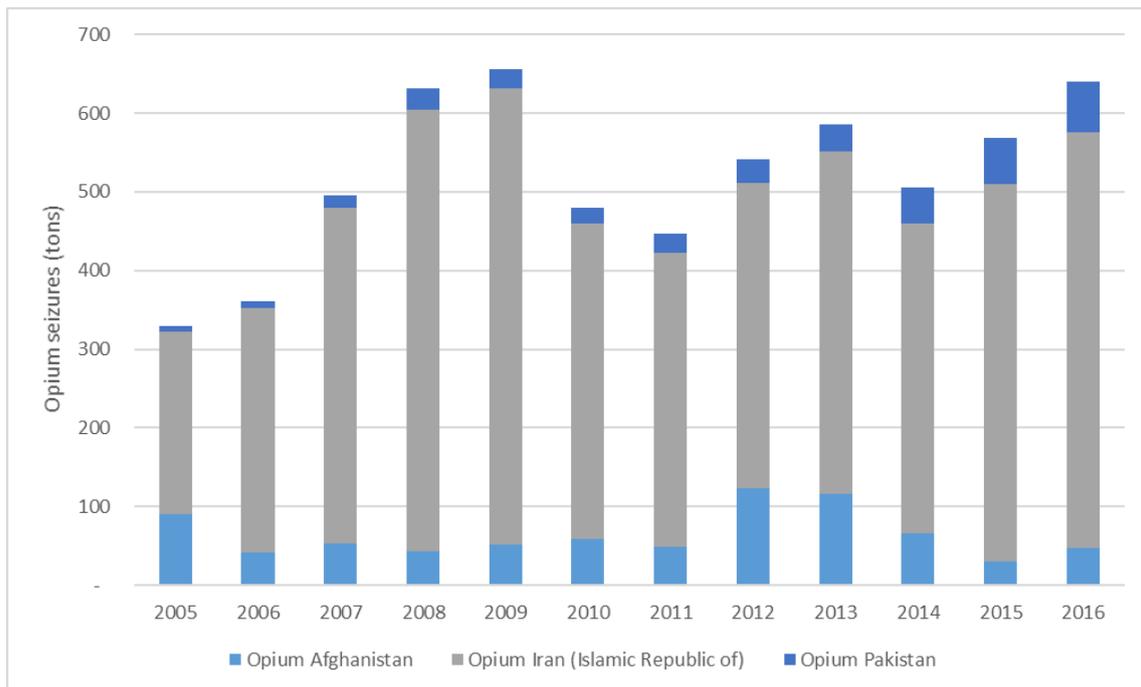


FIGURE 27 HEROIN SEIZURES IN AFGHANISTAN, IRAN AND PAKISTAN, 2005-2016

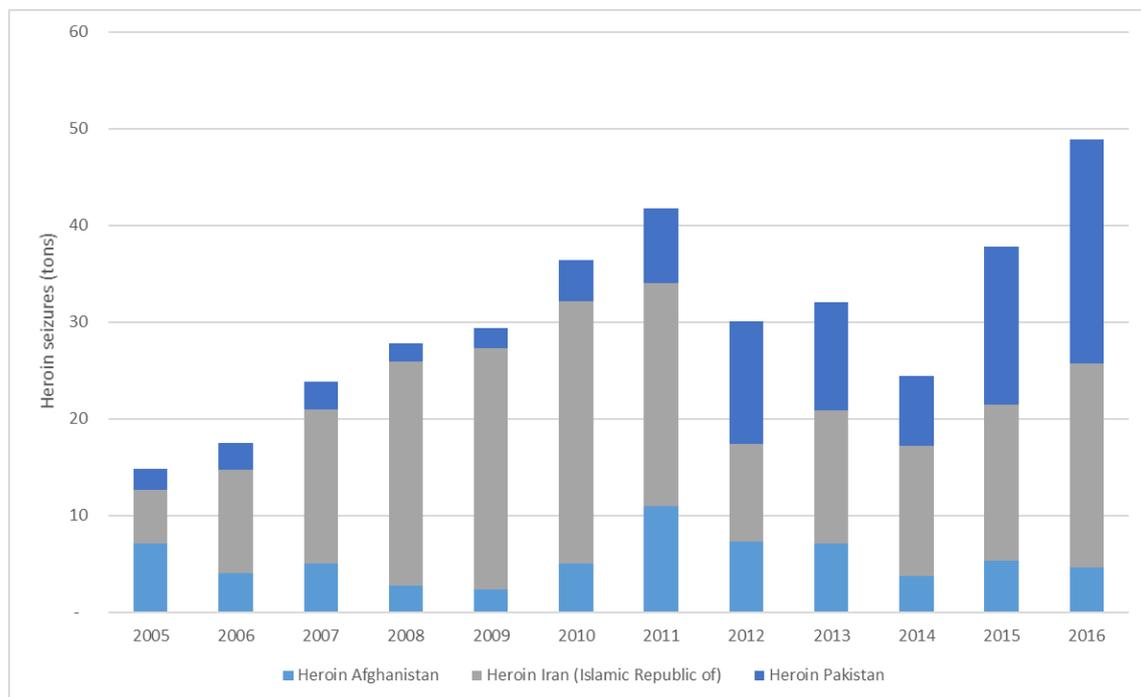


FIGURE 28 ILLICIT MORPHINE SEIZURES IN AFGHANISTAN, IRAN AND PAKISTAN, 2005-2016

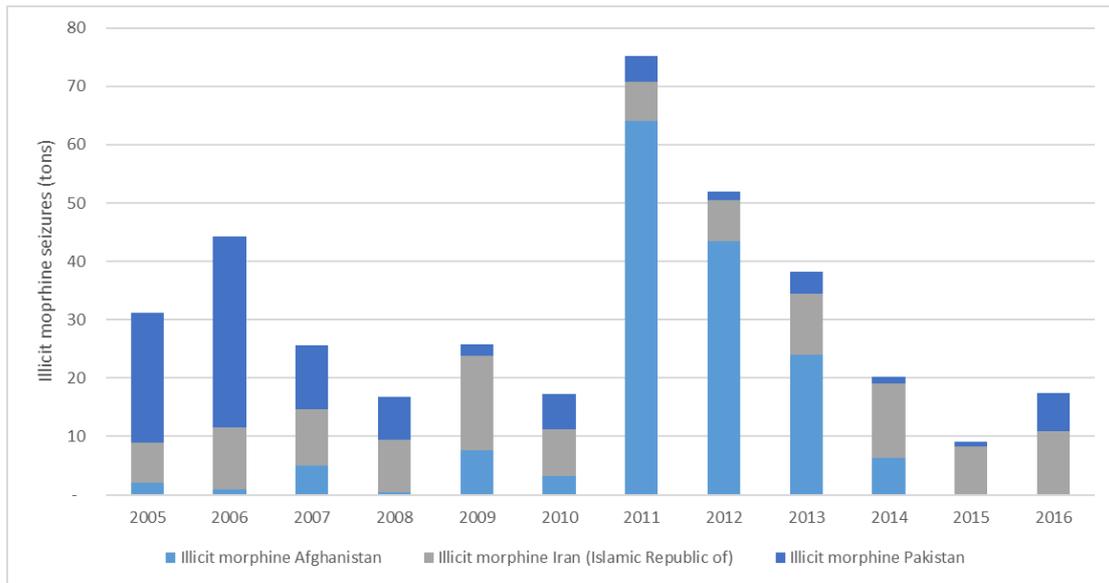


TABLE 35 HEROIN, OPIUM AND MORPHINE SEIZURES IN AFGHANISTAN AND NEIGHBOURING COUNTRIES (KILOGRAMS), 2005-2016,

Drug	Country	Year											
		2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016
Heroin	Afghanistan	7,112	4,053	5,038	2,782	2,400	4,991	10,983	7,262	7,157	3,754	5,308	4,588
	Iran (Islamic Republic of)	5,554	10,665	15,899	23,129	24,926	27,141	23,096	10,181	13,730	13,459	16,116	21,098
	Pakistan	2,144	2,819	2,874	1,900	2,061	4,237	7,651	12,630	11,131	7,184	16,348	23,172
	Tajikistan	2,345	2,097	1,550	1,636	1,133	985	509	515	483	508	499	89
	Turkmenistan	173	201	326	245	420	133	39	15	13	2	1	1
	Uzbekistan	467	537	480	1,472	755	1,004	662	262	122	107	148	108
Heroin Total		17,795	20,373	26,166	31,164	31,694	38,491	42,941	30,865	32,635	25,012	38,419	49,055
Illicit morphine	Afghanistan	1,967	938	5,019	479	7,686	3,179	64,028	43,519	23,980	6,369	18	
	Iran (Islamic Republic of)	6,939	10,607	9,681	8,977	16,139	8,098	6,811	6,997	10,429	12,717	8,258	10,903
	Pakistan	22,197	32,658	10,989	7,325	1,961	6,064	4,296	1,369	3,754	1,077	762	6,596
	Tajikistan							8	4				
	Uzbekistan	0		21									
Illicit morphine Total		31,103	44,203	25,710	16,781	25,786	17,341	75,143	51,889	38,163	20,163	9,038	17,499
Opium	Afghanistan	90,990	40,959	52,457	42,807	51,090	58,166	49,344	123,940	115,690	66,197	30,307	47,048
	Iran (Islamic Republic of)	231,352	311,306	427,147	561,272	580,478	401,395	373,818	387,606	436,159	393,013	478,814	528,928
	Pakistan	6,475	8,997	15,370	27,243	24,820	19,813	23,419	29,481	33,870	46,895	58,929	64,608
	Tajikistan	1,104	1,387	2,542	1,746	1,041	744	490	627	774	990	1,079	612
	Turkmenistan	856	2,656	2,284	1,503	1,259	828	754	663	396	181	243	293
	Uzbekistan	108	759	731	1,062	626	519	984	770	851	882	882	1,447
Opium Total		330,886	366,064	500,530	635,633	659,314	481,465	448,809	543,086	587,741	508,158	570,255	642,936

Source: Annual report questionnaires, UNODC.

Part III: Technical notes and methodology

Village survey methodology

Village survey activities (such as training, deployment and data collection) were carried out from the end of March to the end of April 2017 by 136 local field surveyors across all provinces. These activities were supervised jointly by MCN and UNODC. The surveyors were selected on the basis of their experience in opium poppy surveys, knowledge of local customs and their acceptance by local communities. Security was generally problematic for the surveyors, but the selection of local surveyors helped to reduce security risks.

New sampling frame 2017

For the 2017 MCN/UNODC village survey, a new list of settlements was made available by the Afghan Geodesy and Cartography Head Office (AGCHO). The new list of settlements replaced the old village frame, which has not been updated since 2010 and was based on information from the Central Statistical Office and UN databases. The new village frame is considered to be more up-to-date and has a better geographical coverage.

Overall, the 2017 village frame has 5 per cent more villages than the old one. At the regional level, the differences can be greater. In contrast to previous years, the Central region, and thus a region with very limited opium poppy cultivation, is comparatively stronger represented than the Southern region. This means that in 2017, opium poppy villages had a smaller weight on national estimates than non-poppy villages. This may limit the year-on-year comparability of national estimates.

TABLE 36 NUMBER OF VILLAGES IN THE VILLAGE SAMPLING FRAME, 2010-2016 AND 2017, BY REGION

Region	Village frame 2010-2016	Village frame 2017	Difference (%)
Central	10,602	12,857	21%
Eastern	3,571	4,467	25%
North-Eastern	3,668	4,181	14%
Northern	7,162	7,846	10%
Southern	11,749	8,663	-26%
Western	6,782	7,495	11%
National	43,534	45,509	5%

Sample selection and obtained samples

The sample of villages visited was a nationally representative sample. It was drawn by means of a simple random sampling approach. The sample size was allocated to the provinces proportionally to their size measured by the number of villages. This resulted in a self-weighting sample of villages.

In 2017, a total of 1,503 villages were selected into the sample. Out of these, 1,377 villages were successfully visited. Surveyors sought to interview three farmers in each village: one opium-growing farmer; one who had discontinued opium poppy cultivation; and one who had never grown opium. Interview partners were recruited by opportunity sampling. This resulted in 4,083 interviews with farmers and 1,378 interviews with village headmen.

The interviews were conducted by following a questionnaire developed jointly by MCN and UNODC.

TABLE 37 NUMBER OF VILLAGES IN THE SAMPLING FRAME, NUMBERS OF SAMPLED AND RESPONSIVE VILLAGES, BY PROVINCE, 2017

Province	Villages in frame	Sampled villages	Responsive villages
BADAKHSHAN	1,869	62	56
BADGHIS	1,017	33	30
BAGHLAN	1,535	51	48
BALKH	1,235	41	40
BAMYAN	1,891	62	62
DAYKUNDI	2,134	70	56
FARAH	1,267	42	39
FARYAB	1,052	35	31
GHAZNI	3,262	107	98
GHOR	2,330	78	67
HELMAND	2,059	68	66
HERAT	2,363	78	72
JAWZJAN	455	15	11
KABUL	844	28	24
KANDAHAR	2,224	73	73
KAPISA	684	23	22
KHOST	1,081	36	29
KUNARHA	1,166	38	35
KUNDUZ	963	32	22
LAGHMAN	718	24	24
LOGAR	767	25	24
NANGARHAR	1,506	50	43
NIMROZ	518	17	16
NOORISTAN	393	13	10
PAKTIKA	1,696	56	56
PAKTYA	1,374	45	43
PANJSHER	534	18	18
PARWAN	1,299	43	39
SAMANGAN	843	28	24
SAR-E-PUL	835	28	28
TAKHAR	1,349	44	38
UROZGAN	618	20	16
WARDAK	2,000	66	65
ZABUL	1,628	54	52
National	45,509	1,503	1,377

TABLE 38 NUMBER OF VISITED VILLAGES, NUMBER OF VILLAGES WITH AND WITHOUT OPIUM POPPY CULTIVATION AND THE SHARE OF VILLAGES WITH OPIUM POPPY CULTIVATION AMONG TOTAL NUMBER OF VILLAGES, BY REGION

Region	Number of sampled villages	Number of villages without poppy cultivation	Number of villages with poppy cultivation	Percentage of villages with poppy cultivation
Central	396	387	9	2.27%
Eastern	134	64	70	52.24%
North-Eastern	116	100	16	13.79%
Northern	244	157	87	35.66%
Southern	263	40	223	84.79%
Western	224	138	86	38.39%
National	1,377	886	491	35.66%

TABLE 39 NUMBERS OF INTERVIEWS CONDUCTED IN 2017

Region	Headmen	Farmers who never grew opium poppy	Opium poppy farmers	Farmers who stopped growing
Central	396	1,141	16	22
Eastern	134	161	117	93
North-Eastern	116	277	26	45
Northern	244	534	89	106
Southern	263	252	292	241
Western	224	412	108	151
National	1,377	2,777	648	658

Surveyor training

In order to prepare for the village survey, and as part of a capacity-building exercise for national staff, regional survey coordinators and their assistants were trained in Kabul over a two-day period. They, in turn, trained surveyors in their respective regions. The extension of survey training sessions to the regional level is one of the milestones reached in building national capacity to conduct opium poppy surveys.

During the training period, a total of 136 surveyors were trained in the use of the survey form and techniques by MCN survey coordinators and supervised by UNODC survey coordinators. Surveyor training began in March 2017. The training included practical (use of GPS, etc.) and theoretical aspects (interviewing and dialogue with village headmen and farmers).

Data collection

Opium poppy cultivation is illegal in Afghanistan and is considered to be forbidden by Islam. Given the sensitive nature of the issue, data collection is difficult and can be dangerous. Surveyors are thus selected from different regions of Afghanistan by means of a very careful process. MCN and UNODC regional offices and coordinators recruit surveyors according to survey specifications and the surveyors' skills. Most of those selected already have experience of conducting UNODC surveys.

Surveyors were trained in techniques for approaching local community members and conducting interviews. Following intensive theoretical and practical training, they were deployed to the field where they interviewed village headmen and conducted other survey-related activities. MCN and UNODC

coordinators closely monitored data quality and the progress of the survey. Fortunately, the surveyors did not encounter any security problems.

Debriefing

After the survey, surveyors were debriefed by survey coordinators. This helps understand the difficulties surveyors may have encountered (for example, due to the difficult security situation) and whether questions were properly understood by respondents.

Heroin production estimates

Opium consumption in the region and Afghanistan opiate consumption

In 2009, the Ministries of Health and Counter Narcotics, in collaboration with UNODC, implemented an extensive national drug use survey in Afghanistan,⁶⁰ in which the number of opium and heroin users in the country was estimated to be 230,000 (210,000-260,000) and 120,000 (110,000-140,000), respectively. These numbers account for poly-drug use, i.e. one person is counted in both groups if using both opium and heroin.

The report provides information on the average numbers of days that both groups consume the drugs (256 days per year for opium users and 285 days per year for heroin users). This information, together with the average amount spent on each drug per day, can be used to calculate the total amount spent on opium and heroin in Afghanistan in a given year. This total amount divided by the average end-consumer price gives the total quantity consumed. As there were no end-consumer prices available for 2009, the earliest (and lowest) data available, which was the price average of October 2010, was used. The price of 1 kilogram of heroin was reported to be US\$ 6,300 and of 1 kilogram of opium to be US\$ 530. Combining the price data with the other estimates yields the results shown in the following table.

TABLE 40 AFGHAN OPIATE MARKET, 2009

Substance	Days consumed, 2009*	Total expenditure (US\$), 2009	Total consumption (tons)	Average daily consumption (grams)	Average annual consumption (grams)
Opium	58,045,000	92,872,000	175	3	770
Heroin/ Morphine	34,142,000	75,113,000	12	0.4	100

Source: Ministry of Counter Narcotics/Ministry of Health/UNODC: Drug Use in Afghanistan: 2009 Survey.

The resulting average daily consumption is a sensible magnitude for Afghanistan and is confirmed by regular non-representative use surveys undertaken by MCN/UNODC among heavy users in Afghanistan. It should be noted that there are indications that the quality of heroin/morphine at street level is very poor. When multiplying these quantities consumed by current end-consumer level prices, the value of the domestic opiate market can be calculated.

In absence of national data available, the consumption estimate retrieved from the Afghanistan drug use survey is applied to estimates on the number of drug users in Pakistan and Iran, which results in the estimates presented in the following table.

⁶⁰ Ministry of Counter Narcotics/Ministry of Health/UNODC: Drug Use in Afghanistan 2009 Survey.

TABLE 41 ESTIMATED OPIUM CONSUMPTION IN AFGHANISTAN, PAKISTAN AND IRAN

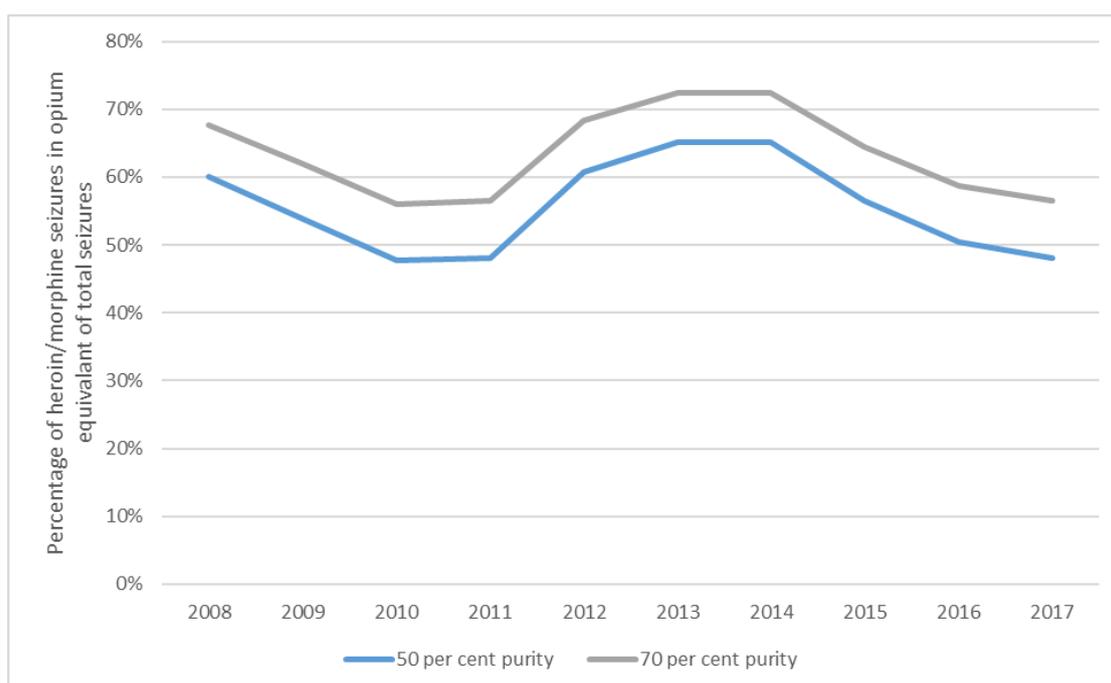
	Iran and Pakistan	Afghanistan
Number of opium users	1,432,000 (1,257,000 – 1,607,000)	230,000 (210,000 – 260,000)
Average annual consumption	0.77 kilograms	0.77 kilograms
Estimated consumption in tons (range)	1,100 (970 – 1,230)	175 (160 – 200)

Sources: Afghanistan Ministry of Counter Narcotics/Ministry of Health/UNODC: *Drug Use in Afghanistan 2009 Survey (average daily consumption and drug users in Afghanistan)*; UNODC/Pakistan Ministry of Interior and Narcotics Control: *“Drug use in Pakistan 2013”*; Ali Nikfarjam et al. (2016), *“National population size estimation of illicit drug users through the network scale-up method in 2013 in Iran”*, *International Journal of Drug Policy*, Volume 31, 2016 (opium users in Iran).

Ratio of opium and heroin/morphine seizures in Afghanistan and neighbouring countries

Data presented is 3-year moving average of the percentage of heroin/morphine seizures (converted to opium equivalent) of total opiate seizures in Afghanistan and neighbouring countries with two different purity assumptions for the conversion of heroin/morphine to opium equivalents.

FIGURE 29 PERCENTAGE OF HEROIN/MORPHINE SEIZURES (IN OPIUM EQUIVALENTS) OF TOTAL OPIATE SEIZURES, 2008 - 2017



Sensitivity analysis on the conversion ratio and on the shares converted to heroin within Afghanistan

It is challenging to define one, best estimate for the conversion ratio of opium to heroin. The following presents what-if analysis on how varying levels of purity and laboratory efficiency affect the conversion ratio from opium to heroin and the estimates of the share of opium converted to heroin within Afghanistan.

Increasing the laboratory efficiency increases the heroin production estimates (as less opium is needed per kilogram heroin). Increasing the purity assumption reduces the heroin production estimates (with higher purity and the same laboratory efficiency, more opium is needed per kilogram heroin).

The conversion ratio, however, is used twice in estimating the heroin production within Afghanistan. First, at the stage where heroin seizures are used to estimate the shares of the opium harvest that are converted to heroin (when the weight of heroin and morphine seizures is converted back to opium equivalents), and then when the estimated shares are converted into heroin. Varying the conversion ratio has therefore a non-linear impact on overall production.

Using the following notation, the heroin produced can be calculated by using one formula.

TABLE 42 NOTATION FOR ESTIMATING HEROIN PRODUCTION

Notation	Meaning
m	Morphine content of raw opium (%)
p	Purity of the heroin considered (%)
P	Opium production in a given year (tons)
H	Combined heroin and morphine seizures in the previous three years (tons)
O	Opium seizures
c	Chemical constant
l	Laboratory efficiency
k	Conversion ratio (kilograms of opium needed to produce one kilogram of heroin)
s	Share of the opium production converted to heroin
E	Estimated heroin production

The number of kilograms, k , of opium needed to produce one kilogram of heroin is given by

$$k = \frac{1}{m \cdot c \cdot l}$$

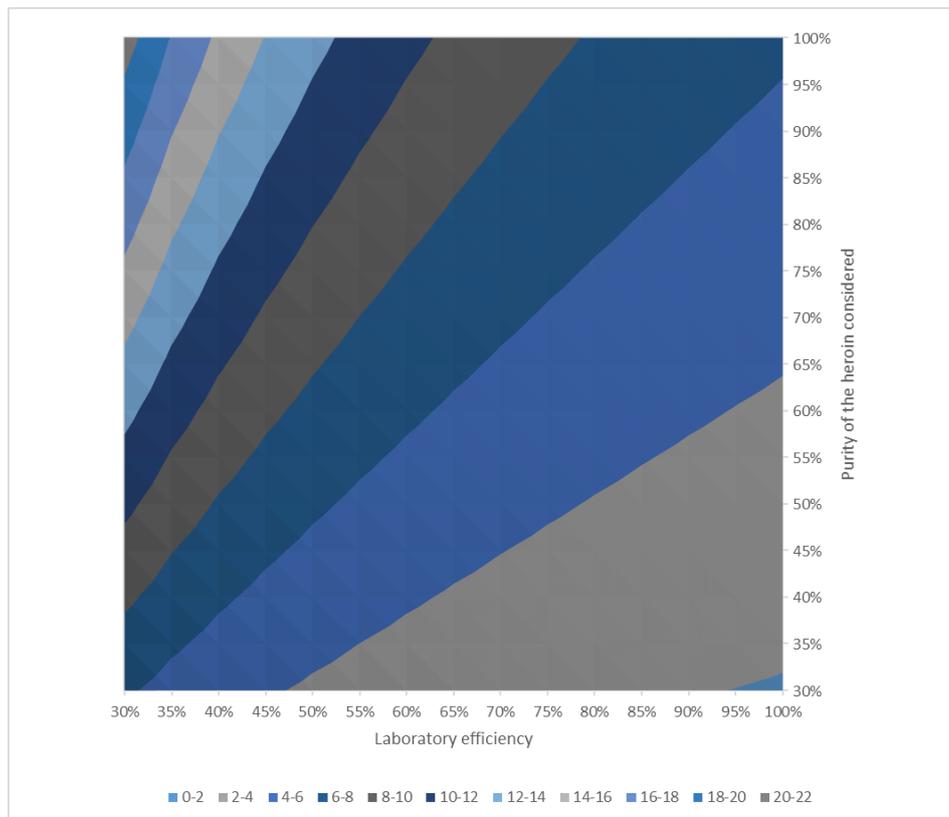
The share, s , of the opium harvest that is estimated to be converted to heroin is the ratio of heroin seizures in opium equivalents to the sum of opium and heroin seizures in opium equivalents

$$s = \frac{k \cdot H}{k \cdot H + O}$$

The estimated heroin production, E , is thus the opium harvest P multiplied by s divided by k

$$E = \frac{s \cdot P}{k} = \frac{k \cdot H}{k \cdot H + O} \cdot \frac{P}{k} = \frac{P \cdot H}{k \cdot H + O}$$

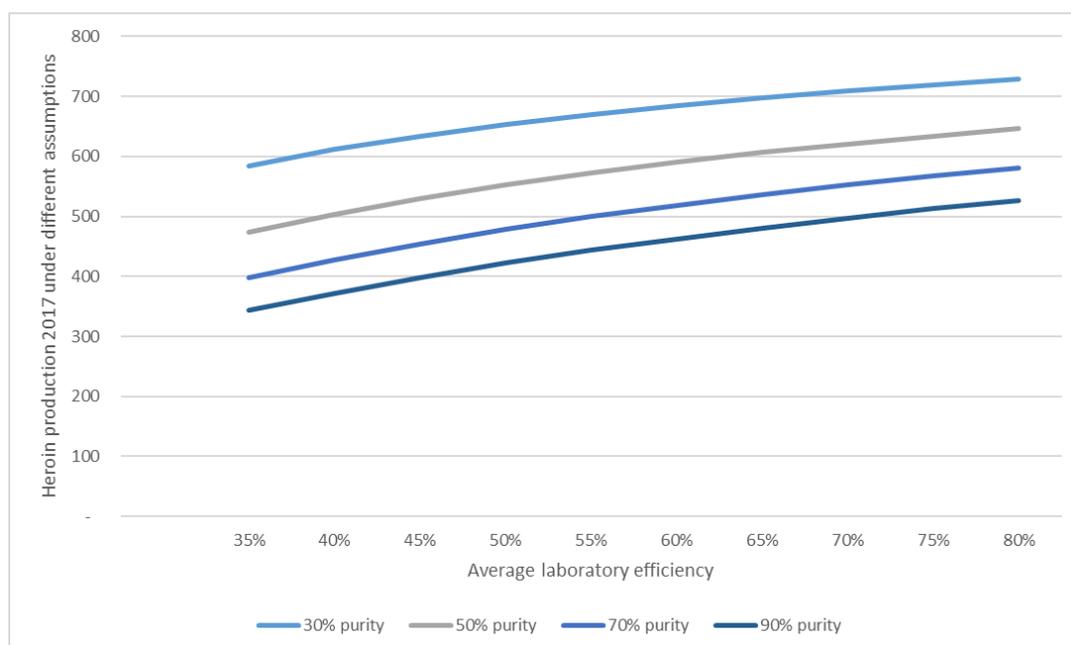
FIGURE 30 AMOUNTS OF OPIUM NEEDED TO PRODUCE ONE KILOGRAMME OF HEROIN FOR VARYING DEGREES OF HEROIN PURITY AND LABORATORY EFFICIENCY



The colors represent the kilograms of opium needed (see legend) for producing one kilogram of heroin under a given laboratory efficiency (horizontal axis) and purity of the resulting heroin (vertical axis). Calculations are based on 12.5 per cent morphine content of raw opium.

Applying these calculations on the 2017 case yields the following results. In a very-low production scenario (very low laboratory efficiency – 30 per cent, very high purity – 90 per cent) 312 kilogram of heroin would be produced, in a high production scenario (very high laboratory efficiency – 80 per cent and low purity – 30 per cent), 730 kilogram of heroin would be produced. Please note that these estimates refer to the point estimate of production (9,000 tons in 2017) and do not include the uncertainty around the production estimates.

FIGURE 31 HEROIN PRODUCTION YIELDED FROM THE 2017 OPIUM HARVEST UNDER DIFFERENT ASSUMPTIONS ON PURITY AND LABORATORY EFFICIENCY



Note: Calculations are based on 12.35% morphine content and 8,971 tons of opium production in 2017.

Value of the opiate economy

Key components and underlying assumptions

Opium available for conversion to heroin. All the opium produced in Afghanistan each year is either exported as raw opium or in the form of heroin/morphine, consumed domestically in various forms, seized, stored for later use or lost (for example, due to mould or disposal to avoid seizures). Of these factors, only production and seizures can be estimated – seized opiates do not contribute to the value of the opiate economy and are therefore subtracted from the opium harvest estimate to establish the amount of opium available for consumption as raw opium and for heroin production for both exports and domestic consumption. To approximate seizures in the current year the latest available data on seizures of opiates in Afghanistan is used. Heroin and morphine seizures are converted into opium equivalents by using the latest available conversion ratio from opium to heroin and morphine.

Percentage of opium converted to heroin within Afghanistan. Once approximate amounts of seized opiates are subtracted from the opium production estimates, the amounts of opium converted to heroin within Afghanistan has to be estimated. All seizure data from Afghanistan and neighbouring countries is used for the estimation, which assumes that the shares converted in and exported from Afghanistan are proportional to all seizures made in those countries. Since seizures are often driven by chance and can vary strongly from year to year, a three year moving average of seized amounts is used for establishing the shares. Heroin and morphine seizures are converted into heroin equivalents by using the latest available conversion ratio estimate and purity assumptions.

Precursor substances. For the production of 1 kilogram of heroin, 1 litres of the costly precursor substance acetic anhydride is needed (updated in 2017 from 1.5 litres).⁶¹

Purity. The calculation of the value of the opium economy is limited by the fact that the drug products leaving laboratories in Afghanistan may undergo further processing, such as adulterations, before reaching assumed points of sale in neighbouring countries. Indeed, there is evidence that heroin is already mixed

⁶¹ US Drug Enforcement Administration Special Testing and Research Laboratory analysis – October 2017

with cutting agents in Afghanistan. This is done to increase profitability but can also be done for other reasons, such as tailoring the drug product for specific usages,⁶² which not only alters the volume of the drug exported but also influences costs. To account for these uncertainties, MCN/UNODC uses a wide range of purities.

Domestic market. The calculation of opiates consumed within Afghanistan uses the drug use estimates from the 2009 Drug Use Survey implemented by the Government of Afghanistan and UNODC, as well as more recent price data. The underlying assumption is that the quantity used has not changed since 2009, which is a simplification due to the lack of more recent data. The value of the domestic market was calculated by multiplying the estimated volumes of opium and heroin consumed in Afghanistan with the latest available retail price data retrieved from the MCN price monitoring system.

Gross and net export value. For the calculation of gross export value, the potential volumes of opium and heroin exported to neighbouring countries were multiplied by the corresponding average cross-border prices. The total gross export value is the combined gross export value of opium and morphine/heroin exports. Morphine exports are not considered separately and all processed opium exports are assumed to be in the form of heroin. By using cross-border prices, any profits made with Afghan opiates from onwards trafficking to end-consumer markets are not considered in the value of the opiate economy. To estimate the net value, the value of imports has to be subtracted from the gross value of all final goods, since this is income lost to the exporting country (Afghanistan). There are many imports necessary for opiate production but only imports of the main precursor substance for heroin production are considered in the calculation.

Components of the estimation

The opium economy estimation process includes the following steps:

- Estimation of the gross value of the domestic market for heroin/morphine and opium;
- Estimation of the gross export value of the remaining opium in the form of opium or heroin/morphine, after deducting seizures and domestic consumption. The respective value is calculated by multiplying quantities by prices in respective neighbouring countries;
- Estimation of the net value of the economy by subtracting the costs of imported precursors used for the production of domestically consumed opiates and the gross export value of remaining opiates;
- Therefore, up-to-date cross-border (for the export value) and end-consumer market (for the domestic market value) prices are needed, as well as the prices of the main precursor substances;
- Furthermore, in order to estimate the amount of opium needed for each of those markets a conversion factor for opium into morphine and heroin is needed.

The gross value of Afghan opium production at end-consumer level and at the country's borders is calculated by the amounts consumed and traded multiplied by their respective prices. The net value of opiate production is the gross value minus all expenditure for imports from abroad needed for processing opium into morphine and heroin and results in a net gain for the Afghanistan economy. Net value is considered to be more suitable for comparison with GDP than gross value.

Seizures are not represented in these calculations, as the income that would be generated by seized products is lost. The value of the domestic market at end-consumer level is calculated by multiplying the amounts consumed by the street-level price for heroin/morphine and opium, respectively. The cross-border price was used to calculate the value of the potential exports of opium and opiate products.

⁶² See UNODC (2009): *World Drug Report 2009*, p. 61, where evidence from the forensic laboratory of CNPA is presented confirming the use of various cutting agents in Afghanistan in 2008.

The calculation of a possible range in the potential value of the Afghan opiate economy is based on different assumptions on purity that affect the conversion ratio from opium to heroin, on different price ranges and on the confidence intervals around the estimated opium production of the current year. The resulting ranges are not meant to provide a confidence interval or any other statistical measure, but rather they constitute a what-if analysis that offers results on the basis of different assumptions about the further processing of opium in Afghanistan.

Prices

Until 2015, for Pakistan, the cross-border price of opium was the simple average of the average monthly wholesale price in Peshawar, Pakistan and the average monthly wholesale price in Quetta, Pakistan, collected via MCN Afghanistan opium price monitoring system. However, in 2016 the collection in Pakistan was discontinued. The source for prices of heroin and opium in neighbouring countries are the Annual report questionnaires submitted by Member States to UNODC. The simple average of these prices was used for estimating the value of exported opiates. It should be noted that price information has strong limitations and needs to be improved in order to enhance the reliability of the estimate.

Average farm-gate price and farm-gate value of opium production

Since 2009, farm-gate prices at harvest time have been derived from the opium price monitoring system and refer to the month when opium harvesting actually took place in the different regions of the country, which is thought to reflect opium prices at harvest time better. To calculate the national average price, regional price averages were weighted by regional opium production. The opium price in the Central region was calculated from the annual village survey, as there is no monthly opium price monitoring in that region.

The farm-gate value of opium production is the product of potential opium production at the national level multiplied by the weighted average farm-gate price of dry opium at harvest time. The upper and lower limits of the range of the farm-gate value were determined by using the upper and lower opium production estimate.