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Cultivation and Production

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Key Findings

Area under opium poppy cultivation increased by 63% since 2016, reaching a new record high

The total area under opium poppy cultivation in Afghanistan was estimated at 328,000 hectares in 2017, a 63% increase or 127,000 hectares more compared to the previous year. This level of opium poppy cultivation is a new record high and exceeds the formerly highest value recorded in 2014 (224,000 hectares) by 104,000 hectares or 46%.

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

The majority (60%) of cultivation took place in the South of the country. The Western region accounted for 17% of total cultivation, the Northern region for 13% and the Eastern region for 7%. The remaining regions (North-eastern and Central) together accounted for 3%.

Hilmand remained the country's major opium poppy cultivating province, followed by Kandahar, Badghis, Faryab,[1] Uruzgan,[2] Nangarhar, Farah, Balkh, Nimroz and Badakhshan.

Opium poppy cultivation expanded to new regions and intensified where there was cultivation before

In 2017, the number of poppy-free provinces in Afghanistan decreased from 13 to 10. The number of provinces affected by opium poppy cultivation increased from 21 to 24. Ghazni, Samangan and Nuristan provinces lost their poppy-free status. Ghazni had been poppy-free for more than two decades (since 1995), Samangan and Nuristan for almost 10 years (since 2007).

Starting in 2014, the Northern region experienced a rapid expansion of opium poppy cultivation. In 2014, a total of 574 hectares was cultivated in three out of seven provinces (Baghlan, Faryab and Sari-Pul); in 2017, only one province remained poppy-free (Bamyan) and some 43,000 hectares were cultivated in the other six provinces.[3]

Cultivation in Balkh, which was poppy-free until 2014, expanded from 204 hectares in 2015 to 12,100 hectares in 2017. In Jawzjan, which was poppy-free between 2008 and 2015, cultivation increased from 409 hectares in 2016 to 3,200 hectares in 2017. In Sari-Pul (last time poppy-free in 2013), cultivation expanded from 195 hectares in 2014 to 3,600 hectares in 2017.

Opium poppy cultivation intensified in the main opium-poppy cultivating provinces by holding a more significant share of the available agricultural land. In Hilmand, a third of the arable land was dedicated to opium poppy in 2017, whereas only 20% was under cultivation in 2016. Less drastically, but still significant increases in density could be observed in Uruzgan and Nangarhar where a fourth of the arable land was under opium poppy cultivation in 2017 compared to 19% in Uruzgan and 16% in Nangarhar in 2016.

Total eradication of opium poppy increased by 395 hectares but remained very low

In 2017, 750 hectares of opium poppy were eradicated in 14 provinces (355 hectares in 7 provinces in 2016). During the 2017 eradication campaign, six lives were lost and eight persons were injured. In 2016, eight lives were lost and seven persons were injured.

[1] Including Ghormach district, a district formerly part of Badghis, but since 2017 under the administration of the Governor of Faryab province.

[2] Including Gizab district, a district formerly part of Day-Kundi, but under the administration of the Governor of Uruzgan province.

[3] This includes the estimates of Ghormach district, a major poppy cultivating district which was part of Badghis (Western region) until 2016. Comparability of the totals of 2016 and 2017 in the Northern region is therefore limited. When excluding Faryab from the comparison, cultivation increased from 363 hectares in 2014 to 20,200 hectares in 2017.

Potential opium yield and production increased in 2017

Potential opium production was estimated at 9,000 tons in 2017, an increase of 87% from its 2016 level (4,800 tons). The increase in production is mainly a result of an increase in area under opium poppy cultivation, while an increase in opium yield per hectare also contributed.

In 2017, the average opium yield amounted to 27.3 kilograms per hectare, which was 15% higher than in 2016. Yields increased in the Southern region by 19% (from 22.0 kilograms per hectare in 2016 to 26.2 kilograms per hectare in 2017), in the North-eastern region by 14% (from 31.2 to 35.4 kilograms per hectare) and in the Eastern region by 8% (from 32.4 to 34.9 kilograms per hectare). In the Central and Northern regions, yields decreased by 5% and 6% respectively and remained stable in the Western region.

Accounting for 57% of national production, the Southern region continued to produce the vast majority of opium in Afghanistan. With 16% of national production, the Northern region was the second most important opium-producing region in 2017, followed by the Western region (13%) and Eastern region (9%).

In response to the increased supply of opium, 2017 prices at harvest time decreased in all regions (between -7% in the Western region and -50% in the North-eastern region) of Afghanistan except in the Southern region where prices only dropped in the months after the harvest.

At almost US$ 1.4 billion (1.2 – 1.5 billion), equivalent to roughly 7% of Afghanistan's estimated GDP,[4] the farm-gate value of opium production increased by 55% in 2017 as compared to past year.[5]

Reasons for the increase

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, as well as corruption, 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. This may have subsequently contributed to the strong increase in the area under opium poppy cultivation. Political instability and increased insecurity particularly affected the Northern region, where opium poppy cultivation expanded drastically in the last couple of years. Generally, the weaker engagement of the international aid community may also have reduced the socio-economic development opportunities in rural areas.

In Hilmand province, additional factors may have played a role. In 2017, reports from the field indicate that more cheap labour for harvesting might have become available. In combination with increasing yields in 2016, this could have motivated many farmers to take up or expand opium poppy cultivation. The opium harvest requires a large number of skilled labourers, who often come from other provinces of Afghanistan and even from neighbouring countries. In past years, there have been reports of a lack of workers, caused by the on-going fights within Hilmand, which may have led farmers to restrict their investments in opium poppy cultivation to avoid the risk of unharvested fields.

The continuing advances in agriculture, including the use of solar panels for powering irrigation pumps and fertilizers and pesticides, may have made opium poppy cultivation increasingly

[4] Estimated at USD 20 billion for the Afghan year 2016/2017. Source: Islamic Republic of Afghanistan, Central Statistics Organization.

[5] Without adjustment for inflation.

profitable even under unfavourable natural conditions. Solar panels for irrigation seem to have replaced diesel pumps in many areas. These panels require a sizable initial investment, but have lower running costs than diesel-powered pumps and thus can turn desert areas into highly productive arable land at a relatively low cost. The nation-wide high opium farm-gate prices of 2016 might have facilitated some of these investments.

Future challenges

The 2017 record levels of opium poppy cultivation in Afghanistan create multiple challenges for the country, its neighbours and the many other countries that are transit for or destination of Afghan opiates. The significant levels of opium poppy cultivation and illicit trafficking of opiates will probably further fuel instability, insurgency and increase funding to terrorist groups in Afghanistan. More high quality, low cost heroin will reach consumer markets across the world, with increased consumption and related harms as a likely consequence.

Addressing the opiate problem in Afghanistan remains a shared responsibility. 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. Moreover, the transformation of opium into heroin is likely to bring increased trafficking of precursor substances. Tons of precursor chemicals will potentially be diverted from licit international markets and smuggled into Afghanistan to supply manufacturers of heroin.

In Afghanistan, one of the least-developed countries worldwide, the impact of the illicit drug cultivation and production on economic, environmental and social development, continues to be multifaceted. The large increase in opium production will reinforce the negative consequences of the already existing large-scale production of opiates. The expanding illicit economy, which in many provinces has permeated rural societies and made many communities dependent on the income from opium poppy, will further constrain the development of the licit economy and potentially further fuel corruption. The increased levels of opium poppy cultivation also have the potential to exacerbate existing environmental damage caused by overexploitation of the land for opium. The increased availability of opium and heroin in the country might further raise the social and economic costs associated with the consumption of opiates for drug users, their families, and for society in general.

To support the Afghan Government in its efforts to counter illicit crop cultivation, continuing analysis and monitoring of the links between the rule of law, illicit drug cultivation, production, and trafficking is required. The forthcoming MCN/UNODC socio-economic survey report will discuss these factors in detail, presenting an in-depth analysis of the risk factors related to illicit cultivation of opium, as well as the possible consequences and policy considerations for Afghanistan and the international community following this year's record cultivation.

Fact Sheet Afghanistan Opium Survey 2017

	2016	Change from 2016	2017
Net opium poppy cultivation (after eradication)[6]	201,000 ha (181,000 - 221,000)	+63%	328,000 ha (301,000 - 355,000)
Number of poppy-free provinces[7]	13	-3	10
Number of provinces affected by opium poppy cultivation	21	+3	24
Eradication	355 ha	+111%	750 ha
Average opium yield (weighted by cultivation)	23.8 kg/ha	+15%	27.3 kg/ha
Potential production of opium	4,800 mt (4,000 - 5,600)	+87%	9,000 mt (8,000 -10,000)
Average farm-gate price (weighted by production) of fresh opium at harvest time	US$ 152/kg	-14%	US$ 131/kg
Average farm-gate price (weighted by production) of dry opium at harvest time	US$ 187/kg	-17%	US$ 155/kg
Total farm gate value of opium production	US$ 0.90 billion	+55%	US$ 1.4 billion

[6] Numbers in brackets indicate the upper and lower bounds of the estimation range.
[7] A province is defined as poppy-free when it is estimated to have less than 100 hectares of opium poppy cultivation.

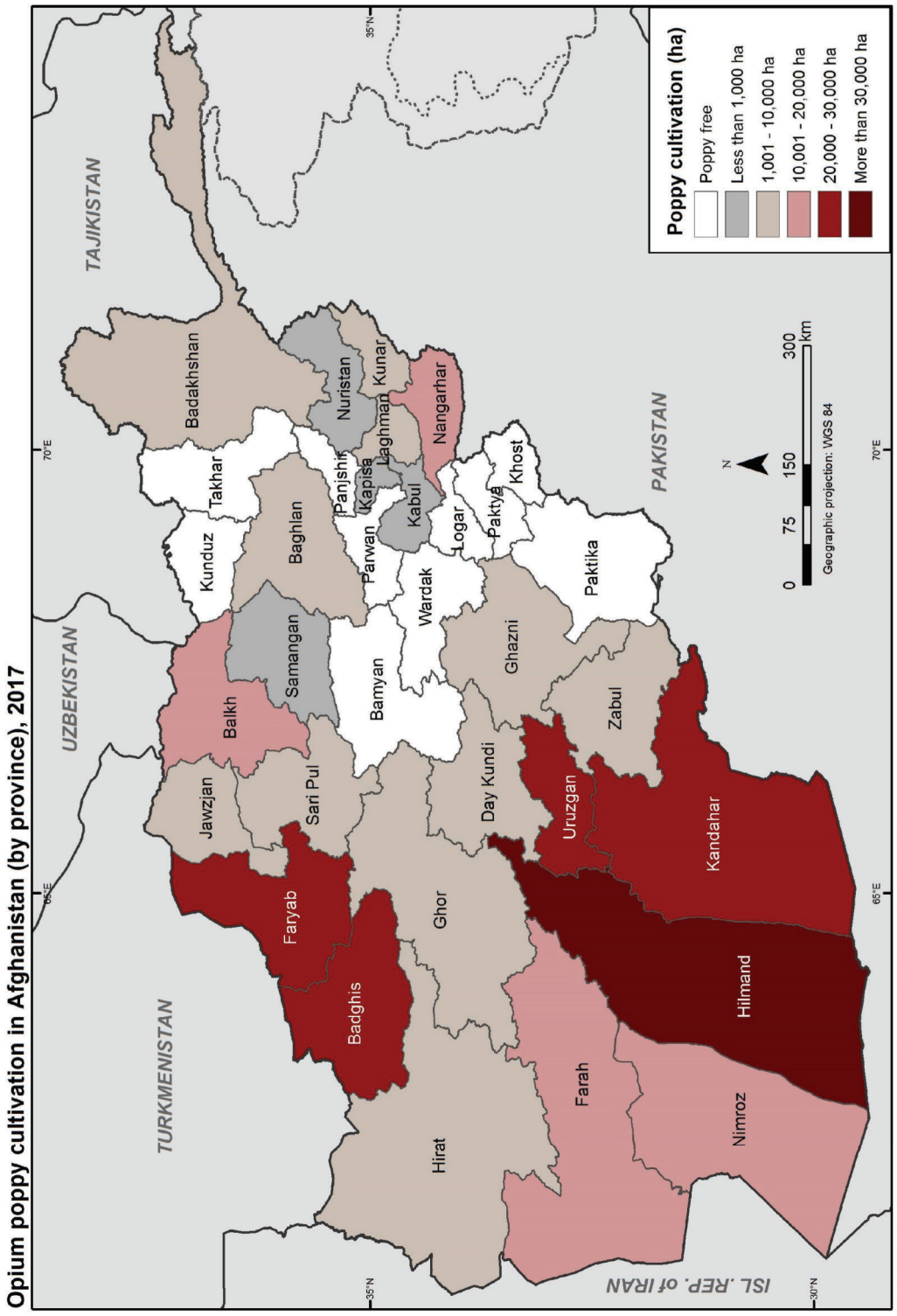
1 Introduction

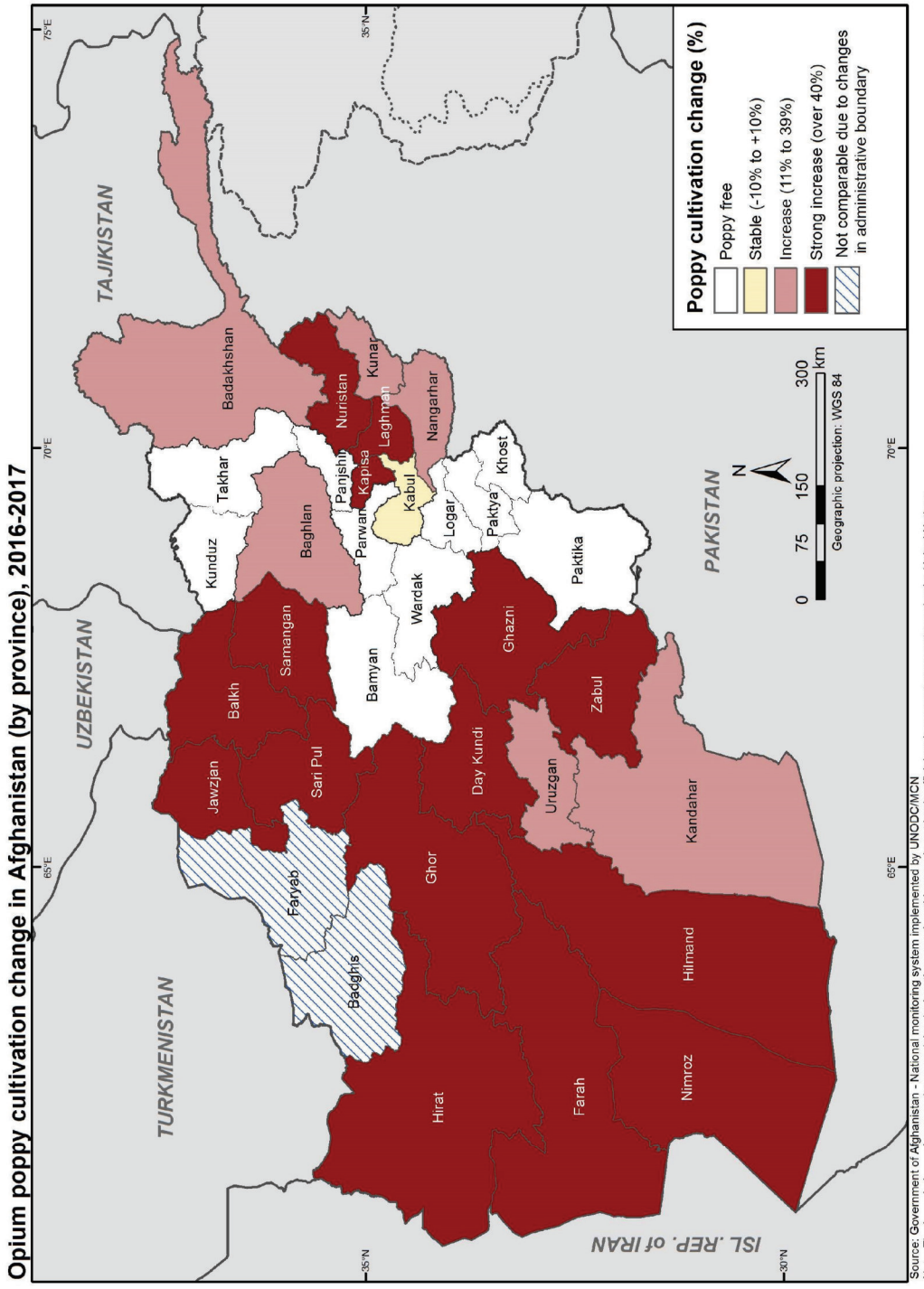
The Afghanistan Opium Survey is implemented annually by the Ministry of Counter Narcotics (MCN) of Afghanistan in collaboration with the United Nations Office on Drugs and Crime (UNODC). The survey team collects and analyses information on the location and extent of opium poppy cultivation, potential opium production and the socio-economic situation in rural areas. Since 2005, MCN and UNODC have also been involved in the verification of opium eradication conducted by provincial governors and poppy-eradication forces. The results provide a detailed picture of the outcome of the current year's opium season and, together with data from previous years, enable the identification of medium- and long-term trends in the evolution of the illicit drug problem. 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 opium survey is implemented within the technical framework of the UNODC Illicit Crop Monitoring Programme (ICMP). The objective of ICMP is to assist the international community in monitoring the extent and evolution of illicit crops, an objective that was reiterated in the plan of action adopted by the United Nations (the 53rd session of the Commission on Narcotic Drugs in March 2009) and in a recent outcome document from the United Nations General Assembly Special Session on the World Drug Problem[8]. Under ICMP, monitoring activities currently supported by UNODC also exist in other countries affected by illicit crop cultivation: in Asia, Myanmar; in Latin America, the Plurinational State of Bolivia, Colombia, Mexico and Peru; in Africa, Nigeria.

The Afghanistan Opium Survey 2017 was 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.

[8] See points 3u, 7c, 7d, 7g in *Our joint commitment to effectively addressing and countering the world drug problem*. Outcome Document of the 2016 United Nations General Assembly Special Session on the World Drug Problem, New York, 19-21 April 2016


Opium poppy cultivation in Afghanistan (by province), 2017
Poppy cultivation (ha)
Poppy free
Less than 1,000 ha
1,001 - 10,000 ha
10,001 - 20,000 ha
20,000 - 30,000 ha
More than 30,000 ha
TAJIKISTAN
UZBEKISTAN
TURKMENISTAN
PAKISTAN
ISL. REP. of IRAN
Badakhshan
Takhar
Kunduz
Baghlan
Nuristan
Kunar
Laghman
Panjshir
Kapisa
Parwan
Kabul
Nangarhar
Logar
Paktya
Khost
Paktika
Wardak
Bamyan
Ghazni
Zabul
Samangan
Balkh
Jawzjan
Sari Pul
Faryab
Badghis
Ghor
Day Kundi
Uruzgan
Kandahar
Hilmand
Farah
Nimroz
Hirat
65°E
70°E
35°N
30°N
0 75 150 300 km
N
Geographic projection: WGS 84
Source: Government of Afghanistan - National monitoring system implemented by UNODC/MCN
Note: The boundaries and names shown and the designations used on this map do not imply official endorsement or acceptance by the United Nations.
The dotted line represents approximately the line of control in Jammu and Kashmir agreed upon by India and Pakistan. The final status of Jammu and Kashmir has not yet been agreed upon by the parties.



Source: Government of Afghanistan - National monitoring system implemented by UNODC/MCN
Note: The boundaries and names shown and the designations used on this map do not imply official endorsement or acceptance by the United Nations.
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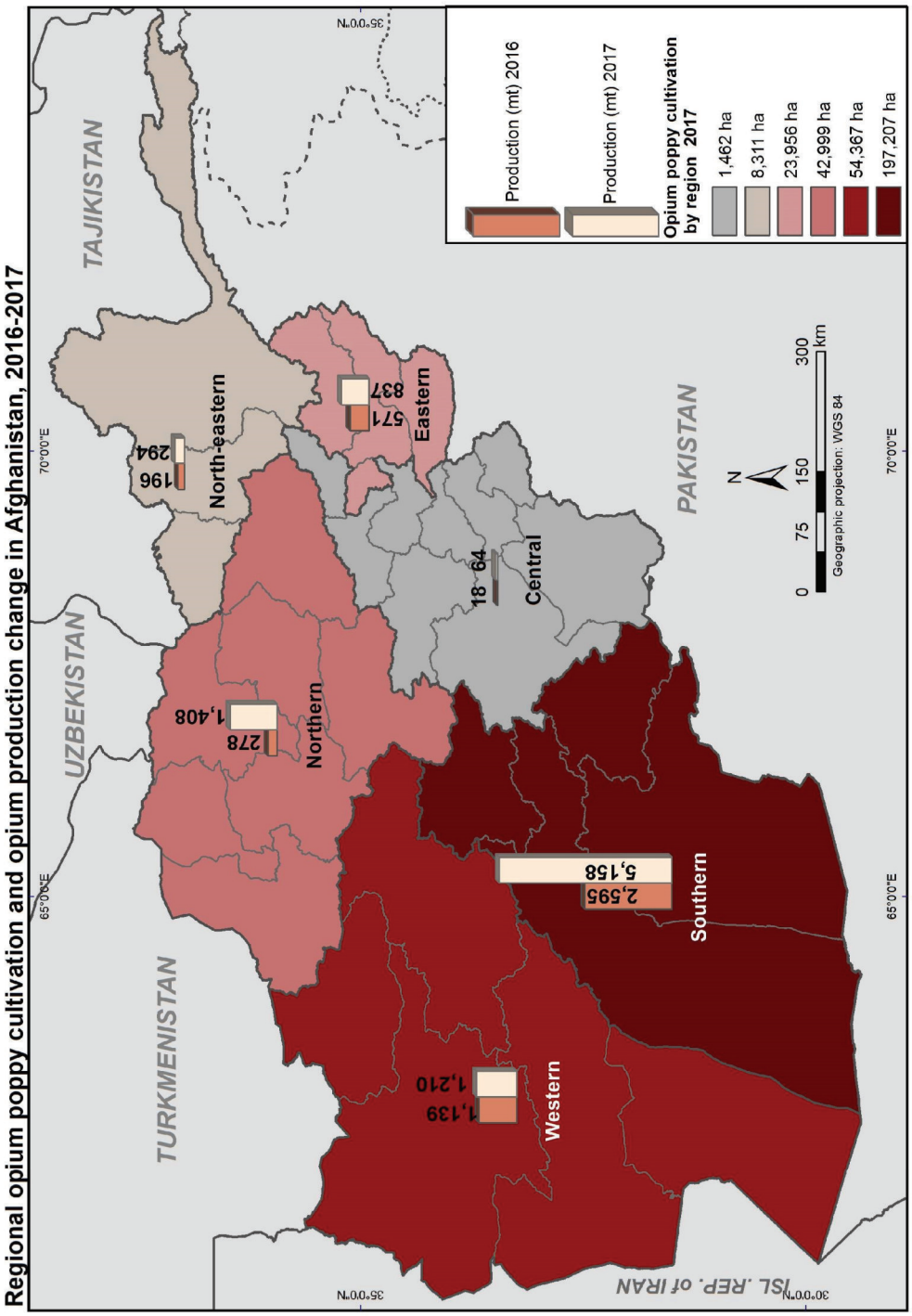

Regional opium poppy cultivation and opium production change in Afghanistan, 2016-2017
TAJIKISTAN
UZBEKISTAN
TURKMENISTAN
PAKISTAN
ISL. REP. of IRAN
North-eastern
196
294
Eastern
571
837
Central
18
64
Northern
278
1,408
Southern
2,595
5,158
Western
1,139
1,210
Production (mt) 2016
Production (mt) 2017
Opium poppy cultivation by region 2017
1,462 ha
8,311 ha
23,956 ha
42,999 ha
54,367 ha
197,207 ha
N
0 75 150 300 km
Geographic projection: WGS 84
65°0'0"E
70°0'0"E
35°0'0"N
30°0'0"N
Source: Government of Afghanistan - National monitoring system implemented by UNODC/MCN
Note: The boundaries and names shown and the designations used on this map do not imply official endorsement or acceptance by the United Nations.
The 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.

2 Opium Poppy Cultivation

2.1 National and regional opium poppy cultivation trends

The total area under opium poppy cultivation in Afghanistan was estimated at 328,000 hectares in 2017, a 63% increase or 127,000 hectares more compared to the previous year. This level of opium poppy cultivation is a new record high since the beginning of the systematic monitoring and exceeds the formerly highest value of 2014 (224,000 hectares) by 104,000 hectares or 46%.

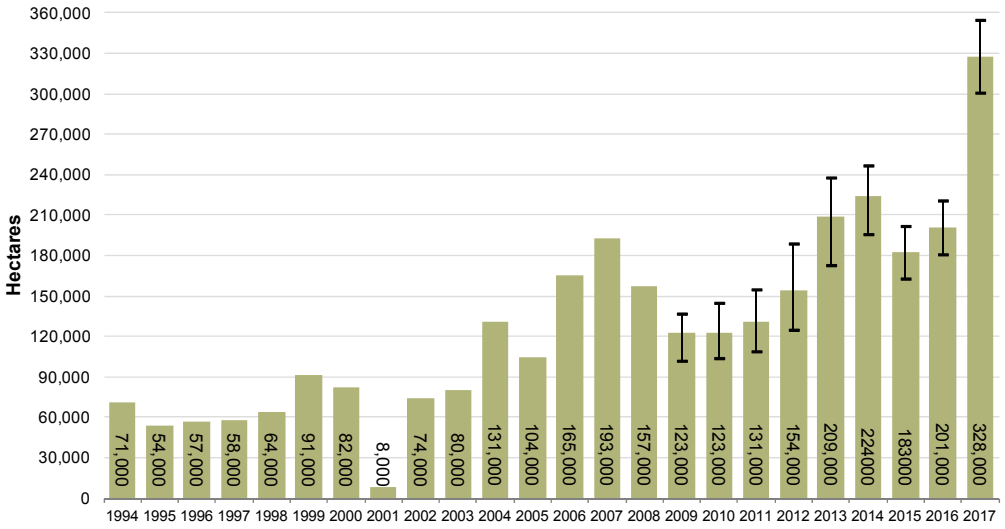
Strong increases were observed in almost all major poppy cultivating provinces. In Hilmand province alone, cultivation increased by 63,745 hectares (+79%) which accounted for about half of the total national increase. Strong increases were observed also in Balkh (+10,031 hectares or almost five times more than in 2016), Kandarhar (+7,535 hectares or +37%), Nimroz (+6,163 hectares or +116%), and Uruzgan (+6,038 hectares or +39%).

The regional distribution of opium poppy cultivation shows that the majority (60%) of cultivation took place in the South of the country. The Western region accounted for 17% of total cultivation; the Northern region for 13% and the Eastern region for 7%. The remaining regions (North-Eastern and Central) together accounted for 3%.

Hilmand remained the country's major opium poppy cultivating province at 144,018 hectares, followed by Kandahar (28,010 hectares), Badghis (24,723 hectares), Faryab (22,797 hectares),[9] and Uruzgan (21,541 hectares).[10]

In 2017, the number of poppy-free provinces in Afghanistan decreased from 13 to 10. Opium poppy cultivation in Samangan, in the Northern region, was estimated at 243 hectares and lost its poppy-free status, which it gained 2007. Ghazni and Nuristan also lost their poppy-free status which they had kept since 1995 and 2007, respectively.

Figure 1: Opium poppy cultivation in Afghanistan, 1994-2017 (Hectares)



Sources: MCN/UNODC opium surveys 1994-2017. The vertical lines represent the upper and lower bounds of the 95% confidence interval.

[9] Including Ghormach district, a district formerly part of Badghis, but under the administration of the Governor of Faryab province.

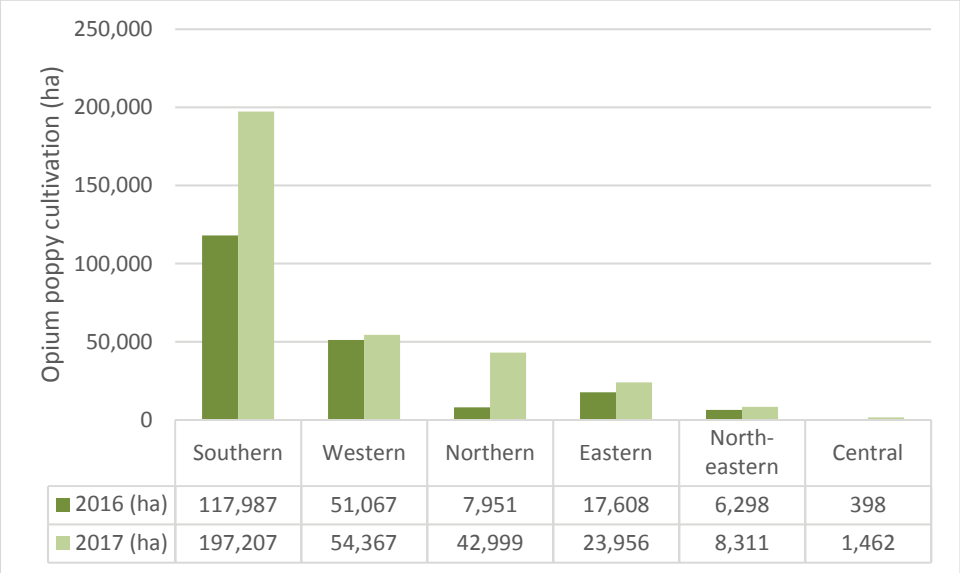
[10] Including Gizab district, a district formerly part of Day-Kundi, but under the administration of the Governor of Uruzgan province.

Table 1: Regional distribution of opium poppy cultivation, 2016-2017 (Hectares)

Region	2016 (ha)	2017 (ha)	Change 2016-2017 %	2016 (ha) as % of total	2017 (ha) as % of total
Central	398	1,462	+267%	0.2%	0.4%
Eastern	17,608	23,956	+36%	9%	7%
North-eastern	6,298	8,311	+32%	3%	3%
Northern*	7,951	42,999	+441%	4%	13%
Southern	117,987	197,207	+67%	59%	60%
Western*	51,067	54,367	+6%	25%	17%
Rounded Total	**201,000**	**328,000**	**+63%**	**100%**	**100%**

**In 2017, the provincial boundaries of Badghis (Western region) and Faryab (Northern region) were changed. Ghormach district, formerly part of Badghis province and a major opium poppy cultivating district, came in 2017 under the administration of the Governor of Faryab province. The changes in opium poppy cultivation in these two regions are affected by this change.*

Figure 2: Opium poppy cultivation in Afghanistan, by region 2016-2017 (Hectares)



In 2017, the provincial boundaries of Badghis (Western region) and Faryab (Northern region) were changed. Ghormach district, formerly part of Badghis province and a major opium poppy cultivating district, came in 2017 under the administration of the Governor of Faryab province. The changes in opium poppy cultivation in these two regions are affected by this change.

In the **Eastern region**, the increase of opium poppy cultivation was mainly driven by the strong increase in Nangarhar (+4,632 hectares or +32%). Strong relative increases albeit at lower levels were also observed in Laghman (+877 hectares or +64%), Kapisa (+360 hectares or +59%) and Kunar (+358 hectares or +28%). Nuristan province lost its poppy-free status with 121 hectares of opium poppy cultivation (Nuristan was poppy-free since 2007). A total of 261 hectares of opium poppy were eradicated in Kapisa, Kunar, Laghman and Nangarhar provinces in 2017.

In the **North-Eastern region**, Badakhshan saw a significant increase of 32% in opium poppy cultivation from 6,298 hectares to 8,311 hectares. Eradication in Badakhshan province was 269 hectares in 2017 (270 hectares in 2016).

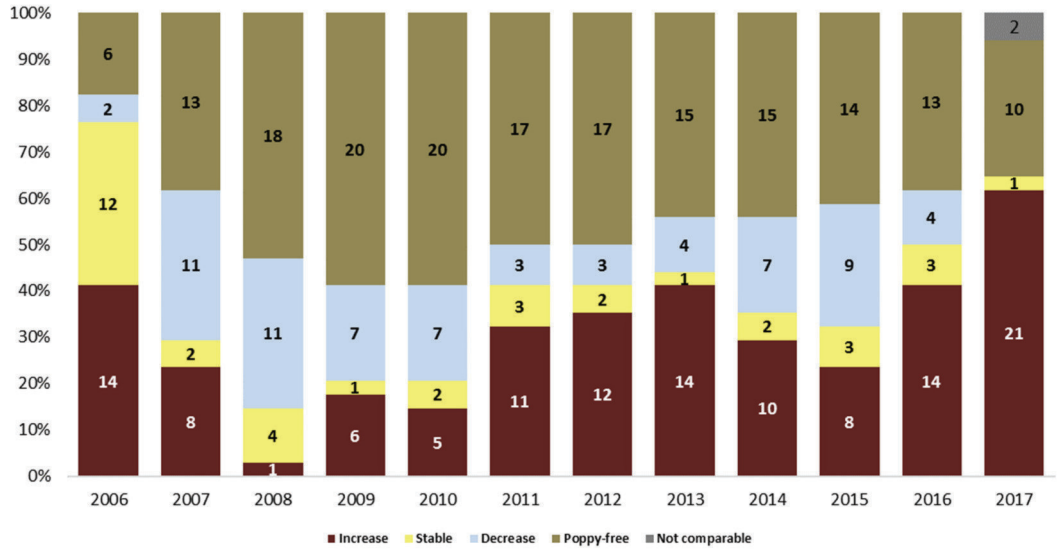
In the **Northern region**, strong increases were observed in Jawzjan (+2,828 hectares or +691%), Balkh (+10,031 Hectares or +481%), Sari-Pul (+1,864 hectares or +111%), and Baghlan province (+208 hectares or +24%). Area under cultivation in Faryab increased from 2,923 in 2016 to

22,797 hectares in 2017 which can be mostly attributed to a change in provincial boundaries: the major opium poppy cultivating district Ghormach, formerly part of Badghis province in the Western region came in 2017 under the administration of the Governor of Faryab province. Samangan province (243 hectares) lost its poppy-free status, which it had since 2007. In the past three years no eradication was carried out in the Northern region with an exception of Sari-Pul (33 hectares in 2015 and 55 hectares in 2016) and Balkh (25 hectares in 2017).

In the **Southern region**, opium poppy cultivation increased in all provinces: Day-Kundi (+1,134 hectares or +303%), Hilmand (+63,745 hectares or +79%), Zabul (+768 hectares or +56%), Uruzgan (+6,038 hectares or +39%) and Kandahar (+7,535 hectares or 37%). Hilmand remained in 2017 the country's main opium-poppy-cultivating province, accounting for 44% of total opium poppy cultivation. There was no eradication carried out in the Southern region with exception of Kandahar, where 48 hectares of opium poppy were eradicated in 2017.

The **Western region** remained in 2017 the second most important opium poppy cultivating region in the country. The two main poppy-cultivating provinces, Farah and Nimroz, saw significant increases, 41% (+3,745 hectares) and 116% (+6,163 hectares), respectively. Opium poppy cultivation also increased by 431% or 896 hectares in Hirat province in 2017. Levels of opium poppy cultivation in 2017 in Badghis province cannot be compared to 2016, because Ghormach district, a major opium poppy cultivating district, came under the administration of the Governor of Faryab province (Northern region) in 2017.

Figure 3: Number of provinces by opium poppy cultivation trends, 2006-2017[11]



[11] For the purpose of this table, change of area under cultivation from one year to the next is considered stable when the change is smaller than 10 per cent. Data since 2006 has been updated in 2015 to fit this criterion.

Table 2: Main opium-poppy-cultivating provinces in Afghanistan, 2012-2017 (Hectares)

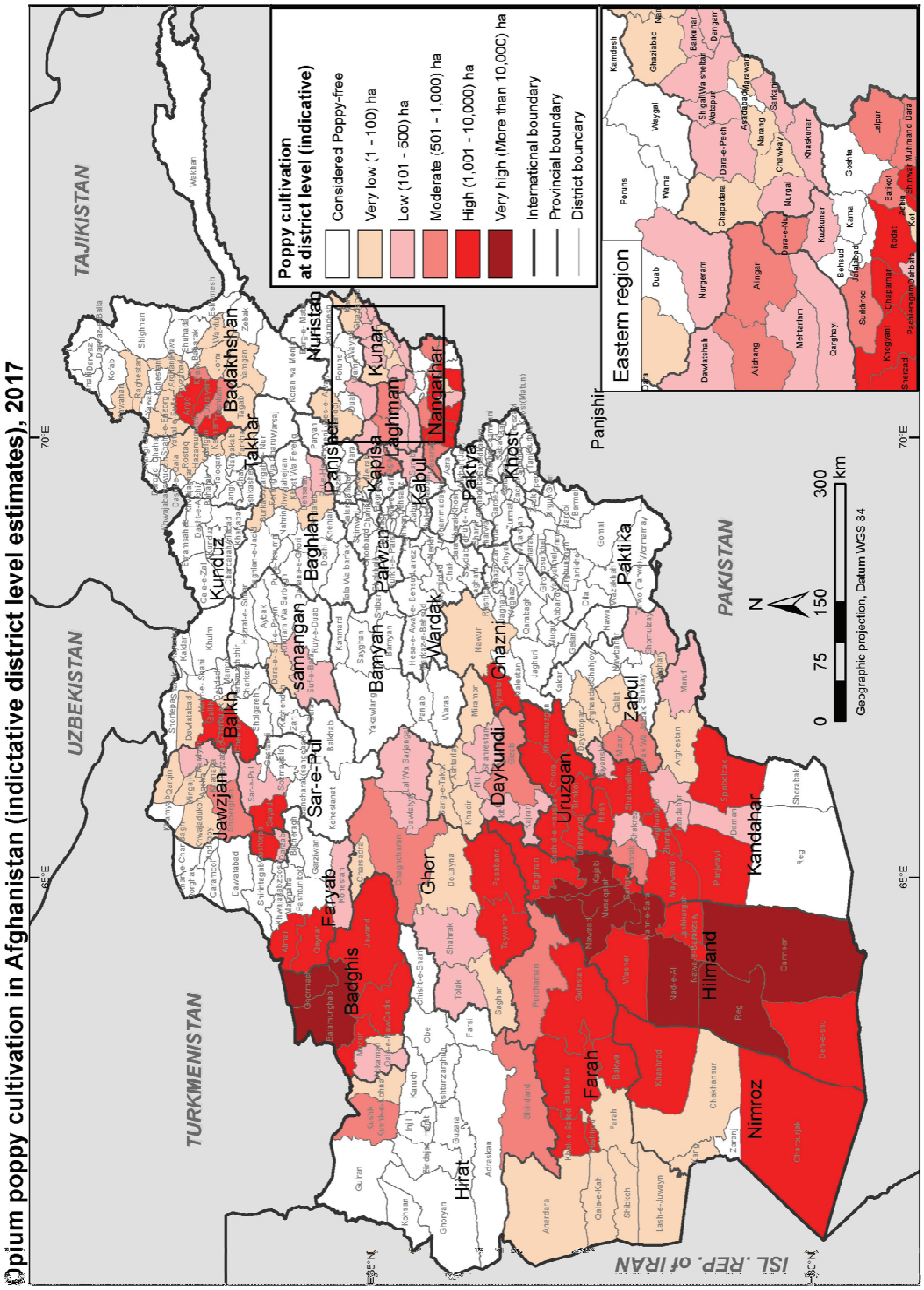
Province	2012	2013	2014	2015	2016	2017	Change 2016-2017	2017(ha) as % of total
Hilmand	75,176	100,693	103,240	86,443	80,273	144,018	79%	44%
Kandahar	24,341	28,335	33,713	21,020	20,475	28,010	37%	9%
Badghis*	2,363	3,596	5,721	12,391	35,234	24,723	NA	8%
Faryab*	PF	158	211	1,160	2,923	22,797	NA	7%
Uruzgan	10,508	9,880	9,277	11,277	15,503	21,541	39%	7%
Nangarhar	3,151	15,719	18,227	10,016	14,344	18,976	32%	6%
Farah	27,733	24,492	27,513	21,106	9,101	12,846	41%	4%
Balkh	PF	410	PF	204	2,085	12,116	481%	4%
Nimroz	3,808	16,252	14,584	8,805	5,303	11,466	116%	3%
Badakhshan	1,927	2,374	4,204	4,056	6,298	8,311	32%	3%
Rest of the country	5,475	7,553	7,647	6,089	9,771	23,499	140%	7%
Rounded Total	**154,000**	**209,000**	**224,000**	**183,000**	**201,000**	**328,000**	**63%**	**100%**

In 2017, the provincial boundaries of Badghis (Western region) and Faryab (Northern region) were changed. Ghormach district, formerly part of Badghis province and a major opium poppy cultivating district, came in 2017 under the administration of the Governor of Faryab province. The changes in opium poppy cultivation in these two regions are affected by this change.

Table 3: Opium poppy cultivation (2013-2017) and eradication (2016-2017) in Afghanistan
(Hectares)

PROVINCE	Cultivation 2013 (ha)	Cultivation 2014 (ha)	Cultivation 2015 (ha)	Cultivation 2016 (ha)	Cultivation 2017 (ha)	Change 2016-2017 (%)	Estimation method 2017	Eradication in 2016 (ha)	Eradication in 2017 (ha)
Ghazni	Poppy-free	Poppy-free	Poppy-free	Poppy-free	1,027	NA	T	0	0
Kabul	298	233	321	398	435	+9%	T	0	27
Khost	Poppy-free	Poppy-free	Poppy-free	Poppy-free	Poppy-free	-	V	0	0
Logar	Poppy-free	Poppy-free	Poppy-free	Poppy-free	Poppy-free	-	T	0	0
Paktika	Poppy-free	Poppy-free	Poppy-free	Poppy-free	Poppy-free	-	V	0	0
Paktya	Poppy-free	Poppy-free	Poppy-free	Poppy-free	Poppy-free	-	V	0	0
Panjshir	Poppy-free	Poppy-free	Poppy-free	Poppy-free	Poppy-free	-	V	0	0
Parwan	Poppy-free	Poppy-free	Poppy-free	Poppy-free	Poppy-free	-	T	0	0
Wardak	Poppy-free	Poppy-free	Poppy-free	Poppy-free	Poppy-free	-	V	0	0
Central Region	**298**	**233**	**321**	**398**	**1,462**	**+267%**		**0**	**27**
Kapisa	583	472	460	608	968	+59%	T	0	3
Kunar	1,127	754	987	1,276	1,634	+28%	S	0	31
Laghman	1,236	901	779	1,380	2,257	+64%	S	3	23
Nangarhar	15,719	18,227	10,016	14,344	18,976	+32%	S	1	204
Nuristan	Poppy-free	Poppy-free	Poppy-free	Poppy-free	121	NA	T	0	0
Eastern Region	**18,665**	**20,353**	**12,242**	**17,608**	**23,956**	**+36%**		**4**	**261**
Badakhshan	2,374	4,204	4,056	6,298	8,311	+32%	S	270	269
Kunduz	Poppy-free	Poppy-free	Poppy-free	Poppy-free	Poppy-free	-	T	0	0
Takhar	Poppy-free	Poppy-free	Poppy-free	Poppy-free	Poppy-free	-	T	21	15
North-eastern Region	**2,374**	**4,204**	**4,056**	**6,298**	**8,311**	**+32%**		**291**	**284**
Baghlan	141	168	180	849	1,057	+24%	T	0	0
Balkh	410	Poppy-free	204	2,085	12,116	+481%	T	0	25
Bamyan	Poppy-free	Poppy-free	Poppy-free	Poppy-free	Poppy-free	-	V	0	0
Faryab	158	211	1,160	2,923	22,797	NA	S	0	0
Jawzjan	Poppy-free	Poppy-free	Poppy-free	409	3,237	+691%	S	0	0.3
Samangan	Poppy-free	Poppy-free	Poppy-free	Poppy-free	243	NA	T	0	0
Sari Pul	Poppy-free	195	331	1,686	3,550	+111%	T	55	0
Northern Region	**710**	**574**	**1,875**	**7,951**	**42,999**	**+441%**		**55**	**25**
Day Kundi	1,536	587	381	374	1,508	+303%	S	0	0
Hilmand	100,693	103,240	86,443	80,273	144,018	+79%	S	0	0
Kandahar	28,335	33,713	21,020	20,475	28,010	+37%	S	4	48
Uruzgan	9,880	9,277	11,277	15,503	21,541	+39%	S	0	0
Zabul	1,335	2,894	644	1,363	2,131	+56%	S	0	0
Southern Region	**141,779**	**149,711**	**119,765**	**117,987**	**197,207**	**+67%**		**4**	**48**
Badghis	3,596	5,721	12,391	35,234	24,723	NA	S	0	55
Farah	24,492	27,513	21,106	9,101	12,846	+41%	S	0	0
Ghor	264	493	1,721	1,222	4,228	+246%	S	0	14
Hirat	952	738	285	208	1,104	+431%	T	0	23
Nimroz	16,252	14,584	8,805	5,303	11,466	+116%	S	1	14
Western Region	**45,557**	**49,049**	**44,308**	**51,067**	**54,367**	**+6%**		**1**	**106**
Total (rounded)	**209,000**	**224,000**	**183,000**	**201,000**	**328,000**	**+63%**		**355**	**750**

Area estimation method: S=remote sensing sample survey, T=remote sensing target survey, V=village sample survey and field observation. See Methodology section for detailed description of methods used. A province is defined as poppy-free when it is estimated to have less than 100 hectares of opium poppy cultivation. In 2017, the provincial boundaries of Badghis (Western region) and Faryab (Northern region) were changed. Estimates of these provinces and respective regions are not comparable between 2016 and 2017.


Opium poppy cultivation in Afghanistan (indictative district level estimates), 2017
Poppy cultivation at district level (indicative)
Considered Poppy-free
Very low (1 - 100) ha
Low (101 - 500) ha
Moderate (501 - 1,000) ha
High (1,001 - 10,000) ha
Very high (More than 10,000) ha
International boundary
Provincial boundary
District boundary
Eastern region
TAJIKISTAN
UZBEKISTAN
TURKMENISTAN
PAKISTAN
ISL. REP. of IRAN
Badakhshan
Nuristan
Kunar
Takhar
Panjsher
Laghman
Kapisa
Nangarhar
Kabul
Paktya
Khost
Kunduz
Baghlan
Parwan
Samangan
Balkh
Bamyan
Wardak
Ghazni
Paktika
Jawzjan
Sar-e-Pul
Daykundi
Zabul
Uruzgan
Faryab
Ghor
Kandahar
Badghis
Hilmand
Farah
Nimroz
Hirat
0 75 150 300 km
N
Geographic projection, Datum WGS 84
Source: Government of Afghanistan - National monitoring system implemented by UNODC/MCN
Note: The boundaries and names shown and the designations used on this map do not imply official endorsement or acceptance by the United Nations.
The 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.

2.2 Provincial Breakdown

2.2.1 Central region

(Ghazni, Kabul, Khost, Logar, Paktika, Paktya, Panjshir, Parwan, Wardak)

In 2017, opium poppy cultivation in the Central region was almost four times higher than in 2016, with the total area under cultivation increasing from 398 hectares in 2016 to 1,462 hectares in 2017.

Ghazni province with 1,027 hectares under opium poppy cultivation lost its poppy-free status which it held for more than 20 years since 1995. Opium poppy was mainly cultivated in Ajrestan district where the security situation is extremely poor.

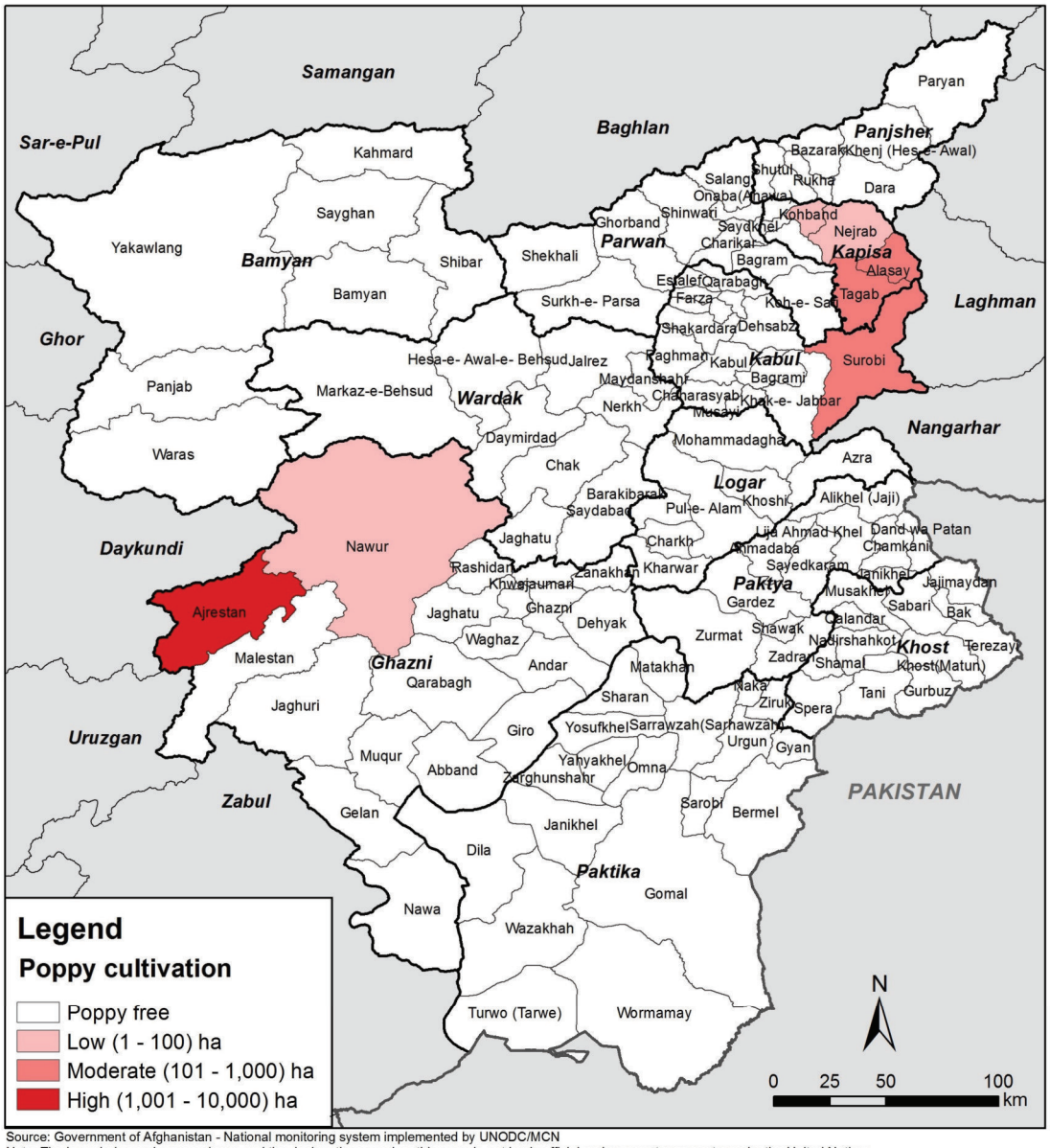
In **Kabul** province opium poppy cultivation was limited to the Uzbeen valley of Surobi district, where security was extremely poor. A total of 27 hectares of opium poppy were eradicated in 2017 in this province.

Table 4: Opium poppy cultivation and eradication in the Central region, 2015-2017 (Hectares)

PROVINCE	Cultivation 2015 (ha)	Cultivation 2016 (ha)	Cultivation 2017 (ha)	Change 2016-2017 (%)	Eradication in 2016 (ha)	Eradication in 2017(ha)
Ghazni	Poppy-free	Poppy-free	1,027	NA	0	0
Kabul	321	398	435	9%	0	27
Khost	Poppy-free	Poppy-free	Poppy-free	-	0	0
Logar	Poppy-free	Poppy-free	Poppy-free	-	0	0
Paktika	Poppy-free	Poppy-free	Poppy-free	-	0	0
Paktya	Poppy-free	Poppy-free	Poppy-free	-	0	0
Panjshir	Poppy-free	Poppy-free	Poppy-free	-	0	0
Parwan	Poppy-free	Poppy-free	Poppy-free	-	0	0
Wardak	Poppy-free	Poppy-free	Poppy-free	-	0	0
Central Region	**321**	**398**	**1,462**	**267%**	**0**	**27**

A province is defined as poppy-free when it is estimated to have less than 100 hectares of opium poppy cultivation.

Figure 4: Opium poppy cultivation in the Central region (by district), 2017



Source: Government of Afghanistan - National monitoring system implemented by UNODC/MCN
Note: The boundaries and names shown and the designations used on this map do not imply official endorsement or acceptance by the United Nations.

2.2.1 Eastern region

(Kapisa, Kunar, Laghman, Nangarhar, Nuristan)

The Eastern region experienced a 36% increase in opium poppy cultivation from 17,608 hectares in 2016 to 23,956 hectares in 2017. In 2017, 261 hectares were eradicated.

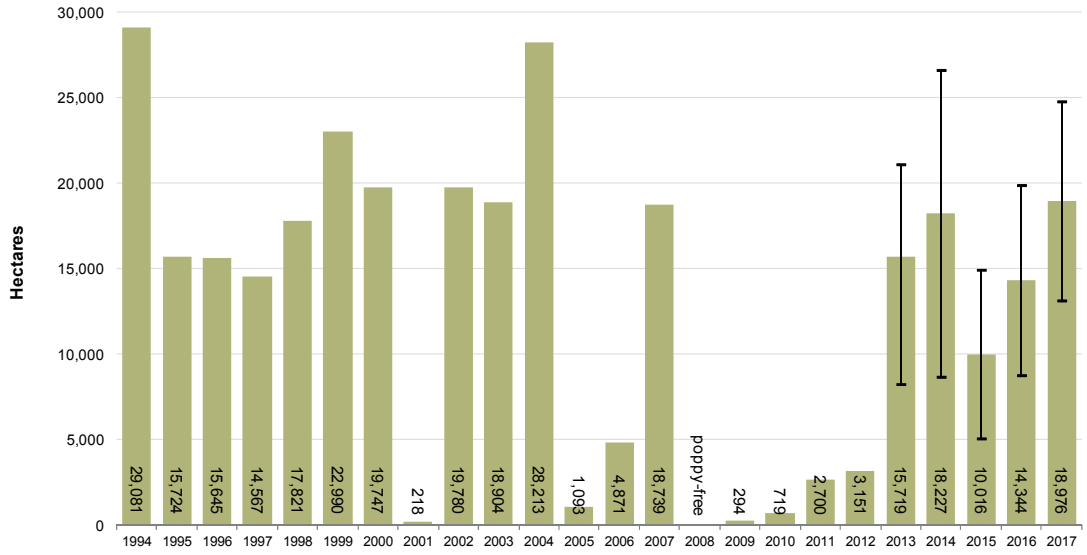
Table 5: Opium poppy cultivation and eradication in the Eastern region, 2015-2017
(Hectares)

PROVINCE	Cultivation 2015 (ha)	Cultivation 2016 (ha)	Cultivation 2017 (ha)	Change 2016-2017	Eradication in 2016 (ha)	Eradication in 2017 (ha)
Kapisa	460	608	968	59%	0	3
Kunar	987	1,276	1,634	28%	0	31
Laghman	779	1,380	2,257	64%	3	23
Nangarhar	10,016	14,344	18,976	32%	1	204
Nuristan	Poppy-free	Poppy-free	121	NA	0	0
Eastern Region	**12,242**	**17,608**	**23,956**	**36%**	**4**	**261**

A province is defined as poppy-free when it is estimated to have less than 100 hectares of opium poppy cultivation.

In 2017, opium poppy cultivation in **Nangarhar** increased by 32% from 14,344 hectares in 2016 to 18,976 hectares in all main opium poppy cultivating districts: Khugyani, Chaprahar, Batikot, Darah-i- Noor, Hesark, Lalpoor, Mohmand Dara, Rodat, Shinwari and Sherzad.

Figure 5: Opium poppy cultivation in Nangarhar province, 1994-2017 (Hectares)



The vertical lines represent the upper and lower bounds of the 95% confidence interval.

In **Laghman** province, opium poppy cultivation increased by 64% from 1,380 hectares in 2016 to 2,257 hectares in 2017. At the district level, increases were observed in all opium poppy cultivating districts (Alingar, Alishang, Dowlat Shah, Mehterlam and Qarghayee).

In **Kunar** province, opium poppy cultivation increased by 28% from 1,276 hectares in 2016 to 1,634 hectares in 2017. The main opium poppy cultivating districts were Sarkani, Noor Gal, Shigal Wa Sheltan, Watapoor and Dangam.

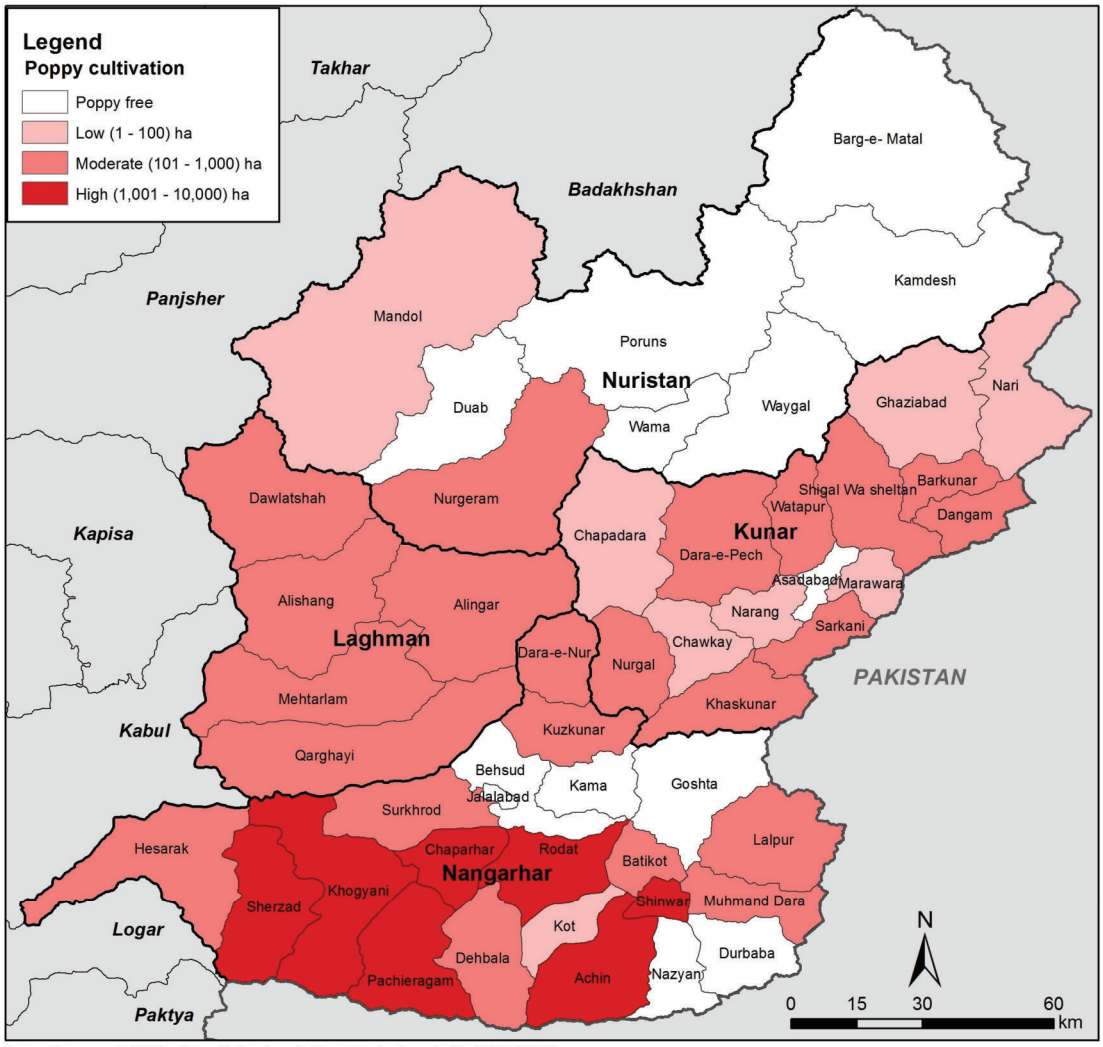
Opium poppy cultivation in **Kapisa** province increased by 59%, from 608 hectares in 2016 to 968 hectares in 2017. Tagab and Alasai were the main opium-poppy-cultivating districts.

Nuristan province was poppy-free from 2007 to 2016 but the province lost its poppy-free status in 2017 with 121 hectares of opium poppy cultivation in Noor Gram and Mandol districts.

Table 6: Opium poppy cultivation in Laghman, Kunar, Nuristan and Kapisa provinces, 1994-2017 (Hectares)

Year	Kapisa	Kunar	Laghman	Nuristan
1994	Poppy-free	115	Poppy-free	Poppy-free
1995	Poppy-free	152	Poppy-free	Poppy-free
1996	Poppy-free	18	Poppy-free	Poppy-free
1997	Poppy-free	Poppy-free	Poppy-free	Poppy-free
1998	Poppy-free	75	77	Poppy-free
1999	Poppy-free	288	297	Poppy-free
2000	Poppy-free	786	707	Poppy-free
2001	Poppy-free	82	15	Poppy-free
2002	Poppy-free	972	950	Poppy-free
2003	Poppy-free	2,025	1,907	648
2004	522	4,366	2,756	764
2005	115	1,059	274	1,554
2006	282	932	710	1,516
2007	835	446	561	Poppy-free
2008	436	290	425	Poppy-free
2009	Poppy-free	164	135	Poppy-free
2010	Poppy-free	154	234	Poppy-free
2011	181	578	624	Poppy-free
2012	290	1,279	877	Poppy-free
2013	583	1,127	1,236	Poppy-free
2014	472	754	901	Poppy-free
2015	460	987	779	Poppy-free
2016	608	1,276	1,380	Poppy-free
2017	968	1,634	2,257	121

Figure 6: Opium poppy cultivation in the Eastern region (by district), 2017



Source: Government of Afghanistan - National monitoring system implemented by UNODC/MCN
Note: The boundaries and names shown and the designations used on this map do not imply official endorsement or acceptance by the United Nations.

2.2.1 Northern region

(Baghlan, Balkh, Bamyan, Faryab, Jawzjan, Samangan, Sari-Pul)

In **Baghlan** province, opium poppy cultivation increased from 849 hectares in 2016 to 1,057 hectares in 2017. The main opium-poppy-cultivating districts were Deh Salah, Pul-i-Hisar, Andrab and Khwajah Hijran (Jalgah).

In 2017, opium poppy cultivation in **Balkh** increased almost sixfold from 2,085 hectares to 12,116 hectares. Until 2014, Balkh was poppy-free; it lost this status in 2015 with 204 hectares of opium poppy cultivation. In 2017 opium poppy was mainly cultivated in Chimtal, Chahar Bolak and Balkh districts.

Faryab was poppy-free in 2009, 2010 and 2012, but lost its poppy-free status in 2013. Since then the province area under opium poppy cultivation continuously expanded. In 2014, 211 hectares were cultivated, in 2015 1,160 hectares and in 2016 2,923 hectares. In 2017, opium poppy cultivation in Faryab province was estimated at 22,797 hectares, however this value is not directly comparable to last year's estimate, because Ghormach district, formerly part of Badghis province and a major opium poppy cultivating district, came in 2017 under the administration of Faryab province.

In 2017, **Samangan** lost its poppy-free status, which it held since 2007, with 243 hectares of opium poppy cultivation. Darah-i-Soof-i-Bala and Darah-i-Soof-i-Payin were the main opium poppy cultivating districts.

Bamyan has been poppy-free since 2007 and remained so in 2017.

Sari-Pul province was poppy-free from 2008 to 2013. The province lost its poppy-free status in 2014 with 195 hectares of opium poppy cultivation. In 2015, opium poppy cultivation increased to 331 hectares, in 2016 to 1,686 hectares and in 2017 to 3,550 hectares. The main opium cultivating districts were Sayyad and Sari-Pul provincial center.

Jawzjan province was poppy-free from 2008 to 2015, but lost its poppy-free status in 2016 with 409 hectares of opium poppy cultivation. In 2017, levels of cultivation further increased to 3,237 hectares, which was almost eight times more than in 2016.

Table 7: Opium poppy cultivation and eradication in the Northern region, 2014-2017
(Hectares)

PROVINCE	Cultivation 2014 (ha)	Cultivation 2015 (ha)	Cultivation 2016 (ha)	Cultivation 2017 (ha)	Change 2016-2017 (%)	Eradication in 2016 (ha)	Eradication in 2017 (ha)
Baghlan	168	180	849	1,057	+25%	0	0
Balkh	Poppy-free	204	2,085	12,116	+481%	0	25
Bamyan	Poppy-free	Poppy-free	Poppy-free	Poppy-free	-	0	0
Faryab*	211	1,160	2,923	22,797	NA	0	0
Jawzjan	Poppy-free	Poppy-free	409	3,237	+692%	0	0.3
Samangan	Poppy-free	Poppy-free	Poppy-free	243	NA	0	0
Sari-Pul	195	331	1,686	3,550	+111%	55	0
Northern Region	**574**	**1,875**	**7,951**	**42,999**	**+441%**	**55**	**25**

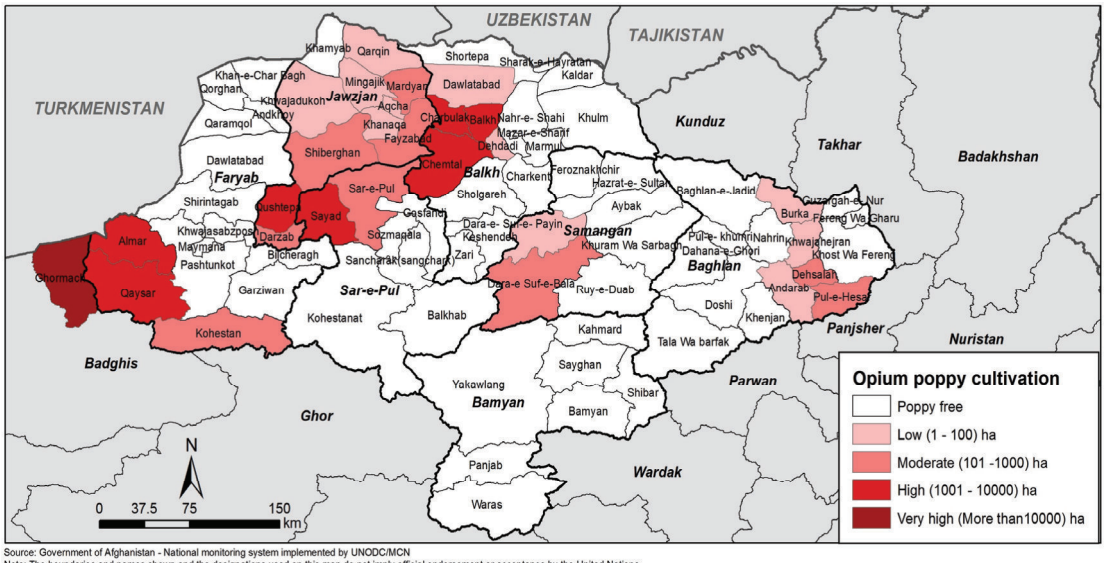
A province is defined as poppy-free when it is estimated to have less than 100 hectares of opium poppy cultivation. Ghormach district, formerly part of Badghis province and a major opium poppy cultivating district, came in 2017 under the administration of the Governor of Faryab province. The changes in opium poppy cultivation in Faryab and thus of the region are affected by this change.

Table 8: Opium poppy cultivation in the Northern region, 2004-2017 (Hectares)

Year	Baghlan	Balkh	Bamyan	Faryab	Jawzjan	Samangan	Sari-Pul
2004	2,444	2,495	803	3,249	1,673	1,151	1,974
2005	2,563	10,837	126	2,665	1,748	3,874	3,227
2006	2,742	7,232	Poppy-free	3,040	2,024	1,960	2,252
2007	671	Poppy-free	Poppy-free	2,866	1,085	Poppy-free	260
2008	475	Poppy-free	Poppy-free	291	Poppy-free	Poppy-free	Poppy-free
2009	Poppy-free	Poppy-free	Poppy-free	Poppy-free	Poppy-free	Poppy-free	Poppy-free
2010	Poppy-free	Poppy-free	Poppy-free	Poppy-free	Poppy-free	Poppy-free	Poppy-free
2011	161	Poppy-free	Poppy-free	Poppy-free	Poppy-free	Poppy-free	Poppy-free
2012	177	Poppy-free	Poppy-free	Poppy-free	Poppy-free	Poppy-free	Poppy-free
2013	141	410	Poppy-free	158	Poppy-free	Poppy-free	Poppy-free
2014	168	Poppy-free	Poppy-free	211	Poppy-free	Poppy-free	195
2015	180	204	Poppy-free	1,160	Poppy-free	Poppy-free	331
2016	849	2,085	Poppy-free	2,923	409	Poppy-free	1,686
2017	1,057	12,116	Poppy-free	22,797*	3,237	243	3,550

A province is defined as poppy-free when it is estimated to have less than 100 hectares of opium poppy cultivation. Ghormach district, formerly part of Badghis province and a major opium poppy cultivating district, came in 2017 under the administration of the Governor of Faryab province. The changes in opium poppy cultivation in Faryab are affected by this change.

Figure 7: Opium poppy cultivation in the Northern region (by district), 2017



Source: Government of Afghanistan - National monitoring system implemented by UNODC/MCN
Note: The boundaries and names shown and the designations used on this map do not imply official endorsement or acceptance by the United Nations.

2.2.1 North-eastern region

(Badakhshan, Kunduz and Takhar)

The only opium poppy cultivating province in the region was **Badakhshan** province as the two other provinces, Kunduz and Takhar were poppy-free.

Opium poppy cultivation in Badakhshan increased by 32% from 6,298 in 2016 to 8,311 hectares in 2017 and was mostly confined to rain-fed areas cultivated in spring, mainly in Argo, Darayim and Kishim districts. A total of 269 hectares of opium poppy were eradicated in Badakhshan province in 2017.

Kunduz province has been poppy-free since 2007 and is well known for growing a wide range of licit crops, from fruit and vegetables to cotton. An insignificant amount of cultivation was observed in this province in recent years. It remained under 100 hectares in 2017, the threshold for obtaining the poppy-free status.

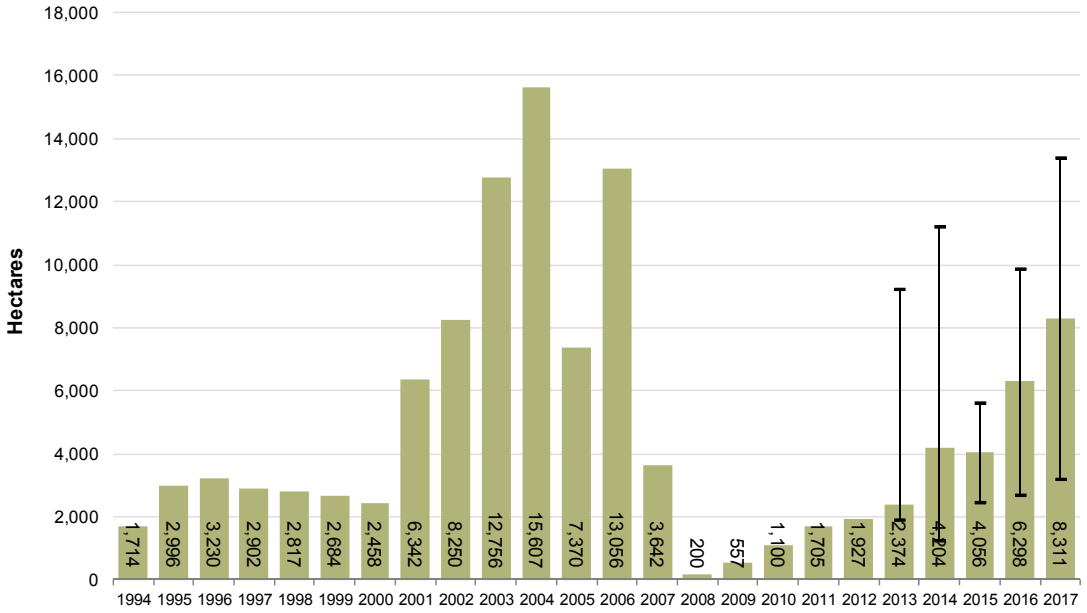
Takhar province was poppy-free since 2008, and it maintained its poppy-free status in 2017. However, small amounts of cultivation below the threshold of 100 hectares were observed in this province. A total of 15 hectares were eradicated in 2017.

Table 9: Opium poppy cultivation and eradication in the North-eastern region, 2015-2017
(Hectares)

PROVINCE	Cultivation 2015 (ha)	Cultivation 2016 (ha)	Cultivation 2017 (ha)	Change 2016-2017 (%)	Eradication in 2016 (ha)	Eradication in 2017 (ha)
Badakhshan	4,056	6,298	8,311	32%	270	269
Kunduz	Poppy-free	Poppy-free	Poppy-free	-	0	0
Takhar	Poppy-free	Poppy-free	Poppy-free	-	21	15
North-eastern Region	**4,056**	**6,298**	**8,311**	**32%**	**291**	**284**

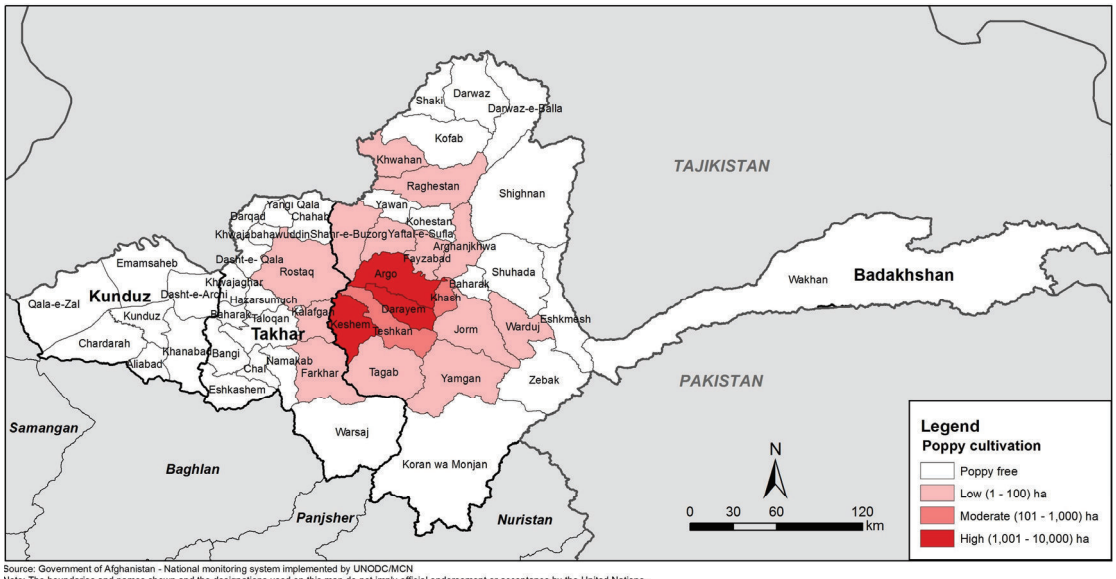
A province is defined as poppy-free when it is estimated to have less than 100 hectares of opium poppy cultivation.

Figure 8: Opium poppy cultivation in Badakhshan province, 1994-2017 (Hectares)



The high-low lines represent the upper and lower bounds of the 95% confidence interval.

Figure 9: Opium poppy cultivation in the North-eastern region (by district)**, 2017**



Source: Government of Afghanistan - National monitoring system implemented by UNODC/MCN
Note: The boundaries and names shown and the designations used on this map do not imply official endorsement or acceptance by the United Nations.

2.2.1 Southern region

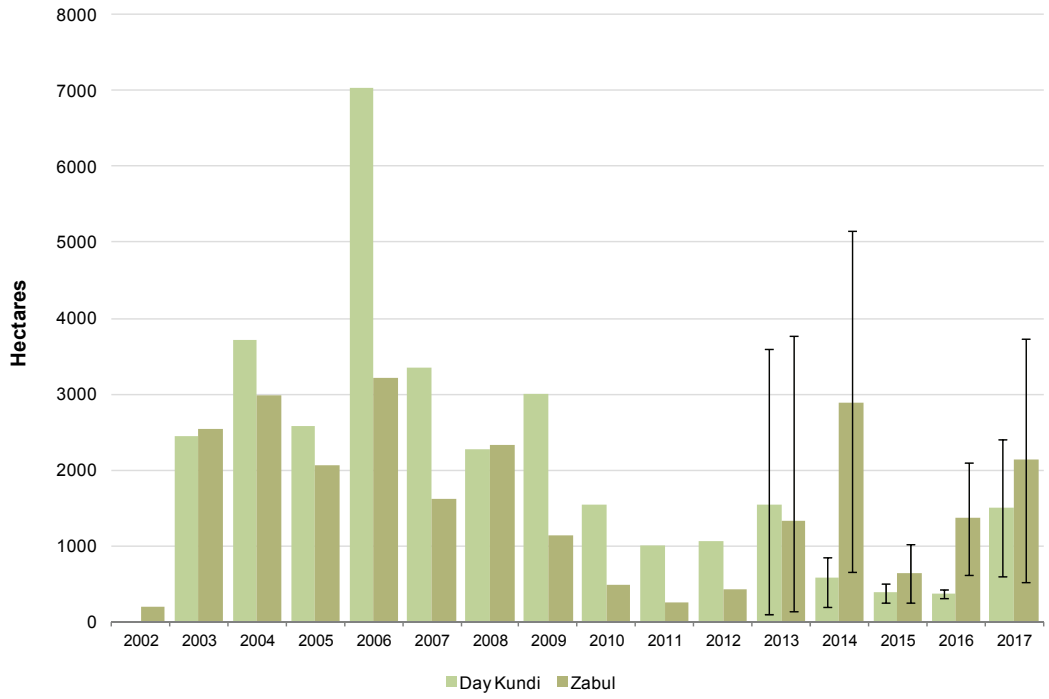
(Day-Kundi, Hilmand, Kandahar, Uruzgan, Zabul)

Table 10: Opium poppy cultivation and eradication in the Southern region, 2015-2017
(Hectares)

PROVINCE	Cultivation 2015 (ha)	Cultivation 2016 (ha)	Cultivation 2017 (ha)	Change 2016-2017 (%)	Eradication 2016 (ha)	Eradication 2017 (ha)
Day-Kundi	381	374	1,508	303%	0	0
Hilmand	86,443	80,273	144,018	79%	0	0
Kandahar	21,020	20,475	28,010	37%	4	48
Uruzgan	11,277	15,503	21,541	39%	0	0
Zabul	644	1,363	2,131	56%	0	0
Southern Region	**119,765**	**117,988**	**197,207**	**67%**	**4**	**48**

A province is defined as poppy-free when it is estimated to have less than 100 hectares of opium poppy cultivation.

Figure 10: **Opium poppy cultivation in Day-Kundi and Zabul provinces, 2002-2017**



A province is defined as poppy-free when it is estimated to have less than 100 hectares of opium poppy cultivation. The vertical lines represent the upper and lower bounds of the 95% confidence interval.

Hilmand province experienced the significant increase of 79% in opium poppy cultivation and remained Afghanistan's single largest opium-poppy-cultivating province in 2017. Hilmand accounted for 44% of the total area under opium poppy cultivation in Afghanistan and for almost half of the total national increase between 2016 and 2017. In 2017, no Governor-led eradication was carried out (like in 2016) in this province.

At the district level, opium poppy cultivation levels were highest in Nad Ali, Naher-i-Saraj, Nawzad, Kajaki, Musa Qala, Garmser, Regi-i-Khan Nishin, Dishu, Sangin Qala, Lashkargah, Washer, Baghran and Nawa-e-Barakzaiy districts. Increases in opium poppy cultivation were observed in all districts except for Baghran in the north of Hilmand (see district details in Annex I).

Between 2009 and 2012, an alternative livelihood programme took place in central Hilmand (the so-called "Hilmand Food Zone"; see map). In 2013, MCN/UNODC started to produce annual

estimates of the area under opium poppy cultivation within and outside of the former "Food Zone" area for monitoring purposes.

Inside the former Food Zone, opium poppy cultivation increased by 90% from 34,760 hectares in 2016 to 66,181 hectares in 2017, outside of the former Food Zone it increased by 71% (from 45,513 hectares in 2016 to 77,837 hectares). Overall, 33% of the agricultural land was under opium poppy cultivation in Hilmand, 31% inside of the area of the former Food Zone, 35% outside of the area of the former Food Zone.

Table 11: Poppy cultivation inside and outside the former Hilmand "Food Zone" (after eradication), 2013-2017

	Cultivation 2013 (ha)	Cultivation 2014 (ha)	Cultivation 2015 (ha)	Cultivation 2016 (ha)	Cultivation 2017 (ha)	Change 2016 -2017 (%)
Inside the food zone	36,244	41,089	31,216	34,760	66,181	90%
Outside the food zone	64,449	62,151	55,227	45,513	77,837	71%
Total	**100,693**	**103,240**	**86,443**	**80,273**	**144,018**	**79%**

The Food Zone estimates refer to an area in ten districts of Hilmand (the "Food Zone" as of 2011), where farmers were provided with fertilizers, certified wheat seeds and high-value horticulture seeds in the poppy planting seasons for the 2009-2012 harvests. See e.g. Afghanistan Opium Survey 2009.

In **Kandahar** province, opium poppy cultivation increased by 37% from 20,475 hectares in 2016 to 28,010 hectares in 2017. The main opium poppy cultivation districts were Maiwand, Zhire, Nesh, Spin Boldak and Panjwayee.

In **Uruzgan** province opium poppy cultivation increased by 39% from 15,503 hectares in 2016 to 21,541 hectares in 2017. Tirin, Kot, Dihrawud and Shahidi, Hassas were the main opium poppy-cultivating districts.

Opium poppy cultivation in **Zabul** province also saw a significant increase by 56% from 1,363 in 2016 to 2,131 hectares in 2017. The main opium-poppy-cultivating districts in Zabul were Tarank Wa Jaldak and Mizan, where security was poor.

Figure 11: Hilmand Food Zone, 2011

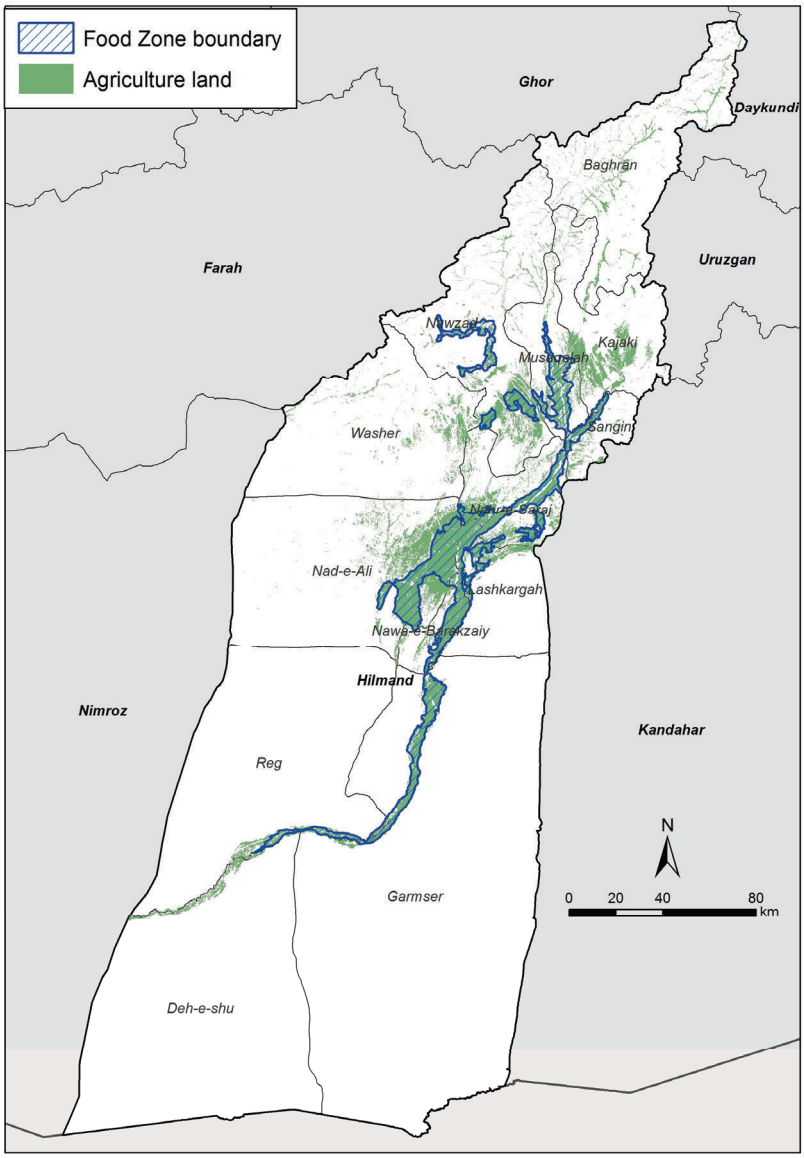


Figure 12 Area under opium poppy cultivation in Hilmand province, by district, 2016-2017

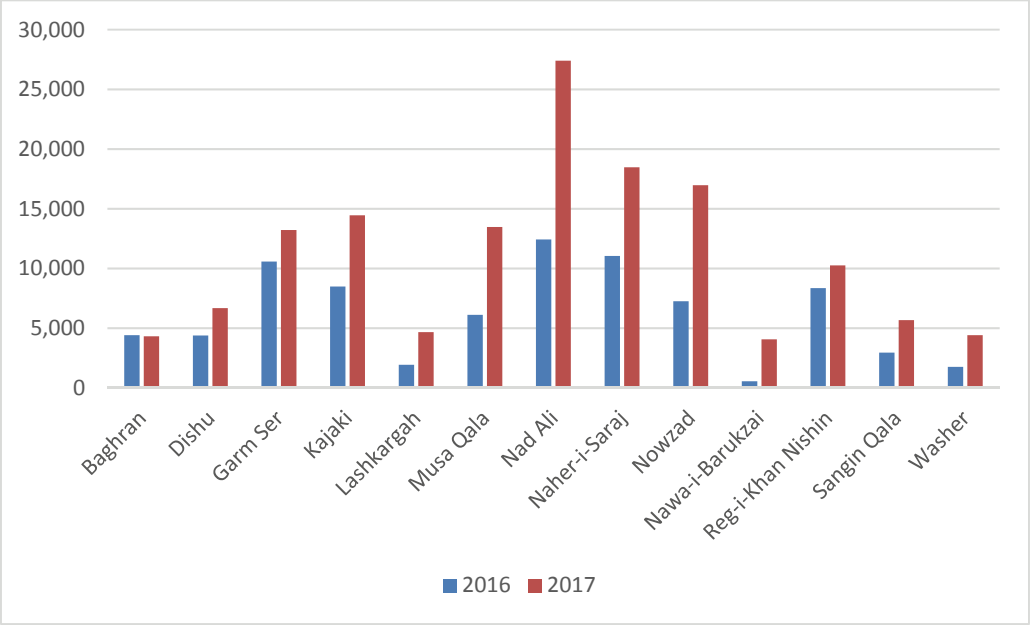


Figure 13: Opium poppy cultivation increase in Hilmand province, 2016-2017

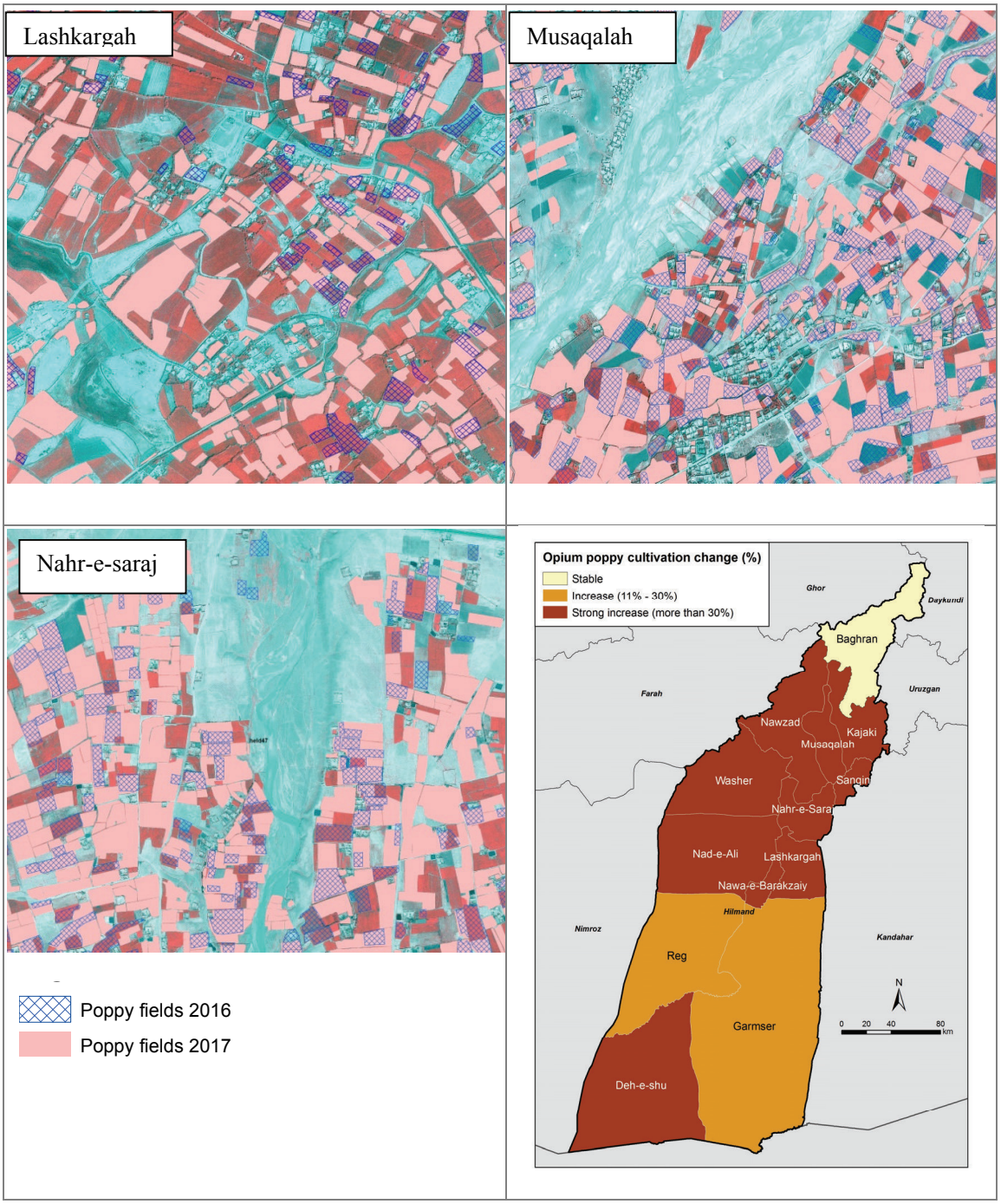
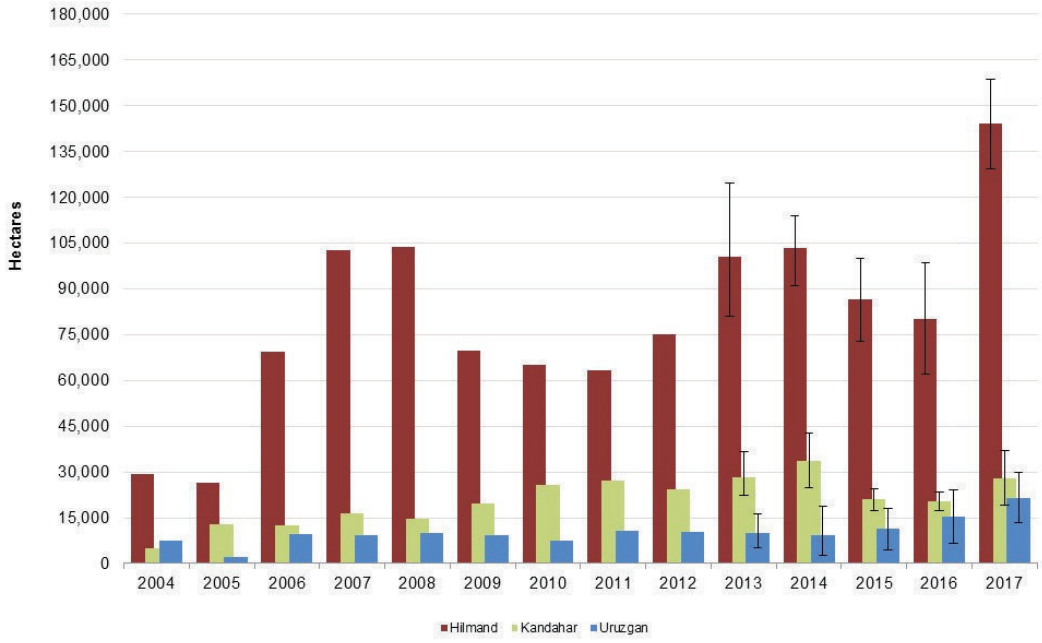
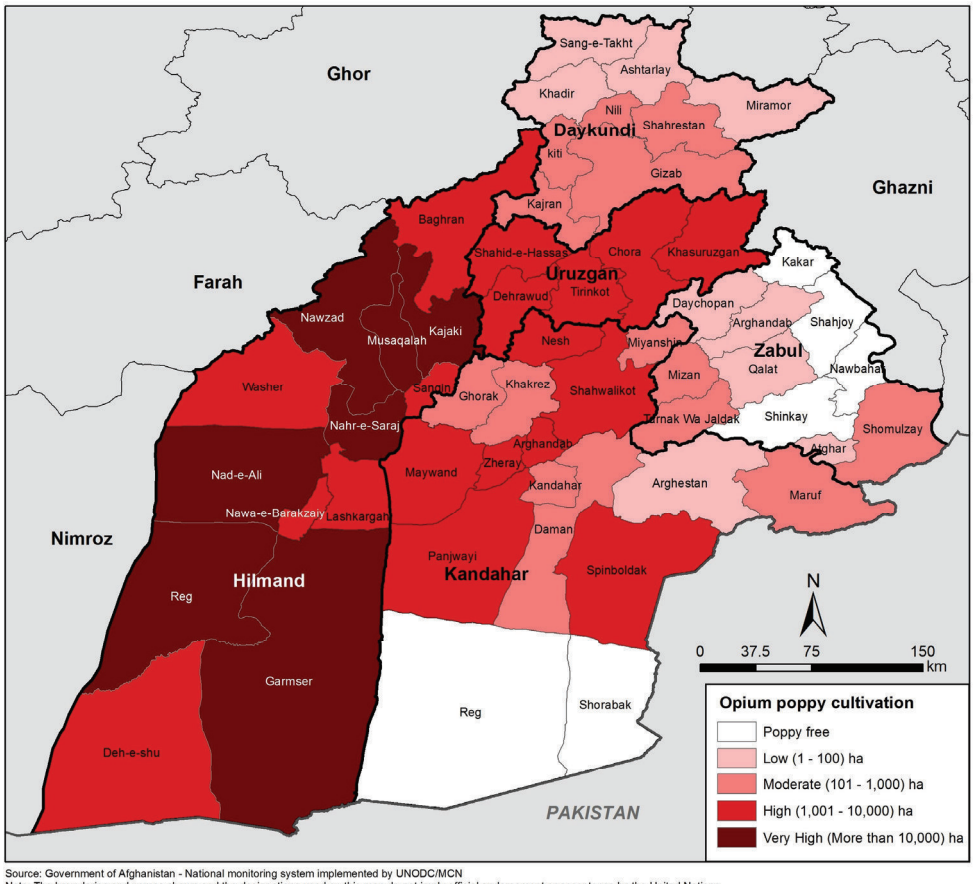


Figure 14: Opium poppy cultivation in Hilmand, Kandahar and Uruzgan provinces, 2004-2017 (Hectares)



The high-low lines represent the upper and lower bounds of the 95% confidence interval.

Figure 15 Opium poppy cultivation in the Southern region (by district), 2017



Source: Government of Afghanistan - National monitoring system implemented by UNODC/MCN
Note: The boundaries and names shown and the designations used on this map do not imply official endorsement or acceptance by the United Nations.

2.2.1 Western region

(Badghis, Farah, Ghor, Hirat, Nimroz)

Opium poppy cultivation in **Farah** province increased by 41% from 9,101 hectares in 2016 to 12,846 hectares in 2017. The main opium-poppy-cultivating districts in Farah, were Bala Buluk, Bakwah, Khak-i-Safed, Pusht-Rod and Gulistan where security was very poor (see district details in the Annex I).

In 2017, opium poppy cultivation in **Ghor**, poppy-free in 2011, increased more than 3 times when compared to 2016: from 1,222 hectares to 4,228 hectares. The main opium cultivating districts were Ghaghcharan, Pasaband and Taywara.

In **Hirat** province, the level of opium poppy cultivation increased more than 5 times when compared to 2016, from 208 hectares to 1,104 hectares. The main opium poppy cultivating districts in Hirat province were Shindand and Kushk (Rabat-i-Sangi), where security was very poor.

In 2017, the level of opium poppy cultivation in **Nimroz** province (11,466 hectares) more than doubled since 2016 (5,303 hectares). The main poppy cultivating districts were Khash-Rod and Chahar Burjak.

The levels of opium poppy cultivation in 2016 and 2017 in Badghis province are not comparable due to changes in the administrative boundaries. Ghormach district, formerly part of Badghis province and a major opium poppy cultivating district, came in 2017 under the administration of the Governor of Faryab province.

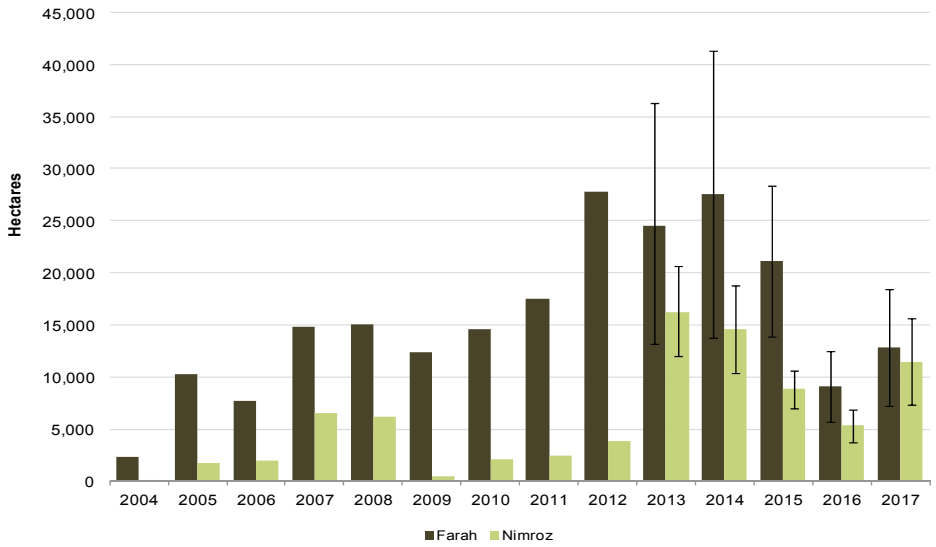
In 2017, a total 106 hectares of Governor-led eradication was carried out in Badghis (55 hectares), Ghor (14 hectares), Hirat (23 hectares) and Nimroz (14 hectares).

Table 12: Opium poppy cultivation and eradication in the Western region, 2015-2017 (Hectares)

PROVINCE	Cultivation 2015 (ha)	Cultivation 2016 (ha)	Cultivation 2017 (ha)	Change 2016-2017 (%)	Eradication in 2016 (ha)	Eradication in 2017 (ha)
Badghis*	12,391	35,234	24,723	NA	0	55
Farah	21,106	9,101	12,846	41%	0	0
Ghor	1,721	1,222	4,228	246%	0	14
Hirat	285	208	1,104	432%	0	23
Nimroz	8,805	5,303	11,466	116%	1	14
Western Region	**44,308**	**51,067**	**54,367**	**6%**	**1**	**106**

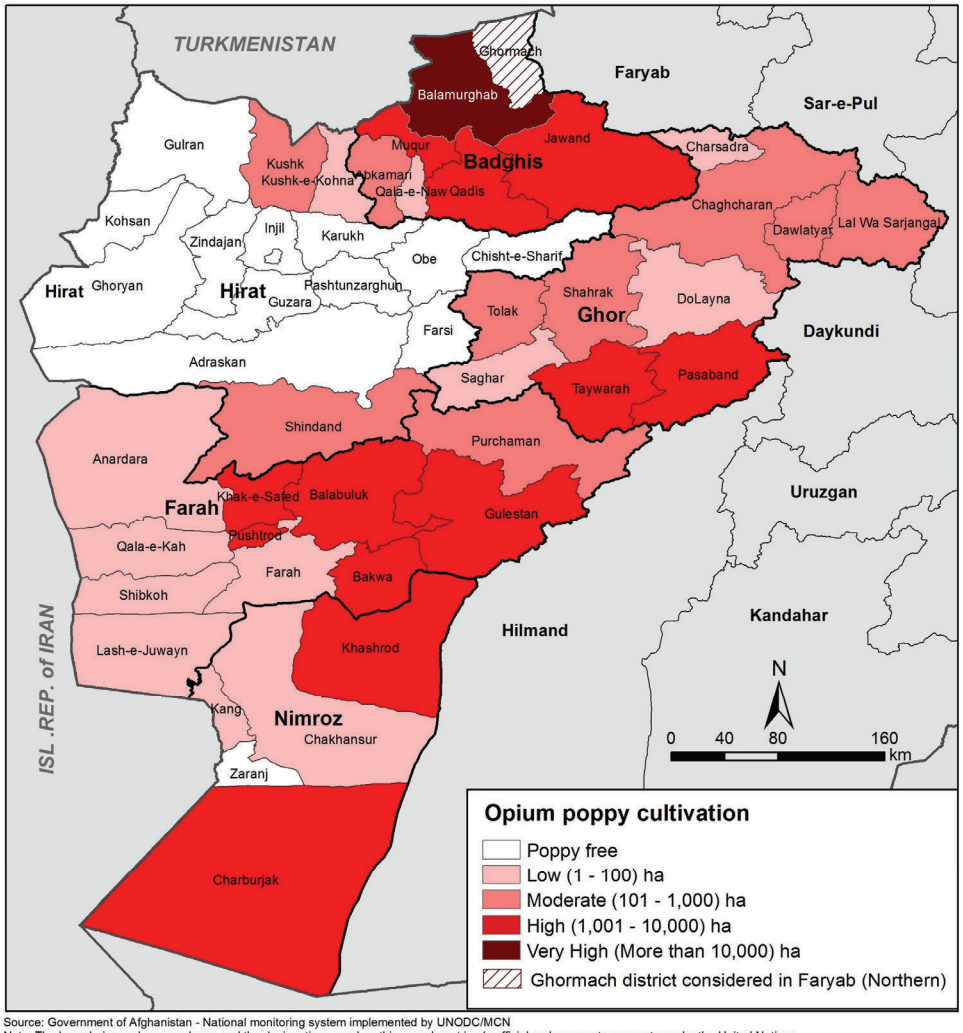
** Ghormach district, formerly part of Badghis province and a major opium poppy cultivating district, came in 2017 under the administration of the Governor of Faryab province. Levels of opium poppy cultivation in 2016 and 2017 are therefore not comparable.*

Figure 16: Opium poppy cultivation in Farah and Nimroz provinces, 2004-2017 (Hectares)



The high-low lines represent the upper and lower bounds of the 95% confidence interval.

Figure 17 Opium poppy cultivation in the Western region (by district), 2017



Source: Government of Afghanistan - National monitoring system implemented by UNODC/MCN
Note: The boundaries and names shown and the designations used on this map do not imply official endorsement or acceptance by the United Nations.

3 Eradication

3.1 Poppy eradication increased by 111% in 2017

A total of 750 hectares of verified poppy eradication was carried out by the provincial Governors in 2017. This represented an increase of 111% from 2016 when 355 hectares of Governor-led eradication (GLE) was verified by MCN/UNODC.

In 2017, MCN/UNODC field surveyors verified the eradication of 7,271 fields in 317 villages in 14 provinces. In 2016 MCN/UNODC verifiers visited 201 villages (7,922 poppy fields) in 7 provinces.

Quality control of eradication verification was carried out using satellite data in Badakhshan, Balkh, Badghis, Kandahar, Kabul, Kapisa, Hirat and Nangarhar provinces. Final figures for eradication in these provinces were confirmed after checking with high-resolution satellite imagery supported by GPS tracking files, and photographs from the ground. For the provinces of Takhar, Laghman, Nimroz, Ghor, Jawzjan and Kunar, the quality checks were based on a detailed check of the survey forms, area measurement calculations and on field photographs.

Major observations on the 2016 and 2017 eradication campaigns:

- Total eradication of opium poppy increased by 111% from 355 hectares in 2016 to 750 hectares in 2017.
- In 2017, less security incidents occurred than in 2016: in 2017, 6 lives were lost and 8 persons were injured; in 2016, 8 lives were lost and 7 persons were injured.
- Eradication took place in 14 provinces in 2017 (7 provinces in 2016): Badakhshan, Balkh, Badghis, Ghor, Hirat, Jawzjan, Kabul, Kapisa, Kandahar, Nimroz, Kunar, Laghman, Nangarhar and Takhar.
- Eradication started on 7 March in Nimroz, on 16 May in Badakhshan province and concluded on 20 July in Badakhshan.
- The largest amount of poppy eradication took place in Badakhshan province (269 hectares; almost the same amount as in 2016), followed by Nangarhar province (204 hectares).
- Since 2016, there has not been any eradication in Hilmand, which is the province with the highest levels of opium poppy cultivation in Afghanistan.
- Quality of eradication was checked by using satellite data in Badakhshan province. The quality of eradication in Badakhshan province was very poor with partially eradicated fields and at similar levels as last year.

Table 13: Governor-led eradication, by province, 2017

Province	Verified eradication (ha)	No. of eradicated fields	No. of villages eradication
Badakhshan*	269	4176	108
Badghis*	55	307	11
Balkh*	25	94	39
Ghor	14	54	7
Hirat*	23	110	8
Jawzjan	0.3	4	1
Kabul*	27	190	18
Kandahar*	48	157	16
Kapisa*	3	38	2
Kunar	31	90	2
Laghman	23	595	12
Nangarhar*	204	1370	85
Nimroz	14	60	3
Takhar	15	26	5
Grand Total	**750**	**7,271**	**317**

** Eradication verified by using satellite imagery.*

Table 14: Governor-led eradication, 2016-2017

Province	Verified eradication (ha) 2016	Verified eradication (ha) 2017
Badakhshan	270	269
Badghis	0	55
Balkh	0	25
Ghor	0	14
Hirat	0	23
Jawzjan	0	0.3
Kabul	0	27
Kandahar	4	48
Kapisa	0	3
Kunar	0	31
Laghman	3	23
Nangarhar	1	204
Nimroz	1	14
Sari-Pul	55	0
Takhar	21	15
Total	**355**	**750**

Table 15: Opium poppy eradication and cultivation in Afghanistan, 2011-2017 (Hectares)

Year	2011	2012	2013	2014	2015	2016	2017
Number of provinces where eradication was carried out	18	18	18	17	12	7	14
Governor-led Eradication (GLE), (ha)	3,810	9,672	7,348	2,692	0	355	750
Cultivation (ha) *	131,000	154,000	209,000	224,000	183,000	201,000	328,000
% poppy in insecure provinces of South and West	95%	95%	89%	89%	90%	84%	77%
Poppy-free provinces	17	17	15	15	14	13	10

** Net opium poppy cultivation after eradication.*

Figure 18: Area of opium poppy eradication, by different methods, 2016-2017 (Percentage of total)

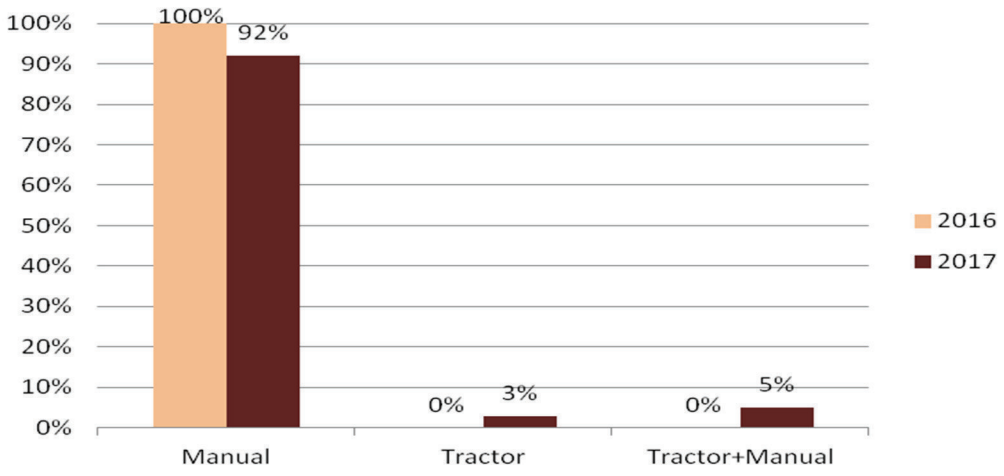


Figure 19: Area of opium poppy eradication, per month, 2016-2017 (Percentage of total)

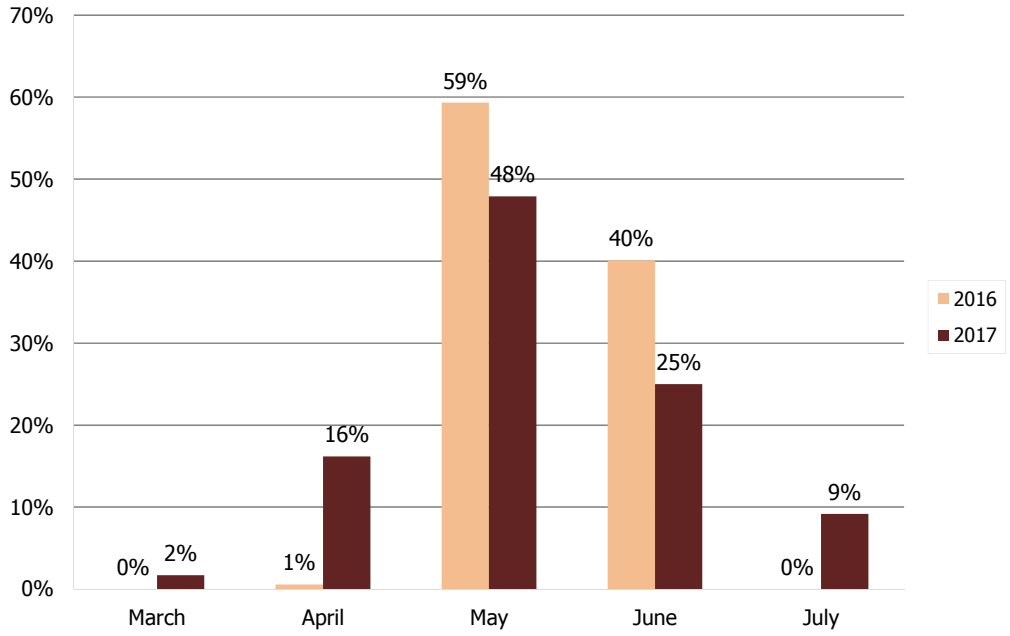


Table 16: Start and end dates of Governor-led eradication, 2017

Region	Province	Eradication Start Date	Eradication End Date	Eradication (ha)
Central	Kabul	25-Apr-2017	16-May-2017	27
	Kapisa	21-May-2017	25-May-2017	3
East	Kunar	16-Apr-2017	11-May-2017	31
	Laghman	8-Apr-2017	11-May-2017	23
	Nangarhar	25-Mar-2017	11-May-2017	204
South	Kandahar	29-Mar-2017	16-Apr-2017	48
West	Badghis	29-Apr-2017	14-May-2017	55
	Ghor	18-Jun-2017	22-Jun-2017	14
	Hirat	1-Apr-2017	16-May-2017	23
	Nimroz	7-Mar-2017	25-Mar-2017	14
North	Balkh	14-May-2017	17-May-2017	25
	Jawzjan	6-May-2017	6-May-2017	0.3
North-east	Badakhshan	16-May-2017	20-Jul-2017	269
	Takhar	18-May-2017	24-May-2017	15

3.2 Quality control of reported eradication with satellite images

As in previous years, in 2017, MCN/UNODC procured high-resolution satellite images based on field coordinates recorded by verifiers in eradicated poppy fields to validate the authenticity of reports and generate more accurate area figures by on-screen digitization of the eradicated fields.

The Governor-led eradication of opium poppy in Badakhshan, Balkh, Badghis, Kandahar, Kabul, Kapisa, Hirat and Nangarhar provinces was checked with satellite images. Satellite images were supported with ground pictures and GPS tracking collected during the eradication campaign.

Since 2013, surveyors have generated a GPS track around eradicated fields that provides both the location and shape of the fields. These tracks have helped verification of eradicated fields with satellite imagery.

In 2017, satellite images of eradicated fields were interpreted and compared with the figures reported from field and corrected for over-reporting or under-reporting.

In **Badakhshan** province, eradication reported by verifiers were checked with satellite imagery and the final eradication figures were corrected to 269 hectares. Similar to previous years, the quality of eradication (measured in terms of the area of a field that was actually eradicated) was reported from field and confirmed with satellite imagery. Out of 4,231 eradicated fields, only 46 percent of the fields could be considered to be fully eradicated (more than 80% of the field area eradicated). In 1,309 poppy fields only 20% and in 1,912 poppy fields more than 20% but less than 30% of the field area was eradicated.

Figure 20: Percentage of poppy eradication in each field in Badakhshan province, by number of fields, 2017

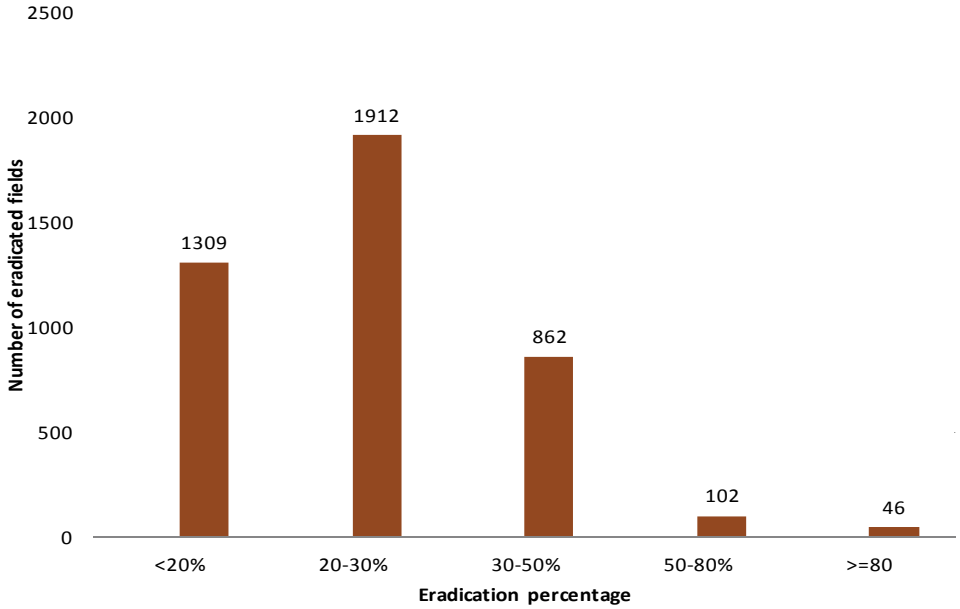
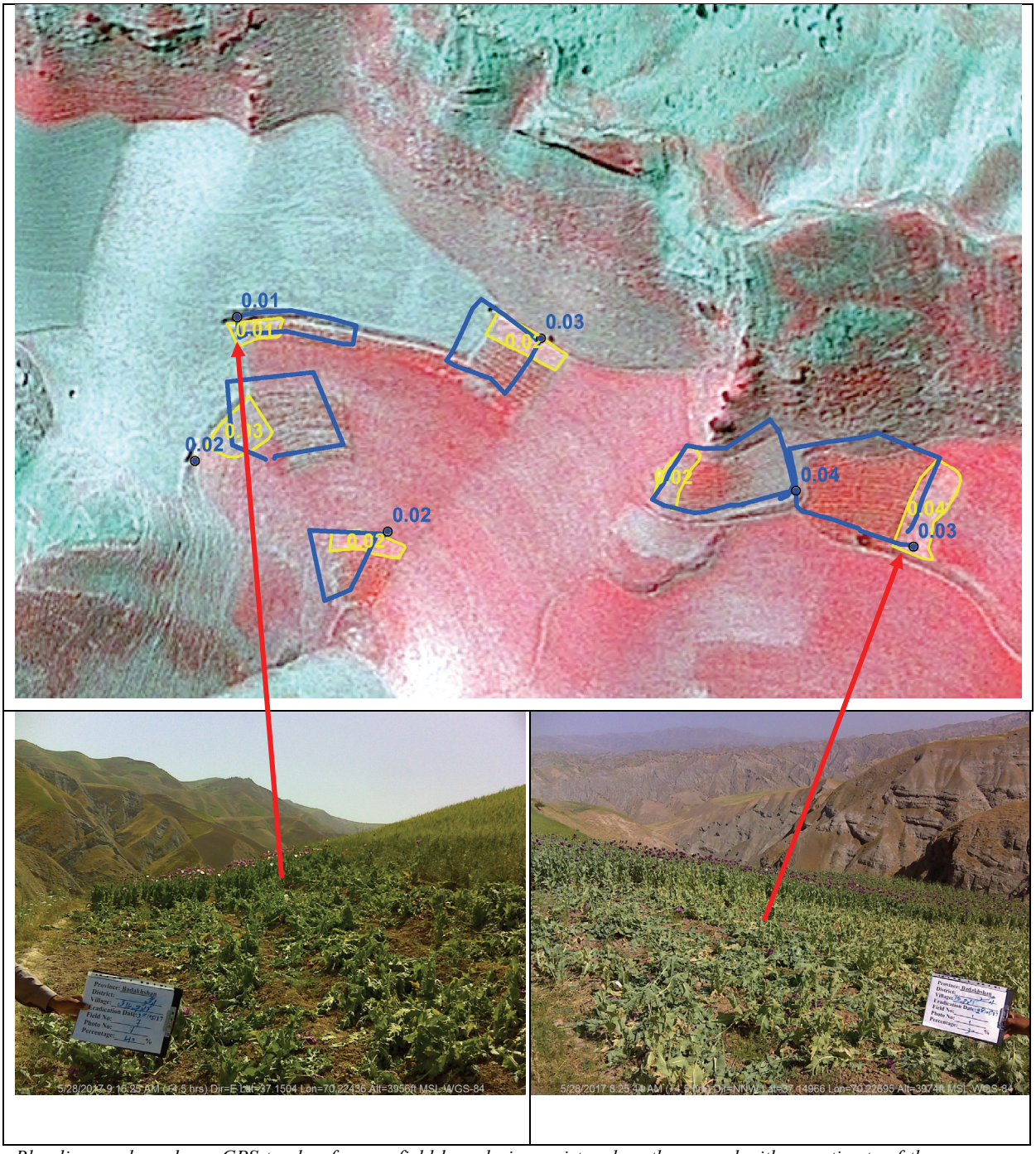


Figure 21: Quality check of partially eradicated fields using satellite imagery in Badakhshan province in 2017



Blue lines and numbers: GPS tracks of poppy field boundaries registered on the ground with an estimate of the area (ha) that was actually eradicated; Yellow lines and numbers: eradicated parts of the fields that were verified and measured (in ha) with satellite imagery.

4 Potential opium yield and production

4.1 Potential opium yield and production increased in 2017[12]

In 2017, estimated potential opium production in Afghanistan amounted to 9,000 tons (8,000-10,000 tons), which was an increase of 87% from its 2016 level (4,800 tons). The average opium yield amounted to 27.3 kilograms per hectare in 2017, which was 15% more than in 2016 (23.8 kilograms per hectare).

The increase in potential opium production in 2017 is mainly explained by the larger area under opium poppy cultivation but higher opium yields per hectare also contributed to this increase. The largest relative increase in opium yield occurred in the Southern region, where yield increased by 19% from 22.0 kg/ha in 2016 to 26.2 kg/ha in 2017. In the Eastern and North-eastern regions, yields increased by 8% and 14%, respectively. The increase of yield in the Southern region, where 60% of the total area under opium poppy cultivation in Afghanistan took place, had a significant impact on the national potential opium production.

Table 17: Opium yield, by region, 2016-2017[13] (Kilograms per hectare)

REGION	2016 average yield (kg/ha)	2017 average yield (kg/ha)	% Change
Central	46.1	43.8	-5%
Eastern	32.4	34.9	+8%
North-eastern	31.2	35.4	+14%
Northern	35.0	32.8	-6%
Southern	22.0	26.2	+19%
Western	22.3	22.3	0%
Weighted national average	**23.8**	**27.3**	**+15%**

There are some limitations in the yield estimates since the yield survey was not implemented in all main cultivating provinces for security reasons. For the provinces not covered, the regional average was used. This year the yield surveys were extended to Badghis province in addition to the provinces covered last year.

In 2017, a total of 222 poppy fields were surveyed for the purpose of estimating opium yield. Since 2012, the yield survey has been limited to low-risk areas where the security situation allowed access and enough time to carry out all measurements. Together with close supervision of field work, this ensured a very high degree of compliance with the yield survey protocol.[14] All yield data obtained in 2017 met the strict quality criteria introduced in 2011.

[12] "Potential production" is a hypothetical concept and not an estimate of actual opium or morphine/heroin production. For more information, see UNODC *World Drug Report 2011*, p. 265.
[13] Yield estimates in this report are based on the concept of potential yield, i.e., the amount opium farmers can potentially extract from poppy capsules. Depending on local conditions and practices, this may differ from the amount actually harvested.
[14] Published in UNODC *Guidelines for yield assessment of opium gum and coca leaf from brief field visits*, UN New York, 2001, ST/NAR/33.

Table 18: Potential opium production, by region, 2016-2017 (mt)

Region	Production 2016 (tons)	Production 2017 (tons)	Change 2016-2017 (%)	2017 production as % of total
Central	18	64	+256%	0.7%
Eastern	571	837	+47%	9%
North-eastern	196	294	+50%	3%
Northern*	278	1,408	+406%	16%
Southern	2,591	5,158	+99%	57%
Western*	1,139	1,210	+6%	13%
Total (rounded)	**4,800**	**9,000**	**+87%**	**100%**

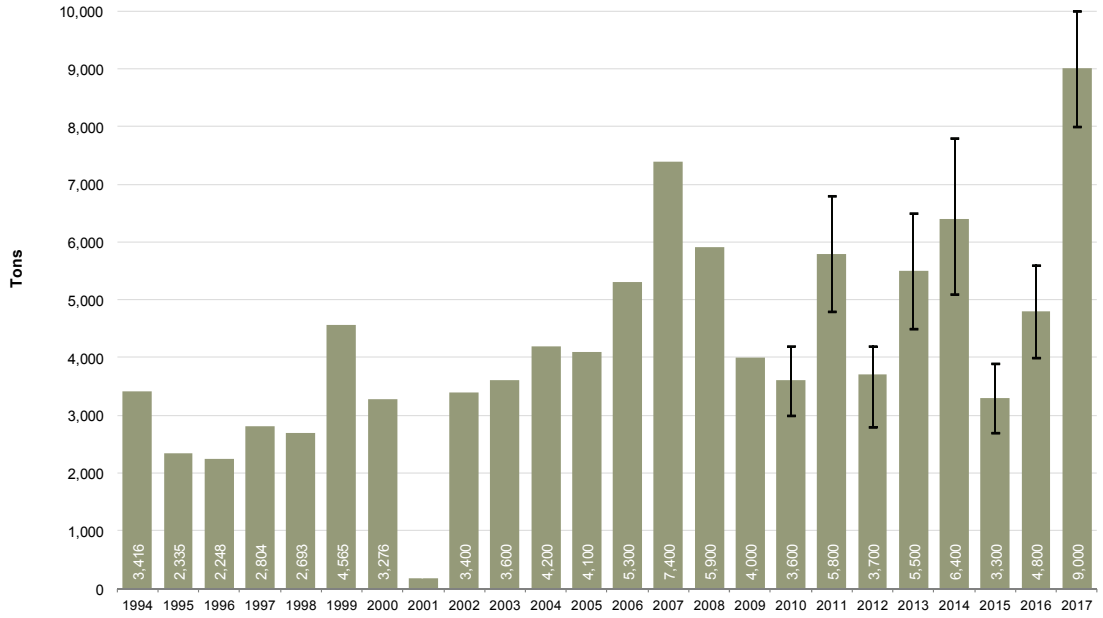
** Estimates of 2016 and 2017 are not directly comparable since Ghormach district, a major opium cultivating district formerly part of Badghis province (Western region) came in 2017 under the administration of the Governor of Faryab province.*

Table 19: Opium production in Afghanistan 2014-2017, by province (mt)

Province	Production 2014 (mt)	Production 2015 (mt)	Production 2016 (mt)	Production 2017 (mt)	Change 2016-2017(mt)	Change 2016-2017(%)
Kabul	11	13	18	19	+1	6%
Khost	Poppy-free	Poppy-free	Poppy-free	Poppy-free	-	-
Logar	Poppy-free	Poppy-free	Poppy-free	Poppy-free	-	-
Paktya	Poppy-free	Poppy-free	Poppy-free	Poppy-free	-	-
Panjshir	Poppy-free	Poppy-free	Poppy-free	Poppy-free	-	-
Parwan	Poppy-free	Poppy-free	Poppy-free	Poppy-free	-	-
Wardak	Poppy-free	Poppy-free	Poppy-free	Poppy-free	-	-
Ghazni	Poppy-free	Poppy-free	Poppy-free	45	NA	NA
Paktika	Poppy-free	Poppy-free	Poppy-free	Poppy-free	-	-
Central Region	**11**	**13**	**18**	**64**	**+46**	**256%**
Kapisa	19	17	20	34	+14	69%
Kunar	30	36	41	57	+16	39%
Laghman	36	28	45	79	+34	75%
Nangarhar	721	365	465	663	+198	43%
Nuristan	Poppy-free	Poppy-free	Poppy-free	4	NA	NA
Eastern Region	**805**	**446**	**571**	**837**	**+266**	**47%**
Badakhshan	161	161	196	294	+98	50%
Takhar	Poppy-free	Poppy-free	Poppy-free	Poppy-free	-	-
Kunduz	Poppy-free	Poppy-free	Poppy-free	Poppy-free	-	-
North-eastern Region	**161**	**161**	**196**	**294**	**+98**	**50%**
Baghlan	6	7	30	35	+5	15%
Balkh	Poppy-free	8	73	397	+324	444%
Bamyan	Poppy-free	Poppy-free	Poppy-free	Poppy-free	-	-
Faryab*	7	44	102	747	NA	NA
Jawzjan	Poppy-free	Poppy-free	14	106	+92	657%
Samangan	Poppy-free	Poppy-free	Poppy-free	8	NA	NA
Sari-Pul	7	13	59	116	+57	97%
Northern Region	**20**	**72**	**278**	**1,408**	**+1,130**	**+406%**
Hilmand	3,048	1,392	1,763	3,767	+2,004	114%
Kandahar	995	338	450	733	+283	63%
Uruzgan	274	182	340	563	+223	66%
Zabul	85	10	30	56	+26	86%
Day-Kundi	17	6	8	39	+31	393%
Southern Region	**4,420**	**1,928**	**2,591**	**5,158**	**+2,567**	**99%**
Badghis*	117	202	786	550	NA	NA
Farah	561	343	203	286	+83	41%
Ghor	10	28	27	94	+67	249%
Hirat	15	5	5	25	+20	391%
Nimroz	297	143	118	255	+137	116%
Western Region	**999**	**721**	**1,139**	**1,210**	**+71**	**+6%**

**Estimates of 2016 and 2017 are not comparable since Ghormach district, a major opium cultivating district formerly part of Badghis province (Western region) came in 2017 under the administration of Faryab province.*

Figure 22: Potential opium production in Afghanistan, 1994-2017 (mt)



Sources: MCN/UNODC opium surveys, 1994-2017. The vertical lines represent the upper and lower bounds of the confidence interval of the estimates. Figures refer to oven-dry opium. Production figures for 2006 to 2009 have been revised in 2012; see MCN/UNODC Afghanistan opium survey 2012.

Table 20: Potential opium production, by region, with ranges, 2017 (mt)

Region	Best estimate	Lower bound	Upper bound
Central	64	58	70
Eastern	837	403	1,271
North-eastern	294	1,084	1,732
Northern*	1,408	104	484
Southern	5,158	4,414	5,902
Western*	1,210	835	1,585
National	**8,971**	**7,960**	**9,983**
National (rounded)	**9,000**	**8,000**	**10,000**

**In 2017, the provincial boundaries of Badghis (Western region) and Faryab (Northern region) were changed. Ghormach district, formerly part of Badghis province and a major opium poppy cultivating district, came in 2017 under the administration of the Governor of Faryab province. The changes in opium production in these two regions are affected by this change.*

4.2 Potential heroin production in Afghanistan

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 mold, disposal to avoid seizures, etc.).

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

- the share of raw opium that is converted to heroin (for the domestic market or for export)
- the amount of heroin/morphine that can be produced from one kilogramme of raw opium
- the purity of the heroin considered
- the amount of opium or heroin that is seized or lost, and the remainder (if any), which does not enter the market in the year of interest.

There is a clear understanding of the amount of opium produced. However, the other factors related to the convertion ratio opium/heroin and the purities of these substances are much less clear as only secondary data can be used as a proxy. For example, the purity of the heroin seized is often not known. Likewise, the purity of heroin consumed domestically may differ substantially from the purity of heroin destined for export. Furthermore, little is known about when and where the conversion of morphine to heroin takes place.

In 2014, MCN/UNODC produced a revised estimate of the amount of raw opium needed to produce one kilogram of heroin/morphine since new data on the morphine content of Afghan opium gave reason to do so.[15] However, apart from morphine content, the other factors related to the opium-to-heroin conversion chain are not well researched. Therefore the updated heroin conversion ratio provided only an indication of the actual average amount of opium needed to produce one kilogram of heroin. The situation has not changed since 2014 as no new studies on the conversion process were carried out.

New information has become available on the possible purity of heroin produced in Afghanistan. Recent data points towards higher purities than the previously assumed 51% reported by Turkey,[16] with Italy and Lebanon reporting purities of 70% for heroin of wholesale quality in 2015; and Switzerland reporting 62% in the same year. The purity assumption of purity of export quality is relevant for both the estimated shares of the opium production that are converted to heroin and for the amount of heroin produced within Afghanistan.

In the following, a range of different purity assumptions is used, 50% to 70%. MCN/UNODC are working towards a better understanding of the amounts and the quality of heroin produced within Afghanistan and will provide a detailed discussion of all relevant factors in the upcoming report "Afghanistan opium survey 2017 – socio-economic analysis".

Potentially, all opium produced in Afghanistan could be converted into morphine and heroin. In reality, however, a sizable proportion of opium is trafficked and consumed in the region in its raw form. Using information from 2014-2016 on the distribution of opium, morphine and heroin seizures in Afghanistan and neighboring countries, and using the 50% to 70% purity range of heroin of export quality, an estimate was made of the amount of the production of heroin with export quality versus the amount of unprocessed opium (see table 21). This analysis suggests that between 47% and 55% of all opium produced in Afghanistan is converted into heroin of export quality or morphine and the remainder is left unprocessed. It has to be noted, that the massive increase in opium supply may have an impact on this ratio, which can only be seen in seizure data of the coming years. More details on the estimation of heroin production in Afghanistan can be found in the methodology section.

Table 21: Potential heroin production from Afghan opium (mt), 2017

	Production under the assumption of 50% - 70% of purity of heroin of export quality
Heroin of export quality	320-530 tons
Unprocessed opium	3,600 - 5,300 tons

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 ratio see the methodology section and Afghanistan opium survey report 2014 – cultivation and production.

[15] The morphine content of opium harvested in Afghanistan has decreased since 2005, which was the reason for updating the conversion ratio of opium to heroin. Until 2014, a conversion ratio of 7:1 (7 kilograms of opium are needed for producing one kilogram of heroin of unknown purity) was used. Since 2014, a ratio of 18.5:1 is used for converting opium to pure heroin base. In addition, a conversion ratio for the amount of opium needed to produce one kilogram of heroin of export quality is estimated since 2014.

[16] Between 2014 and 2016, estimated purity of heroin of export quality was based on reports from Turkey, an important transit country for opiates trafficked from Afghanistan to Europe. Average reported purity of Turkey was 51% between 2013 and 2015. Source: Annual Report Questionnaires, 2013-2016.

5 Opium prices and farm-gate value of opium

5.1 Opium prices

Opium prices at the farm-gate present strong seasonal fluctuations and can vary substantially in reaction to the supply of opium on the market. In 2017, the average regional farm-gate prices at harvest time decreased in all regions of Afghanistan with exception of the Southern region, where they remained stable and started to decrease only in the months after the harvest. In the Southern region, opium was harvested earlier than in the rest of the country (May), so opium prices at the time of harvest did not yet strongly react to the increased supply of opium in the market. In the North and North-eastern regions, on the other hand, harvest takes place only in July, until when the supply from the South was already on the market, causing prices to decrease. The remaing regions are 'in-between' and thus showing different levels of price reactions.

Table 22: Regional farm-gate prices of dry opium at harvest time, reported by farmers through the price-monitoring system, 2016-2017 (US dollars per kilogram)

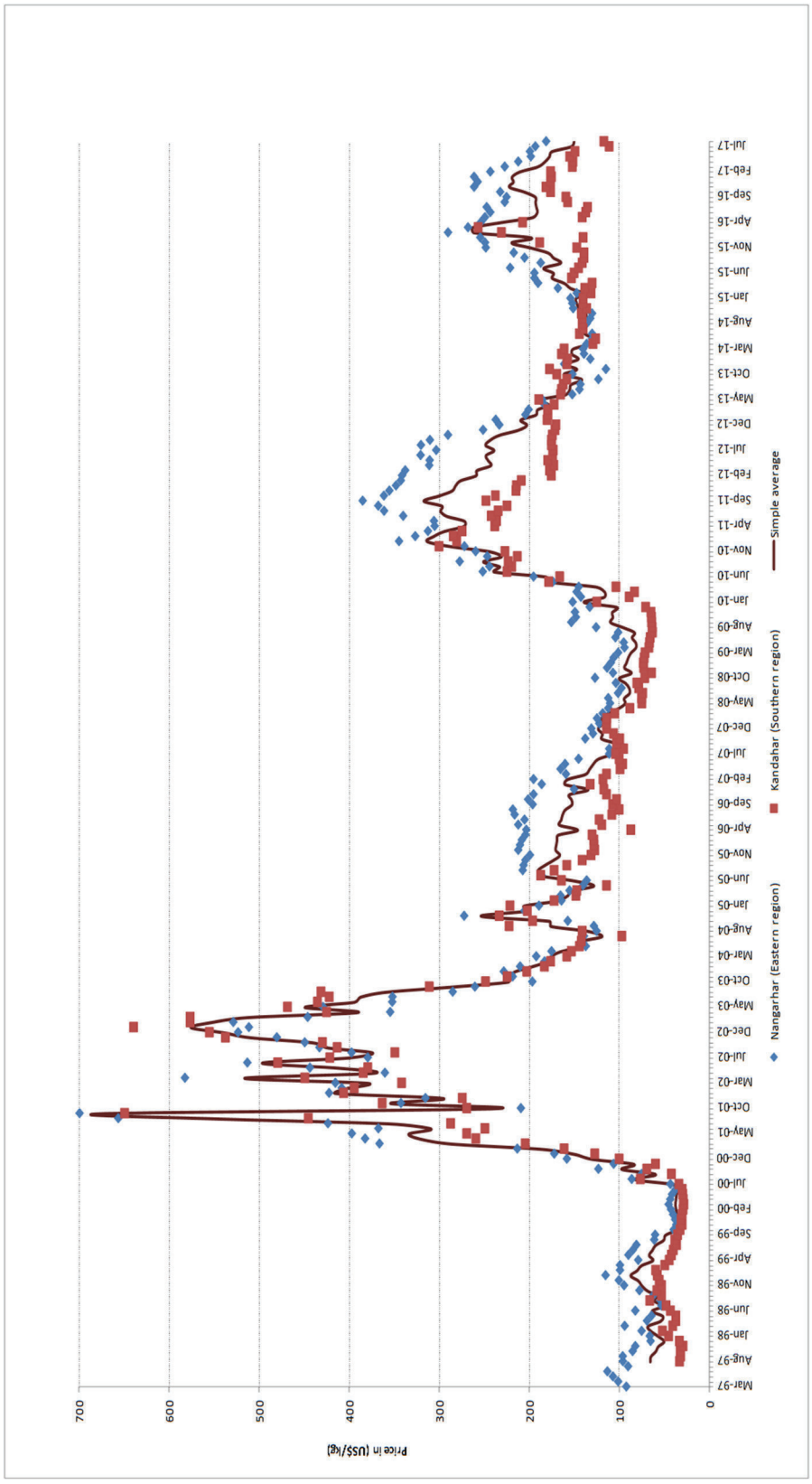
Region	Average Dry Opium Price (US$/kg) 2016	Average Dry Opium Price (US$/kg) 2017	Change 2016-2017 (%)
Central	280	NA	NA
Eastern	239	184	-23%
North-eastern	126	63	-50%
Northern	126	82	-35%
Southern	155	155	+0%
Western	259	241	-7%
National average weighted by production	**187**	**155**	**-17%**

By August 2017, the average regional price of dry opium had substantially decreased in all regions, when compared to the previous year, which is an indication of the strong market reaction to the increased supply. Figure 22 shows how quickly and strongly the prices declined.

Table 23: Dry opium prices reported by opium traders, by region, August 2016-August 2017 (US dollars per kilogram)

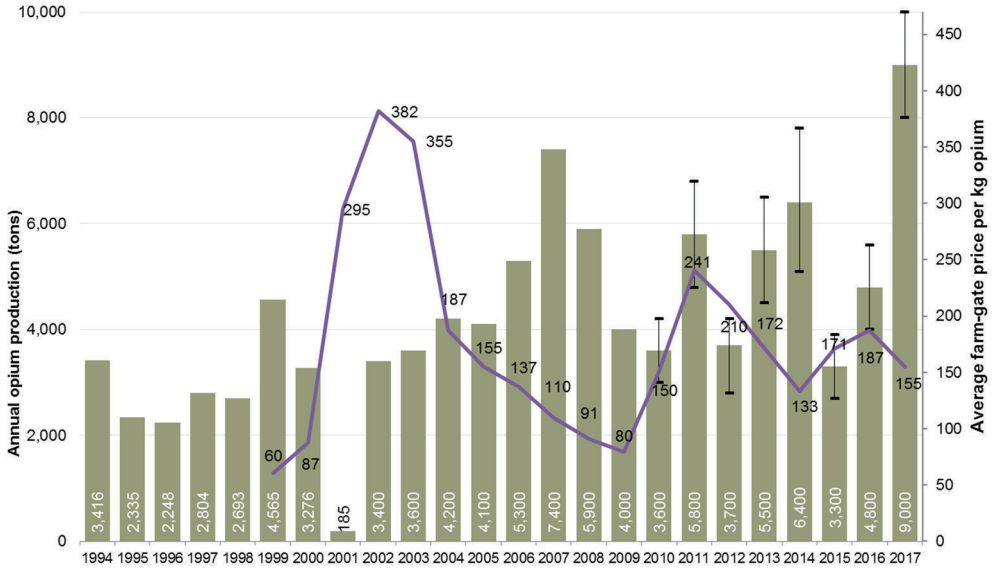
Region	Regional average price (US$/kg) August-2016	Regional average price (US$/kg) August-2017	Change 2016-2017 (%)
	Trader	Trader	
Eastern (Kunar, Laghman, Nangarhar)	217	171	-21%
Southern (Hilmand, Kandahar, Uruzgan, Zabul)	176	129	-27%
Western (Badghis, Farah, Ghor, Hirat, Nimroz)	267	228	-15%
North-eastern (Badakhshan, Kunduz, Takhar)	132	64	-52%
Northern (Baghlan, Balkh, Faryab, Jawzjan, Samangan, Sari-Pul)	138	87	-37%
Average	**197**	**143**	**-27%**

Figure 23 Dry opium prices collected from traders in Nangarhar and Kandahar provinces (US$/Kg), March 1997-July 2017



MCN/UNODC has been monitoring opium prices in selected provinces of Afghanistan on a monthly basis since 1994 (18 provinces as of September 2011) and has been calculating average farm-gate prices annually based on prices at harvest time weighted by regional production. Figure 24 shows that the average farm-gate price follows the laws of demand and supply: during years of high production (e.g. 2006 to 2008) the average price decreased, whereas following a supply shortage (for example the Taliban ban opium in 2001) the average price strongly increased.

Figure 24: Farm-gate prices of dry opium at harvest time weighted by production and annual opium production, 1999-2017 (tons; US dollars per kilogram)

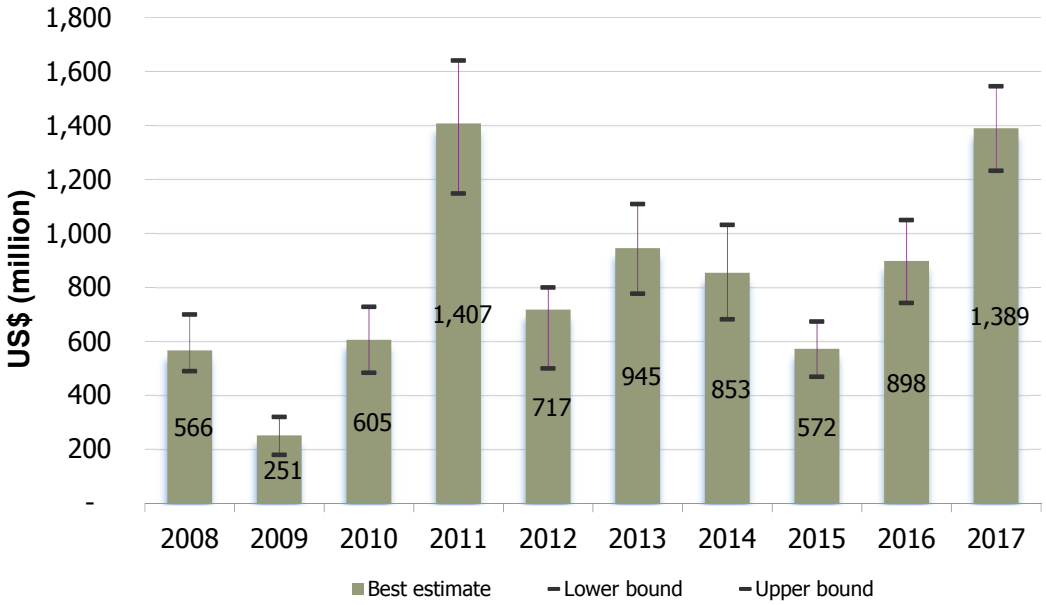


5.2 Farm-gate value of opium production

Amounting to US$ 1,39 billion (US$ 1,23-1,55 billion), the estimated farm-gate value of opium production in 2017 increased by 58% from its 2016 level. The increase in farm-gate value was mainly due to the 87% increase in opium production.

Farmers in Hilmand, the country's largest opium-producing province, earned some estimated US$ 584 million, which was equivalent to 42% of the total farm-gate value of opium production in Afghanistan in 2017; an increase of 77% from 2016 (US$ 330 million).

Figure 25: Farm-gate value of opium production in Afghanistan, 2008-2017 (Million US dollars)



6 Methodology

This chapter covers various methodological aspects regarding survey design and estimation procedure.

6.1 Estimation of area under opium poppy cultivation

Remote sensing methodologies have been used by UNODC since 2002 to monitor the extent of opium poppy cultivation in Afghanistan. Changes in the location of opium poppy cultivation and the increased security difficulties involved in accessing the area of interest require continuous improvements of the survey designs applied.

A sampling approach is used to cover those provinces where most of the poppy is found, whereas a targeted approach is used in provinces with a low level of opium poppy cultivation. "Targeted approach" means that a certain area of a province is fully covered by satellite imagery. Provinces without indication for opium poppy cultivation are covered by the village survey only.

From 2015, new and better satellite technology allowed for a major change in the study design: the size of the grid cells used for acquiring satellite imagery has been reduced from 10 x 10 km images to 5 x 5 km images. This change affected only provinces where a sampling approach was used; all other provinces were not affected by this change.

In 2017, out of 34 provinces in Afghanistan, 15 were sampled and 13 were targeted. The remaining 6 provinces were considered to be poppy-free based on information from the field. These provinces were not covered by the remote sensing survey, but were covered by the village survey.

In all provinces where a sampling approach was used in both 2016 and 2017, the same sampling locations were used, which ensured high levels of comparability.

Due to the more wide-spread cultivation activities in Jawjzan, Faryab and Laghman the approach was changed from a target approach in 2016 to a sampling approach in 2017. It cannot be excluded that this may have influenced the results, as some of the poppy might have been missed in 2016. Badghis province was re-sampled because of the change in provincial boundaries (Ghormach district).

Table 24: Area estimation method, by province, 2017

Region	Targeted approach	Sampling approach	Village survey only
Central	Ghazni, Kabul, Parwan, Logar		Khost, Paktya, Panjshir, Wardak, Paktika
Eastern	Kapisa, Nuristan	Kunar, Nangarhar, Laghman	
Northern	Baghlan, Balkh, Sari-Pul, Samangan	Faryab*, Jawzjan	Bamyan
North-eastern	Takhar, Kunduz	Badakhshan	
Southern		Day-Kundi, Hilmand, Kandahar, Uruzgan, Zabul	
Western	Hirat	Badghis, Farah, Nimroz, Ghor	

In Faryab, Almar, Ghormach and Qaysar districts were covered by a sampling approach, in the remaning districts a targeted approach was used.

6.1.1 Study design

6.1.1.1 Sampling frame

The sampling frame was established by extracting the area of land potentially available for opium poppy cultivation in 15 provinces. This area was divided into regular 5 km by 5 km grids, which constituted the sampling frame. The final sampling frame, from which the satellite images were randomly selected, consisted of 6,498 cells. In the case of images that cut across provincial boundaries, only the part falling into a particular province was considered to be in that province.

The area available for agriculture in the sampling frame covers irrigated and rain-fed land. The total area in the 15 provinces was 31,061 km^2, which is equivalent to 38% of all potential agricultural land in Afghanistan. Potential land refers to all land available for cultivation and also includes land that is currently fallow.

Cells containing less than 0.25 km^2 of potential agricultural land were excluded from the sampling frame in order to reduce the likelihood of choosing cells with very little arable land. In total, the exclusions represented less than 1% of the total potential agricultural land.

6.1.1.2 Sample size determination

The total number of images to be selected in the sampled provinces was determined in 2015 with the goal to increase accuracy of the estimates and to save cost when compared to previous years.

The accuracy of area estimates depends on the proportion of land covered by satellite imagery and even more so on the number of images than can be acquired. With opium poppy cultivation being concentrated in hot spots and thus unevenly distributed across the agricultural land, information from a large, contiguous piece of land has less value than geographically evenly distributed, smaller pieces information. Costs associated with satellite imagery depends mainly on the total area covered (and not on the number of images). By using 5 x 5 km instead of 10 x 10 km images, at same costs four times the number of images can be acquired. Further details on the sample size determination methodology can be found in O*pium Survey, December 2015*, page 42.

6.1.1.3 Sample size allocation

The available number n of images has been distributed to provinces h according to a so-called power allocation, which uses agricultural area as size measure. For provincial sample size n_h,

$$n_h = n \frac{X_h^q CV_h}{\sum_{h=1}^{H} X_h^q CV_h}$$

where CV_h is the coefficient of variation of area under poppy cultivation in province h and X_h land available for agriculture in province h. This approach ensures that sample size depends on both the variability of poppy and the size of the province measured by agricultural land. After an empirical assessment, the smoothing parameter q, $0 \leq q \leq 1$, was set to 0.2. In addition, a mininum of 20 samples per provinces was set, which took effect in Day-Kundi and Kunar. This yielded the following sample size allocation

In 2017, high-resolution satellite images were acquired for 673 sampled locations 5 km by 5 km in size covering a total of 15 provinces.

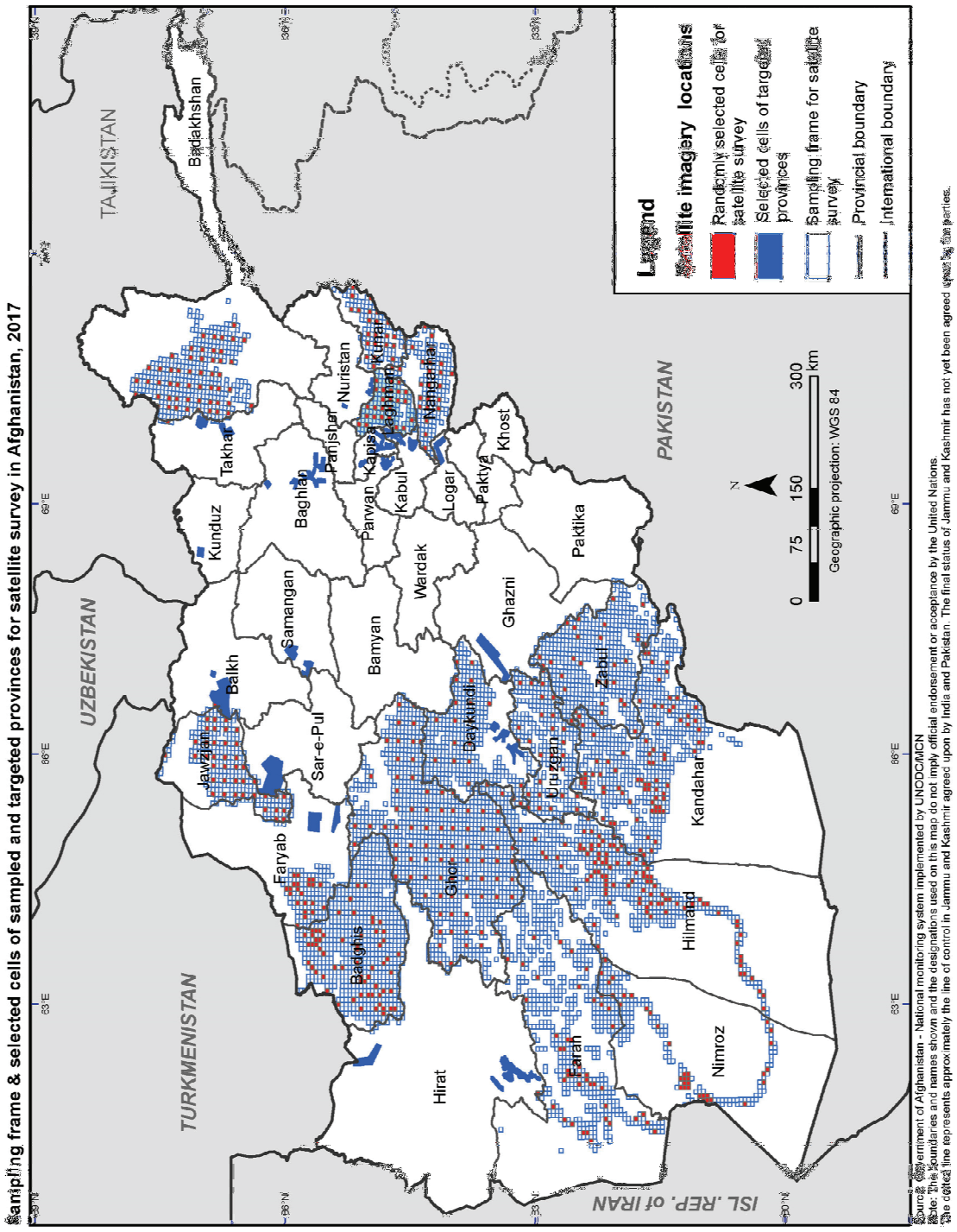

Sampling frame & selected cells of sampled and targeted provinces for satellite survey in Afghanistan, 2017
Legend
Satellite imagery locations
Randomly selected cells for satellite survey
Selected cells of targeted provinces
Sampling frame for satellite survey
Provincial boundary
International boundary
TAJIKISTAN
UZBEKISTAN
TURKMENISTAN
PAKISTAN
ISL. REP. of IRAN
Badakhshan
Takhar
Kunduz
Baghlan
Panjshir
Nuristan
Kunar
Laghman
Nangarhar
Kapisa
Parwan
Kabul
Logar
Paktya
Khost
Paktika
Samangan
Balkh
Jawzjan
Sar-e-Pul
Bamyan
Wardak
Ghazni
Zabul
Daykundi
Uruzgan
Kandahar
Faryab
Ghor
Badghis
Hirat
Farah
Hilmand
Nimroz
0 75 150 300 km
N
Geographic projection: WGS 84
Source: Government of Afghanistan - National monitoring system implemented by UNODC/MCN
Note: The boundaries and names shown and the designations used on this map do not imply official endorsement or acceptance by the United Nations.
The 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.

Table 25: Sample size and agricultural land and sampling ratio, by province, 2017

Province	Total arable land (km^2)	Frame	Estimated sample size	Effective sample size	Arable land in selected cells	% of arable land represented by selected cells
		# cells	# cells	# cells	(km^2)	
Badakhshan	3,490	396	52	53	456	13%
Badghis	6,168	636	50	50	820	13%
Faryab	2,543	188	34	34	660	26%
Jawzjan	3,504	294	39	39	530	15%
Laghman	263	103	25	25	61	23%
Ghor	1,615	1144	83	83	114	7%
Day-Kundi	544	406	12	20	25	5%
Farah	2,076	604	47	46	361	17%
Hilmand	4,013	696	98	98	965	24%
Kandahar	2,837	695	66	80	702	25%
Kunar	246	124	14	24	42	17%
Nangarhar	919	181	25	26	162	18%
Nimroz	985	213	37	36	284	29%
Uruzgan	787	277	29	30	83	11%
Zabul	1,071	541	31	29	124	12%
Total	**31,061**	**6,498**	**642**	**673**	**5,389**	**17%**

6.1.1.4 Sample design

The same image locations were used in 2017 as in 2016 for 10 out of the 15 sampled provinces. The census approach in Ghor, Laghman, Jawzjan, Faryab provinces in 2016 were changed to sample approach this year. Badghis was resampled due to administrative boundary changes.

MCN/UNODC undertook an extensive simulation study which compared various sampling designs and estimation methods in order to determine the best (most accurate with a given number of samples) design for a certain situation.

Case studies were undertaken for Hilmand and Kandahar province. The sampling desings considered have been used in the past by MCN/UNODC:

- simple random sampling,
- probability proportional to size sampling (PPS), using agricultural area as a size measure,
- stratified random sampling using compact geostrata of equal size as strata,
- systematic random sampling.

Two estimation methods have been compared: a ratio estimator using agricultural area as auxiliary variable and the Horvitz-Thompson estimator.

The study concluded that for the two cases considered

- PPS performed best, and
- The ratio estimator is to be preferred for simple random sampling, systematic random sampling, and stratified random sampling. For PPS, it does not yield any improvements in accuracy.

The PPS builds on the correlation between the size measure and the variable of interest. In provinces where poppy and agricultural land are highly correlated, PPS is expected to perform best. In provinces, however, where poppy and agricultural land are only weakly correlated, PPS does not bring any advantages and might reduce accuracy.

Therefore, in Faryab (3 districts), Farah, Hilmand, Kandahar, Nimroz and Zabul PPS was applied. In the remaining provinces, systematic random sampling was used, a sampling design that ensures an even geographical distribution of samples. In Nangarhar systematic random sampling was

applied instead of PPS, since correlation was driven by a few samples and not representative for the province (see the "Opium poppy 2015 – Cultivation and production" for more details).

In more detail in a PPS design without replacement a unit has a probability to be selected in the first draw of

$$pi = \frac{x_i}{\sum_{i=1}^{N} x_i}$$

where x is the size variable (agricultural land) in unit i, and N is the number of units that can be selected. The subsequent units have slightly modified inclusion probabilities. For drawing the samples and for calculating the inclusion probabilities the statistical software *R* (package *sampling*) was used.

Since agricultural area tends to be concentrated in one or more clusters in a province, PPS sampling without further stratification would lead to a concentration of samples in a few spots and possibly do not cover every district. Therefore, in all PPS provinces, the sample was stratified by district.

In the remaining 7 provinces, a one-stage systematic random sampling approach was employed in which a sampling rule was applied that ensured good geographic coverage. Starting from a randomly chosen cell, every *k*th element from then onwards was chosen, where *k* is determined by the number of cells in the frame and the desired sample size (the actual sample size might differ slightly).

In **Nangarhar** province, the districts Dara-e-Nur, Kuzkunar, Kama, Behsud, Jalalabad and partially Surkhrod were excluded from the frame.

6.1.2 Area estimation in sampled provinces

The estimation of the extent of opium poppy cultivation is a ratio estimate[17] for each of the provinces, using potential agricultural land as an auxiliary variable. The national estimate was obtained by adding up the provincial estimates in what is known as a separate ratio estimate.

In provinces where systematic random sampling was applied, the area of opium poppy cultivation, Yk, within province *k,* is estimated as:

$$Y_k = X \frac{\sum_{i=1}^{n_k} y_i}{\sum_{i=1}^{n_k} x_i}$$

where n_k is the number of satellite image locations within the province; y_i is the area of poppy cultivation in image *i;* x_i is the area of land potentially available for poppy cultivation in image *I*, and *X* is the total potential land available for poppy cultivation in province *k*.

In PPS provinces, where units are selected with unequal inclusion probability, a slightly different ratio estimate was used that incorporates the inclusion probability (Horvitz-Thompson estimator).

6.1.2.1 Uncertainty

In the PPS provinces the confidence intervals were calculated following statistical practice.[18]

In all remaining provinces no unbiased estimator for the variance was available; confidence intervals were approximated by assuming simple random sampling. The confidence intervals therefore slightly overestimate the uncertainty of the estimates.

[17] The ratio estimator did not outperform the Horvitz Thompson estimator in the PPS provinces. The ratio estimator was applied in all provinces for reasons of consistency and to account for possible updates of the agricultural area in future years.

[18] See, e.g. Cochran, W. G., Sampling techniques, John Wiley & Sons (2007).

Table 26: Area estimates of sample provinces with 95% confidence interval, 2017 (Hectares)

Province	Point estimate (Hectares)	Lower bound (Hectares)	Upper bound (Hectares)
Badakhshan	8,311	3,215	13,406
Badghis	24,723	11,518	37,928
Day-Kundi	1,508	605	2,412
Farah	12,846	7,210	18,482
Faryab	22,797	15,171	30,422
Ghor	4,228	1,949	6,507
Hilmand	144,018	129,371	158,664
Jawzjan	3,236	1,778	4,695
Kandahar	28,010	18,967	37,052
Kunar	1,634.91	741	2,528
Laghman	2,257	591	3,924
Nangarhar	18,976	13,154	24,799
Nimroz	11,466	7,314	15,619
Uruzgan	21,541	13,297	29,785
Zabul	2,131	527	3,735
Target provinces	**20,620**	**-**	**-**
National	**328,304**	**301,472**	**355,135**
National rounded	**328,000**	**301,000**	**355,000**

To express the uncertainty associated with the national area estimation, which includes the provinces covered by the targeted approach and the sample provinces, but excludes provinces with an estimate of less than 100 hectares (which are considered "poppy-free" and not counted), a range was calculated by adding the poppy area figures of the target provinces to the upper and lower limits of the 95% confidence interval at the national level.

6.1.3 Area estimation in target provinces

The consensus view of those working in Afghanistan was that the MCN/UNODC surveillance system developed in the provinces can identify sites where poppy was grown, with further inputs being obtained from the survey of village headmen. Fieldworkers visited potential poppy-growing sites to confirm the situation and provided GPS references for the sites. If geographical clusters of sites were identified, targeted satellite images were obtained to measure the areas involved. The total poppy area of a target province is equal to the poppy area measured on the imagery without any further calculation. For a list of provinces for which the target approach was used see Table 4.

In provinces where satellite images were targeted, the estimated area under opium poppy cultivation is not affected by sampling errors, although they may be affected by the omission of areas with very little cultivation. Area estimates of target provinces should therefore be considered as a minimum estimate.

6.1.4 District level estimation

District level results are indicative only. For district level estimation all cells are used which have the majority of agricultural area in that district. That means that in certain cases, agricultural area and poppy cultivation is accounted for in a neighbouring district and not within the district where cultivation occurred. This is, however, in most cases set off by those cells, where the contrary is the case.

6.1.5 Accuracy assessment

Due to the difficult security situation in many parts of Afghanistan, which prevented surveyors from carrying GPS and mapping equipment, an insufficient number of ground segments could be visited in order to conduct a systematic accuracy assessment.

6.1.6 Estimation of the net cultivation area

The area figure presented is the net harvestable opium poppy cultivation area. The effect of poppy eradication activities was taken into account based on data from the eradication verification survey, which provides exact GPS coordinates of all eradicated fields supplemented with additional information. The gross cultivation areas would be the net cultivation plus eradication.

In provinces where the poppy area is estimated with a sampling approach, the first step is to calculate the gross poppy cultivation area. The total area eradicated in those provinces is then deducted from the mid-point estimate of the provincial cultivation estimate to obtain the net cultivation area. If eradication activities were carried out after the date of the image acquisition, no adjustment is necessary as the poppy present in the image reflects the gross poppy area. If eradication activities were carried out in a sample block before the date of the image acquisition, the area interpreted as poppy would not reflect the gross area. Therefore, the eradicated fields are added to the interpreted fields. The adjusted poppy area figure for the block is then used for the provincial estimate.

In provinces where the poppy areas is estimated with a targeted approach (census), eradication activities that happened before the date of the image acquisition are already reflected, as these fields no longer appear as poppy in the image. Fields that were eradicated after the date of the images acquisition are simply deleted.

6.2 Satellite image interpretation

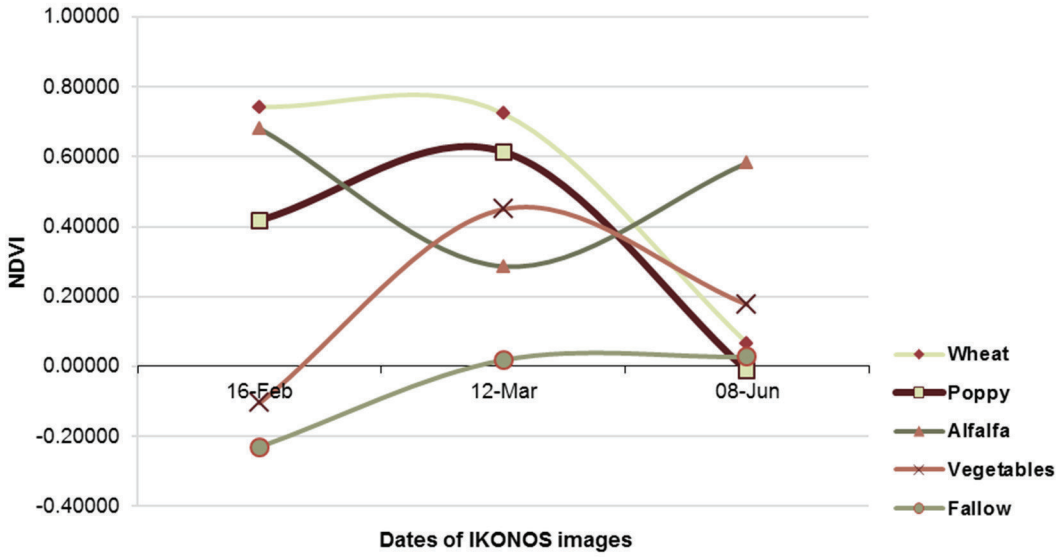
6.2.1 Acquisition of satellite images

The acquisition of satellite images at the appropriate growth stage of the opium poppy is key to the successful identification of opium poppy fields on satellite images. Satellite data is collected at two stages: the pre-harvest (flowering) stage and the post-harvest (post-lancing) stage. In recent years, detailed information on the crop growth cycle of each district has been collected in the form of a phenological chart, which is useful for deciding on appropriate dates for satellite data acquisition. First-dated images of the Southern, Eastern and Western regions are collected during March and April due to the early cultivation and maturity of crops in those regions. The crop growth cycle begins later as one goes northward. Images of the North and North-eastern region are acquired during May, June and July. Second-dated satellite images are collected approximately two months after the first images are collected.

The normal time window for satellite data acquisition is one month, depending on the scheduled passing of satellite and weather conditions. The time window for first-dated image acquisition begins at the full flowering stage and continues through the capsule stage. Second-dated image acquisition begins towards the end of the lancing stage and continues until the opium poppy fields are ploughed. Images acquired in the middle of the prescribed time window facilitate optimum discrimination between opium poppy and other crops.

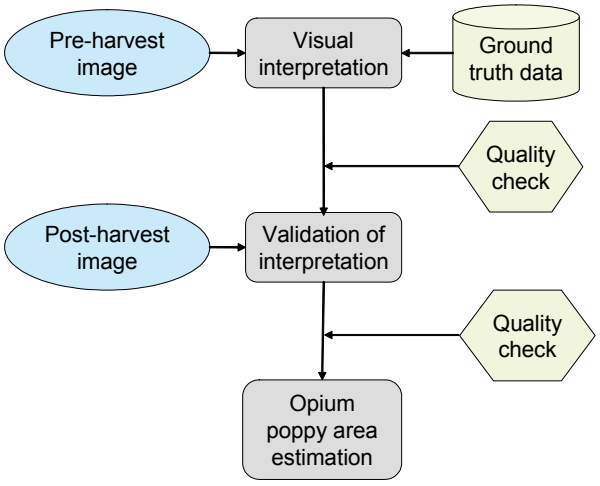
The figure below illustrates the spectral characteristics (Normalized Difference Vegetation Index; NDVI) of opium poppy and other crops between February and June. Wheat and opium poppy have the same growth cycle between March and June, as illustrated. The spectral differences between those two crops are more pronounced in February, which marks the beginning of the capsule stage of the crop in this example. Poppy fields are ploughed immediately after the harvest, whereas wheat fields are not. That is why two-dated images (pre-harvest and post-harvest) are collected for the same location.

Figure 26: Spectral reflectance of opium poppy and other crops



The figure above illustrates the growth cycles of opium poppy, wheat and clover from February to June, with the help of ground photographs. Note that maximum visual discrimination between opium poppy and other crops is possible during the flowering/capsule stage and after capsule lancing. The different phenological stages described above are shown in the figure on the previous page (field photographs of opium poppy, wheat and clover on different dates).

Figure 27: Image classification methodology for estimating opium poppy cultivation area



6.2.2 Interpretation of opium poppy cultivation from satellite images

First-dated images were acquired during the flowering or capsule stage and second-dated images were acquired after the opium harvest. For example, wheat appears mostly in bright red on the first date image in false colour composite (full coverage with vegetation appears in red; bare soil in grey/green), while opium poppy fields are shown in tones of pink. Although there can be some confusion between opium poppy and wheat in the first-dated images, the acquisition of second-dated images makes it possible to distinguish opium poppy from other crops, because the opium poppy crop has been harvested and the fields appear in grey/green.

Visual interpretation was used to delineate opium poppy fields by interpreting PLEIADES images covering a 5 km by 5 km area. Ortho-rectified PLEIADES images of 0.5 m resolution (PAN-sharpened) were used for this purpose. Opium poppy was initially identified using first-dated high resolution images. Ground truth information collected in the form of segment maps and GPS points was also useful in identifying opium poppy fields. The interpretation based on first-dated images was improved using patterns of observation in second-dated images. Ground photos of the poppy fields were used in the provinces of in Kabul, Kapisa, Kunar, Laghman, Nangarhar Faryab, Baghlan, Badakhshan, Jawzjan and Sari-Pul provinces. These photographs were tagged by latitude and longitude and facilitated to locate the poppy areas on satellite images, and were very helpful in confirming the poppy areas in the satellite images. Poppy field boundaries were delineated by an on-screen digitization method.

6.2.2.1 Band combination for opium poppy identification

Two kinds of band combination were used to detect opium poppy. True-colour combination (blue, green, red) was used in areas where land use is dominated by opium (for example, Hilmand and Kandahar) and in cases where images were obtained during the flowering and lancing stages of opium poppy. False-colour combination (infra-red, red, green) was used in almost all cases. Analysts used both combinations simultaneously to optimize discrimination between opium poppy and other crops.

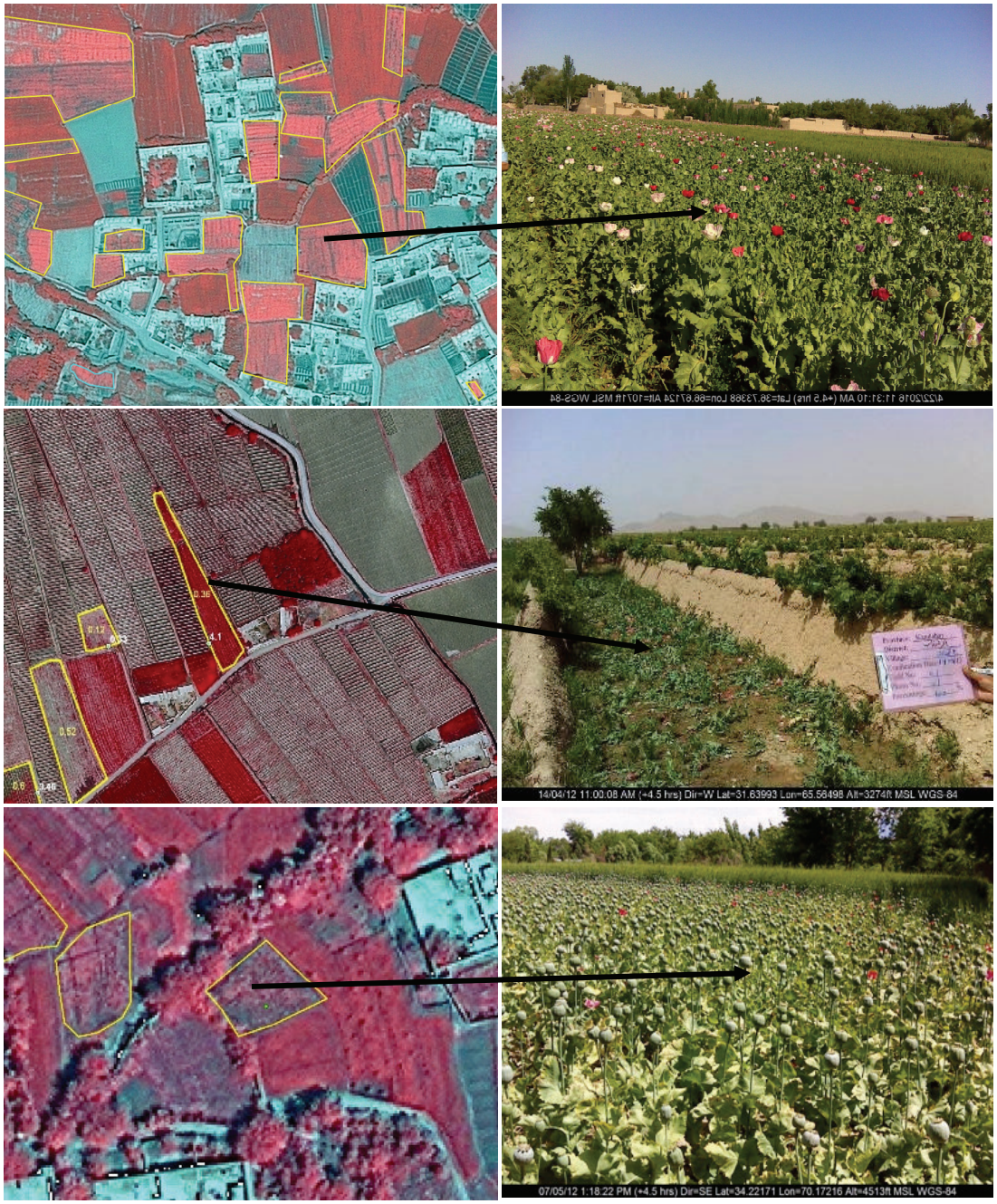
Some of the images could not be acquired at the appropriate time due to weather conditions and/or the time at which the satellite passed. The delayed acquisition of images makes it difficult to detect opium poppy, since fields may be at the senescence stage due to the lancing of capsules and can therefore be confused with fallow fields. In such cases, second-dated images are often useful in confirming opium poppy fields, since harvest patterns are different for wheat and opium poppy.

6.2.2.2 Ground reference information

Ground reference data were collected in the form of GPS points. Some 2,700 GPS points of poppy fields, supported with pictures, were collected from the provinces of Sari-Pul, Baghlan, Balkh and Faryab.

GPS point data were superimposed over the ortho-rectified satellite images to facilitate identification of poppy fields during visual interpretation.

Figure 28: Use of geo-referenced ground photos for image interpretation



6.2.2.3 Advantage of two-dated images

Visual interpretation of single-dated very high-resolution images was a relatively easy task in Hilmand, Kandahar, Uruzgan, Farah and Nimroz provinces. This was due to larger field sizes and timely acquisition of the images. Interpretation in target provinces Nangarhar, Laghman, Kunar, Kabul, Kapisa, Hirat, Ghor, Baghlan, Faryab and Badakhshan was easy with the help of GPS points and aerial photographs. Interpretation of images in Badghis and Zabul was more difficult since the spectral signatures of opium poppy were not as clear as in Hilmand, Kandahar, Uruzgan and Nangarhar. The second-dated images were useful to distinguish poppy from barley, wheat and grapes in certain provinces, namely Kabul, Kandahar and Nangarhar, particularly where the first-dated images were acquired late during the senescence stage. The second-dated (post-harvest) images were therefore useful in confirming whether the opium poppy on the first-dated images had been correctly identified. Image acquisition at two different times (pre- and post-harvest) is thus proven to be essential in such cases.

Normally, wheat and opium poppy is cultivated together at the same time in most of the provinces and wheat is harvested later than poppy. However, in Ghazni it was observed the poppy was at emergence stage when wheat was at flowering stage and when poppy was at flowering stage the wheat was already harvested.

Figure 29: Identification of opium poppy with multidate imageries in Ajrestan district of Gazni province

6.2.2.4 Quality control

A quality control mechanism was applied to the image interpretation process, with each analyst's work being checked by two other experts. Both first-dated and second-dated images were cross-checked.

All fields determined as likely to be under opium poppy cultivation (potential opium poppy fields) were delineated on the basis of the interpretation of first-dated satellite imagery. In some cases a second-dated image was acquired for the purpose of confirmation. The corrections involved a few commissions and omissions.

6.3 Verification of Governor-led eradication (GLE)

MCN/UNODC has improved field-based verification activities since 2010 by enhancing the control mechanism. The areas verified by eradication verifiers were randomly checked by the team leader and MCN/UNODC survey coordinators for validation of the reported figures. A total of 124 eradication verifiers were trained in eradication verification techniques and deployed in a phased manner to provinces where eradication activities were envisaged. The eradication verifiers were part of the eradication teams led by the respective provincial governor.

Verification methodology for GLE:

- Eradication verifiers were part of the Governor-led eradication teams.
- The verifiers took measurements of each eradicated field by their pace length, converted them into metres and calculated the area in jerib (1 jerib=2000 m^2), collected field coordinates using new GPS cameras and took photographs.
- The verifiers drew sketch maps of each field as a reference for area calculations.
- The verification-reporting officers in Kabul obtained the provisional data from the verifiers by telephone (mobile/satellite phones) and updated the database on a daily basis.
- The verifiers filled in hardcopy survey forms and submitted them to UNODC regional offices. The forms were then sent to the Kabul office for data entry. Quality control was undertaken by MCN/UNODC survey coordinators at the regional level. Eradicated fields were revisited randomly by team leaders and MCN/UNODC survey coordinators to check the accuracy of the reports. Further validation of the results was done using data obtained through helicopter flights, as well as from satellite imagery, to calculate the final area of eradicated poppy fields wherever possible.
- In Hilmand province, the area calculations of the eradicated poppy fields was facilitated by calculating the area of fields automatically using a standard template in Excel file, thus avoiding manual calculation errors at the field level.
- MCN/UNODC published periodical reports on a weekly basis to inform stakeholders of eradication activities. The eradication figures provided in these reports were considered provisional until they were finalized based on field checks and/or checks based on the satellite image interpretation.

6.4 Opium yield and production

6.4.1 Estimating opium yield

The relationship between poppy capsule volume per square metre and dry opium yield is used to estimate opium production.[19] It takes the form of a non-rectangular hyperbola.

Non-rectangular hyperbola formula for opium yield as function of capsule volume:

$$Y = [(VC + 1495) - ((VC + 1495)^2 - 395.259\ VC)^{0.5}] / 1.795$$

where

Y = Dry opium gum yield (kg/ha), and

VC = Mature capsule volume (cm^3/m^2).

[19] UNODC Guidelines for yield assessment of opium gum and coca leaf from brief field visits, UN New York, 2001, ST/NAR/33. See also UNODC (2003): Limited opium yield assessment surveys. Technical report: Observations and findings. Guidance for future activities. In: Scientific and Technical Notes, SCITEC/19, December 2003.

In the yield survey, data on the number of yield capsules per plot and capsule volume are collected. The survey follows the procedure established in the UNODC *Guidelines for Yield Assessment*.

An imaginary transect was drawn on each surveyed field, along which three one-metre square plots were selected. In each plot, the number of flower buds, flowers, immature capsules and mature capsules that were expected to yield opium were counted, and the diameter and height of 10 to 15 opium-yielding capsules were measured with a calliper. The capsule volume per square metre was calculated with these data and entered into the formula for the yield calculation. Each plot thus provided one yield observation. The simple average of the three plots in a field is the field yield. The simple average of all fields in a region is the regional yield. A range was calculated to express the uncertainty of the yield estimate due to sampling with the 95% confidence interval.

Table 27: Regional opium yield values with 95% confidence intervals, 2017 (Kilograms per hectare)

REGION	Best estimate	Lower bound	Upper bound
Central	43.8	39.8	47.8
Eastern	34.9	19.2	50.7
North-eastern	35.4	28.1	42.7
Northern	32.8	28.1	37.4
Southern	26.2	23.4	28.9
Western	22.3	19.2	25.3
National weighted by opium poppy cultivation	**27.3**	**23.5**	**31.1**

6.4.2 Size of the yield survey and data quality

Since 2012, the yield survey has been significantly reduced in comparison to previous years. Due to the increasingly difficult security situation, only fields where it was possible to complete the survey without time pressure were visited. Furthermore, training was improved and surveyors worked in pairs rather than alone. The survey is therefore no longer statistically representative. This year the yield suveys were conducted in Badghis province in addition to the provinces covered last year

To further enhance data quality, data quality checks developed with external experts were applied. The statistical tests developed in 2011[20] were applied to the capsule measurements, i.e. to the values reported regarding height and diameter, and thus the resulting capsule volumes. Regarding the number of capsules contributing to yield per plot, no systematic tests are available.

The results showed that data continued to be of a high quality. In 2017, the statistical tests were applied to the capsule measurements (values reported regarding height and diameter), all the data passed the test.

Table 28: Yield survey villages and fields surveyed (all data)**, 2010-2017**

Region	2009	2010	2011	2012	2013	2014	2015	2016	2017
Number of Provinces	18	17	19	10	12	12	14	14	15
Number of Villages	248	240	232	41	48	45	63	76	79
Number of fields (max 3 Per village)	699	685	685	114	142	134	188	209	222
Number of plots (3 per field)	2,415	2,040	2,055	342	426	401	553	620	631
Number of capsules measured	26,901	20,474	20,769	3,211	4,009	3,474	4,280	5,388	5,682

[20] See MCN/UNODC *Afghanistan Opium Survey , December 2011*, pages 94-95.

6.4.3 Estimating opium production

Opium production was calculated by the estimated regional area under opium poppy cultivation being multiplied by the corresponding regional opium yield. All opium estimates in this report are expressed in oven-dry opium equivalent, i.e. the opium is assumed to contain 0% moisture. The same figure expressed in air-dry opium, i.e. opium under "normal" conditions as traded, would be higher as such air-dry opium contains some moisture.

The point estimates and uncertainties of the opium production estimate due to sampling of the area under poppy cultivation and yield can be expressed as $a_p \pm \Delta a$ and $y_p \pm \Delta y$, respectively, where the uncertainty is determined from the 95% confidence intervals.

These uncertainties will impact on the estimate of production ($p_p \pm \Delta p$, or equivalently expressed as the range ($p_p - \Delta p$, $p_p + \Delta p$)), where the best estimate $p_p = a_p y_p$, such that

$$\frac{\Delta p}{p_p} = \left[\left(\frac{\Delta a}{a_p} \right)^2 + \left(\frac{\Delta y}{y_p} \right)^2 \right]^{\frac{1}{2}}$$

expresses the error in production, Δp , resulting from uncertainty in the estimates for cultivation area and yield.

For targeted regions there is no sampling error in the area under cultivation. In such cases, the error in production relates only to the uncertainty in the yield and is given by $\Delta p = p_p \Delta y / y_p$.

6.5 Heroin production

6.5.1 Share of raw opium converted to heroin

When estimating the amount of opium converted to heroin, seizures in Afghanistan and in neighboring countries, such as the Islamic Republic of Iran, Pakistan and Central Asia (e.g. Tajikistan, Turkmenistan, Uzbekistan), are considered in the model. There are indications of direct drug exports to China and India as well as to other countries by air or land, but the amounts trafficked through those routes are thought to be comparatively small and are not considered in the model. All seizure data from Afghanistan and neighboring countries is used for the estimation (retrieved from the latest World Drug Report), which implicitly assumes that the shares converted in and exported from Afghanistan are proportional to all seizures made in those countries.

A three-year average of all reported amounts was taken. In order to estimate the share of opium converted to heroin, all heroin and morphine seizures are converted into opium equivalents by applying the opium to heroin conversion ratio for heroin of export quality. In 2017, two different purity assumptions were used, 50% and 70%. A detailed discussion around all elements of heroin production within Afghanistan will be presented in the upcoming report "Afghanistan opium survey report 2017 – socio-economic analysis".

As seizures are often driven by pure chance and seizure data have some inherent uncertainties, changes should be interpreted with caution. Information from the CNPA laboratory indicates that not all assumed seizures of heroin turn out to actually contain heroin, or they contain heroin in combination with various other substances.[21] This is rather typical for seizures and not specific only to Afghanistan.

6.5.2 Conversion ratio from opium to heroin

The amount of raw opium needed for producing pure heroin base depends on two main factors:[22]

- the average morphine content of opium

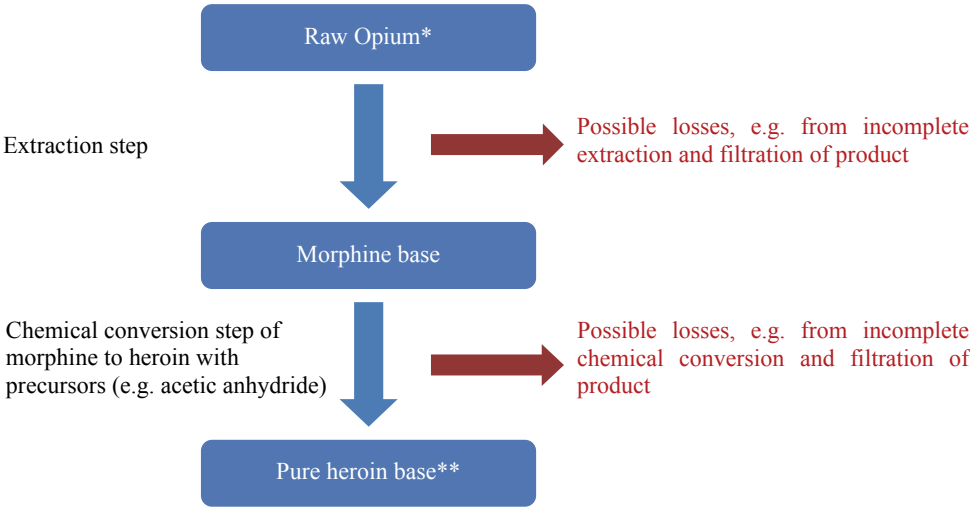
[21] Counter Narcotics Police of Afghanistan, Forensic Laboratory/UNODC (2008): Laboratory Information Bulletin 12/2008 (LIB IV/2008). http://www.unodc.org/pdf/scientific/LIB%20IV-2008_Kabul-.pdf.

[22] 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.*

- the efficiency of the heroin laboratory in extracting morphine from opium and in converting the yielded morphine to pure heroin base (laboratory efficiency).

Raw opium is converted into heroin base in two main steps: In the first step (the extraction step), morphine (and other alkaloids) are extracted from raw opium by adding hot water and chemicals such as calcium oxide and ammonium chloride. Theoretically, 100 kilograms of opium with an average morphine content of 12.3% can yield 12.3 kilograms of pure morphine (12.3% of 100). However, in reality, traffickers are not well trained chemists and do not work under optimal conditions, thus it is unlikely that the full potential of raw opium is used, and a certain percentage of potential morphine production is lost at this stage.

Figure 30: Simplified flow chart of the main stages of processing pure heroin base from opium.



*Note: *oven-dried values are used in estimation; **For the purpose of comparability, 100% pure heroin base is considered.*

In the second step, morphine base is converted to heroin base by adding precursor substances such as acetic anhydride. During this step, when it becomes pure heroin base, the morphine molecule gains two additional "acetyl groups" from the acetic anhydride. These additional molecules add weight to the morphine base: in an optimal scenario, when morphine is completely converted into pure heroin base, the heroin output is 1.29[23] times heavier than the morphine used as input. Thus, 1 kilogram of pure morphine can theoretically yield 1.29 kilograms of pure heroin, if the reaction goes to completion. But this reflects only a potential weight gain as losses also occur at this stage.

The combined losses in both steps are reflected in "laboratory efficiency", 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 is expressed as the percentage of actual amount of pure heroin base produced over the theoretically possible, maximum output (potential amount). 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.

The number of kilograms of raw opium needed to produce a kilogram of pure heroin base is thus given by the inverse of the product of

average morphine content (%) x chemical conversion ratio (1.29) x laboratory efficiency (%).

Data on morphine content is available from the annual investigations undertaken from 2000 to 2005, and 2010 to 2012.[24] These data show that the morphine content of opium harvested in

[23] The factor of 1.29 is the ratio of the molecular weight of heroin to that of morphine (molecular weight of heroin and morphine are 369.42 and 285.34, respectively).
[24] In 2013 and 2014, UNODC/MCN also collected samples. These samples have been dried and stored to be analysed in the CNPA forensic laboratory when it becomes operational.

Afghanistan has decreased since 2005, which was the reason for updating the conversion ratio of opium to heroin in 2014.

Between 2000 and 2003, 39 opium samples from different regions of Afghanistan, which contained an average of 15.0% morphine content (95% confidence interval ±1.32),[25] were analysed. In 2004 and 2005, a total of 56 opium samples was collected and analysed, which had an average morphine content of 13.6% (95% confidence interval ±1.2).[26] From 2010 to 2012, 57 opium samples from all regions of Afghanistan were collected and analysed, which presented a statistically significant[27] lower average morphine content of 12.3% (95% confidence interval ±0.7)[28] than the average from 2000 to 2005. A trend analysis of all yearly data reveals a statistically significant[29] declining trend of average morphine content.

Based on recent trends, the simple[30] average of the morphine content of all samples collected between 2010 and 2012 was used (12.3%) for the calculations of the conversion ratio. When more data becomes available, the morphine content will be updated.

While there is updated information on morphine content available, little is known about the laboratory efficiency of heroin laboratories in Afghanistan.

When the opium/heroin conversion ratio was revised in 2005, the underlying assumption was a laboratory efficiency of 60-70% together with a heroin purity range of 45-85%. These percentages were based on interviews with key informants and seizure data for purity.

In the same year, a study[31] conducted by the Federal Criminal Police Office, Wiesbaden, Germany was published, in which white heroin hydrochloride was produced by using locally seized substances and equipment. In this experiment, a laboratory efficiency[32] of 34% was achieved in the conversion of raw opium of low quality (8.5% morphine content) to pure heroin base. This is the only study available to date that has investigated laboratory efficiency in Afghanistan[33] under local conditions. The study has a number of 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: the processing of illicit heroin from opium is normally carried out with readily available equipment such as buckets, barrels, pots and cloth.[34] Precursors and chemicals used, such as acetic anhydride, ammonium chloride, acids, bases and solvents, are of unknown purities. Furthermore, laboratory operators may be experienced but seldom have any background in chemistry. All these factors considered, laboratory efficiency can vary anywhere from 30% to 70% efficiency and an assumption of either percentage could be either a gross under- or over-estimation.

When estimating the quantity of pure heroin base yielded from annual Afghan opium production, UNODC/MCN uses a laboratory efficiency of 34% for the estimation of the conversion ratio of opium to pure heroin base. If 70% laboratory efficiency could be achieved the conversion ratio from opium to pure heroin base would change from 18.5:1 to 9:1. The estimated heroin production would thus almost double. If more data on laboratory efficiency becomes available, the ratio will be updated.

[25] UNODC, SCITEC/19, Limited Opium Yield Assessment Surveys, December 2003.
[26] Analysis of the raw data used in B. Remberg, A.F. Sterrantino, R. Artner, C. Janitsch, L. Krenn, Science in drug control: the alkaloid content of Afghan opium, Chemistry and Biodiversity, 5 (2008), pp. 1770–1779.
[27] $p<0.05$.
[28] Recent data collected by UNODC/MCN.
[29] $p<0.001$.
[30] Analysis revealed that there are no statistically significant differences between regions in the data collected between 2010 and 2012. Therefore, the data has not been weighted according to production.

[31] Bulletin on Narcotics, vol. LVII, Nos. 1 and 2, 2005, pp. 11-31.
[32] 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 at this stage.
[33] A DEA study on heroin laboratory efficiency in Colombia estimated an overall laboratory efficiency of 67.2% under local conditions from opium (latex) to heroin HCl. This study is not applicable to Afghanistan, because in Colombia processors use a unique method known as the "ammonia method" (key chemicals are ammonia and ethyl acetate) to extract morphine base from opium latex.
[34] Bulletin on Narcotics, vol. LVII, Nos. 1 and 2, 2005.

6.5.1 Heroin of export quality – purity

The amount of pure heroin produced can only be a theoretical measure of the heroin output of Afghanistan opium production: heroin is rarely traded in its pure form and comes as brown heroin base or white heroin (heroin hydrochloride). It is also cut with diluents such as caffeine, chloroquine, phenolphthalein and paracetamol. When aiming to reflect local markets and estimate heroin availability for consumption, an estimate of the amount of heroin of export quality (quality of heroin traded by traffickers at the wholesale level) produced in a given year is a more informative measure.

Scarce data is available for the purity of heroin exported from Afghanistan. In 2017, the average of typical purity of wholesale heroin quality reported by Turkey in the previous three years has been used for estimating purity of export quality. Turkey is an important transit country for opiates trafficked from Afghanistan to Europe and reports purities on a regular basis. However, the percentage is only a single data point and can therefore only give a rough indication for the actual average purity of heroin trafficked out of Afghanistan. Recent reports indicate a much higher average purity of heroin of export quality manufactured in Afghanistan – this report uses therefore two different purity assumptions (50% and 70%). A detailed discussion around all elements of heroin production within Afghanistan will be presented in the upcoming report "Afghanistan opium survey report 2017 – socio-economic analysis".

6.6 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.

Annex I: Indicative district level estimates of opium poppy cultivation, 2005-2017 (Hectares)[35]

Province	District	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017
Badakhshan	Arghanj Khwah	-	-	54	-	-	-	-	-	-	-	10	3	11
Badakhshan	Argo	-	-	210	60	203	327	617	610	565	2,046	1,273	2,648	3,658
Badakhshan	Baharak	1,635	710	-	14	2	-	-	43	322	41	271	0	0
Badakhshan	Darayim	-	-	682	43	145	289	662	898	684	1,282	1,530	1,744	1,957
Badakhshan	Darwaz-i Payin (mamay)	-	-	-	-	-	-	-	-	-	-	-	-	-
Badakhshan	Darwaz-i- Bala (nesay)	-	-	-	-	-	-	-	-	-	-	-	-	-
Badakhshan	Faizabad (Provincial Center)	3,111	7,154	83	64	11	10	64	7	48	65	4	1	10
Badakhshan	Eshkashim	-	-	-	-	-	-	-	-	-	-	-	-	-
Badakhshan	Jurm	1,460	2,027	170	6	6	2	43	98	196	85	50	23	46
Badakhshan	Khash	-	-	999	7	6	4	46	-	-	-	152	330	640
Badakhshan	Khwahan	-	-	-	-	-	-	-	-	5	21	7	40	61
Badakhshan	Kishim	1,076	3,165	-	2	68	204	73	45	141	117	35	674	1,128
Badakhshan	Kohistan	-	-	-	-	-	-	-	2	0	11	8	-	-
Badakhshan	Kuf Ab	-	-	-	-	-	-	-	-	0	-	-	-	-
Badakhshan	Kiran wa Munjan	48	-	10	-	-	-	-	-	0	-	-	-	-
Badakhshan	Raghistan	-	-	400	-	-	-	-	19	9	26	-	44	61
Badakhshan	Shahri Buzurg	39	-	313	-	2	3	3	36	148	59	37	4	35
Badakhshan	Shighnan	-	-	-	-	-	-	-	-	0	-	-	-	-
Badakhshan	Shiki	-	-	-	-	-	-	-	-	0	-	-	-	-
Badakhshan	Shuhada	-	-	-	-	-	-	-	12	86	236	-	-	-
Badakhshan	Tagab	-	-	93	-	-	-	-	22	36	101	57	167	63
Badakhshan	Tashkan	-	-	136	-	57	163	145	73	107	92	595	582	570
Badakhshan	Wakhan	-	-	-	-	-	-	-	-	0	-	-	-	-
Badakhshan	Wardooj	-	-	9	3	14	1	1	-	0	-	-	10	15
Badakhshan	Yaftal-i-Sufla	-	-	305	-	43	97	50	32	18	12	25	23	52
Badakhshan	Yamgan	-	-	10	-	-	-	1	-	5	10	-	4	3
Badakhshan	Yawan	-	-	166	-	-	-	-	30	-	-	2	2	-
Badakhshan	Zaybak	-	-	-	-	-	-	-	-	-	-	-	-	-
Badakhshan Total		**7,369**	**13,056**	**3,642**	**200**	**557**	**1,100**	**1,705**	**1,927**	**2,374**	**4,204**	**4,056**	**6,298**	**8,311**
Badghis	Ab Kamari	-	127	-	11	161	16	5	14	24	-	1,996	71	281
Badghis	Ghormach	944	624	250	328	299	486	1,485	1,005	2,395	1,009	6,855	17,594	Part of Farya
Badghis	Jawand	134	431	66	13	1,090	130	106	187	850	797	683	940	2,303
Badghis	Muqur	-	220	149	7	102	81	9	61	26	47	86	1,062	2,097
Badghis	Bala Murghab	1,889	1,034	3,557	81	2,754	2,055	284	870	-	3,762	1,417	12,372	18,202
Badghis	Qadis	-	391	198	146	906	135	92	152	264	57	1,331	3,185	1,802
Badghis	Qala-i-Now (Provincial Center)	-	378	-	-	99	55	9	75	37	49	23	11	38
Badghis Total		**2,967**	**3,205**	**4,219**	**587**	**5,411**	**2,958**	**1,990**	**2,363**	**3,596**	**5,721**	**12,391**	**35,234**	**24,723**
Baghlan	Andarab	548	947	130	475	-	-	18	5	3	4	8	92	91
Baghlan	Baghlan *	374	72	-	-	-	-	-	-	-	-	-	-	-
Baghlan	Baghlan-i-Jadeed	248	371	287	-	-	-	-	-	-	-	-	-	-
Baghlan	Burka	242	39	31	-	-	-	-	-	4	1	0	4	11
Baghlan	Dahana-i- Ghuri	24	35	-	-	-	-	-	-	-	-	-	-	-
Baghlan	Deh Salah	-	-	14	-	-	-	113	33	37	60	68	351	473
Baghlan	Dushi	116	174	68	-	-	-	-	-	-	-	-	-	-
Baghlan	Firing Wa Gharu	-	-	-	-	-	-	-	-	-	-	-	-	-
Baghlan	Gozargah-i-Noor	-	-	30	-	-	-	-	-	-	-	-	-	-
Baghlan	Kahmard *	263	255	-	-	-	-	-	-	-	-	-	-	-
Baghlan	Khinjan	92	137	23	-	-	-	-	-	-	-	-	-	-
Baghlan	Khost Wa Firing	295	442	56	-	-	-	-	-	-	-	-	-	-
Baghlan	Khwajah Hijran (Jalgah)	-	-	10	-	-	-	-	-	-	-	-	84	57
Baghlan	Nahreen	35	36	-	-	-	-	-	-	-	-	-	-	-
Baghlan	Pul-i-Hisar	-	-	-	-	-	-	30	139	97	103	104	319	424
Baghlan	Pul-i-Khumri (Provincial Center	224	81	21	-	-	-	-	-	-	-	-	-	-
Baghlan	Talah wa Barfak	102	153	-	-	-	-	-	-	-	-	-	-	-
Baghlan Total		**2,563**	**2,742**	**671**	**475**	**p-f**	**p-f**	**161**	**177**	**141**	**168**	**180**	**849**	**1,057**

[35] *The survey is designed to produce province level estimates. District estimates are derived by a combination of different approaches. They are indicative only, and suggest a possible distribution of the estimated provincial poppy area among the districts of a province.*

Province	District	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017
Balkh	Balkh	2,786	1,975	-	-	-	-	-	-	-	-	-	5	2,334
Balkh	Chahar Bolak	2,701	799	-	-	-	-	-	-	10	-	9	316	4,007
Balkh	Chahar Kent	25	16	-	-	-	-	-	-	-	-	-	-	-
Balkh	Chimtal	1,878	2,074	-	-	-	-	-	-	400	-	195	1,764	5,768
Balkh	Dowlat abad	202	181	-	-	-	-	-	-	-	-	-	-	1
Balkh	Dehdadi	990	307	-	-	-	-	-	-	-	-	-	-	6
Balkh	Kaldar (Shahrak-i-Hairatan)	395	123	-	-	-	-	-	-	-	-	-	-	-
Balkh	Khulm	367	-	-	-	-	-	-	-	-	-	-	-	-
Balkh	Kishindeh	290	189	-	-	-	-	-	-	-	-	-	-	-
Balkh	Marmul	18	12	-	-	-	-	-	-	-	-	-	-	-
Balkh	Mazar-i-Sharif	119	78	-	-	-	-	-	-	-	-	-	-	-
Balkh	Nahr-i-Shahi	425	833	-	-	-	-	-	-	-	-	-	-	-
Balkh	Sholgarah	543	245	-	-	-	-	-	-	-	-	-	-	-
Balkh	Shortepa	98	401	-	-	-	-	-	-	-	-	-	-	-
Balkh	Sharak-e-Hayratan	-	-	-	-	-	-	-	-	-	-	-	-	-
Balkh	Zari	-	-	-	-	-	-	-	-	-	-	-	-	-
Balkh Total		**10,837**	**7,233**	**p-f**	**p-f**	**p-f**	**p-f**	**p-f**	**p-f**	**410**	**P-f**	**204**	**2,085**	**12,116**
Bamyan	Bamyan (Provincial Center)	19	17	-	-	-	-	-	-	-	-	-	-	-
Bamyan	Kahmard	-	-	-	-	-	-	-	-	-	-	-	-	-
Bamyan	Panjab	-	-	-	-	-	-	-	-	-	-	-	-	-
Bamyan	Saighan	-	-	-	-	-	-	-	-	-	-	-	-	-
Bamyan	Shebar	107	-	-	-	-	-	-	-	-	-	-	-	-
Bamyan	Waras	-	-	-	-	-	-	-	-	-	-	-	-	-
Bamyan	Yakawlang	-	-	-	-	-	-	-	-	-	-	-	-	-
Bamyan Total		**126**	**17**	**p-f**	**p-f**	**p-f**	**p-f**	**p-f**	**p-f**	**p-f**	**p-f**	**p-f**	**p-f**	**p-f**
Day Kundi	Gizab	-	2,243	1,054	665	810	722	621	684	727	Uruzgan	Uruzgan	Uruzgan	Uruzgan
Day Kundi	Ishtarlay	-	-	535	214	239	9	9	9	6	8	16	-	35
Day Kundi	Kajran	-	2,581	366	357	704	622	153	288	700	320	124	273	442
Day Kundi	Khedir	-	-	531	289	160	5	8	9	4	6	24	6	53
Day Kundi	Kiti	-	-	282	168	284	134	151	14	-	-	13	-	290
Day Kundi	Mir Amor	-	-	512	281	703	19	22	5	12	16	72	15	34
Day Kundi	Nili (Provincial Center)	-	-	-	214	5	5	9	16	3	-	-	13	141
Day Kundi	Sang-i-Takht	-	-	2	1	68	10	15	8	30	150	43	-	47
Day Kundi	Shahristan	-	2,220	64	85	29	21	13	25	53	87	89	67	466
Day Kundi Total		**2,581**	**7,044**	**3,346**	**2,273**	**3,002**	**1,547**	**1,003**	**1,058**	**1,536**	**587**	**381**	**374**	**1,508**
Farah	Anar Darah	1,828	143	16	239	79	1	9	3	314	104	-	2	1
Farah	Bakwah	390	1,093	3,458	3,090	3,570	1,936	800	5,822	8,844	12,651	5,567	1,503	2,040
Farah	Bala Buluk	1,665	1,669	5,312	1,509	2,705	2,586	3,157	3,951	1,947	2,730	7,033	2,062	3,490
Farah	Delaram	-	-	-	-	3,011	4,404	4,263	8,899	Part of Nimroz	Part of Nimroz	Part of Nimroz	Part of Nimroz	Part of Nimroz
Farah	Farah (Provincial Center)	729	905	1,328	1,013	1,142	51	-	129	4,451	4,760	128	72	47
Farah	Gulistan	163	202	1,132	4,756	1,355	2,661	4,565	3,920	3,759	2,000	1,065	841	1,102
Farah	Khaki-Safed	432	537	99	609	232	645	1,103	2,220	1,186	1,726	4,562	2,715	3,998
Farah	Lash-i-Juwayn	1,568	215	233	109	45	3	6	2	179	27	7	10	8
Farah	Pur Chaman	293	363	1,549	1,046	96	2,175	3,512	2,164	230	930	365	315	642
Farah	PushtRod	2,482	1,709	1,314	1,588	46	61	46	505	2,521	2,214	2,192	1,517	1,499
Farah	Qala-i-Kah	407	506	337	888	47	11	39	117	914	354	186	64	17
Farah	Shib Koh	283	352	87	163	77	18	-	-	149	17	1	-	4
Farah Total		**10,240**	**7,694**	**14,865**	**15,010**	**12,405**	**14,552**	**17,499**	**27,733**	**24,492**	**27,513**	**21,106**	**9,101**	**12,846**
Faryab	Almar	57	338	213	-	-	-	-	-	-	-	-	52	1,448
Faryab	Andkhoy	13	31	-	-	-	-	-	-	-	-	-	-	-
Faryab	Bil Chiragh	-	322	620	102	-	-	-	-	-	-	-	1	-
Faryab	Dowlat abad	133	27	-	-	-	-	-	-	-	-	-	-	-
Faryab	Gurziwan	-	-	101	-	-	-	75	-	46	40	108	39	-
Faryab	Khani ChaharBagh	6	490	-	-	-	-	-	-	-	-	-	-	-
Faryab	Khwajah Sabz Poshi Wali	451	375	238	-	-	-	-	-	-	-	-	-	-
Faryab	Kohistan	50	84	152	10	-	-	49	-	65	69	69	89	289
Faryab	Maimanah	-	218	66	10	-	-	-	-	-	-	-	-	-
Faryab	Pashtun Kot	97	60	249	-	-	-	9	-	1	-	-	-	-
Faryab	Qaram Qul	138	43	-	-	-	-	-	-	-	-	-	-	-
Faryab	Qaisar	579	880	303	168	-	-	13	-	46	102	983	2,742	8,294
Faryab	Qurghan	-	-	-	-	-	-	-	-	-	-	-	-	-
Faryab	Shirin Tagab	1,141	172	924	-	-	-	-	-	-	-	-	-	-
Faryab	Ghormach	Part of B	Part of B	Part of B	Part of B	Part of B	Part of B	Part of B	Part of B	Part of Ba	Part of B	Part of B	Part of B	12,766
Faryab Total		**2,665**	**3,040**	**2,866**	**291**	**p-f**	**p-f**	**146**	**p-f**	**158**	**211**	**1,160**	**2,923**	**22,797**

Province	District	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017
Ghazni	Ab Band	-	-	-	-	-	-	-	-	-	-	-	-	-
Ghazni	Ajristan	-	-	-	-	-	-	-	-	-	-	-	-	1,022
Ghazni	Andar	-	-	-	-	-	-	-	-	-	-	-	-	-
Ghazni	Bahram-e Shahid (Jaghatu)	9	-	-	-	-	-	-	-	-	-	-	-	-
Ghazni	Deh Yak	-	-	-	-	-	-	-	-	-	-	-	-	-
Ghazni	Gelan	-	-	-	-	-	-	-	-	-	-	-	-	-
Ghazni	Ghazni (Provincial Center)	-	-	-	-	-	-	-	-	-	-	-	-	-
Ghazni	Giro	-	-	-	-	-	-	-	-	-	-	-	-	-
Ghazni	Jaghatu *	-	-	-	-	-	-	-	-	-	-	-	-	-
Ghazni	Jaghuri	-	-	-	-	-	-	-	-	-	-	-	-	-
Ghazni	Khwajah Omari	-	-	-	-	-	-	-	-	-	-	-	-	-
Ghazni	Malistan	-	-	-	-	-	-	-	-	-	-	-	-	-
Ghazni	Muqur	-	-	-	-	-	v	-	-	-	-	-	-	-
Ghazni	Nawa	-	-	-	-	-	-	-	-	-	-	-	-	-
Ghazni	Nawur	-	-	-	-	-	-	-	-	-	-	-	-	5
Ghazni	Qara Bagh	-	-	-	-	-	-	-	-	-	-	-	-	-
Ghazni	Rashidan	-	-	-	-	-	-	-	-	-	-	-	-	-
Ghazni	Waghaz	-	-	-	-	-	-	-	-	-	-	-	-	-
Ghazni	Wali Muhammad Shadid Khug	-	-	-	-	-	-	-	-	-	-	-	-	-
Ghazni	Zanakhan	-	-	-	-	-	-	-	-	-	-	-	-	-
Ghazni Total		**9**	**0**	**p-f**	**p-f**	**p-f**	**p-f**	**p-f**	**p-f**	**p-f**	**p-f**	**p-f**	**p-f**	**1,027**
Ghor	Chaghcharan (Provincial Cente	1,149	1,233	910	-	-	-	-	71	72	222	397	356	886
Ghor	Chahar Sadah	-	-	41	-	-	-	-	-	64	95	-	182	13
Ghor	Dowlatyar	-	-	132	-	-	-	-	5	82	117	154	235	251
Ghor	Do Lainah	-	-	131	-	-	-	-	16	9	9	17	11	83
Ghor	Lal Wa Sarjangal	718	771	200	-	-	-	-	-	-	9	280	-	192
Ghor	Pasaband	48	241	17	-	-	-	-	-	-	-	633	258	1,426
Ghor	Saghar	120	283	18	-	-	-	-	-	-	-	8	-	6
Ghor	Shahrak	18	1,398	-	-	-	-	-	33	37	41	62	99	214
Ghor	Taywara	240	608	39	-	-	-	-	-	-	-	126	82	1,019
Ghor	Tulak	396	145	16	-	-	-	-	-	-	-	44	-	138
Ghor Total		**2,689**	**4,679**	**1,503**	**p-f**	**p-f**	**p-f**	**p-f**	**125**	**264**	**493**	**1,721**	**1,222**	**4,228**
Hilmand	Baghran	2,507	2,890	4,287	4,279	3,343	4,049	6,739	2,788	4,037	4,553	2,190	4,408	4,318
Hilmand	Dishu	911	851	1,160	688	475	119	481	1,601	4,161	3,338	3,528	4,391	6,675
Hilmand	Garm Ser	1,912	6,168	6,523	8,000	5,789	6,333	4,342	1,246	4,527	8,394	10,406	10,574	13,211
Hilmand	Kajaki	1,639	6,760	5,807	6,240	3,696	3,299	6,435	9,065	10,611	10,836	11,564	8,490	14,447
Hilmand	Lashkargah (Provincial Center)	1,332	4,008	6,320	7,857	4,379	2,014	649	1,469	1,828	2,562	2,089	1,935	4,669
Hilmand	Musa Qala	1,664	6,371	8,854	12,687	8,603	8,415	10,340	7,235	10,586	8,320	6,974	6,112	13,474
Hilmand	Nad Ali	2,356	11,652	20,045	20,824	17,063	18,646	5,413	8,038	19,136	22,256	17,022	12,429	27,398
Hilmand	Marja	-	-	-	-	-	-	2,629	2,046	part of Nad Ali	part of Nad Ali	part of Nad Ali	part of Nad Ali	part of Nad Ali
Hilmand	Naher-i-Saraj	3,548	10,386	22,769	13,270	9,598	11,517	12,638	22,468	18,701	16,984	11,759	11,050	18,464
Hilmand	Nowzad	3,737	2,707	6,192	3,863	6,473	2,845	4,694	10,822	11,944	9,839	5,576	7,256	16,972
Hilmand	Nawa-i-Barukzai	2,552	10,168	6,314	13,978	4,416	1,328	1,610	41	97	319	2,176	559	4,064
Hilmand	Reg-i-Khan Nishin	2,772	3,765	8,484	4,720	2,056	2,292	2,120	2,718	5,912	6,781	7,352	8,352	10,251
Hilmand	Sangin Qala	1,184	2,862	5,150	5,532	2,754	2,631	2,941	2,882	3,709	5,349	3,731	2,955	5,667
Hilmand	Washer	386	735	865	1,653	1,188	1,555	2,275	2,757	5,445	3,710	2,076	1,759	4,409
Hilmand Total		**26,500**	**69,323**	**102,770**	**103,590**	**69,833**	**65,045**	**63,307**	**75,176**	**100,693**	**103,240**	**86,443**	**80,273**	**144,018**
Hirat	Adraskan	9	99	196	22	1	-	-	-	3	10	5	1	0
Hirat	Chiisht-i-Sharif	42	42	-	-	-	-	-	-	-	-	-	-	-
Hirat	Fersi	110	111	-	-	-	-	-	-	-	-	-	-	-
Hirat	Ghoryan	238	204	302	-	-	-	-	-	-	-	-	-	-
Hirat	Gulran	33	32	-	-	-	-	-	-	-	-	-	-	-
Hirat	Guzara	231	233	-	-	-	-	-	-	-	-	-	-	-
Hirat	Hirat	16	16	-	-	-	-	-	-	-	-	-	-	-
Hirat	Enjil	394	382	-	-	-	-	-	-	-	-	-	-	-
Hirat	Karrukh	124	121	-	-	-	-	-	-	-	-	-	-	-
Hirat	Kohsan	72	73	146	-	-	-	-	-	-	-	-	-	-
Hirat	Kushk (Rabat-i-Sangi)	64	50	367	43	-	-	-	-	-	-	-	-	575
Hirat	Kusk-i-Kohnah	15	15	-	-	-	-	-	-	-	-	-	-	11
Hirat	Obe	144	131	-	-	-	-	-	-	-	-	-	-	-
Hirat	Pashtun Zarghun	249	242	-	-	-	-	-	-	-	-	-	-	-
Hirat	Shindand	54	408	516	201	555	360	366	1,080	949	729	280	207	517
Hirat	Zendah Jan	128	129	-	-	-	-	-	-	-	-	-	-	-
Hirat Total		**1,924**	**2,288**	**1,526**	**266**	**556**	**360**	**366**	**1,080**	**952**	**738**	**285**	**208**	**1,104**

Province	District	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017
Jawzjan	Aqchah	631	30	-	-	-	-	-	-	-	-	-	-	20
Jawzjan	Darzab	272	16	803	-	-	-	-	-	-	-	-	85	327
Jawzjan	Faizabad	112	473	21	-	-	-	-	-	-	-	-	7	396
Jawzjan	Khamyab	68	2	-	-	-	-	-	-	-	-	-	-	-
Jawzjan	Khanaqa	-	-	-	-	-	-	-	-	-	-	-	-	8
Jawzjan	Khwajah DuKoh	15	271	-	-	-	-	-	-	-	-	-	-	10
Jawzjan	Mardyan	21	348	62	-	-	-	-	-	-	-	-	-	399
Jawzjan	Mingajik	77	38	-	-	-	-	-	-	-	-	-	-	37
Jawzjan	Qarqin	43	17	-	-	-	-	-	-	-	-	-	-	6
Jawzjan	Qush Tepah	-	-	43	-	-	-	-	-	-	-	-	316	1,168
Jawzjan	Sheberghan (Provincial Center)	508	828	156	-	-	-	-	-	-	-	-	1	867
Jawzjan Total		**1,748**	**2,023**	**1,086**	**p-f**	**p-f**	**p-f**	**p-f**	**p-f**	**p-f**	**p-f**	**p-f**	**409**	**3,237**
Kabul	Bagrami	-	-	-	-	-	-	-	-	-	-	-	-	-
Kabul	Chahar Asyab	-	-	-	-	-	-	-	-	-	-	-	-	-
Kabul	DehSabz	-	-	-	-	-	-	-	-	-	-	-	-	-
Kabul	Farzah	-	-	-	-	-	-	-	-	-	-	-	-	-
Kabul	Gulara	-	-	-	-	-	-	-	-	-	-	-	-	-
Kabul	Estalef	-	-	-	-	-	-	-	-	-	-	-	-	-
Kabul	Kabul	-	-	-	-	-	-	-	-	-	-	-	-	-
Kabul	Kalakan	-	-	-	-	-	-	-	-	-	-	-	-	-
Kabul	Khak-i-Jabar	-	-	-	-	-	-	-	-	-	-	-	-	-
Kabul	Mir Bacha Kot	-	-	-	-	-	-	-	-	-	-	-	-	-
Kabul	Musahi	-	-	-	-	-	-	-	-	-	-	-	-	-
Kabul	Paghman	-	-	-	-	-	-	-	-	-	-	-	-	-
Kabul	Qara Bagh	-	-	-	-	-	-	-	-	-	-	-	-	-
Kabul	Shakar Dara	-	-	-	-	-	-	-	-	-	-	-	-	-
Kabul	Surubi	-	80	500	310	132	152	220	120	298	233	321	398	435
Kabul Total		**0**	**80**	**500**	**310**	**132**	**152**	**220**	**120**	**298**	**233**	**321**	**398**	**435**
Kandahar	Arghandab	287	735	1,016	57	158	22	84	114	18	512	247	381	1,183
Kandahar	Arghistan	2,449	784	310	28	43	7	42	90	155	1,515	178	58	16
Kandahar	Daman	775	183	375	19	119	-	-	-	-	1,227	37	43	157
Kandahar	Ghorak	233	336	1,445	232	628	1,466	1,165	952	676	269	691	565	573
Kandahar	Kandahar (Provinclal Center)	-	1,367	1,220	590	425	108	262	11	46	-	56	74	113
Kandahar	Khakrez	185	217	132	1,224	1,474	1,215	1,190	794	1,006	867	433	459	416
Kandahar	Maruf	150	464	914	182	36	33	31	28	49	275	8	91	408
Kandahar	Maiwand	1,281	1,362	2,878	3,375	6,524	9,966	10,114	12,690	16,382	16,228	9,112	7,287	9,284
Kandahar	Miya Neshin	-	-	322	1,603	158	44	45	30	162	632	4	9	410
Kandahar	Nesh	-	-	432	3,284	1,717	2,842	2,096	620	1,057	405	1,065	1,986	2,257
Kandahar	Panjwayee	4,687	4,714	-	-	1,564	2,982	4,914	4,780	984	3,315	1,735	1,565	2,141
Kandahar	Reg	327	-	4	-	-	-	-	-	-	-	-	-	-
Kandahar	Shah Wali Kot	2,379	1,593	1,258	560	911	813	615	242	474	1,471	541	818	1,568
Kandahar	Shorabak	19	409	308	4	-	-	-	-	102	-	-	-	-
Kandahar	Spin Boldak	218	454	768	541	650	1,359	1,368	121	207	1,889	2,027	1,857	1,880
Kandahar	Zhire	-	-	5,232	2,923	5,405	4,978	5,288	3,867	7,017	5,108	4,886	5,282	7,605
Kandahar Total		**12,990**	**12,618**	**16,615**	**14,623**	**19,811**	**25,835**	**27,213**	**24,341**	**28,335**	**33,713**	**21,020**	**20,475**	**28,010**
Kapisa	AlaSai	82	-	367	-	-	-	3	34	33	125	71	103	254
Kapisa	Hisah-i-Awal Kohistan	-	-	-	-	-	-	-	-	-	-	-	-	-
Kapisa	Hisah-i-Duwumi Kohistan	-	-	-	-	-	-	-	-	-	-	-	-	-
Kapisa	Koh Band	33	-	-	-	-	-	9	16	20	46	10	25	29
Kapisa	Kohistan	-	-	-	-	-	-	-	-	-	-	-	-	-
Kapisa	Mahmood-i-Raqi (Provincial Ce	-	-	-	-	-	-	-	-	1	-	-	-	-
Kapisa	Nijrab	-	-	-	-	-	-	14	21	20	30	21	26	57
Kapisa	Tagab	-	282	468	436	-	-	155	219	508	270	358	454	628
Kapisa Total		**115**	**282**	**835**	**436**	**p-f**	**p-f**	**181**	**290**	**582**	**472**	**460**	**608**	**968**
Khost	Bak	-	14	-	-	-	-	-	-	-	-	-	-	-
Khost	Gurbuz	-	10	-	-	-	-	-	-	-	-	-	-	-
Khost	Jaji Maidan	-	16	-	-	-	-	-	-	-	-	-	-	-
Khost	Khost Matun (Provincial Cente	-	-	-	-	-	-	-	-	-	-	-	-	-
Khost	Manduzay (Ismyel Khel)	-	-	-	-	-	-	-	-	-	-	-	-	-
Khost	Musa Khel (Mangal)	-	-	-	-	-	-	-	-	-	-	-	-	-
Khost	NadirShah Kot	-	-	-	-	-	-	-	-	-	-	-	-	-
Khost	Qalandar	-	-	-	-	-	-	-	-	-	-	-	-	-
Khost	Sabari (Yaqubi)	-	-	-	-	-	-	-	-	-	-	-	-	-
Khost	Shamul (Dzadran)	-	-	-	-	-	-	-	-	-	-	-	-	-
Khost	Spera	-	5	-	-	-	-	-	-	-	-	-	-	-
Khost	Tanay	2	88	-	-	-	-	-	-	-	-	-	-	-
Khost	Terayzai (Ali Sher)	-	-	-	-	-	-	-	-	-	-	-	-	-
Khost Total		**2**	**133**	**p-f**	**p-f**	**p-f**	**p-f**	**p-f**	**p-f**	**p-f**	**p-f**	**p-f**	**p-f**	**p-f**

Province	District	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2,016	2,017
Kunar	Asad Abad (Provincial center)	270	356	42	252	4	-	-	61	342	209	1	1	0
Kunar	Bar Kunar (Asmar)	14	10	111	7	9	7	18	62	83	57	58	73	112
Kunar	Chapa Dara	147	23	-	-	-	12	42	-	-	-	-	4	5
Kunar	Dangam	22	9	90	-	9	-	43	30	46	46	28	15	140
Kunar	Dara-i-Pech	76	183	-	0	1	5	170	298	254	82	30	39	128
Kunar	Ghazi Abad	-	-	5	-	0	4	13	-	-	-	5	30	31
Kunar	Khas Kunar	41	18	8	1	-	-	-	57	79	21	116	36	127
Kunar	Mara warah	22	33	6	-	84	-	2	4	1	-	28	11	1
Kunar	Narang wa Badil	55	25	57	-	4	1	1	41	22	4	5	31	58
Kunar	Nari	19	-	80	15	1	-	-	21	18	7	20	25	26
Kunar	Noor Gal	58	88	7	-	4	20	20	101	-	79	9	241	346
Kunar	Sar Kani	50	75	11	6	1	-	-	14	25	-	476	359	282
Kunar	Shigal wa Sheltan	-	-	5	-	36	73	102	459	212	155	71	242	182
Kunar	Sawkai	284	111	19	9	4	33	30	124	-	50	8	6	14
Kunar	Watapoor	-	-	3	-	6	-	137	7	46	45	132	163	183
Kunar Total		**1,059**	**931**	**446**	**290**	**164**	**155**	**578**	**1,279**	**1,127**	**754**	**987**	**1,276**	**1,634**
Kunduz	Ali Abad	-	-	-	-	-	-	-	-	-	-	-	-	-
Kunduz	Dashti-i-Archi	-	102	-	-	-	-	-	-	-	-	-	-	-
Kunduz	Chahar Darah	-	-	-	-	-	-	-	-	-	-	-	-	-
Kunduz	Hazrati Imam Sahib	-	-	-	-	-	-	-	-	-	-	-	-	-
Kunduz	Khanabad	-	-	-	-	-	-	-	-	-	-	-	-	-
Kunduz	Kunduz (Provincial Center)	-	-	-	-	-	-	-	-	-	-	-	-	-
Kunduz	Qala-i-Zal	275	-	-	-	-	-	-	-	-	-	-	-	-
Kunduz Total		**275**	**102**	**p-f**	**p-f**	**p-f**	**p-f**	**p-f**	**p-f**	**p-f**	**p-f**	**p-f**	**p-f**	**p-f**
Laghman	Alingar	107	259	23	13	1	48	343	303	503	477	277	546	575
Laghman	Alisheng	69	192	237	370	1	65	124	335	472	278	285	471	962
Laghman	Dowlat Shah	44	118	124	3	0	31	52	158	142	5	90	180	301
Laghman	Mehterlam (Provincial Center)	25	-	-	16	43	90	104	69	119	137	123	175	281
Laghman	Qarghayee	30	140	177	23	90	-	-	12	-	5	4	8	137
Laghman Total		**274**	**709**	**561**	**425**	**135**	**234**	**624**	**877**	**1,236**	**901**	**779**	**1,380**	**2,257**
Logar	Azra	-	-	-	-	-	-	-	-	-	-	-	-	-
Logar	Baraki Barak	-	-	-	-	-	-	-	-	-	-	-	-	-
Logar	Charkh	-	-	-	-	-	-	-	-	-	-	-	-	-
Logar	Kharwar	-	-	-	-	-	-	-	-	-	-	-	-	-
Logar	Khoshi	-	-	-	-	-	-	-	-	-	-	-	-	-
Logar	Muhammad Aghah	-	-	-	-	-	-	-	-	-	-	-	-	-
Logar	Pul-i-Alam	-	-	-	-	-	-	-	-	-	-	-	-	-
Logar Total		**0**	**0**	**p-f**	**p-f**	**p-f**	**p-f**	**p-f**	**p-f**	**p-f**	**p-f**	**p-f**	**p-f**	**p-f**
Nangarhar	Achin	198	1,274	1,797	-	14	10	254	580	2,224	3,004	1,090	698	1,364
Nangarhar	Bati Kot	166	550	1,774	-	-	-	-	-	-	-	4	193	757
Nangarhar	Behsud	-	-	-	-	-	-	-	-	-	-	-	-	-
Nangarhar	Chaparhar	20	209	878	-	-	-	12	19	1,452	1,866	1,504	2,472	2,337
Nangarhar	Darah-i- Noor	2	-	322	-	-	-	-	-	-	162	11	326	700
Nangarhar	Deh Bala	17	68	1,075	-	-	-	-	14	-	-	275	55	112
Nangarhar	Dur Baba	5	19	36	-	-	-	-	-	-	-	-	-	-
Nangarhar	Goshta	10	41	109	-	-	-	-	-	19	95	6	3	-
Nangarhar	Hesarak	64	283	295	-	18	5	178	89	-	775	424	581	937
Nangarhar	Jalalabad	77	-	-	-	-	-	-	-	-	-	-	-	-
Nangarhar	Kama	82	-	-	-	-	-	-	-	-	14	-	-	-
Nangarhar	Khugyani	117	750	3,253	-	108	131	557	1,481	5,746	4,755	2,996	4,204	4,728
Nangarhar	Kot	-	-	-	-	-	-	-	-	993	2,040	872	80	49
Nangarhar	Kuzkunar	37	151	153	-	-	-	-	-	-	-	-	1	133
Nangarhar	Lalpoor	17	68	356	-	5	59	185	-	798	712	218	344	728
Nangarhar	Mohmand Dara	54	221	995	-	-	1	1	-	155	175	19	213	505
Nangarhar	Nazyan	8	160	266	-	1	-	-	-	-	-	-	-	-
Nangarhar	Pachir wagam	35	143	594	-	-	-	3	418	1,672	1,588	1,066	1,160	1,231
Nangarhar	Rodat	50	-	3,755	-	-	-	-	-	11	946	389	1,426	1,802
Nangarhar	Sherzad	57	430	864	-	148	513	1,510	550	2,650	1,876	884	1,393	1,534
Nangarhar	Shinwar	79	504	2,218	-	-	-	-	-	-	-	70	379	1,245
Nangarhar	Surkh Rud	-	-	-	-	-	-	-	-	-	219	188	818	816
Nangarhar Total		**1,093**	**4,871**	**18,739**	**p-f**	**294**	**719**	**2,700**	**3,151**	**15,719**	**18,227**	**10,016**	**14,344**	**18,976**
Nimroz	Asl-i-Chakhansur	-	-	-	1	-	183	855	98	9	-	57	34	41
Nimroz	Chahar Burjak	526	1,119	87	4	84	144	181	696	511	250	698	1,305	4,167
Nimroz	Kang	-	40	-	-	-	10	31	36	-	-	-	-	2
Nimroz	Khash Rod	1,164	661	6,421	6,197	326	1,621	1,323	2,536	15,731	14,334	8,046	3,962	7,256
Nimroz	Zaranj (Provincial Center)	-	135	-	-	17	81	102	442	1	-	4	2	0
Nimroz Total		**1,690**	**1,955**	**6,507**	**6,203**	**428**	**2,039**	**2,493**	**3,808**	**16,252**	**14,584**	**8,805**	**5,303**	**11,466**

Province	District	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2,016	2,017
Nuristan	Barg-i-Matal	535	522	-	-	-	-	-	-	-	-	-	-	-
Nuristan	Du Ab	-	-	-	-	-	-	-	-	-	-	-	-	-
Nuristan	Kamdesh	269	262	-	-	-	-	-	-	-	-	-	-	-
Nuristan	Mandol	731	713	-	-	-	-	-	-	-	-	-	-	4
Nuristan	Noor Gram	-	-	-	-	-	-	-	-	-	-	-	-	117
Nuristan	Nuristan Paroon (Provincial Ce	19	19	-	-	-	-	-	-	-	-	-	-	-
Nuristan	Wama	-	-	-	-	-	-	-	-	-	-	-	-	-
Nuristan	Waygal	-	-	-	-	-	-	-	-	-	-	-	-	-
Nuristan Total		**1,554**	**1,516**	**p-f**	**p-f**	**p-f**	**p-f**	**p-f**	**p-f**	**p-f**	**p-f**	**p-f**	**p-f**	**121**
Paktika	Barmal	-	-	-	-	-	-	-	-	-	-	-	-	-
Paktika	Dilah wa Khwoshamand	-	-	-	-	-	-	-	-	-	-	-	-	-
Paktika	Giyan	-	-	-	-	-	-	-	-	-	-	-	-	-
Paktika	Gomal	-	-	-	-	-	-	-	-	-	-	-	-	-
Paktika	Jani Khel	-	-	-	-	-	-	-	-	-	-	-	-	-
Paktika	Mata Khan	-	-	-	-	-	-	-	-	-	-	-	-	-
Paktika	Nika	-	-	-	-	-	-	-	-	-	-	-	-	-
Paktika	Omna	-	-	-	-	-	-	-	-	-	-	-	-	-
Paktika	Sar Rowza	-	-	-	-	-	-	-	-	-	-	-	-	-
Paktika	Sharan (Provincial Center)	-	-	-	-	-	-	-	-	-	-	-	-	-
Paktika	Sarubi	-	-	-	-	-	-	-	-	-	-	-	-	-
Paktika	Turwo	-	-	-	-	-	-	-	-	-	-	-	-	-
Paktika	Urgun	-	-	-	-	-	-	-	-	-	-	-	-	-
Paktika	Wazahkhwah	-	-	-	-	-	-	-	-	-	-	-	-	-
Paktika	Wor Mamay	-	-	-	-	-	-	-	-	-	-	-	-	-
Paktika	Yahya Khel	-	-	-	-	-	-	-	-	-	-	-	-	-
Paktika	Yosuf Khel	-	-	-	-	-	-	-	-	-	-	-	-	-
Paktika	Zarghun Shahr	-	-	-	-	-	-	-	-	-	-	-	-	-
Paktika	Ziruk	-	-	-	-	-	-	-	-	-	-	-	-	-
Paktika Total		**0**	**0**	**p-f**	**p-f**	**p-f**	**p-f**	**p-f**	**p-f**	**p-f**	**p-f**	**p-f**	**p-f**	**p-f**
Paktya	Ahmadabad	-	-	-	-	-	-	-	-	-	-	-	-	-
Paktya	Ali Khail													-
Paktya	Samkani	-	-	-	-	-	-	-	-	-	-	-	-	-
Paktya	Dand Patan	-	-	-	-	-	-	-	-	-	-	-	-	-
Paktya	Gardez (Provincial Center)	-	-	-	-	-	-	-	-	-	-	-	-	-
Paktya	Woza Jadran	-	-	-	-	-	-	-	-	-	-	-	-	-
Paktya	Jaji	-	-	-	-	-	-	-	-	-	-	-	-	-
Paktya	Jani Khel	-	-	-	-	-	-	-	-	-	-	-	-	-
Paktya	Laja Ahmad Khel	-	-	-	-	-	-	-	-	-	-	-	-	-
Paktya	Lija Mangal	-	-	-	-	-	-	-	-	-	-	-	-	-
Paktya	Sayyid Karam	-	-	-	-	-	-	-	-	-	-	-	-	-
Paktya	Shamul *	-	-	-	-	-	-	-	-	-	-	-	-	-
Paktya	Shwak	-	-	-	-	-	-	-	-	-	-	-	-	-
Paktya	Zurmat	-	-	-	-	-	-	-	-	-	-	-	-	-
Paktya Total		**0**	**0**	**p-f**	**p-f**	**p-f**	**p-f**	**p-f**	**p-f**	**p-f**	**p-f**	**p-f**	**p-f**	**p-f**
Panjshir	Bazarak (Provincial Center)	-	-	-	-	-	-	-	-	-	-	-	-	-
Panjshir	Darah	-	-	-	-	-	-	-	-	-	-	-	-	-
Panjshir	Hissa-i-Awal(Khinj)	-	-	-	-	-	-	-	-	-	-	-	-	-
Panjshir	Hisa-i-Duwumi	-	-	-	-	-	-	-	-	-	-	-	-	-
Panjshir	Panjshir	-	-	-	-	-	-	-	-	-	-	-	-	-
Panjshir	Paryan	-	-	-	-	-	-	-	-	-	-	-	-	-
Panjshir	Rukhah	-	-	-	-	-	-	-	-	-	-	-	-	-
Panjshir	Shutul	-	-	-	-	-	-	-	-	-	-	-	-	-
Panjshir	Unaba	-	-	-	-	-	-	-	-	-	-	-	-	-
Panjsher Total			**0**	**p-f**	**p-f**	**p-f**	**p-f**	**p-f**	**p-f**	**p-f**	**p-f**	**p-f**	**p-f**	**p-f**
Parwan	Bagram	-	-	-	-	-	-	-	-	-	-	-	-	-
Parwan	Charikar (Provincial Center)	-	-	-	-	-	-	-	-	-	-	-	-	-
Parwan	Syahgird (Ghorband)	-	-	-	-	-	-	-	-	-	-	-	-	-
Parwan	Jabalussaraj	-	-	-	-	-	-	-	-	-	-	-	-	-
Parwan	Koh-i-Safi	-	124	-	-	-	-	-	-	-	-	-	-	-
Parwan	Salang	-	-	-	-	-	-	-	-	-	-	-	-	-
Parwan	Sayyid Khel	-	-	-	-	-	-	-	-	-	-	-	-	-
Parwan	Shaykh Ali	-	-	-	-	-	-	-	-	-	-	-	-	-
Parwan	Shinwari	-	-	-	-	-	-	-	-	-	-	-	-	-
Parwan	Surkh-i-Parsa	-	-	-	-	-	-	-	-	-	-	-	-	-
Parwan Total		**0**	**124**	**p-f**	**p-f**	**p-f**	**p-f**	**p-f**	**p-f**	**p-f**	**p-f**	**p-f**	**p-f**	**p-f**
Samangan	Aybak (Provincial Center)	-	-	-	-	-	-	-	-	-	-	-	-	-
Samangan	Darah-i-Soof-i-Bala	1,454	1,182	-	-	-	-	-	-	-	-	-	-	58
Samangan	Darah-i-Suf-i-Payin	-	-	-	-	-	-	-	-	-	-	-	-	185
Samangan	Fayroz Nakhcheer	-	-	-	-	-	-	-	-	-	-	-	-	-
Samangan	Hazrat-i-Sultan	280	90	-	-	-	-	-	-	-	-	-	-	-
Samangan	Khuram wa Sar Bagh	307	99	-	-	-	-	-	-	-	-	-	-	-
Samangan	Roi-Do-Ab	1,833	589	-	-	-	-	-	-	-	-	-	-	-
Samangan Total		**3,874**	**1,960**	**p-f**	**p-f**	**p-f**	**p-f**	**p-f**	**p-f**	**p-f**	**p-f**	**p-f**	**p-f**	**243**
Sari Pul	Balkhab	95	188	-	-	-	-	-	-	-	-	-	-	-
Sari Pul	Gosfandi	-	-	-	-	-	-	-	-	-	-	-	-	-
Sari Pul	Kohistanat	1,424	377	-	-	-	-	-	-	-	-	-	-	-
Sari Pul	Sangcharak	441	1,122	16	-	-	-	-	-	-	-	-	-	-
Sari Pul	Sari Pul (Provincial Center)	959	415	203	-	-	-	-	-	-	-	-	72	212
Sari Pul	Sayyad	52	25	41	-	-	-	-	-	-	195	331	1,614	3,338
Sari Pul	Sozma Qala	256	124	-	-	-	-	-	-	-	-	-	-	-
Sari Pul Total		**3,227**	**2,251**	**260**	**p-f**	**p-f**	**p-f**	**p-f**	**p-f**	**p-f**	**195**	**331**	**1,686**	**3,550**

Province	District	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017
Takhar	Baharak	-	-	-	-	-	-	-	-	-	-	-	-	-
Takhar	Bangi	-	-	79	-	-	-	-	-	-	-	-	-	-
Takhar	Chahab	-	70	-	-	-	-	-	-	-	-	-	-	-
Takhar	Chal	-	15	9	-	-	-	-	-	-	-	-	-	-
Takhar	Darqad	-	-	-	-	-	-	-	-	-	-	-	-	-
Takhar	DashtiQala	-	-	-	-	-	-	-	-	-	-	-	-	-
Takhar	Farkhar	43	118	32	-	-	-	-	-	22	-	-	-	7
Takhar	Hazar Sumuch	-	-	32	-	-	-	-	-	-	-	-	-	-
Takhar	Eshkamish	-	2	47	-	-	-	-	-	-	-	-	-	-
Takhar	Kalafgan	-	609	318	-	-	-	-	-	21	-	-	-	17
Takhar	Khwaja Bahawuddin	-	-	-	-	-	-	-	-	-	-	-	-	-
Takhar	Khwaja Ghar	-	109	-	-	-	-	-	-	-	-	-	-	-
Takhar	Namak Ab	-	-	-	-	-	-	-	-	-	-	-	-	-
Takhar	Rustaq	1,321	816	118	-	-	-	-	-	25	-	-	-	23
Takhar	Taloqan (Provincial Center)	-	77	577	-	-	-	-	-	2	-	-	-	0
Takhar	Warsaj	-	46	-	-	-	-	-	-	-	-	-	-	-
Takhar	Yangi Qala	-	317	-	-	-	-	-	-	-	-	-	-	-
Takhar Total		**1,364**	**2,179**	**1,211**	**p-f**	**p-f**	**p-f**	**p-f**	**p-f**	**p-f**	**p-f**	**p-f**	**p-f**	**p-f**
Uruzgan	Chorah	259	2,024	71	316	306	221	301	349	611	502	275	454	1,263
Uruzgan	Dihrawud	209	1,704	3,538	2,849	2,038	145	3,438	4,375	3,321	2,214	3,382	4,743	5,648
Uruzgan	Khas Uruzgan	338	886	173	304	407	230	384	38	123	1,074	172	2,492	2,680
Uruzgan	Nesh *	352	614	-	-	-	-	-	-	-	-	-	-	
Uruzgan	Shahidi Hasas	646	1,127	3,109	4,403	2,445	3,635	3,601	3,617	3,888	2,296	3,489	1,951	3,062
Uruzgan	Tirin Kot (Provincial Center)	221	3,348	2,312	2,067	4,028	3,106	2,895	2,129	1,936	3,042	3,852	5,574	8,368
Uruzgan	Gizab*	-	-	-	-	-	-	-	-	-	148	107	290	520
Uruzgan Total		**2,025**	**9,703**	**9,203**	**9,939**	**9,224**	**7,337**	**10,620**	**10,508**	**9,880**	**9,277**	**11,277**	**15,503**	**21,541**
Wardak	Chak-i-Wardak	-	-	-	-	-	-	-	-	-	-	-	-	-
Wardak	Daimirdad	106	-	-	-	-	-	-	-	-	-	-	-	-
Wardak	Hisah-i-Awal Behsud	-	-	-	-	-	-	-	-	-	-	-	-	-
Wardak	Jaghatu	-	-	-	-	-	-	-	-	-	-	-	-	-
Wardak	Jalrez	-	-	-	-	-	-	-	-	-	-	-	-	-
Wardak	Markaz-i- Behsud	-	-	-	-	-	-	-	-	-	-	-	-	-
Wardak	Maidan Shahr (Provincial Cente	-	-	-	-	-	-	-	-	-	-	-	-	-
Wardak	Nerkh	-	-	-	-	-	-	-	-	-	-	-	-	-
Wardak	Sayyidabad	-	-	-	-	-	-	-	-	-	-	-	-	-
Wardak Total		**106**	**0**	**p-f**	**p-f**	**p-f**	**p-f**	**p-f**	**p-f**	**p-f**	**p-f**	**p-f**	**p-f**	**p-f**
Zabul	Arghandab	205	346	79	55	103	91	47	79	32	256	24	56	56
Zabul	Atghar	86	36	16	3	2	16	1	5	12	12	-	3	52
Zabul	Daychopan	1,016	742	389	422	147	122	26	25	259	178	25	35	93
Zabul	Kakar Kak-e Afghan	-	-	104	110	219	44	40	38	50	403	122	4	-
Zabul	Mizan	56	123	129	289	309	140	74	155	858	544	171	150	759
Zabul	Naw Bahar	-	-	63	44	33	4	2	12	-	-	-	-	-
Zabul	Qalat (Provincial Center)	188	657	78	310	19	20	56	10	28	146	37	-	10
Zabul	Shah Joi	240	538	320	237	175	20	11	69	96	146	-	-	-
Zabul	Shemel Zayi	16	35	159	153	46	15	1	5	-	41	-	-	202
Zabul	Shinkai	102	228	139	105	87	-	-	-	-	-	-	-	-
Zabul	Tarnak wa Jaldak	145	506	136	608	5	10	5	26	-	1,168	265	1,115	959
Zabul Total		**2,053**	**3,211**	**1,611**	**2,335**	**1,144**	**482**	**262**	**424**	**1,335**	**2,894**	**644**	**1,363**	**2,131**
TOTAL		**103,919**	**164,969**	**192,981**	**157,253**	**123,095**	**122,515**	**131,065**	**154,436**	**209,450**	**224,337**	**182,566**	**201,312**	**328,302**
Rounded Total		**104,000**	**165,000**	**193,000**	**157,000**	**123,000**	**123,000**	**131,000**	**154,000**	**209,000**	**224,000**	**183,000**	**201,000**	**328,000**

p-f: Poppy-free according to the definition of the respective year. This concept was introduced in 2007. In 2007, provinces with no poppy were considered poppy-free; since 2008, provinces with less than 100 hectares of poppy have been considered poppy-free.

Annex II: Eradication figures, by district (2017)

	DISTRICT	Eradication reported (ha)	No. of fields eradication reported	No. of villages eradication reported
Badakhshan	Argo	149	2249	51
	Faizabad	1	9	1
	Yaftal Sufla	4	123	8
	Tashkan	28	488	16
	Darayam	59	825	14
	Khash	25	358	14
	Kishim	3	124	4
Badakhshan Total		**269**	**4,176**	**108**
Balkh	Charbolak	3	13	8
	Balkh	5	6	5
	Chimtal	3	8	6
	Sholgara	6	25	8
	Dawlat abad	3	27	6
	Dehdadi	5	15	6
Balkh Total		**25**	**94**	**39**
Kabul	Surobi	27	190	18
Kabul Total		**27**	**190**	**18**
Kapisa	Tagab	3	38	2
Kapisa Total		**3**	**38**	**2**
Badghis	Muqur	55	307	11
Badghis Total		**55**	**307**	**11**
Kandahar	Arghandab	18	25	1
	Maywand	1	23	2
	Panjwayi	6	23	4
	Zheray	23	86	9
Kandahar Total		**48**	**157**	**16**
Nangarhar	Achin	20	96	8
	Batikot	11	21	3
	Dehbala	17	38	6
	Nazyan	2	16	4
	Rodat	29	172	13
	Shinwar	16	97	5
	Chaparhar	3	32	7
	Khogyani	53	625	13
	Surkhrod	49	245	20
	Dara-i- noor	4	28	6
Nangarhar Total		**204**	**1,370**	**85**
Laghman	Mehterlam (Provincial Center)	23	595	12
Laghman Total		**23**	**595**	**12**
Kunar	Shigal	20	47	1
	Narang	11	43	1
Kunar Total		**31**	**90**	**2**
Nimroz	Charburjak	8	31	1
	Chakhansur	3	16	1
	Khashrod	3	13	1
Nimroz Total		**14**	**60**	**3**
Hirat	Kushk(Robat-i-Sangi)	11	68	4
	Obe	12	42	4
Hirat Total		**23**	**110**	**8**
Jawzjan	Sheberghan	0.3	4	1
Jawzan Total		**0.3**	**4**	**1**
Takhar	Kalafgan	8	12	2
	Rostaq	7	14	3
Takhar Total		**15**	**26**	**5**
Ghor	Chaghcharan (Provincial Center)	14	54	7
Ghor Total		**14**	**54**	**7**
Grand Total		**750**	**7,271**	**317**